CHEManager EUROPE

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THE NEWSPAPER FOR THE CHEMICAL AND LIFE SCIENCES MARKETS

Newsflow

Wacker Chemie said it will invest as much as €400 million in a Chinese siloxane production plant it is building jointly with U.S. rival Dow Corning, Wacker chief executive Peter-Alexander Wacker told Sueddeutsche Zeitung, one of Germany's largest newspapers. The factory, situated 180 km northwest of Shanghai, is being built without the involvement of a Chinese partner, in part to protect the German company's technology from being copied, the company said in an interview.

▶ www.wacker.com
▶ www.dowcorning.com

Belgian chemicals and drugs company **Solvay** said it has signed an agreement with the **Perstorp Group** of Sweden to sell Solvay's entire Caprolactones business, which is active in the production, marketing and sales of epsilon-Caprolactone and downstream derivatives for €200 million. The transaction is expected to be completed in the fourth quarter of 2007, pending the relevant regulatory approvals.

▶ www.solvay.com
▶ www.perstorp.com

SAP said it will make a cash tender offer agreement of €42.00 per ordinary share for Business Objects. The transaction volume including transaction costs will be slightly above €4.8 billion. Founded in 1990, Business Objects, based in Paris, France and San Jose, California, has roughly 6,150 employees, supporting more than 44,000 customers.

▶ www.sap.com
▶ www.businessobjects.com

Thermo Fisher Scientific said it has acquired NanoDrop Technologies, a manufacturer of micro-volume ultraviolet visible (UV-Vis) instrumentation. The company said acquisition will strengthen its portfolio of UV-Vis spectrophotometry instruments for applications involving small sample volumes. For example, micro-volume samples are used in emerging life sciences research that involves measurement of DNA and proteins. NanoDrop, which is based in Wilmington, Delaware, has annual revenues of approximately US-$35 million.

▶ www.thermofisher.com
▶ www.nanodrop.com

Growth Focus On Asia

Lanxess Goes East

After the sale of the Lustran Polymers Business Unit is initiated, Lanxess will concentrate completely, as far as thermoplastics are concerned, on semi-crystalline technical polymers with Durethan polyamides and with Pocan polyesters. How does the future of this business look? A discussion with Dr. Werner Breuers, member of the Lanxess board, and Dr. Hubert Fink, Manager of the Semi-Crystalline Products Business Unit.

Dr. Werner Breuers
Member of the Board of Lanxess (Photo: Lanxess)

CHEManager Europe: Do you consider polyamides and polyesters as a sufficient basis for your thermoplastics business? Or is an extension of the portfolio to be expected in the medium term, which would further increase the significance of thermoplastics for the company?

W. Breuers: The Semi-Crystalline Products Business Unit makes an annual turnover in excess of €500 million with Durethan and Pocan. It is therefore one of the largest of our business units – and with an EBDITA margin of well over ten percent, it is also one of the most profitable. Consequently, it has a very solid basis in the Lanxess group with sufficient critical mass. Amid global competition, it is one of the five top players in terms of polyamides and polybutylene terephthalate. The development and innovation ability connected with the brands Durethan and Pocan are deemed to be a benchmark worldwide – particularly in Europe and even more so in Asia. Semi-Crystalline Products therefore has excellent prerequisites to grow faster than the market under its own steam. We want to use these opportunities, a fact which underlines our numerous investments. Think, for example, of the extension of polyamide 6 capacities in Uerdingen or the capacity increase with polyamide 6 raw material Caprolactam in Antwerp.

What are the highlights that will allow Lanxess to gain and sustain a position of excellence among innovative plastics producers at K 2007 above?

H. Fink: A key part of the presentation will be the injection-moulded structure inserts (fig. 1, page 4) made of Durethan, which strengthen the crash-related areas of the steel body of the new C4 Picasso from Citroën. They enable a saving in weight of 12 kg and ensure that this car passes the Euro NCAP crash test with the best score. A further focus is on our flame-protected polyamides and polyesters, which with their largely chlorine-free and bromine-free flame protection packages meet the latest regulations of the electrical and electronics industry on ecology and safety. And, of course, we will also be giving our hybrid technology plenty of space. In the meantime, as well as front ends (fig. 2, page 4) even roof frames, pedal lever brackets and brake pedals will be made with it. We will introduce, as well as new lightly flowing and high-filled polyamide 6 models, new hybrid concepts – such as hybrid connection points as an alternative to point welds.

Are we to recognise in this the objective of the new R&D strategy, which after extensive conclusion of the restructuring and consolidation measures, should produce new growth and consolidate global market positions?

W. Breuers: That's right; most of our innovations at K 2007 reflect our new R&D strategy. With it we are prioritising growth-related future markets and future technologies that promise a quick return on investment. We want to use our R&D investments as efficiently as possible, which in the year 2007 were 15% higher than the previous year at around €100 million. We are therefore focussing our research activities on the market, and indeed primarily on development projects

▶ Continues **Page 4**

Value Through IT

IT-Conference for the Process Industries

SAP and the German Chemical Industry Association (VCI) will jointly conduct their traditional SAP/VCI conference from 26 – 27 November in Frankfurt, Germany. This gives managers and executives from the process industries the opportunity to meet SAP, their software partners and system integrators to discuss applications, new developments and state-of-the-art IT technology. CHEManager Europe spoke with Michael Kleinemeier, corporate officer and member of SAP's executive council and Franz Hero, SAP's vice president industry business unit chemicals, about the company's strategy in the chemical and pharmaceutical industry and the most important topics for the upcoming event.

Franz Hero
SAP's vice president industry business unit chemicals

Michael Kleinemeier
Corporate officer and member of SAP's executive council

CHEManager Europe: Mr. Kleinemeier, what are SAP's expectations for the SAP/VCI conference in November?

M. Kleinemeier: The SAP/VCI conference is an important European event where process industries executives can learn more about how technology can help their businesses to become more efficient and competitive. We are excited about the fact that most of the presentations

▶ Continues **Page 10**

A Dynamic Network

Research, Development and Production in Chemical Parks

Bayer Industry Services (BIS) has almost completed the transformation from its former role as Bayer's site administration division to a chemical park manager. Today, the company is a modern service provider employing some 5,000 people at its three sites in Leverkusen, Dormagen and Krefeld-Uerdingen, Germany. A joint venture between Bayer and Lanxess, BIS has initiated an extensive strategy project which is presently being implemented. With the rebranding of the company this coming fall, the transformation is to be made visible to the market. BIS Executive Board Chairman Dr. Klaus Schäfer spoke with CHEManager Europe.

Dr. Klaus Schäfer
BIS Executive Board Chairman

CHEManager Europe: Dr. Schäfer, the future branding of BIS is intended to be a clear signal of the transformation taking place within the company. What has changed since the launch of the strategy project 18 months ago and what still remains to be done?

K. Schäfer: Four key aspects are involved. We implemented the strategy project in response to changed conditions within our industry segment. Firstly, we found that some of our cost structures were out of step with the market. Our new company-specific collective agreement has enabled us to rectify this situation, especially in personnel-intensive organizational units. A further important step has been the simplification of processes and streamlining of structures. Both of these aspects are reflected in our reorganization. Thirdly, we have launched an extensive efficiency enhancement program. Lastly, we will introduce our new branding this fall, focusing the attention of both the market and our own

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CONTENT

BASF: R&D Agreement in Korea BASF Plant Science and Crop Functional Genomics Center (CFGC), a Korean consortium for crop research, have signed a cooperation and licensing agreement. The agreement includes the discoveries by 200 researchers from 40 renowned research institutes over 10 years. The deal focuses on plant traits, which can increase yield and improve stress tolerance in major crops such as rice and corn. CFGC will contribute discovery work with genes that have shown proven practical results, while BASF Plant Science will be responsible for the further analysis and development of the genes. CFGC will grant BASF Plant Science exclusive licensing rights outside of South Korea. Financial details of the agreement have not been disclosed.

▶ www.basf.com

EU Clears Wacker/Schott JV The European Commission said it has approved a joint venture between a unit of German technology group Schott and German chemical company Wacker Chemie. The joint venture will focus on the production of crystalline solar wafers, used to produce solar cells. Wacker and Schott will invest a total of €370 million (US-$506 million) on facilities for the project in the German regions of Thuringia and Bavaria, which Wacker said will create 700 new jobs.

▶ www.wacker.de

▶ www.schott.com

RadiciGroup Plastics, Lati Industria to Develop Chinese Market RadiciGroup Plastics and Lati Industria Termoplastici said they have signed a letter of intent to form a 50:50 joint venture to develop the Chinese engineering plastics market. According to the companies, the constant growth of this Asian market offers attractive opportunities for businesses with a strong international presence and a wide range of products.

The companies sited several factors that they believe will have an increasing influence on Chinese growth, including: the surging Chinese auto industry; the potential arising from the modernisation of the electric power grid and electrical equipment; the growing pool of domestic appliance buyers; the large investments in infrastructure, the increasing hunger for high quality goods: these are the factors that will have an increasing influence on Chinese growth, which up to now has been tied to the competitive advantage of low-cost labour.

▶ www.radicigroup.com

Sumitomo Buys CDT

Sumitomo Chemical said it has completed its acquisition of Cambridge Display Technology (CDT), with a purchase price of approximately US-$285 million. In July, Sumitomo Chemical and CDT, a company active the development of polymer organic light emitting diode (P-OLED) displays, announced an agreement in which CDT would become a wholly owned subsidiary of Sumitomo Chemical, and a resolution for the acquisition was approved by CDT's shareholders at a general shareholders' meeting. Integrating the two companies' technological and business resources, Sumitomo Chemical will improve the performance of light-emitting materials and OLED display-related materials while accelerating the development of commercial technologies for the manufacture of OLED displays, serving its customers as a total solution provider to meet their diverse requirements from materials to processes.

▶ www.sumitomo-chem.co.jp/english

New Structure At Lanxess

Lanxess said it will now position itself as a specialty chemicals group following the divestment of its Lustran Polymers business unit. "Our place is as a specialty chemicals group at the core of the chemical industry," said management board chairman Axel C. Heitmann. As part of a systematic market orientation, the company will organize its 13 business units into three segments following the divestment of the commodity plastics activities. The new segments are:

- Performance Polymers: This segment comprises the butyl rubber, polybutadiene rubber, semi-crystalline products and technical rubber products business units. All the polymer-based businesses are grouped together here. The engineering plastics segment, which previously included SCP, ceases to exist.
- Advanced Intermediates: This former chemical intermediates segment is to be renamed in order to emphasize the quality of its products. This new segment includes the basic chemicals and Saltigo business units. The inorganic pigments business unit, which was previously incorporated in this segment, will be integrated into the performance chemicals segment.
- Performance Chemical: This segment will focus on specialty products. Performance chemicals incorporates the functional chemicals, inorganic pigments, ion exchange resins, leather, material protection products, Rhein Chemie and rubber chemicals business units.

▶ www.lanxess.com

Mylan: Merck KGaA Generics Acquisition

Mylan said it has completed its acquisition of Merck KGaA's generics business. Mylan and Merck initially announced the signing of a definitive agreement under which Mylan would acquire Merck Generics for €4.9 billion in May.

The new Mylan is the third largest generic company worldwide, employs more than 11,000 people and has a global presence in more than 90 countries. The company's product offering now includes more than 570 products and the world's second largest portfolio of active pharmaceutical ingredients (APIs) with 126 U.S. drug master files (DMFs).

Mylan also announced that the company will change its name from Mylan Laboratories to Mylan to better reflect the broader scope of its business. The company also confirmed that it has changed its financial year to begin reporting on a calendar year basis.

▶ www.mylan.com

▶ www.merck.de

BOC, Linde Rebrand in North America as Linde

The integrated BOC Gases and Linde Gas organizations in North America will be branded as Linde.

Linde acquired The BOC Group in September 2006 to form The Linde Group, which consists of a group of over 100 companies in more than 70 countries. Those strengths include in excess of US-$2 billion in sales in North America and 5,000 employees. Linde serves over 100,000 customers in the food, chemicals, metals, glass, energy, electronics, welding and fabricating industries from a network of over 400 locations, including plants, sales offices and retail outlets, and 1,600 trucks and railcars.

▶ www.linde.com

▶ www.boc-gases.com

Air Liquide Buys Allied Healthcare Unit

French industrial gas company Air Liquide said it bought the respiratory homecare unit of UK-based Allied Healthcare for €51 million in cash. In a statement, Air Liquide said with this acquisition, the combined Air Liquide businesses will serve over 20,000 patients in England and Northern Ireland, with homecare sales of around €34 million.

▶ www.airliquide.com

Honeywell Receives EU OK for HBA-1 Import

Honeywell said it has received clearance from the EU to import a limited quantity of HBA-1, its novel developmental low global warming potential blowing agent for one-component foam. Honeywell's technology would replace R-134a, a hydrofluorocarbon (HFC) used to make one-component foam expand. The EU Competent Authority, which is responsible for ensuring full and effective compliance with the EU F-Gas regulation, based its decision primarily on favorable results from initial toxicity assessments, according to Honeywell. The notification also ensures that HBA-1 will not be classified as dangerous under EU Directive 67-548-EEC.

One-component foam is easily dispensed from a can and requires no mixing. This energy-saving foam is commonly used to seal gaps around windows and doors. According to industry estimates, there were more than 120 million cans of one-component foam sold throughout Europe in 2004, the last year for which comprehensive data are available.

▶ www.honeywell.com

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Growth Focus On Asia

Lanxess Goes East

Continued Page 1

with customers. The structure inserts already mentioned or the hybrid pedal lever brackets are two of the many good examples of this. In all, our aim is to achieve maximum added value, with minimum investment, in a short space of time. Four fifths of our research and development projects should lead to market-ready products within two years if at all possible.

Innovative system solutions are the key to success with high quality technical polymers. They ensure your competitive position. How do you encourage the innovative culture needed for this internally and in the interplay with your customers and with external research establishments?

H. Fink: With a whole raft of measures. As far as the internal innovative culture is concerned, in Dormagen, for example, we have combined product, sales and application development. As these areas are in close proximity to each other, there is optimum communication and exploitation of resources. Examples of external measures, taken particularly by our Customer Service department, are the extension of our development centre in Dormagen and the recently-inaugurated Research and Development Testing Center in Wuxi. Together with our development centres in Hong Kong and Pittsburgh, they form a worldwide research network. We maintain contacts with universities and research institutions primarily to detect technical trends at an early stage. So for example, in the area of mechatronics, we keep close contacts with Professor Schmachtenberg of the Department of Plastics Technology at the University of Erlangen-Nuremberg. With all the measures described, we want to extend even further our widely recognised technological leading position with materials and system solutions.

What significance does process development and optimisation have for you, both as part of the R&D process and also in the production processes being used?

H. Fink: Fundamental research on the development of new production processes for polyamides, polyesters and their fabricated materials is not our main aim. The production processes being used have been and shall be optimised continuously with much success in relation to output and energy efficiency.

Dr. Hubert Fink, Manager of the Semi-Crystalline Products Business Unit

"Lanxess Goes Asia" – What consequences does this strategic statement have on your thermoplastics trade?

W. Breuers: We do not want to operate the Asia-Pacific market for polyamide and polyester from afar, but from the region – and that is with everything that goes along with it. Therefore we are constructing – as incidentally in our trade with rubbers, rubber chemicals or leather chemicals, for example – in Asia the complete infrastructure needed for commercial success. This comprises modern production plants on a world scale such as in Wuxi, tailor-made marketing for the regional market specialities and, of course, comprehensive service points such as the already activated Technical Center for application development on the customer's doorstep. Behind all these measures is the directed transfer of know-how, with which we have worked out a top position in the established markets for polyamide and polyester.

Our aims are ambitious. Already today, clearly over ten percent of the turnover with Durethan and Pocan is made in the Asia-Pacific region. We want to increase this share in the next four years to over 25 %.

How far is your Asia business supported by production facilities on site?

H. Fink: Our Asia business is supported primarily by our compounding plant in Wuxi. We are putting a second production line into operation there at the end of the year and we will then double our capacities for Durethan and Pocan to around 40,000 t/y. The site is suitable for an extension of capacity of up to 100,000 t/y.

The extension option is significant against the background of growth figures in this region. For technical polymers such as polyamide and PBT, we are expecting an annual growth in Asia in the coming years of around 7 % and in China even above 10 % – compared with a worldwide average growth of five percent.

How will you ensure your raw materials supply in Asia; will you also be manufacturing fabricated materials in the region?

H Fink: The SCP Business Unit produces the strategic fabricated materials for Durethan and Pocan at the Uerdingen (D) and Antwerp (B) sites. There Caprolactam, adipic acid and glass fibres are manufactured in highly modern world scale plants. These plants are each the largest of their kind, which allows production under competitive conditions.

In Uerdingen, and through our joint venture with DuPont in Hamm-Uentrop, we also have highly modern world scale production plants for polyamide 6 or polybutylene terephthalate. Our compounding in Wuxi is primarily supplied with fabricated materials from our European plants.

Of course, we are also looking into possibilities for sourcing materials locally. That is particularly true of functional additives. In this, the Asian market provides very good opportunities which will certainly be further improved in the future.

Technological development, working out system solutions in cooperation with customers: are these particular challenges in Asia, especially in China? How do you communicate locally?

W. Breuers: In Asia, the automotive, electrical, electronic and IT industries in particular are very innovative. These sectors have also become our main customers, because we provide a very good service in material, process and application development in our technical centres. We can react quickly and flexibly to what our customers want. Short response times are an essential success factor in this market. To ensure this, and simply because of the language-factor, we rely in China on well-trained native employees. They not only know the business of their customers, but they are also culturally close to them.

Are you also thinking about extending R&D facilities in Asia? And how do you secure your expertise locally?

W. Breuers: We will, as we have already done in the past, extend our research and development to the extent that our business in this region has been growing. The focus is then on a comprehensive service for our Asian customers. The centre for our R&D activities with Durethan and Pocan, however, shall remain in Dormagen. There, we will be doing our basic work honed by special know-how.

What significance does the North America trade with plastics have for you? How are you represented there?

H. Fink: We supply North America from our world scale plants in Europe. Customers will be looked after by our Technical Center in Pittsburgh/Ohio. The North American market for technical thermoplastics is a ready market with rather moderate growth rates – completely the opposite of the boom region of Asia. There, we can develop ourselves much more strongly and secure a significant market share for ourselves. So, quite clearly, the priorities of our growth activities are in Asia.

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Fig. 1: The structure inserts are fitted deliberately in crash-relevant areas of the body and are located in the lower part of the A pillar, in the lower and upper part of the B pillar and in the transverse beam above the rear axle. (Photo: Citroën)

Fig. 2: In the Audi TT, the first front end in plastic aluminium composite structure is on the road. It is made up of three aluminium sheets spray-coated with polyamide 6 Durethan BKV 30. (Photo: Lanxess)

Europe Sets The Pace

Pharmaceuticals Industry Consolidating More Rapidly

Based on the sheer volume of transactions, it is clear that the process of consolidation in the worldwide pharmaceuticals and health care industries is speeding up. In the first half of 2007 the total value of mergers and acquisitions (M&A) in the pharmaceuticals, medical technology and health care sectors reached the US-$140 billion mark. According to the report Pharmaceutical Sector M&A Insights 2006/2007 published by Pricewaterhousecoopers (PwC), projections for the entire year indicate that it should be possible to outstrip the US-$209 billion mark achieved in 2006.

"It is the European pharmaceuticals companies, above all, that are trying to reach the critical size required for global competition through acquisitions. Consolidation will continue in 2008, and we wouldn't exclude the possibility of mega-mergers either," says Dr Volker Fitzner, a partner in PwC's Advisory division.

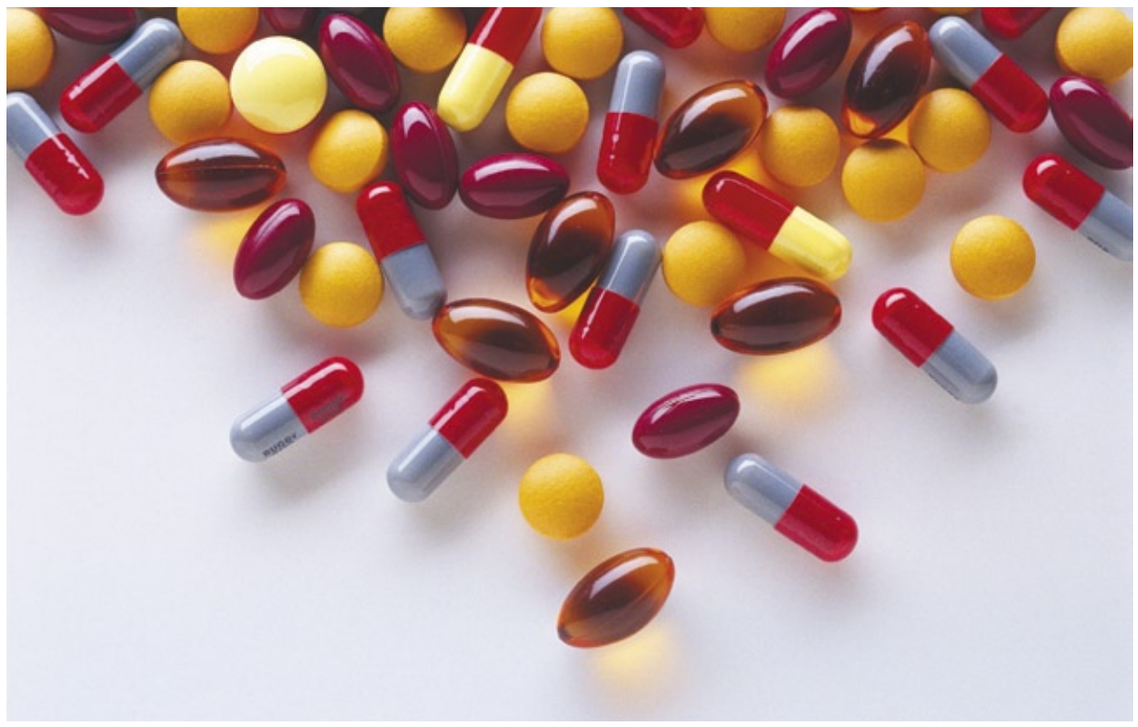
In 2006, the M&A volume in the pharmaceuticals industry in Western Europe totalled US-$59 billion, well ahead of the North American volume of US-$43 billion. German companies were the target of three out of the five largest deals. Bayer's takeover of Schering alone was valued at US-$22.5 billion. In the first half of 2007, M&A transactions in Western Europe amounted to US-$27 billion, compared with US-$25 billion in North America.

There were 719 transactions in the pharmaceuticals industry in the year 2006 with a total value of US-$113 billion. In the previous year, 684 takeovers amounted to a volume of just US-$61 billion.

Biotech Alliances

The trend towards partnerships and alliances between pharmaceuticals and biotech companies continued to grow in the course of the current year. In 2006, the ten biggest M&A transactions in the biotech sector had a total value of US-$25 billion. In the first half of 2007, this figure was already outstripped by Astrazeneca's takeover of Medimmune and Schering-Plough's acquisition of Organon (with transaction volumes of US-$14.6 and 14.4 billion respectively).

"All the big pharmaceuticals producers are faced with the challenge that at present fewer innovative



drugs are being put on the market, while at the same time patent protection on a number of blockbuster products is about to run out. Alliances with biotech companies are designed to accelerate the development of new effective ingredients," comments Volker Booten, head of PwC's Chemicals & Pharmaceuticals division.

Generics Suppliers

The consolidation trend continues in the generics sector as well. "The main motives for acquisitions are to reduce costs and open up new markets," says Volker Booten. In the first half of 2007, the American pharmaceuticals company Mylan Laboratories took over the generics arm of the German Merck KGaA, making it the world's third biggest generics supplier. Meanwhile, the investment company Novator acquired the generics specialists Actavis for the sum of US-$4.6 billion.

Private Equity Favours Medical Technology

Since the start of the year, there have been 211 M&A transactions in the medical technology and diagnostics sector, amounting to a total value of US-$26 billion. Private equity investors have been particularly active in this area to date. With the takeover of Mölnlycke Healthcare by the Swedish investment company Investor and Morgan Stanley, and that of VWR by Madison Dearborn Partners, financial investors were involved in two of the five biggest transactions of the last six months.

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Merck & Co to Acquire Novacardia

Merck & Co., one of the world's leading research-based pharmaceutical companies, and Novacardia, a privately held clinical-stage pharmaceutical company focused on cardiovascular diseases, have entered into a definitive agreement under which Merck will acquire Novacardia. Under the agreement, Merck will acquire all of the outstanding equity of Novacardia for US$350 million plus the amount of cash on hand at the time of closing, all of which will be paid in Merck stock based on the average closing stock price on the five days prior to closing of the acquisition.

▶ www.merck.com
▶ www.novacardia.com

Novozymes to Acquire Indian Enzyme Business

Novozymes acquires Biocon's enzyme business for an agreed purchase price equivalent to DKK 551 million. Novozymes thereby strengthens its position in India.

Biocon is one of India's leading biotechnology companies, specialising in biopharmaceuticals, contract research, clinical research and enzymes. The enzyme business includes a broad range of industrial enzymes, food additives and process aids. Further, Biocon plays a role in the global enzymes market for the juice and wine industries.

▶ www.novozymes.com
▶ www.biocon.com

Bayer CropScience' Nunhems Acquires SeedEx

Bayer CropScience announced that Nunhems, its vegetable seed business, has completed the acquisition of the assets of the South Korean vegetable seed company SeedEx which specializes in the breeding, production and marketing of Hot pepper and Brassica varieties. Both crops belong to the most important vegetable crops in Asia in terms of acreage and consumption. The Korean authorities had approved the transaction. Financial terms were not disclosed. The acquisition strengthens Nunhems' business in the Asia/Pacific region offering access to new Asian markets as well as growth opportunities in other regions of the world.

▶ www.bayercropscience.com

Cell Therapeutics Completes Acquisition of SMi

Cell Therapeutics confirmed that it has completed the acquisition of Systems Medicine, a privately held oncology company, in a stock for stock merger valued at US$20 million. SMi stockholders could also receive a maximum of US$15 million in additional consideration upon the achievement of certain regulatory milestones. The acquisition of SMi provides CTI with worldwide rights to Brostallicin, a DNA minor groove binding agent with proven anti-tumour activity. SMi will continue to operate as a wholly-owned subsidiary of CTI.

▶ www.cticseattle.com

Harvard University and Carl Zeiss Sign Agreement

Harvard University's Office of Technology Development (OTD) and Carl Zeiss MicroImaging, a 100% subsidiary of Carl Zeiss, have signed a licensing agreement permitting Carl Zeiss MicroImaging GmbH to use the CARS (Coherent anti-Stokes Raman-Scattering) microscopy technology developed at Harvard. The technology shall be used in the confocal and multiphoton microscopes from Carl Zeiss.

▶ www.zeiss.de/mikro
▶ www.otd.harvard.edu

A Material for the Future

The State of the Art in Polyvinyl Chloride (PVC)

The future is produced in people's heads. This is why the "PVC and the Environment Team" is also working with the most important type of brain food: information. They are collecting and supplying all types of information about PVC in Germany and around the world. There are no borders when it comes to the environment, and because the environmental quality of PVC is an issue, a sound knowledge of the facts is necessary. In this context, Dr. Roy T. Fox spoke to Werner Preusker, Managing Director of the "PVC and the Environment Team" (Arbeitsgemeinschaft PVC und Umwelt – AGPU).

Werner Preusker

CHEManager Europe: Mr. Preusker, PVC, one of the oldest plastics almost sidelined a few years ago, is currently experiencing a surprising renaissance. What contribution did your organisation, the PVC and the Environment Team, make for this change to happen?

W. Preusker: Since 1997, the demand for PVC in Germany has increased by about 40 % or a good 500,000 t/y, much more than in the rest of Europe. In 2006, its rise of 6.6 %, according to details from Plastics Europe, even exceeded the average of all polymers which was 5.8 %.

On the one hand, this can be traced back to the excellent properties of this plastic which, with its easy ability to be modified by additives, can be successfully processed into products such as UV-resistant windows that do not have to be painted, or durable water pipes with a particularly smooth surface.

Another factor was the readiness and ability of people and companies along the whole value-creation chain to continually learn new solutions and to deal with changing public opinions.

The contribution made by AGPU was in creating a network between those people involved, working out concepts for action and carrying these through the Board and working groups into companies and associations. The renaissance of PVC, the classic plastic, is therefore not such a surprise for us.

What significance did the creation of a functional recycling system have for the success of PVC as a material?

W. Preusker: The creation of recycling opportunities at the start of the 1990s for a wide range of material flows that use PVC products, from flooring, through windows, pipes, roofing felt and film, to plastic mixtures such as in cables, was the first important step in reducing environmental problems and making this both visible and credible to politicians and the public through communication.

What influence did marketing measures have, such as focusing on PVC in durable applications such as pipes and window frames?

W. Preusker: The image campaign that was started in 1997 by the marketing platform PVC-plus, also supported by the industry, was the critical step in getting out of the continuous debate on environmental issues. At the same time, we were able to end the stagnation in demand that occurred between 1988 and 1996. The strategy was to make the material as a whole more sympathetic through advertising the benefits of the end products in an emotional manner, such as swimming arm bands, inflatable life rafts, blood bags, through to windows and cables. We addressed those who made decisions on the use of PVC and leaders of public opinion also through personal contacts, and thus built up trust.

Our work thus corresponds to the current state of knowledge of how to answer a public campaign from pressure groups. Enquiries from the chemical and plastics industries – even from outside Germany – showed that people are aware of this success. They even led to a few collaborative projects.

Where and why is PVC still used today as a packaging material?

W. Preusker: PVC is still used today where its particular properties are required to protect sensitive goods, for example for blood bags, pharmaceutical packaging, fresh meat and cosmetics.

For a long time, stabilizing PVC with additives that contain toxic heavy metals such as cadmium and lead, was a process attacked by opponents of PVC. How far has the conversion to less critical additives progressed, and will full protection against ageing continue to be guaranteed?

W. Preusker: Since then, stabilizers containing Cd have no longer been used across Europe in new goods. The use of stabilizers that contain lead will be stopped by 2015 at the latest through the voluntary European commitment for sustained development ("Vinyl2010"). By the end of 2006, a substitution rate of over 20 % had already been achieved. This step-by-step conversion should also ensure that no compromises have to be made as regards durability.

Toxic heavy metals in PVC are not banned everywhere else in the world. Are there problems with contaminated imports?

W. Preusker: So far, such incidents have been rare. In most cases, imported products are made on the orders of European companies.

There was a second issue with plasticizers, which are needed in larger quantities for flexible PVC. Can the plasticizers used today be considered quite safe from a toxicological point of view?

W. Preusker: Flexible PVC allows flexible bags, cables, hoses or imitation leather to be produced, as well as sealant films for roofs, drinking water containers or tunnel construction – that sounds mundane, but we don't have many materials for flexible applications. The plasticizers most frequently used today, DINP and DIDP, are evaluated by official EU risk assessments, published in the gazette in April 2006, and these expressly state that, after very comprehensive tests, it is unlikely that, when used in products, they would cause any risk for people or the environment.

A significant proportion of the success of German PVC manufacturers and plastic processors comes from exports to Eastern Europe, where there is a great need to catch up in terms of PVC profiles and pipes in the construction industry, as well as in water supply and drainage. Bearing in mind the size of this, has the German PVC industry remained calm in the face of the rapid increase in the Eastern Europeans' ability to supply themselves?

W. Preusker: The German profile manufacturers in particular have captured a good market share through their early involvement in Eastern Europe, and they will continue to defend and expand this with equal force. European PVC manufacturers are therefore also profiting from the need for Eastern Europe to catch up, some through direct imports and some through imported products. These markets are being monitored very closely. In my opinion, confidence is more appropriate than calmness in view of the expansion of PVC, such as in profile production.

The existing demand for PVC is essentially supported by standard products and applications. Can you see any product or wapplication innovations that could give this plastic a new impetus for growth?

W. Preusker: PVC is growing through innovative applications like Audi's new car models. If you look closely, you can see that pipes, for example, with their foam cores or wall structures look quite different today than they did 15 years ago; the underbody protection in a car is also produced with less material, and today window frames achieve a significantly higher level of thermal insulation that reaches up to the levels of zero-energy housing. New fillers such as nano-particles or wood fibre offer new application opportunities. In any case, even the markets for pipes and windows in Western Europe are far from exhausted.

Criticism about PVC arose, and still arise from the fact that the raw material for PVC, chloride, used to be generated through chlor-alkali electrolysis using mercury cathodes (mercury electrode process) and sometimes still is. What is the state of play today? Has mercury electrolysis been converted to the more environmentally friendly and efficient membrane process?

W. Preusker: According to current information from the VCI, today in Germany a capacity of 2.1 million tonnes of chloride (48 %) is made using the membrane process, 26 % by the diaphragm process and just 26 % by the mercury electrode process. In the case of German PVC manufacturers, further membrane plants are already under construction or currently being planned.

Are there other procedural improvements worth mentioning in the way ethylene is synthesized into PVC?

W. Preusker: As in other industries, PVC manufacture processes are continually being improved. In polymerisation, increased space-time yields have been recorded in the reactors through higher solid concentrations, better condensing (internal condensers, external reflux condensers) as well as developments in initiators and dryers.

How is global interest in PVC developing? Is there increased construction of PVC production lines in countries that produce crude oil? If so, where, and who is doing it? Or will PVC remain an issue for classic manufacturing countries?

W. Preusker: The demand for PVC and PVC products is growing around the world and so too is the expansion in production capacity. In China, remarkably, several rather smaller production units are being constructed based on coal and acetylene. New capacity is being produced in the USA, Brazil, Thailand, Russia and also in the Near East. In my opinion, these plants will essentially supply regional requirements, some observers expect significant growth of Chinese exports.

Photo: Pixelio

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A 21st Century Material

Further Development of the Innovative Potential of Plastics

This year, over 2,900 companies will be showing off their capabilities at the world's largest plastics and rubber fair, the K, in a net exhibition space of 168,000 m², under the motto "Turning Vision into Business." The exhibitors originate from nearly 60 different countries, a clear indication both of the globalisation of the market and of the fair's own global importance.

The suppliers of machinery and equipment traditionally represent the largest group of exhibitors at the K, followed by the producers of raw materials, semi-finished products and technical components. This year, the raw material producers are exhibiting their products in a net space of 36,000 m². So they are taking up 5,000 m² (15%) more space than in K 2004, hardly proof of fair-weariness, or of the claim that the supply of products online would take over from the fair. Around 230,000 visitors are expected in Dusseldorf in October, more than half of them coming from abroad.

Just before the start of their leading world fair the plastics manufacturers, along with their customers, the processors and plastics machinery manufacturers, have been able to post good business results and report a good economic situation.

Continuing Growth in German Plastics Production

In 2006, plastics production in Germany rose by a total of 2.7% – 18.5 million tonnes. Figures available to date for 2007 indicate that production in Germany is going very well. According to the official production index, they rose by 3.1% up to June 2007. So the current year looks like an extremely good year for plastics, and demand for this highly versatile product, which remains just as popular in the transport and travel sectors as in the construction industry, medicine, packaging and sport, continues unabated.

According to current figures, 60 m t of plastic were manufactured in Europe during 2006. Germany remains Europe's leading production location, and with a share of world production of around 8%, it ranks third amongst the world's plastics manufacturers.

Last year, 245 m t of plastic were manufactured worldwide. At around 9%, the growth rate in global plastics production since the last K in 2004 is impressive. The global volume of plastic produced has doubled over only 15 years.

Plastics from Germany for Europe

For many years now, plastics producers in Germany have been manufacturing in Europe and for Europe, as last year's figures impressively demonstrate. In 2006, over two thirds of German plastics exports remained within the EU, and virtually all imports (90%) came from the EU.

Exports rose in 2006 by 3.5% to 12.6 m t, and their value rose by 8.3% to €18.7 billion. Imports rose by 14.3% to 8.1 m t, and their value rose by 21.9% to €11.4 billion. Figures available to date indicate that the volume of exports has continued to rise, by 4.6%, up to May 2007. Imports have also increased, by 9.9% up to May 2007, a clear indication of rising domestic demand.

Sales and Margins: Light and Shade are in Close Proximity

At € 22.2 billion, total plastics sales in Germany during 2006 were 6.1% higher than during the previous year. Sales rose again during the first half of 2007 and are 9.6% higher than last year. This excellent picture is clouded by the fact that prices of intermediate products have remained high for several years. The price index of crude oil, the primary material of most plastics, rose again in 2006 by more than 20%. It is small comfort that the same index recorded a slight fall of 3.8% up to June of this year. The margins of plastics manufacturers are and remain under pressure. For this reason, if they want to succeed, plastics manufacturers must fully exploit and develop the considerable innovative potential of plastics, and also need to implement a coordinated bundle of measures in the future: rationalisation, restructuring, mergers, concentrations. This represents the only way to reduce pressure on margins.

Dr. Peter Orth
Plastics Europe Germany

Looking to the Future: Plastic, a 21st Century Material

Plastics manufacturers know this to be a certainty. There is much to comment the use of plastic. In particular, it has a great deal to contribute to the current debate on energy, the conservation of resources and protection of the climate. As an example, plastics production only accounts for 4–6% of natural oil and gas consumption. Plastic products are durable, extremely tough and can be manufactured using very little energy, added to which, plastic products are simple, safe and cheap to manufacture. Plastics are also generally very light. They offer a weight saving of up to 85% in comparison with other materials such as glass, metal and ceramic. And let's not forget: Plastics only "borrow" the oil used in their manufacture, whereas it is irrevocably lost when it is heated. The energy stored in a plastic product can be reused through recycling or else used to generate heat in a heating power station.

Finally, plastic is an innovative material: many major innovations are only achievable with plastic. Virtually no truly new, promising product can be launched without the use of plastic: the trendy mobile phone, the new car, the practical anorak, skis, aircrafts, all of them would be inconceivable without plastic.

So the plastics industry has huge growth potential that needs to be explored. This is why plastics manufacturers are convinced that the importance of their material will continue to grow. The scale of this growth depends on political and economic developments not only in Europe, but thanks to globalisation, the global interdependence of markets and economies, also on developments in North America and Asia.

The realisation of acceptable margins despite high intermediate product prices represents a major challenge for the future. Plastics manufacturers therefore need to continue to pull out all the stops. In particular, they must use innovation as a sustained process and must continue their restructuring efforts. However, the political situation will also be a determining factor in the success of such measures and of plastics production overall.

Plastic is loved and highly regarded in Germany, both by the public at large and by decision-makers, this being a further factor in its success. Plastic is a key material for the preservation of resources and energy efficiency, and its use in virtually all applications is also likely to increase in the future. Plastics manufacturers in Germany are keen to exploit the opportunities offered to them by this 21st century material.

The K Special Exhibition

For many years, the special exhibition has drawn the public attending the plastics fair. Whilst in 2001 the focus was on spin-offs from space technology in everyday applications, in 2004 visitors to the special exhibition in hall 6 were enthralled by a massive "sports show". This time the theme of the show led by Plastics Europe is what plastics can achieve as a 21st century material. The theme of solutions is broadened. The term "packaging" is interpreted way beyond its basic meaning of simply wrapping products for example. Tropical fruit is protected en route from the plantation to the supermarket, and the body of an ice hockey player is protected by her polymer dress. At home, heat insulation represents packaging, and the head of a cyclist is packaged and protected by his ultra-light plastic helmet. Intelligent high-tech materials will be just as important at the show as transport and production, whilst terms such as environmental protection and sustainability will be heard as frequently as art and design.

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Pharma Solutions for Better Drugs

PRODUCT BASF has once again expanded its pharmaceutical industry portfolio. BASF's Catalysts Division, born from the takeover of Engelhard Corporation, presented catalyst products and solutions at the corporate exhibit at CPhI in Milan, side by side with the other business groups.

With its Catalysts Division, BASF offers exceptional expertise in the development of technologies that ensure efficient production of a wide variety of chemicals, plastics and adsorbents. The new "Blocking Group Removal" catalysts technology was developed in response to the specific needs of the pharmaceutical and fine chemical marketplace. Characterized by a unique deposition technology used in conjunction with strict adherence to a narrow range of catalyst supports, these catalysts are designed to achieve significant cost savings in reactions requiring a deprotection step.

Carrying out confidential and exclusive work on behalf of pharmaceutical companies, BASF manufactures customized active ingredients and highly refined intermediates. BASF's experts offer support through the pharmaceutical ingredient's entire lifecycle.

Formulation with pharmaceutical excipients by BASF helps to create more successful medicines from the pure active ingredients. The product range comprises binders and disintegrants, coating polymers and a number of other excipients particularly including solubilizers. At CPhI, BASF unveiled its product innovation Ludiflash. This new excipient markedly improves the quality and manufacture of rapidly disintegrating tablets.

BASF also provides generic active ingredients for many therapeutic fields of application, making it the market leader for the substances caffeine, ibuprofen, pseudoephedrine and theophylline.

As the majority of chemical processes are based on catalysts, innovation in the chemical industry is predominantly driven by catalyst research and development. BASF lab manager Dr. Godwin Mabande presents a catalyst in granule form such as is used in solid phase reactors.

Developing new intermediates targeted specifically at the pharmaceutical market, BASF can support customer projects from the lab scale to the commercial stage. The company has access to the world's largest range of chemical intermediates, more than 600 of them are directly available in the Intermediates Division.

The brand name ChiPros represents BASF's broad and growing range of chiral amines, alcohols, epoxides and acids. The pharmaceutical industry is a major market for ChiPros, using them in complex drug synthesis. BASF also has one of the most extensive technology platforms for manufacturing achiral specialties for the chemical and life science industries, for example specialty amines and heterocycles.

Ionic liquids used as reaction media in chemical processes open up opportunities not achievable with any other solvent. Compared to conventional products the use of ionic liquids leads to higher efficiency and improved yields, less by-products and less energy consumption. BASF offers a broad range of ionic liquids and is also prepared to advise and otherwise support customers in applying ionic liquids to fine chemical & pharmaceutical synthesis.

BASF's broad range of standard intermediates is aimed at meeting the demanding needs of customers in the pharmaceutical industry. The company manufactures products like tetrahydrofuran (THF), N methylpyrrolidone (NMP) and pharma-grade diazabicycloundecene (DBU P) to the excellent quality standards required in the sophisticated production processes of the pharmaceutical industry. BASF is the only supplier in the world offering THF with an extremely low residual water content of 0.01 percent maximum. High-purity THF is especially well suited for use in those new and complex water-sensitive reactions occurring frequently in the production of active pharmaceutical ingredients.

BASF offers its customers an extensive portfolio of inorganic chemicals with a strong focus on reagents for organic synthesis. Recent examples of new product launches include hydroxylamine-O-sulfonic acid, a versatile aminating agent, O-benzylhydroxylamine hydrochloride as well as new reagents to make boron enolates, like dicyclohexylchloroborane (DCBCl) and dibutylboron triflate (DBBT).

BASF also provides regulatory support and pharmaceutical development services. Providing full analytical support, BASF has the facilities to generate all the relevant safety and toxicology parameters.

▶ www.basf.com
▶ www.basf-catalysts.com

From Bench To Market

American Girindus plant in Cincinnati

PRODUCT Solvay Organics specialises in organic molecules for a wide range of uses. Innovative molecules, materials and solutions are designed to help clients develop new applications. The company is also active in fluorinated building blocks, peptides and oligonucleotides, as well as process development and custom synthesis of active ingredients.

About 50% of all newly developed drugs and 20% of agrochemicals contain fluorine. However, it is not easy to introduce fluorine into target structures because fluorination reagents are highly reactive, often explosive and can be harmful to the environment. Their use also requires highly specialist expertise and engineering technology. Moreover, fluorination reactions generally cannot be scaled up from laboratory to industrial production. It is much more economical and effective to incorporate fluorine into target structures in the early stages of development with the aid of building blocks.

At this year's CPhI in Milan, Solvay Organics presented a whole range of fluorinated – particularly aliphatic – building blocks, including esters, ketones and acrylates.

Oligonucleotides and peptides can have a targeted effect on the body's cellular functions and open up a number of treatment options. The technologies for their use and production are still new and therefore require a great deal of expertise. For example, typical oligonucleotides such as 20-base DNA and RNA fragments require about 100 chemical reactions.

Girindus, majority-owned by Solvay, is focusing on therapeutic DNA and RNA oligonucleotides with all relevant modifications – for example phosphothioates, 2'-modified RNA or PEG conjugates. Girindus will be present at the Solvay-Organics stand to share their knowledge and provide information about production capacities at the American plant in Cincinnati and the German plant in Künsebeck. Large-scale production under GMP conditions uses both solid phase synthesis and a newly developed liquid phase synthesis process.

Peptisyntha, a subsidiary of Solvay Organics, offers production capacities for therapeutic peptides, together with developmental expertise. Eptifibatide is a good example of Peptisyntha's capabilities. A cyclic heptapeptide with a disulphide bridge, Eptifibatide is the active ingredient of Integrilin, an anticoagulant used in heart surgery.

Girindus offers a range of technology, expertise and equipment for process development to pharmaceutical and cosmetics companies which have developed an active ingredient and wish to bring it from the laboratory to the market. These include reactions which take place under special process-technology conditions such as high pressure or extreme temperatures, as well as demanding synthesis techniques such as nitration, hydration or Suzuki coupling. The company can produce active ingredients and intermediates at virtually any scale, whether in laboratories, technical units or production plants.

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ISP 'Advances The Science'

PRODUCT ISP's Advantia range of tablet coating systems is a major focus of our technology portfolio. ISP will be offering visitors the chance to sign up for the Advantia Tablet Coating Centre of Excellence Programme. This programme will be conducted by ISP's team of tablet coating experts at our Pharmaceutical laboratory based in Istanbul.

In addition to ISP's widely-used ingredients for improving drug solubility, ISP Pharma Technologies (IPT) offers novel process capabilities to form solid dispersions and solutions of drug actives through spray drying. This technology gives us the ability to disperse individual drug molecules or submicron size particles of the drug in a matrix of water soluble polymers and other solubility enhancing ingredients. The result is a stable drug system with a 5 to 50-fold increase in bioavailability.

The ISP Fine Chemicals group is a custom manufacturer of key starting materials, regulated intermediates, and active pharmaceutical ingredients, produced from gram to multi-ton quantities within a strict cGMP environment in an FDA inspected facility.

ISP produces more than 30 ingredients for use in pharmaceutical formulations, including high-performance binders and solubilizers for tablets, injectables and ophthalmic formulations and superdisintegrants for solid dosage forms.

▶ www.ispcorp.com

Hazardous Reaction Technologies

PRODUCT Dottikon Exclusive Synthesis is a specialist for hazardous reaction technologies that are being used for the manufacturing (grams to multi-tons) of exclusive APIs and high-quality intermediates for pharmaceutical and chemical companies. Dottikon ES' safety culture and dedicated equipment allow the use of hazardous reactions to shortcut syntheses, improve quality, and reduce costs.

Hazardous reactions performed at Dottikon ES comprise of four categories: highly exothermic processes, thermally or mechanically instable compounds, highly reactive compounds and high-potent compounds. Core strengths are: azide chemistry, oxidations, nitrations, alkylations, hydrides, catalytic hydrogenations (hetero-/homogeneous), continuous reactions technologies and low temperature reactions.

Over the past period, Dottikon ES expanded its project development capacity by around one quarter and an increase in capacity of another 25% was initialized. Further investment projects are targeting the expansion of multi-ton production capacities. Compared to the past period, overall investments nearly doubled.

▶ www.dottikon.com

New Products and a New Industry Focus

PRODUCT As a result of Chemtura's restructuring, the Bromine & Derivatives and Catalyst & Inhibitors businesses are now part of Chemtura Global High Performance Industries. "High Performance is a core segment for Chemtura," said Dr. Janet Chetland, VP, global high performance industries, which include Pharma and Fine Chemicals. "Chemtura's new corporate structure aligns us more closely with the industries we serve," she said, "Our organisation is designed to be even more customer-focused, closer to the final-product industries, to drive value and identify opportunities for both Chemtura and our customers."

Dr. Janet Chetland
VP, Chemtura Global High Performance Industries

The Bromine & Derivatives business supplies a wide range of intermediates to the pharmaceutical and fine chemical industries where bromine is generally used in processes to facilitate cleaner, higher yields of product at lower temperatures. Chemtura brings decades of wexperience and innovation to the bromine and derivatives field. The catalyst & inhibitors business is likewise an innovation centre: The Chemtura catalyst research group in Bergkamen, Germany works closely with pharmaceutical customers to generate tailor-made organometallic reagents to meet their specific synthesis needs.

It is also much easier to incorporate fluorine into a bioactive compound. These compounds are key to new anti-cancer, anti-viral, anti-inflammatory, anti-fertility, and central nervous system drugs, as well as modern herbicides, insecticides, and fungicides, and Chemtura's range of organic building blocks based on CF2 and CF3 groups make it safe, simple, and economical to propitiously place fluorine at a particular position in a molecule.

The company is also active in fluorination and ammoxidation capabilities for organic synthesis. Chemtura's Amsterdam plant makes a series of Benzonitriles as well as fluoro-based intermediates for both the Pharmaceutical and Agricultural chemical industries. Products include 2,6-dichlorobenzonitrile, 2,6-difluorobenzonitrile,2-chloro-6- fluorobenzonitrile,2,6-difluorobenzamide, Diflubenzuron and 3,4-dichlorobenzonitrile.

▶ www.chemtura.com

EFCG: Standards for Excipient Regulation

The European Fine Chemicals Group (EFCG), a Cefic sector group, has developed a position paper on excipients used in pharmaceutical manufacturing. The paper explains that the manufacture of excipients destined for use in European medicines is neither regulated nor controlled as it should be and that regulations and standards should be enforced to avoid any potential risk to the health of EU patients and consumers.

With the implementation of the EU Directive 2001/83/EC (amended by Directive 2004/27/EC) into national law, it is now mandatory that all active pharmaceutical ingredients (APIs), and the yet-to-be-defined list of certain excipients used in pharmaceutical manufacturing, must be produced in compliance with current Good Manufacturing Practice (cGMP).

EFCG's Position Paper builds on this expectation and proposes that all common excipients, by far the largest grouping, conform to General Chapter <1078> USP, including certified ISO requirements; that all specific (includes certain excipients) and novel excipients, a much smaller defined group, are covered by EC directive 2001/83 (amended by directive 2004/27/EC); and that all these requirements are certified and effectively enforced.

EFCG said it believes that the consequences of the full implementation of their proposals not only supports the need to better protect the health of EU citizens, but it would also bring into law what is already the accepted practice for a wide range of reputable suppliers in the Far East, North America and Europe. As such, the group said it believes it should have an insignificant effect on product prices.

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Fine Chemicals Custom Manufacturing

Satisfying the Needs of the Pharmaceutical Industry, Part II – Pricing

Three different methods are used for the pricing of fine chemicals (see table 4). They are adopted depending on the development status (laboratory/industrial scale) and on the business type (exclusive/API-for-Generics):

A volume-priced approach, either "bottom-up" or "top-down" is used for fine chemicals produced on an industrial scale; a time-based one for those produced on a small scale, or for process research. The most frequently used unit for the former is "US-$/kg", respectively "FTE" (Full Time Equivalent) for the latter.

In the volume-based pricing one must take in due consideration that the pharmaceutical industry makes formulated products, of which the active ingredients represent only a fraction of the COGS. The active ingredients of the drugs are considered as raw materials. They account for less than a 10 % fraction of the sales price of a drug. The latter is composed of four main elements, namely COGS (API + formulation), about 20 %; Research and Development, 15 – 20 %; Marketing and General Administrative Expense, about 35 – 40 %; Profit, about 25 %.

Peter Pollak, Ph.D.

The exact share of the API cost depends on many elements, a.o. the patent status (the share is much lower for proprietary drugs than for generics), the strength, the frequency of administration, the therapeutic category (it is higher for anti-cancer or anti-AIDS drugs than for more traditional categories, such as cardiovascular and CNS drugs) and the country in which the drug is sold.

The Pharmaceutical industry and the Fine Chemicals industry use completely different approaches for API pricing. As illustrated in figure 2, the drug industry follows a "top-down" approach, starting from the patient and focusing on the daily medical cost, expressed in US-$/day within a given therapeutic category. The custom manufacturer applies a "bottom-up" calculation, starting from the raw material and conversion costs and ending up with a unit price, expressed in US-$/kg.

An illustrative example of the medical cost for the patient as overwhelming driver for the drug prices is Wal-Mart's "US-$4 Generics Program", launched in Q 4, 2006. It sent shockwaves throughout the pharmaceutical industry, as well as its upstream suppliers and downstream distributors. The program offers an approximately one month supply of 300 widely used prescription drugs at a very attractive price of US-$4, respectively a daily cost of 13 cents! An example in case is the well known anti-diabetes drug Glucophage (metformin HCl). The average pharmacy retail price of an approximately one month's supply of 60 500 mg tablets of the generic version is US-$43. In comparison, Wal-Mart's US-$4 price amounts to a staggering discount of over 90 %! Wal-Mart could only achieve this by drastically shortening its supply chain, i.e. sourcing bulk quantities of the formulated metformin HCl directly from the most competitive producers in China and India and compromising on its own margin.

For the API producer, the question comes up, what this means for him in terms of prices. In the example chosen, the 60 500 mg tablets correspond to a quantity of 30 grams of drug substance, or a kilogram price of US-$133. Assuming that the API accounts for 25 % of the formulated drug's price, this leaves the producer with a target price of US-$33 per kilogram.

In order to give further evidence of the pricing process of the pharma industry, the daily medical costs for widely prescribed drugs have been compared. The data within a major therapeutic class, namely depression is reported in table 5.

The average daily medical cost for the eight top selling antidepressants reported in table 5 is US-$3.87 per day. It appears that this figure neither depends on the total annual sales (US-$3.3 billion for Zoloft [2005] >> US-$0.45 billion for Remeron [2004]), nor the dosage (100 mg >> 20 mg), nor the complexity of the molecule. Whereas Prozac's API, fluoxetine (see fig. 2), is a relatively simple, achiral diarylsubst. propylamine with a typical tablet strength of 20 mg, Zoloft's API, sertraline (see fig. 3), is a complex chiral tetrahydro naphthalene derivative, administered with a strength of 50 mg.

Despite the 2.5 times higher daily dosage and the more demanding synthesis of Zoloft, the daily medical cost is higher for Prozac than for Zoloft! Eli Lilly's Prozac is also a good example for the deleterious effect of patent expiration. Also the prices of different strengths of the same drug differ only marginally in most cases. For instance, a package of 90 10 mg tablets of Prozac costs US-$512, for 90 20 mg tablets the ticket is US-$526. This is another indication of the small relevance of the API cost. With sales of US-$2.6 billion and US-$1,99 billion in the years 2000 and 2001 respectively, Prozac ranked among the top ten blockbuster drugs After patent expiration, the hemorrhage began and sales collapsed (see fig. 4).

The – rather unexpected – conclusion from the considerations made so far is, that a supplier of a simple API used in a low-dosage drug can be better off than one of a complex molecule. This, obviously, puts the traditional definition of a "star project" for a custom manufacturer into jeopardy, namely (1) an API for a new drug for a widespread chronic disease, (2) used in a high dosage and (3) made by a demanding multistep production process requiring the vendor's niche technologies. As a matter of fact, as procurement departments are under heavy pressure to comply with the "daily medical treatment cost" axiom, a big gap opens vis-à-vis the vendors from the Fine Chemical industry, who are under the imperative of the manufacturing cost. The latter becomes all the more a hurdle, the higher the complexity of the API molecule and the higher the daily dosage are. The awareness of the "daily medical cost" is all the more important for the vendor, as typically there are no reference prices in this business: At least for the APIs for proprietary drugs, there are no list prices enabling the CM to double-check the internal cost, with which the internal controlling has come-up. Furthermore, the confidentiality agreements, which exclude an information exchange with third parties, prevent the vendor to apply traditional marketing principles in order to find out, whether his price is competitive. At the end of the day, the likely winner of the impasse is the innovative Fine Chemical company, which invents a breakthrough process enabling drastically reduced COGS.

Whereas for exclusive products, where no established market prices exist, the "bottom-up" approach, as described above, is adopted by the suppliers, a "top-down" model is used for API-for-Generics, where reference market prices do exist. In the former case, the target price is calculated on the basis of the raw material and the conversion costs – which individually account for about 35 % and 55 % respectively of the sales price and together represent the COGS – and a profit margin is added. As the raw materials are the single most important cost element, particularly if the synthesis starts at a late stage, they require a particular attention. Questions which have to be addressed are "how can the consumption be reduced", "which are the minimum specifications?", "make or buy?", and, in the case of "make" should the internal COGS or the market price be used for the comparative calculation? The attainable profit margin depends both on customer and supplier driven factors … and can vary substantially depending on the specific circumstances.

A price calculation is relatively easy for a product with a track record of a regular industrial scale production. On the other hand, it is difficult, if only a laboratory procedure exists and a calculation has to be made based on the virtual scale-up to industrial scale production. The capability to do this desk exercise in a quick and reliable fashion is an important competency of a Fine Chemical manufacturer. When setting a price, a separation of tasks has to be made between the controller, who calculates the manufacturing cost and the sales manager, who determines the sales price. If mistakes have been made and prices have to be changed, you will need facts to support your request. If a pivotal product is supplied, a supply contract is concluded.

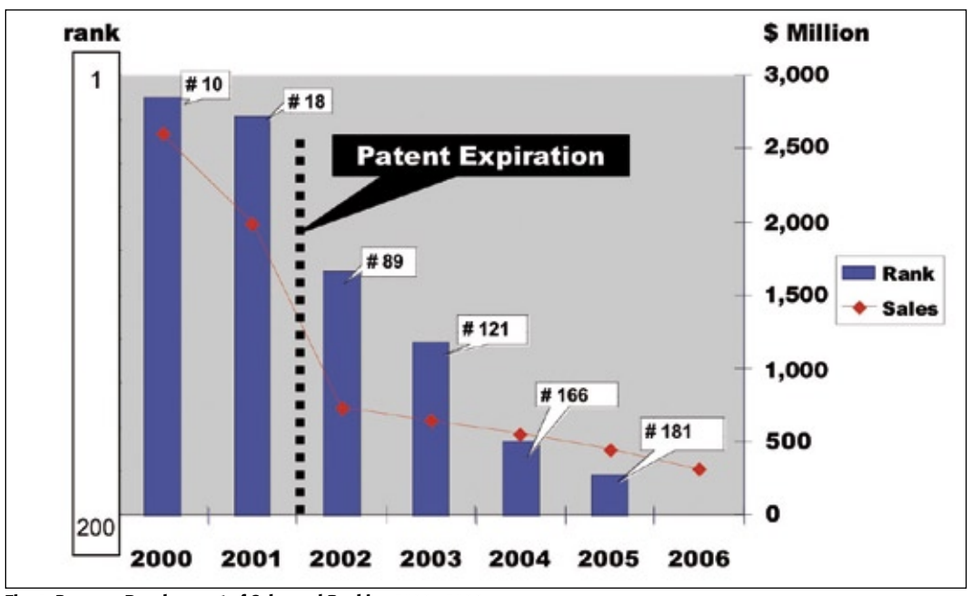

Fig. 4: Prozac – Development of Sales and Ranking 2000 – 2006

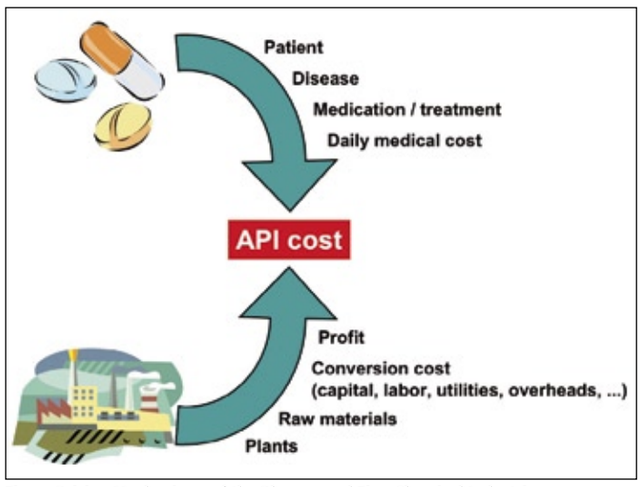

Fig. 1: Pricing Mechanisms of the Pharma and Fine Chemical Industries

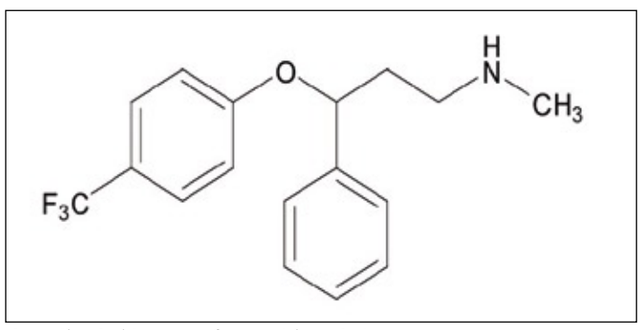

Fig. 2: Chemical Structure of Prozac (Fluoxetine)

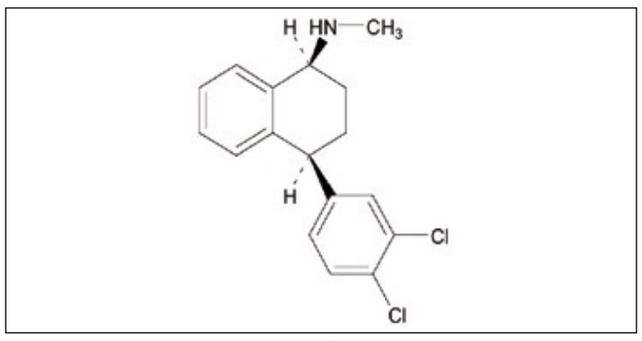

Fig. 3: Chemical Structure of Zoloft (Sertraline)

Table 4: Pricing Models

	Sample Preparation/ Laboratory Research	Industrial Scale Production
Exclusive Products/Services	**Time Based Bottom-Up**	**Volume Based Bottom-Up**
Standard Products (E.G. API-For-Generics)	**N/A**	**Volume Based Top-Down**

Table 5: Antidepressants – Daily Medical Cost for Prescription Drugs

Product	cat.	Company	package . calc. base . range	daily dosage	daily medical cost
Prozac **Fluoxetine**	a	Eli Lilly	90 tabl x 20 mg = $526	20 mg 10–40 mg	$5.84/day
Effexor **Venlafaxine**	a	Wyeth	90 tabl x 50 mg =$253	75 mg 25–100 mg	$4.22/day
Remeron **Mirtazepin**	a	Akzo Nobel	90 tabl x 30 mg = $350	30 mg 15–45 mg	$3.89/day
Celexa **Citalopram**	a	Forest Labs/ Lundbeck	90 tabl x 20 mg =$312	20 mg 10–40 mg	$3.47/day
Zoloft **Sertralin**	a	Pfizer	90 tabl x 50 mg = $296	50 mg 25–100 mg	$3.29/day
Wellbutrin **Bupropion**	b	GlaxoSmithKline	90 tabl x100 mg = $228	100 mg 75–150 mg	$2.53/day
Average					$3.87/day

a = selective serotonine re-uptake inhibitors (=SSRI)
b = cuminokenone

Source: Drugstore, Average Retail Price

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Ertl Wins Nobel Prize

Nobel Academy Honors Catalysis Research

The Nobel Prize in Chemistry for 2007 is awarded for groundbreaking studies in surface chemistry. This science is important for the chemical industry and can help us to understand such varied processes as why iron rusts, how fuel cells function and how catalysts work. Chemical reactions on catalytic surfaces play a vital role in many industrial operations, such as the production of artificial fertilizers. Surface chemistry can even explain the destruction of the ozone layer, as vital steps in the reaction actually take place on the surfaces of small crystals of ice in the stratosphere. The semiconductor industry is yet another area that depends on knowledge of surface chemistry.

Prof. Gerhard Ertl
Nobel Prize Winner 2007

It was thanks to processes developed in the semiconductor industry that the modern science of surface chemistry began to emerge in the 1960s. Gerhard Ertl was one of the first to see the potential of these new techniques. Step by step he has created a methodology for surface chemistry by demonstrating how different experimental procedures can be used to provide a complete picture of a surface reaction. This science requires advanced high-vacuum experimental equipment as the aim is to observe how individual layers of atoms and molecules behave on the extremely pure surface of a metal, for instance. It must therefore be possible to determine exactly which element is admitted to the system. Contamination could jeopardize all the measurements. Acquiring a complete picture of the reaction requires great precision and a combination of many different experimental techniques.

Gerhard Ertl has founded an experimental school of thought by showing how reliable results can be attained in this difficult area of research. His insights have provided the scientific basis of modern surface chemistry: his methodology is used in both academic research and the industrial development of chemical processes. The approach developed by Ertl is based not least on his studies of the Haber-Bosch process, in which nitrogen is extracted from the air for inclusion in artificial fertilizers. This reaction, which functions using an iron surface as its catalyst, has enormous economic significance because the availability of nitrogen for growing plants is often restricted. Ertl has also studied the oxidation of carbon monoxide on platinum, a reaction that takes place in the catalyst of cars to clean exhaust emissions.

▶ www.nobelprize.org

Business Value Through IT

IT-Conference for the Process Industries

Continued Page 1

will be held by our customers, who will be sharing best business practices enabled by the latest IT technology. Also, the event provides a unique forum and platform for exchange of industry trends, experiences and ideas associated with state-of-the art IT architectures.

What are the most interesting topics of the conference?

F. Hero: SAP will focus on a number of issues important to the industry: the integrated and comprehensive approach to governance, risk and compliance covering corporate governance, environment, health and safety including Reach and emissions and global trade management; the realisation of the vision of the perfect plant by tightly integrating manufacturing execution systems with the enterprise; and new solutions for managing a company's performance holistically.

We will also present solutions that support critical corporate functions such as a company balanced scorecard, business planning, simulation and consolidation as well as profitability management, driven by real time activity based costing.

Another important aspect is the business network transformation in chemicals, which is enabled by our business process platform and enterprise SOA. In addition, we offer a special forum on enterprise SOA where we give the participants of the conference a deep insight in the benefits that this new IT-architecture can bring to their businesses.

On 27 November, we are offering an event dedicated to the needs of small- and medium-sized businesses in the process industry. We will discuss our three solutions in this area: SAP Business All-in-One, SAP Business Bydesign and SAP Business One.

What are SAP's current developments directed towards the chemical and pharmaceutical industry?

M. Kleinemeier: Our current developments span across the entire SAP solution map and are supported by our industry value network ecosystem. A few of our key developments include SAP's Reach compliance solution, which ensures business continuity for chemical companies and reduces the risks associated with this legislation at minimised costs.

To support the perfect-plant vision, we are developing innovative manufacturing applications jointly with our industry value network partners on top of our manufacturing integration and intelligence solution. We see energy management as an interesting topic in this area.

Another area of strategic importance and investment is medium-sized chemical companies. Companies in this segment face the same challenges as their large enterprise counterparts but are more limited in terms of budget and resources. We are developing rich, industry-specific, out-of-the box functionality that is available on a single platform, rapidly scalable and easy to implement. This ensures a high return on investment at low risk for our customers.

Finally, we are driving developments directed towards transportation management with a focus on enhancements in the area of bulk transportation and railcar management. Specific functions include freight cost extensions, distance determination services, tracking and tracing leveraging latest technologies such as radio-frequency identification and global positioning systems.

SAP launched the Industry Value Network (IVN) for Chemicals about a year ago. Who are the network participants and what are their roles?

F. Hero: The IVN for chemicals was in fact the pilot for the IVN concept and one of the first of its kind to be launched by SAP in May 2006. The members are chemical companies such as Eastman Chemicals, Hexion, Nova Chemicals, Dupont, Dow Corning and Celanese. These enterprises are accompanied by SAP and leading-edge independent software vendors such as Invensys; Osisoft; Logictools; OR Soft; Meridium; Pavilion Smartops; Technidata; and Vendavo, finally, by a series of system integrators such as Accenture, Atosorigin, IBM and Tata Consultancy Services.

SAP acts as the sponsor and enabler for the IVN, leveraging our comprehensive software and platform offerings, resources and infrastructure. The software vendors bring complementary software solutions to provide end-to-end solutions to the market. System integrators provide the necessary business consulting, solution implementation and development services as well as best practices. Customers support ongoing collaboration and co-innovation projects, sharing their innovation needs and solution requirements, supporting solution design, specification and validation.

What results have you seen so far ?

F. Hero: The IVN for chemicals is driving strong collaboration among members to accelerate innovation and deliver new composites and integration scenarios. A host of new joint solutions have been developed – price and margin management by Vendavo, to reliability centred maintenance and optimisation from Meridium; OR Soft's manufacturing workbench to enterprise; inventory optimisation by Smartops; and manufacturing process optimization from Pavilion.

For example, the composite for price and margin management results from a co-innovation project with Hexion, Vendavo, Accenture and SAP to support chemical industry complex pricing requirements. The solution now enjoys success in multiple industries, helping our customers achieve more effective and efficient pricing as well as increased margins through real-time visibility.

The newest solution resulting from IVN engagement is to be launched in 2008. It is a holistic, integrated approach to manage the Reach process and support Reach compliance. Here SAP and Technidata are working with the German Chemical Industry Association (VCI) the European Chemical Industry Council (Cefic) and pilot customers. The new solution will enable substance volume tracking throughout the life cycle and across the extended supply chain for easy identification, tracking and reporting of Reach-relevant data.

You mentioned a perfect plant scenario. What is SAP's vision for a perfect plant?

F. Hero: As chemical companies struggle to deal with their business environment, one of the tools being used is the concept of the perfect plant. The term perfect plant is the operations version of the well-known concept of perfect order within the plant. Success is defined by aligning corporate strategies and objectives with the plant's performance. However, to take ownership of these factors, plant personnel must have the visibility and control of key metrics.

The perfect-plant concept from SAP gives a 360-degree view into all plant operations. It allows companies to increase visibility, improve integration with business processes and extend the investment in SAP ERP by integrating with plant operations. It provides an environment in which manufacturing assets are optimized and production performance is increased – delivering critical visibility into all aspects of manufacturing operations.

During the conference the concept of perfect plant will be visible in its various aspects throughout the show.

SAP is looking for larger market shares with medium-sized companies. What efforts have been made to meet the industry specification of medium-sized chemical and pharmaceutical companies? Are there new solutions coming up soon?

M. Kleinemeier: SAP has extensive experience and expertise in working with medium-sized companies, and we have developed a strong presence in this market over the past years. SAP Business All-in-One solutions are based on industry best practices for chemicals and pharmaceuticals and are specifically designed for the size, resource and industry requirements of small and midsized companies. These solutions are delivered through partners and address business processes at the micro vertical level. To meet the chemical industry specifications, for example, SAP and its partners defined 33 specific business scenarios such as blending, repacking or storage tank management for implementation right out of the box. These pre-configured business scenarios and additional deployment accelerators enable more affordable, predictable and rapid deployments. Customers will not lose flexibility and scalability, but they gain a solid business platform which manages today's challenges and tomorrow's growth. SAP continues to invest in developing more pre-defined business processes and further deployment accelerators. The next edition of SAP best practices for chemicals will support full Reach functionality which is one of the most requested business scenarios by chemical companies globally.

▶ www.sap.com

SAP-Solutions for the Chemical and Pharmaceutical Industry

From 26 – 27 November, the German Chemical Industry Association (VCI) and SAP conduct their traditional conference on SAP- and partner solutions for the chemical and pharmaceutical industry in Frankfurt, Germany (see agenda below). During this conference, a series of lectures presents the latest developments and manifold applications related to SAP-technologies.

For more information and registration, visit

▶ www.sap.com/germany/campaigns/vci-kongress/index.htm

SAP-VCI Conference – The Agenda

MONDAY, NOVEMBER 26, 2007

10.00 a.m. Welcome and Opening of the Congress:
Jochen Gantzel, Chairperson VCI IT and Telecommunications Committee, RAG Beteiligungs-AG, and Hartmut Cordes, Vice President Process & Consumer Industries, Trade, Financials, SAP Deutschland AG & Co. KG

10.30 a.m. Keynote: Value Creation Through IT
Kasper Rorsted, Vice Chairperson of the Management Board, Henkel KGaA

11.00 a.m. Keynote: Business Drives Technology – SAP's Innovation Road Map from Vision to Execution
Michael Kleinemeier, Corporate Officer and Member of the Executive Council, SAP AG

11.30 a.m. Lunch and time for visiting the exhibition

	Special Topics	Logistics	Research & Development	Financials & Controlling	Sales & Marketing
1.00 p.m.	**A1** Global Secure Identity and Access Management at BASF *Dr. Holger Petersen, IT Security, Access & Identity Management, BASF and Jevgeni Kravets, Business Development Manager, SAP*	**B1** Raising Customer Satisfaction and Adding Value with SCM *Univ.-Prof. Dr. Dr. h.c. mult. Horst Wildemann, Technical University Munich and Managing Partner, TCW GmbH & Co. KG*	**C1** Trends in Innovation Management in the Chemicals Industry *Prof. Dr. Jens Leker, Institute for Business Management in Chemicals and Pharmaceuticals, Wilhelm's University of Westphalia, Münster*	**D1** Optimizing the Financial Supply Chain in Credit Management – Results of an Empirical Study *Prof. Dr. Bernd Weiß, Chair for Financial Management and Controlling, University of Bochum*	**E1** Potential-Oriented Sales Management and Precise Targeting in an Ethical Pharmaceutical Business *Volkmar Krohl, Director Sales Management/CRM, Merz Pharmaceuticals GmbH and Norbert Hagemann, IT Director, Merz Group Services GmbH*
2.00 p.m.	**A2** Scheduling with Redwood Cronacle in an SAP® Environment at Basell *Thomas Dillenberger, SAP Administrator, Basell Polyolefine GmbH and Alexander Goebels, Redwood*	**B2** How Can We Deal with Current Bottlenecks in Chemicals Logistics? *Dr. Josef Packowski, Managing Director and Bernd H. Flickinger, Partner, Camelot ITPro AG*	**C2** Global Product Management: From the Idea to the Finished Product *Dr. Joerg Prust, Director IT Application PLM, BYK Chemie GmbH*	**D2** Celanese way to accelerated financial close using integrated planning and consolidation *Jens Jarick, Head of SAP Applications Support Finance, Celanese AG*	**E2** Global CRM in Practice at Henkel with 1,000 Users *Henkel and IDS Scheer*

2.45 p.m. Coffee and time for visiting the exhibition

	Manufacturing & Maintenance	Logistics	Research & Development	Financials & Controlling	Human Resources
3.30 p.m.	**G1** RFID-Based Plant Maintenance with SAP xApp™ Mobile Asset Management at Solvay *Dr. Frank Müller, SAP PM Support and Project Manager, Solvay Management Support GmbH and Alessandro Morosin, member of the management board, BEGIS GmbH*	**B3** Strengthening Logistics at Infraserv with Powerful, Competitive Warehouse and Transport Processes *Dr. Wolfram Schmidt, CIO, Infraserv GmbH & Co. Höchst KG and Dr. Karsten Fuchs, Director SAP LES, incoso AG*	**C3** Integrated, Centralized Document Management Throughout the Product Life Cycle *Thomas Meurer, Director Competence Center CAD and R&D Solutions, B. Braun – Aesculap AG & Co. KG*	**D3** Electronic Bill Presentment & Payment *Robert Desiere, Senior Manager Accounts Payable, Merck KGaA and Dieter Gratschke, Senior Sales Manager, Deutsche Post AG*	**F1** Duet™ – Increasing Efficiency with Intuitive Access to Business Processes *Reiner Pistorius, Duet Account Executive Overlay Sales, SAP Deutschland AG & Co. KG*
4.30 p.m.	**G2** SAP xApp Manufacturing Integration and Intelligence as the Core Element of Production Integration: Supporting Novartis's Efforts to Be the "Toyota of the Pharmaceutical Industry" *Ralph Haefeli, Head Global TechOps IT Systems, Novartis and Steffen Himstedt, CEO, Trebing + Himstedt*	**B4** What Challenges Will Logistics Face in the Future? *Panel discussion with all speakers*	**C4** What Challenges Will Research & Development Face in the Future? *Panel discussion with all speakers*	**D4** Integrated Business Planning *Reinhard Sturr, CIO, Kao Professional Salon Services GmbH and Matthias Matuschka, Director Solution Integrated Planning, BearingPoint*	**F2** HR Transformation with SAP – Successfully Implementing Personnel Strategies *Elke Hecht-Friedrich and Dirk Paley, SAP Deutschland AG & Co. KG*

5.30 p.m. Close: "From Solo to Symphony – What Companies Can Learn from Orchestras"
Christian Garrick, Conductor

TUESDAY, NOVEMBER 27, 2007

9.00 a.m. Welcome and introduction to the second day

9.15 a.m. Keynote: SAP's Solution Strategy for Process Industries
Peter Maier, Senior Vice President ISM Process Industries, SAP AG

10.00 a.m. Keynote: Qualifications and Innovation – Creating More Growth and Employment
Dr. Dieter Hundt, President of the Confederation of German Employers' Associations

10.45 a.m. Coffee and time for visiting the exhibition

	Research & Development	Financials & Controlling	Sales & Marketing	Human Resources	Manufacturing & Maintenance
11.15 a.m.	**C5** SAP Product Lifecycle Management in the Chemicals Industry – Reports on Global Recipe Management Implementations *Lutz Damsmann, SiPro*	**D5** Automation in Finance and Accounting at Roche Diagnostics *Christian Hebich, Head of Finances & Services, Roche Diagnostics*	**E3** Marketing Without Borders: Opportunities and Requirements in Service and Price Competition *Dr. Karl-Heinz Sebastian, Senior Partner and Director Chemicals Industry, Simon – Kucher & Partners*	**F3** The Talent Management Challenge in the Chemicals Industry *Prof. Dr. Armin Trost, University Furtwangen and Promerit TalentManagement AG*	**G3** Tapping Potential for Greater Productivity with Plant Maintenance: Is Plant Maintenance Doing the Right Thing? *Prof. Dr.-Ing. Werner E. Tichauschke, Plant Maintenance and Quality Management, South Westphalia University of Applied Sciences*
12.05 p.m.	**C6** Use of SAP Messages in a Regulated Environment *Christoph Deckers, SCM Expert, Boehringer Ingelheim Pharma GmbH & Co. KG and Michael Steffner, CEO, quinteserv GmbH & Co. KG*	**D6** Management Cockpit at Bayer CropScience *Dr. Arndt Kiel, Head of Administration Services, Bayer CropScience GmbH and Jens Schauenberg, Business Intelligence Consultant, camline AG*	**E4** SAP Price and Margin Management – A key chemical industry need *James Mason, VP Commercial Excellence, Chemtura, Kristen Mureebe, Director Commercial Excellence, Chemtura and Paul Adsit, Industry Director, Vendavo*	**F4** Corporate Strategy in a Nutshell – Performance Management at BASF *Silke Rauf, Expert for HR Policy and Principles, BASF AG*	**G4** Integration of SAP Quality Management Data and Siemens Process Data with SAP xApp Manufacturing Integration and Intelligence with Continuous Improvements at Johns Manville, Wertheim *Mario Hecker, IT Application, Johns Manville and José Iglesias, Business Unit Director, CIBER Europe*

12.50 p.m. Lunch and time for visiting the exhibition

	Logictis	Special Topics	Sales & Marketing	Human Resources	Manufacturing & Maintenance
2.00 p.m.	**B5** Optimizing Processes by Restructuring the Supply Chain *Karsten Teichmann, Partner, J&M Management Consulting AG*	**A3** Implementation of SAP NetWeaver® Exchange Infrastructure in a European SAP Rollout *Thorsten Holzinger, Corporate IT, Head of SAP Competence Center, Grünenthal and Hubert Brengen, Director SAP Technology, it.cosult*	**E5** Improving Results with Global Key Account Management – An SAP CRM Implementation One Year On *Dr. Roderik Abthoff, Key Account Manager and CRM Project Lead, Südchemie AG and Gabriele Vogt, Project Manager, SAP*	**F5** A System for All Continents – Global Talent Management at Bayer *Arnd Fecker, Training & Development/Competence Training, Bayer Industry Services GmbH & Co. OHG*	**G5** Mobile Applications in Manufacturing: Compounding of Plastics at Ticona Kelsterbach *Ernst Hofmann, Production Manager, Ticona, Andreas Oefner, Celanese, and Axel Herrmann Project Manager, SAP*
2.50 p.m.	**B6** Implementing a Centralized Planning Solution for Greater Transparency in the Supply Chain *Thorsten Schöwer, Head of CCC Planning Team, Clariant and Clemens Twardy, Senior Manager, Accenture*	**A4** Global Reporting Strategy at BASF Supported by SAP NetWeaver Business Intelligence Accelerator *Patric Burkhart, BASF and Markus Berg, HP*	**E6** Customer Relationships and Supply Chain Intelligence *Mario Rotsch, Department Manager Supply Chain Development, OMV Refining & Marketing GmbH and Lars Eichmann, Partner Chemicals, J&M Management Consulting AG*	**F6** Holistic Documentation Concept in SAP Projects – from SAP Solution Manager to SAP Learning Solution *Ralf Rademann, Competence Training/Innovative Solutions & Methods, Bayer Business Services GmbH and Andreas Nückter, TTS GmbH*	**G6** MES – Paperless Production in the LIFE Pharmaceuticals Factory at B. Braun *Jens Schuetrumpf, Director Melsungen Pharmaceuticals Documentation, Department for Quality Control, B. Braun Melsungen AG and Christian Wölbeling, Director Marketing & Sales, Werum Software & Systems AG*
3.40 p.m.	**B7** A Collaborative Supply Chain *Michael Schneiderhan, IT Supply Chain & Production, Wacker Chemie AG*	**A5** Innovation Through Integrated Architecture with IBM *Alexander Lorenz, Partner, IBM Global Business Services and Raymond Wissenburg, European IT Director, Amgen*	**E7** What Challenges Will Sales & Marketing Face in the Future? *Panel discussion with all speakers*	**F7** What Challenges Will Human Resources Face in the Future? *Panel discussion with all speakers*	**G7** What Challenges Will Manufacturing & Maintenance Face in the Future? *Panel discussion with all speakers*

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Corrective And Preventive Action

Capa And Deviation Management

Surveillance authority's regulatory and economic pressure is constantly increasing, thus calling for permanent process optimization. These requirements are associated with increasing effort in deviation documentation and the corresponding measures. One instrument to reduce the costs and comply with the requirements is "Capa & Deviation Management."

Systematic evaluation and processing of incidences and possible deviations from the promised quality (products and processes) as well as from the quality management system's rules offers the facility to establish methods suitable for compliant process optimization. This leads to products and service's quality assurance and improvement. Process risks can be avoided and recorded by means of efficient deviation management as well as effective corrective and preventive action (Capa).

It is the instrument for integrated and comprehensive fault management. Capa primarily comprises various deviation forms, their failure investigation, but also changes and change control in the light of future repetitive errors and their elimination. Therefore, the essence of the Capa process is effective and systematic processing of quality failures, errors and disturbances in terms of adequate correction and consistent error prevention. Capa was established and designed by the American Food and Drug Administration (FDA) for inspection of medical devices. The method quickly advanced to one of the most important quality systems resulting in measurable error reduction.

The main challenges facing the Capa & Deviation Management process are adherence to regulatory requirements and the facility of systematic process and product improvement (Improved customer satisfaction, competitiveness and cost reduction due to efficient quality processes). A standardized processing approach leads to increased process transparency and efficiency. Collaboration between organizational units improves due to defined and standardized processes, which lead to a joint knowledge base for related processes and products.

The Capa & Deviation Management Process

To eliminate errors (non-conformities, defects or other undesired conditions), corrective action must be taken to prevent recurring occurrence. The corrective action must be adequate in relation to the caused errors. Therefore, a documented method needs to be implemented defining corrective action requirements.

To prevent their occurrence, an organization must furthermore define preventive action to eliminate the cause of possible errors. The preventive action taken must be of reasonable adequacy in relation to the effects of potentially arising problems. It is therefore also necessary to implement a documented process to specify the requirements for preventive action.

For this purpose, a corresponding Capa & Deviation Management process, which is customized to fit company requirements, must be implemented and lived. In principle, the process can be displayed as follows: (see fig. 1 and 2).

The deviation management process kicks off as soon as deviation notices are received. After a Capa incident occurrence, this can result from multiple reasons (process error, audit, complaint, deviation, management review, improvement …), incident evaluation and analysis takes place. The analysis is comprised of a risk disclosure and the error's root cause determination.

In addition, problem classification is carried out to ensure that deviation type determination meets and adheres to legal requirements. Afterwards, a remedial process is initiated. Based on analysis results, corrective action regarding the deviation is determined, implemented and documented in an action plan. Action monitoring also constitutes an important part of the Capa process. It is vital that monitoring systems are available, as in the scope of Capa processes all action must be executed and evaluated. This is most commonly facilitated with computer-aided systems.

After the defined action is completed, the final evaluation, whether the imposed action was successful or not, takes place. When evaluation is not successful, the process is run through again, beginning with examination of the classification made in the previous run. When the process is successful, final documentation and archiving of the deviation commences. Thereby it is important that lessons learned from the deviation respectively Capa process are implemented in preventive action as to be available for future and similar cases.

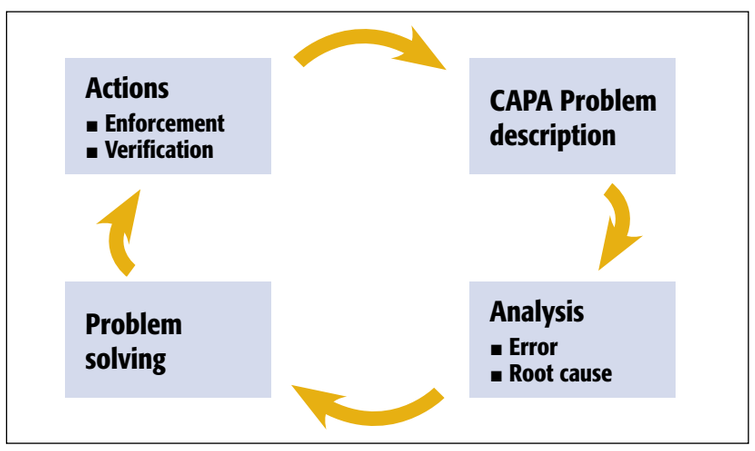

Fig. 1: Schematic Diagram of the Capa Process.

Capa & Deviation Management Systems

IT systems supporting the Capa process generally operate using the same principles. They support the process via established and adjustable parameterized workflows. It is self-evident that these tools comply with common regulatory requirements (GxP, EU GMP Guideline Annex 11, 21 CFR Part 11 and so on) and thus can be employed validly. The use of workflows resp. systems occurs via use of a role-based concept in conjunction with the necessary electronic signature and audit-trail function. Some tools are self-contained; others again are capable of communicating with other systems (DMS[8], ERP[9], LIMS[10]…) via interfaces. Thus, it is possible to centralize and manage data in the Capa tool. On the one hand, SAP can be employed (see below), on the other hand, the market offers a series of dedicated solutions such as DHC Vision (DHC) or PAS-Capa (Werum) amongst others.

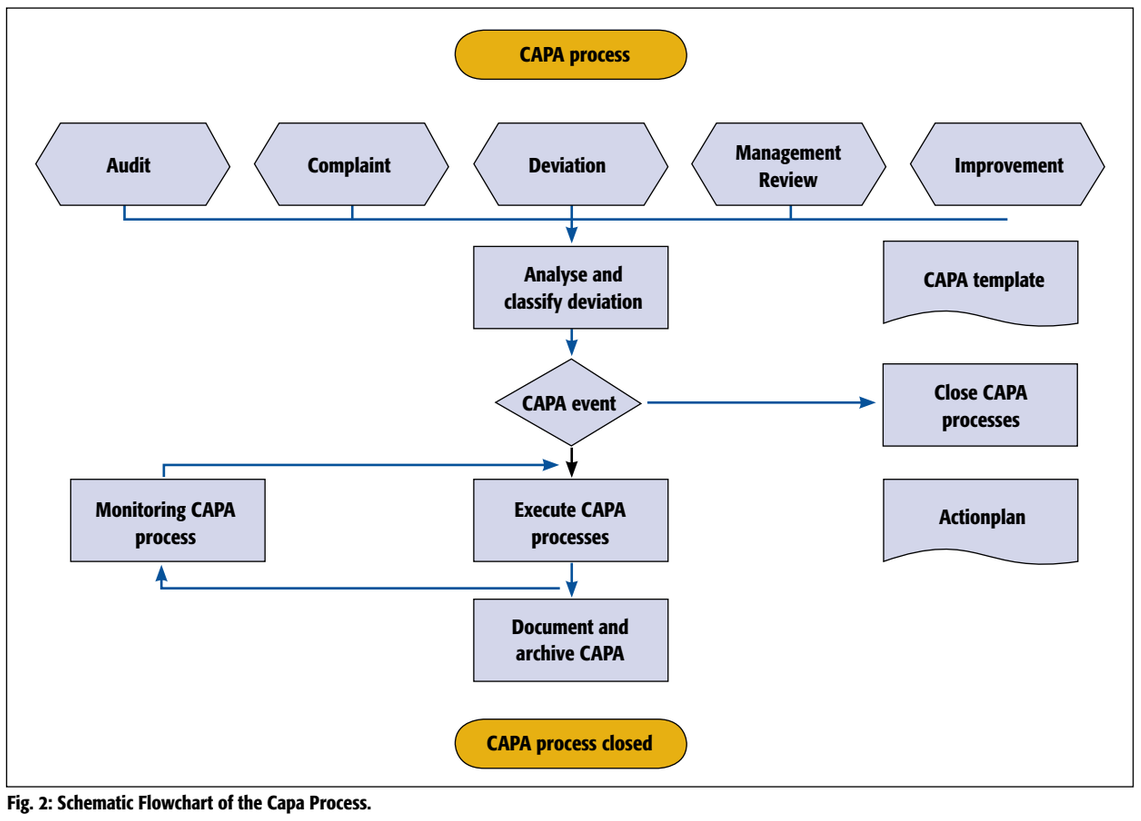

Fig. 2: Schematic Flowchart of the Capa Process.

Deviation Management and Capa based on SAP ERP

In addition to the aforementioned dedicated tools, SAP ERP also offers the feature of controlling Capa and deviation processes and documenting legal requirements accordingly. With the combined employed aid of the regulatory reporting, SAP Workflow, audit trail and electronic signature features, the requirements of a modern and comprehensive tool for Capa and deviation management are achievable.

In comparison to solutions based on Microsoft Office products such as Word and Excel or even dedicated tools, SAP ERP possesses the great advantage of complete integration in preceding and following business processes. All process data is readily available for deviation evaluation and documentation, therefore no information and format discontinuities result. Process transparency and efficiency increase, as redundant data capture does not occur. It is possible for instance to block batches directly in deviation processing or initiate customer recalls. During batch release, the system automatically checks whether unresolved issues regarding deviations still exist in the associated production process.

Via direct linkage with finance and controlling, it is furthermore possible to achieve cost transparency regarding arisen deviations.

Varying deviation types such as OOS or OOT results, customer complaints, corrective and preventive measures initiate different processes in dealing with deviations. This is taken into account with the aid of definable notice types. Workflows as well as the involved departments can be flexibly customized in dependency of the notice type.

In spite of the comprehensive features and the advantage of complete solution integration in logistical processes, many companies have yet to date been reluctant to employ SAP ERP for Capa and deviation management. One decisive factor is that SAP was considered a specialists tool requiring a relatively large degree of user training. The new technologies entailing SAP Netweaver though open new possibilities to break down this barrier.

With the JAVA Engine integration in SAP, user-friendly Web-based user-interfaces can easily be created. Deviation and measures recording and processing can thus be simplified significantly.

A further innovation is Adobe's SAP Interactive Forms. In this solution, data processing using SAP's conventional user-interface is replaced partially or completely by data entry in a PDF-Form. When a deviation arises, the person reporting the deviation fills out a predefined deviation report form. Upon saving the report form, a notice is created in SAP accordingly. The report data again can be used as basis for generating a form determining the necessary measures and which is then sent to the respective responsible via workflow.

Employment of these new technologies thus facilitates combining the advantages of comprehensive process integrated solutions with the clarity and easy usability of specialist systems.

Whether one decides to use a specialist system or an integrated ERP solution – to really exhaust the potentials of a Capa and Deviation Management in the sense of a process improvement it is a indispensible prerequisite to give the people a tool on hand which is supporting them in processing of the tasks. A purely manual and paper based process does not reflect the central role of the topic for a future oriented organization.

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Creating a Set of Values

Compliance Training as a Way to Promote Corporate Values

Following the number of large corporate scandals that occurred across Europe and the U.S. in the early years of this century, a lot of governments have legally required large companies to train their staff in ethics and compliance matters. However, there have been significant variations in the extent to which companies have embraced this requirement.

Some companies have publicly criticised the regulations as a burden and a hindrance to their day-to-day business operations, while others – particularly multinationals – have seen it as an opportunity to establish a cohesive "corporate culture". That is to say, they have seen ethics and compliance training as a way of creating and communicating a set of values and approved modes of behaviour which apply to all employees. This is of especial importance for multinational organisations as a strong company culture is known to help to increase employee loyalty, retention and motivation.

A company that has seen this as an opportunity is Novartis, Switzerland. It views ethics and compliance training as a way to promote its corporate values to its employees. However, this is particularly challenging for a company which employs over 90,000 people in approximately 140 countries.

Across these countries there is a huge range of culturally accepted practices. One of the major differences Novartis has found between countries is in the "speaking up" mentality. "Speaking up relates to two different aspects," says Nicolaas Sieben, Group Compliance Officer at Novartis. "One is to ask before you act, before you do something; and the other is to report any wrongdoing or misconduct. In certain parts of the world you find that nobody will ever accuse anyone else of wrongdoing."

Face-to-face training is suitable and important for a select number of employees, especially in high-risk areas of the organisation. Novartis recognised that training a very high proportion of these employees face-to-face, however, is all but impossible. Logistically it is hugely complex and expensive, and qualified trainers would have to travel to each office to give the courses.

Sieben makes clear the size of the task: "For face-to-face training you need to hire lots of people, and it takes years before you would really start to have a good programme." Clearly such a delay was untenable. The potential fall-out from an ethics and compliance failure would have been significant; therefore a training programme covering a large majority of Novartis's employees in a short period of time was of the highest importance.

To address this problem efficiently and effectively, Novartis turned to Integrity Interactive's web-based training courses. By choosing web-based training, Novartis had instant access to dozens of off-the-shelf courses, all of which were available in various languages. Moreover, Novartis could customise the courses with its own original content, such as introductions from senior Novartis management, and could tailor them to the company's own style. It was even possible to add specific examples relevant to Novartis's work into the courses.

Novartis's employees took a range of courses, from those which trained them on specific industry-related issues – such as anti-trust and insider trading – to those which provided more general instruction on corporate citizenship and culture, such as human rights and ethical conduct. In total, Novartis's employees take over 200,000 courses per year, with each employee taking three or four courses per year. Each course takes 30 or 40 minutes.

Because the courses are available online, Novartis's employees can complete them at any time, at their own convenience, within a set time-frame. The fact that the courses are online also means each employee's training is electronically tracked and progress recorded.

Measuring the "success" or otherwise of ethics and compliance training is not as straightforward as measuring other investments; frequently its benefits are invisible and intangible. "The feedback we have had from employees is positive," says Sieben. "Having had the importance of ethics and compliance training explained to them, they understand why it is necessary and beneficial." The courses' popularity and effectiveness is also aided by the fact they require the employee to answer questions and take a final test.

As a result, Novartis's flourishing training system has strongly contributed to ensuring the behaviour of its employees around the world abides effectively by its corporate culture and has reduced the risk of a compliance failure.

Nico Sieben
Group Compliance Officer
Novartis International AG

▶ Contact:
Integrity Interactive, Munich
www.integrity-interactive.com

Prosim Partners With Dechema

Prosim, the French process simulation software house, enters a partnership with Dechema, the German Society for Chemical Engineering and Biotechnology, to distribute the Detherm database and associated software. The database is a factual database for raw thermo-physical property data (about 25,000 pure compounds and 100,000 mixtures covered) used for design and optimization of processes and plants. The French company has agreed to promote the database along its own process simulation packages and to leverage commercial synergies in Europe.

▶ www.prosim.net

Thermo Fisher Works with Microsoft

Thermo Fisher announced that it is web-enabling its laboratory information management systems (LIMS) offerings by utilizing Microsoft's deployment technology to create a solution that combines the functionality and performance of the desktop client delivered via the simplicity of a Web interface. By web-enabling its LIMS, Thermo Fisher provides customers a hassle-free deployment strategy, as well as easy maintenance and transparent updates from a central point on the network.

▶ www.thermo.com/informatics

Akzo Nobel Sells to Kansai Dutch chemical company Akzo Nobel said that it has divested its share in the automotive passenger car coatings activities of Kemipol in Turkey to Kansai Paint. Financial details were not disclosed. The joint venture with Kemipol was established in 1990 and Akzo Nobel Coatings will continue to be active with Kemipol in its car repair, wood and coil activities. Regulatory approvals will be sought as and where appropriate.

▶ www.akzonobel.com

Novozymes Completes Acquisition Novozymes has completed the acquisition of the enzyme activities of Biocon, Bangalore, India. In reference to the stock exchange announcement of 18 July the acquisition was subject to shareholders' approval and approval by the relevant Indian regulatory bodies, which have now been granted. The activities will be integrated into Novozymes' existing Indian and global activities and included in Novozymes' consolidated financial statements with effect from 1 October.

▶ www.novozymes.com

Eastman Buys Texas Facilities Eastman and Terra Industries announced that Eastman has exercised its option to purchase Terra's Beaumont, Texas assets, including methanol and ammonia production facilities. The two companies anticipate closing the sale on or before 1 January 2009. Terms of the sale agreement were not disclosed. Eastman will incorporate the assets into a previously announced US-$1.6 billion industrial gasification project it is developing in Beaumont.

▶ www.eastman.com
▶ www.terraindustries.com

Brenntag Expands in Turkey Brenntag has announced the acquisition of Abaci, Istanbul, Turkey. Abaci has a leading position in the Turkish chemical distribution market with a main focus on raw materials for the production of household-/I&I cleaners, detergents and personal care goods as well as general water treatment. The family owned company was founded in 1990 and operates its business via Istanbul. The acquisition of Abaci enables Brenntag to expand its presence in the Turkish market. "Due to the acquisition we are now in the position to provide our business partners with a wider access to the growing Turkish market. In addition this is a significant step to extend our European distribution network," stated Steven E. Holland, Member of the Executive Board of Brenntag.

▶ www.brenntag.com

Expanded Ineos Nova JV Launched Ineos Nova, the 50:50 joint venture between Nova Chemicals and Ineos, announced it commenced expanded operations on 1 October. Ineos Nova is expected to generate approximately US-$3.8 billion (€2.7 billion) in revenue from manufacturing sites in the U.S., Canada, France, Germany, The Netherlands, and Sweden. The venture will include production and global sales of styrene, polystyrene, performance polymers as well as expandable polystyrene in Europe.

▶ www.ineos-nova.com.

Süd-Chemie Streamlines Portfolio Süd-Chemie will sell its Nanofil business to Rockwood Clay Additives, the German subsidiary of U.S.-based Rockwood Specialties Group. The German Federal Anti-Trust Commission has already agreed. The Nanofil business comprises organically modified bentonite products that are used as flame retardants in cable plastics and for optimising mechanical properties of polyolefins. Financial details were not disclosed.

▶ www.rockwoodspecialties.com
▶ www.sued-chemie.com

3M Acquires Venture Tape 3M announced that it has completed its acquisition of Venture Tape., a U.S. provider of pressure sensitive adhesive tapes based in Rockland, Massachusetts. Venture Tape manufactures a broad range of tapes used in construction, oil and gas, heating, ventilation and air conditioning, electronics, aerospace, marine and appliance markets. It also provides specialty industrial tapes complementary to 3M's specialty tape product line used in splicing, automotive and automotive aftermarket applications.

▶ www.mmm.com

Ineos Nova JV to Acquire Rights

Nova Chemicals Corporation announced that it has secured exclusive rights to the styrene production from Sterling Chemicals' Texas City, Texas, manufacturing facility on behalf of its pending joint venture with Ineos. The Ineos Nova joint venture has received U.S. regulatory approval and will be assigned the rights when the joint venture is operational. The US-$60 million cost of the transaction will be fully funded by the Ineos Nova joint venture from cash on hand.

▶ www.ineos-nova.com

Ineos/Lanxess JV Completed

Following clearance by the European Commission, Ineos and Lanxess completed their agreement to establish a joint venture through which Ineos is to take over the operation of the Lanxess ABS plastics business (Lustran polymers). As part of the first stage of this agreement Ineos acquires a 51% majority share in the new business, to be called Ineos ABS. The remaining 49% share will be acquired by Ineos at the end of September 2009. Ineos ABS will be the world's third largest supplier of ABS plastics. It will employ 1,600 people and generate sales amounting to almost €900 million from its assets in Dormagen (Germany); Tarragona (Spain); Map Ta Phut (Thailand); Vadodara (India) and Addyston (USA).

▶ www.ineos.com

Novo Nordisk Sells Pharmaplan

Danish pharmaceutical company Novo Nordisk plans to sell its engineering unit NNE Pharmaplan by the summer of 2008, Novo Nordisk's Chief Financial Officer Jesper Brandgaard told Boersen. "By mid 2008 we should be in a position where we have consolidated business with a sensible structure. Then we will look at options for the long-term ownership of NNE Pharmaplan," Brandgaard said. The unit has been formed from Novo Nordisk's own engineering unit and Pharmaplan which the company acquired earlier in 2007. Total annual revenue is around US-$303 million.

▶ www.novonordisk.com

Akzo Nobel: Financial Strategy

Akzo Nobel chairman Hans Wijers painted a more complete picture of the company's future ambitions and financial strategy ahead of the proposed acquisition of Imperial Chemical Industries (ICI). Wijers, said that the company will maintain a solid investment grade rating in the single A– to BBB+ range and also revealed that a new dividend policy will be introduced – a minimum payout ratio of 45% of net income before incidentals – with the 2007 interim dividend proposal to be increased from €0.30 per share to €0.40 per share.

Furthermore, Wijers elaborated on the 2008/2009 capital return program, with a €2 billion share buyback planned to start in the second half of next year. In addition, a return of paid-in capital of €1 billion is scheduled upon completion of the share buyback, both of which are subject to shareholder approval.

"This is a year of incredible transformation," said the chairman. "We are fully on track in creating one of the world's leading industrial companies.

Hans Wijers
Akzo Nobel chairman

We have a strong portfolio of businesses in attractive growth markets and, coupled with the synergies of the ICI integration – which we estimate will result in a total post-tax net present value benefit of approximately €2.5 billion after implementation costs – and our plans to further improve operational excellence, we should be able to outgrow our markets and deliver EBITDA margins in the upper half of our peer group."

▶ www.akzonobel.com

Evonik: Germany's Newest Industrial Group

The entity previously operating under the name of RAG is now known as Evonik Industries. Dr. Wener Müller, chairman of the board, said company plans on entering the capital market with the new brand in the first half of 2008. Previous corporate brands such as Degussa, Steag, and RAG Immobilien will no longer exist. The chemicals, energy and real estate business areas now operate under the company name of Evonik. German coal mining operations will be known under the name of RAG, and will not be connected with Evonik.

"We are now in a better position to develop our growth opportunities as a new force, right on time for the christening of Evonik."

Dr. Werner Müller
Chairman of the board, Evonik

The company was able to significantly increase its operating performance over the last four years of group restructuring. Sales rose 3% to €7.565 billion in the first six months (H1 2006: €7.328 billion). EBIT (earnings before interest and taxes) rose 26% to €788 million (H1 2006: €625 million). Evonik has divested its portfolio of some 480 companies with sales of over €8 billion and 35,000 employees. During this time, the acquisition of Degussa was completed, and the shareholder squeeze-out was accomplished in just over three months, which the company said is a record time for Germany. Group structures were also adjusted inshort period of time to meet the requirements for operating as a modern, high-performance company.

"We are now in a better position to develop our growth opportunities as a new force, right on time for the christening of Evonik," Müller said.

▶ www.evonik.com

Bayer: Top Sustainability Performance

Bayer has this year again been included in the Dow Jones Sustainability World Index and its European counterpart. This year's Dow Jones sustainability ranking extended the indicators used to evaluate performance in the area of environmental and climate protection. Based on an independent evaluation, the company is thus considered to be one of the international leaders in sustainability. Bayer stock has been continuously listed in the two sustainability indexes since their introduction: the DJSI World (1999) and the European DJSI STOXX (2001).

"We aim to bring commercial success into harmony with environmental protection and meet the needs of society," said Dr. Wolfgang Plischke, the member of the board of management responsible for innovation, technology and environment. "We have recently increased our environmental and climate protection efforts."

Bayer has just launched a group-wide climate program to minimise the use of natural resources in its production processes, further reduce emissions, and develop new solutions to protect the climate and tackle the consequences of climate change.

▶ www.sustainability-indexes.com
▶ www.bayer.com

Bristol-Myers Squibb to Pay US-$515 Million

Bristol-Myers Squibb and a former subsidiary have agreed to pay more than US-$515 million to settle federal and state investigations into their drug marketing and pricing practices. The civil settlement resolves a broad array of allegations against Bristol-Myers Squibb, dating from 1994 through 2005.

Among them were a charge that the New York-based pharmaceutical company illegally promoted the sale of Abilify, an anti-psychotic drug, for paediatric use and to treat dementia-related psychoses. Neither use is approved by the U.S. Food and Drug Administration (FDA).

In the second quarter, the company reported US-$412 million in sales of Abilify, approved to treat bipolar disorder and schizophrenia, a 27% increase from a year earlier.

Although physicians are permitted to prescribe drugs for off-label uses, drug companies are prohibited from marketing them for uses that have not been approved by the FDA. U.S. Attorney Michael Sullivan said when pharmaceutical companies market drugs for unapproved uses, there is a potential risk that patients could be harmed, because the drugs have not been tested as rigorously as they are during the FDA approval process. Prosecutors have no evidence that anyone was harmed by Bristol-Myers Squibb's actions in promoting Abilify for unapproved uses, he said.

Photo: Pixelio

In a statement, Bristol-Myers Squibb said the settlement would not affect the company's ongoing business with any customers, including the government.

The settlement with Bristol-Myers Squibb is the latest in a series of settlements the Justice Department has reached with pharmaceutical companies over illegal marketing of their drugs. Sullivan's office has been particularly aggressive in prosecuting health care fraud cases.

Earlier this year, Schering Sales and its parent company, Schering-Plough agreed to pay US-$435 million to settle allegations it lied to the government about drug prices and illegal promoted the drugs Temodar and Intron A for the treatment of cancers they were not approved for by the FDA.

In 2004, Pfizer paid US-$430 million in fines to settle allegations it marketed the epilepsy drug Neurontin for pain and psychiatric illnesses. In 2001, TAP Pharmaceutical Products paid US-$875 million to settle allegations it inflated prices and bribed doctors to prescribe its prostate cancer drug Lupron.

▶ www.bms.com

Early Phase Drives US-$4 Million NPIL Investment

Pharma custom manufacturer NPIL Pharma has announced US-$4 million of additional investment in its early phase Pharma Development and Scale up (PDS) business unit. A package of four projects is raising capacity and capability at the Ennore, Chennai facility in southern India – notably to bring a marked increase in cGMP pilot plant capacity. Chennai is NPIL Pharma's lead development phase facility in India.

The company said the investment reflects strong early phase demand, fuelled by NPIL Pharma's deeply integrated service offer across early phase API, formulation and clinical manufacturing.

- In the first two moves, NPIL Pharma commissioned a new process safety lab in July and upgraded existing pilot plant to a cGMP-compliant facility, operating eight reactors with 2,200 l of capacity in August.
- In a phased programme to year-end, further additions to Chennai's cGMP pilot plant will add eight new reactors with 12,000 l of capacity. Facilities include an entire process area qualified for manufacturing final API and a Class 100,000 clean room for final API powder processing and packing.
- In October, the company planned to add on to its R&D laboratories in Chennai. A new analytical laboratory is being commissioned, with four new science staff groups increasing the technical team from 25 to potentially 40 personnel.

▶ www.npilpharma.com

Avecia Invests £1 Million for Capacity Increase

Demand for pAVEway, a new technology from Avecia Biologics, has seen the company invest more than £1million to increase capacity.

Avecia unveiled the new technology in May this year. According to the company, the technology has been developed to help speed up the process from research to production of biopharmaceuticals, with reduction in long-term manufacturing cost. Building upon demand for the technology, Avecia is developing a new suite of state-of-the-art biologics laboratories at its Tees Valley, UK, headquarters, which will allow it to take on over 20% more research and development work than was previously possible. The new technology enables class-leading (>10g/l) microbial production of a wide range of therapeutically useful proteins, such as vaccines, cytokines, growth factors and antibody fragments.

▶ www.avecia.com

chemanager@gitverlag.com

Production
FACILITIES · PROCESSES · TECHNOLOGIES

Production

Using barrier technology instead of clean rooms in pharmaceutical filling and packaging.

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Industrial Locations

A global view of international biotech clusters.

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Photo: Pixelio

Logistics

Intelligent logistics in aerosol production.

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Bayer Materialscience to Build Polymer Polyols Plant

Bayer Materialscience is planning to build a world-scale plant for the manufacture of polymer-filled polyether polyols (PMPO) at its Antwerp site in Belgium. The plant, representing a total investment of €40 million, will have an annual capacity of 60,000 t and is scheduled for commissioning in late 2008. Bayer Materialscience already manufactures polyether polyols, one of the starting materials for polymer polyols, at the Antwerp site. The decision to build the new plant in Antwerp enables leverage of available synergies and will further increase the efficiency of PMPO production.

▶ www.bayermaterialscience.com

Arkema Doubles PVC Heat Stabilizer Plant

Arkema is investing in a major expansion of its PVC heat stabilizer production facility in Beijing (China), to respond to the strong growth of the construction and packaging markets.

The expansion will double the capacity of the site to 12,000 t/y for production of the full range of tin-based heat stabilizers, and make it the single largest production facility for tin stabilizers in Asia. The extension is scheduled for completion in the first quarter of 2008.

▶ www.arkema.com

Lanxess: €10 Million for EVM Expansion

Lanxess said it will be spending €10 million on expanding capacity for ethylene-vinyl acetate copolymer (EVM) at its site in Dormagen, Germany, to meet growing demand from the rubber industry for the synthetic elastomer used in the auto industry as well as in manufacture of cable sheathing, adhesive and weather-resistant transparent film. The company said a capacity of 15,000 t/y could be reached by 2009.

▶ www.lanxess.com

Evonik, TSM to Build Facility for Solar Silicon

Evonik Industries and The Silicon Mine (TSM) are planning to build the first integrated production facility for solar silicon in the Netherlands. For this purpose, the two partners recently signed a letter of intent. In this integrated production network, Evonik's Chemicals division will manufacture Siridion chlorosilanes, from which TSM will produce high purity solar silicon for the photovoltaics industry. Evonik will invest a high double-digit million euro amount. Creating at least 400 jobs, TSM is planning an annual production of 3,750 mt of high purity solar silicon at the site in Sittard-Geleen. The company also said its long-term plan is to expand annual production.

Process Optimization Applications

How to Improve Production Efficiency and Return on Assets

ADVERTORIAL

In times of increasing competition, manufacturers face ongoing pressure to reduce costs and complexity and leverage existing technology investments while improving their ability to quickly adapt to changing business priorities and customer demands. Pavilion8, Pavilion Technologies' modular software platform, allows manufacturers to achieve these goals and reduce their total cost of ownership.

Robert Kranz
Managing Director EMEA, Pavilion Technologies

Prior to the K'2007 in Düsseldorf, Dr. Roy T. Fox from CHEManager Europe spoke to Robert Kranz, Managing Director EMEA, Pavilion Technologies.

What are the main production challenges facing European chemical manufacturers today?

In the last couple of years, we have seen a general improvement in the chemicals markets across Europe. While business has improved, we have also seen that chemical companies are facing more competition than ever before. Companies in Eastern Europe with lower cost structures are hungry for new business as are companies in the Middle East with tremendous feedstock advantages. Increased raw material and energy costs are driving the need for European chemical manufacturers to improve production efficiencies and return on assets. In addition, more stringent customer demands create the need for better adherence to product quality specifications and the ability to adapt production quickly to specification changes.

As such, European chemical manufacturers are focused on what they are always focused on: how to get the most from their manufacturing assets.

Pavilion's Model Predictive Control (MPC) solutions enable chemical manufacturers to get the most from their manufacturing assets by stabilizing plant operations and enabling them to run closer to constraints while maintaining the same margin of safety. In effect, this enables them to increase production, reduce specific energy consumption and enhance product quality. In other words, get the most from their manufacturing assets.

Your new software platform Pavilion8 has been on the market for 2 years now. How has the software been received in Europe?

The Pavilion8 software platform is the foundation for all our applications across the industries in which we focus. We have been very pleased with the market's response. In Europe, we have seen excellent demand for Pavilion8-based applications in the chemical, refining, cement and consumer product sectors. The response from those companies using it has been exceptionally positive as well.

In addition, the Pavilion8 platform has been certified by SAP as "Powered by Netweaver" and Pavilion is a member of SAP's Indsutry Value Network for Chemicals.

What applications are specific to the chemicals industry? Which are particularly popular of successful in Europe?

The Pavilion8-based control and optimization applications we deliver to the chemicals industry include distillation, purification, reaction and extrusion. In addition, we provide energy system optimization, which is a key concern of many chemical manufacturers, Virtual Online Analyzers (VOA) that are real-time and predictive product quality applications and environmental monitoring and compliance solutions. We have successful implementations of each application within Europe and I would say that the distillation and reaction applications are the most widely deployed.

Can you give any examples of your software "in action"?

In the European chemicals industry we have many applications currently online and delivering real business value.

One example that we are very proud of is our relationship with Ineos in Cologne (formerly Erdöl Chemie). Our relationship with this site is more than 10 years old. Ineos utilizes our solutions in all of their polyethylene lines in Cologne. Ineos has publicly reported that our MPC solutions have enabled them to increase production by 7%, reduce transition times between product grades by 25–50% and reduce variability of key polyethylene product properties by 50%. What's more, this performance has been sustained for a number of years.

We see these sorts of results across the chemicals industry and other industry segments that we serve.

Many of your customers in Europe have been Pavilion customers for many years. Could you explain how the relationships have developed throughout the years?

Pavilion has maintained an active presence in Europe for 12 years. Our first customers here were in Germany. Over the years we have continued to build and grow those relationships to where they are today. Many of our customers have had Pavilion process optimization applications online for more than 10 years. These applications continue to deliver significant, measurable value year after year.

I believe that Pavilion has been successful at building strong relationships with our European customers for several reasons.

The first is a strong focus on delivering business value to our customers, which is embodied in our Value First Customer Engagement Methodology.

Secondly, the strength of our underlying Model Predictive Control (MPC) technology helps to easily adapt to process changes.

And finally, we pride ourselves on having respect and integrity in every aspect of our relationship with the customer.

Many of these relationships have remained, and even expanded, as the businesses themselves have changed owners. Our long-term partnerships with Ineos and Veba Oel (now BP) are good examples of this fact. My primary metric for our success in building and maintaining relationships is the level of repeat business that we get from our customers. At present the level of repeat business in Europe, across industries, is very close to 100%.

Do you see a demand in the European chemical industry to integrate MPC software with other elements in the production chain such as ERP systems? Are any of your customers doing this?

This is definitely an issue that we see as very important for the chemical industry as a whole. As customer requirements for on-time delivery and quality consistency increase, the need to better plan, execute and account for customer orders accelerates. It's this scenario that is driving manufacturers to evaluate "closed-loop" integration between the business and production processes as embodied by SAP and Pavilion respectively. We have several projects of this type actively underway in Europe. Due to the high level of competitive advantage anticipated from the result, we are not able to disclose the specific companies. However, we can say that the collaboration from our colleagues in SAP's Chemical Industry Business Unit (IBU) has been excellent.

Have you seen more interest in your environmental solutions since global warming became a trend issue again thanks to Al Gore's film "An inconvenient truth" and Live Earth, etc?

It is clear that environmental issues and "green solutions" are at the forefront of everyone's thinking these days. More and more manufacturers are developing and implementing sustainability and emissions credit trading programs. Consequently, environmental compliance is no longer simply a cost since a company must consider their brand equity, customer goodwill and the revenue to be made from a coordinated approach to controlling, monitoring, reporting and trading emissions. Pavilion uniquely has a single, common software architecture that enables all of these functions within a plant environment.

Pavilion's approach to emissions monitoring and control is different to traditional solutions. Please explain that difference. Are there any examples of European chemical companies using your software for this purpose?

The key, as I stated before, is that Pavilion's chemical solution comprises both emissions control and monitoring via the same software platform. This capability enables the Pavilion8-based MPC applications to optimize the process based on multiple objectives which include environmental limits in addition to quality, cost and production throughput. Therefore, the most profitable production settings can be determined while ensuring environmental compliance. The emissions themselves can be simultaneously monitored and calculated by our Predictive Emissions Monitors (PEMS) and can be visualized and reported to authorities via our Real-Time Environmental Management application.

Now, to you, Mr. Kranz. You have now been heading up the European side of Pavilion's business for over 18 months. What have you achieved in that time?

Moving to Brussels to lead our EMEA operations has been a tremendously rewarding challenge. In the past 18 months we have made substantial enhancements to Pavilion's presence and performance in Europe. Orders for new business have nearly tripled, revenue has nearly doubled from the previous year, operating income has increased significantly and we have increased our headcount in Europe by 50%.

In the past 18 months Pavilion has been awarded business in Europe that we believe is very strategic to our continued success. We have received major awards in the petrochemicals, polymers, dairy and laundry powder areas. We have also been awarded our first major refinery project.

All in all, I am very proud of the accomplishments of our European team over the past 18 months.

What are your expectations, plans and goals for the months ahead?

Although we have experienced tremendous growth over the past 18 months in Europe, I believe that we still have significant opportunities to expand our presence even more. Our goals for the months ahead are really very simple: continue to grow our business in Europe by hiring more resources and leveraging our proven track record of success.

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Barrier Technology

Using RABS and Isolators in Pharmaceutical Applications

CHEManager Europe recently spoke with Jack Lysfjord, Vice president, Pharmaceutical Consulting at Bosch Packaging Technology to discuss Restricted Access Barriers Systems (RABS) and Isolators and their use in the pharmaceutical market.

Jack Lysfjord
Vice president

CHEManager Europe: Jack, could you give us a thumbnail description of RABS and Isolators?

J. Lysfjord: Overall, barrier technology is designed to replace the use of clean rooms in pharmaceutical filling and packaging, i.e. ampoules, vials, cartridges, and pre-filled syringes. Thus, the goal of Isolators and RABS is to segregate people from the product, ensuring that pharmaceuticals are not exposed to viable organisms or particulate contamination. Also, when dealing with highly potent formulations, these systems are protecting operators as well.

Isolators are enclosed, positively pressurized units with high efficiency particulate air (HEPA) filters supplying air in a unidirectional manner to the ISO class 5 interior. Air is typically re-circulated by returning it to the air handlers through sealed ductwork. Bio-decontamination occurs through an automated cycle typically using vaporized hydrogen peroxide. Access to an isolator is through glove ports and sterile transfer systems, and, because they are sealed, isolators can be located in an ISO class 8 environment.

RABS also contain an ISO Class 5 environment, with varying degrees of contact with the surrounding room, which is generally an ISO class 7 or better. Bio-decontamination is performed manually in a RABS. Although doors can be opened, this is a rare occurrence, after which the system must be appropriately cleaned and a necessary line clearance performed.

What are some of the main differences between RABS and Isolators?

J. Lysfjord: There are a number of key differences between the two technologies.

Compared to isolators, RABS can allow for faster start-up and ease of changeover, and, accepting certain restrictions, offer increased operational flexibility and reduced validation and revalidation expenditure.

As far as air handling is concerned, RABS operate in a fashion similar to laminar flow hoods (LFH) in that they are fed clean air from fan units through HEPA filters and air vents from the unit into the surrounding room. Isolator air handling requirements are more complicated as air is re-circulated, necessitating return fans and ductwork, and, in order to maintain positive pressure, the air handling unit must be leak tight.

There are also differences in bio-decontamination and cleaning systems. Isolators are bio-decontaminated through an automatic sequence by injecting vaporized hydrogen peroxide. RABS, however, have no automated bio-decontamination cycle and must be cleaned by manual spray and wipe down. Thus, validation of the manual RABS cleaning is more challenging than the automated cleaning cycle of an isolator system.

Environmental monitoring is necessary to ensure the ISO class 5 environment in both systems. Monitoring in isolator systems can only be achieved though built-in sampling ports or sterile transfer of sampling devices. The environmental monitoring requirements of an isolator system are thus key design considerations. These same methods can be employed in RABS, but there is also the option of using portable sampling devices inserted into the floor level openings.

How do RABS/Isolators relate to current trends in the pharmaceutical market?

J. Lysfjord: There are a number of trends within the pharmaceutical industry that will make RABS and isolators critical components of any successful packaging and processing operation.

Biotechnology is having a big impact and reshaping the processing demands on pharmaceutical firms. Live vaccines, large molecules, and protein-based drugs are increasingly the trend and require highly aseptic conditions. Toxic, cytotoxic, and otherwise highly potent applications – immunosuppressive cancer drugs are a key example – also demand stringent barrier technology to protect operators.

Broadly speaking, there is a trend towards smaller volume, higher value pharmaceuticals. Manufacturing in high-throughput, mass production systems that churn out millions of dosages is declining and the ultimate cost-effectiveness of constructing a large ISO 5 clean room facility must be addressed in the long term.

Smaller systems that meet high regulatory standards and can be customized to small product runs are an increasingly attractive option. More compact, adaptable lines allow for flexible configurations and enable manufacturers to respond rapidly to changes in market demand.

Bosch has further developed the FLM 4080 filling and closing machine and now offers it with a bio-decontamination module integrated in the isolator. The module generates hydrogen peroxide steam using a process which operates more simply and reliably than previous procedures and also provides very short sterilization cycle times.

RABS and isolators are ideal for smaller facilities that employ flexible, reduced-footprint systems. Compared to a full-scale clean room, barriers systems offer pharmaceutical firms significant cost savings. Furthermore, with a smaller isolator system there are minimized gowning costs and reduced labor and maintenance expenses. Isolator systems also offer minimized capital and operational costs over conventional clean rooms or RABS designs.

Are there any regulatory issues to consider when using RABS or Isolators?

J. Lysfjord: The critical regulatory concern for barrier systems is so-called "open door" interventions in a RABS. Such interventions introduce undesirable variables into the operation and potentially compromise the aseptic environment, and thus should be avoided or minimized.

However, when such interventions are unavoidable, appropriate measures must be taken to ensure the aseptic environment is maintained. Open door interventions inevitably prompt heightened regulatory scrutiny and thus demand particularly scrupulous observance of protocol.

When open door interventions are necessary, an ISO 5 vertical unidirectional airflow system outside of the RABS reduces risk of a breach in ISO 5 conditions and further safeguards the aseptic integrity of the system. Each intervention that requires opening of a door of the RABS is regarded and documented as a significant event. Interlocked RABS doors facilitate control and documentation. Following an open door intervention, appropriate line clearance and disinfection commensurate with the nature of the intervention are required.

What are the foremost challenges to implementing an Isolator or RABS?

J. Lysfjord: Many people forget the "systems" aspect of RABS and isolators. For successful implementation of these technologies, operators must take an expansive, holistic view of their system, ensuring that it is integrated into its surrounding environment and institute the appropriate maintenance and oversight regimes.

This includes appropriate surrounding building and room design, including HVAC and air handling systems. Proper disposal systems for bio-decontamination waste, both within the building and in relation to the exterior natural environment, are also key considerations. Plumbing systems and building power should also be taken into account.

Management oversight is indispensable. Proper gowning procedure, adequate training in current Good Manufacturing Procedure (cGMP), Standard Operating Procedures (SOP) for interventions, and documentation protocols must be instituted, rigorously executed, and consistently enforced. Continuous system monitoring is also a must.

A RABS or isolator system should be understood not merely as a discrete piece of a larger manufacturing process, but as deeply integrated with every other aspect of an operation. Of course, it's a big advantage if the line itself is well integrated and all its modular components come from a single original equipment manufacturer (OEM) operating under one control system. Moreover, a holistic view encompassing all of these exterior concerns will ensure the successful implementation of a RABS or isolator system.

▶ www.bosch.com

Vioxx Saga: No End in Sight

Three years after Merck & Co. pulled its blockbuster painkiller Vioxx from the market due to increased heart attack and stroke risk, there's no end in sight for the massive litigation it ignited. Shortly after Vioxx was withdrawn on 30 September 2004, stock analysts said Merck's liability could reach US-$50 billion, and doomsayers predicted Merck's demise. Neither look possible now, as Merck has won nine of the 14 of product liability trials resolved so far and had other key victories, including beating back two multibillion-dollar class-action lawsuits, on behalf of shareholders and private insurers seeking to recoup what they paid for Vioxx prescriptions. Still, legal experts say it will be a few years before it is clear how the Vioxx saga will end.

There are at least 45,200 product liability cases pending, another 14,450 on hold with the statute of limitations suspended, 266 potential class action lawsuits alleging patient injuries or stockholders' economic losses and one class-action certified in Canada. Meanwhile, New York and six other states are suing to recoup what they paid for Vioxx through Medicaid.

As of 30 June, Merck had spent US-$1.04 billion for defense costs and had another US-$828 million in reserve. Plaintiffs' lawyers say they are spending US-$650,000 to US-$1.5 million per case.

▶ www.merck.com

Agrium to Close Nitrogen Facility

Agrium has announced it is closing its Kenai nitrogen fertilizer operations due to a shortage of natural gas supply in Alaska's Cook Inlet. Agrium has diligently attempted to encourage development of natural gas supply and to negotiate contracts for 2008 and beyond. Despite these efforts, and after offering what it believed to be competitive prices and incentives, Agrium was unable to secure gas supply.

It is estimated that the facility will contribute approximately US-$6 million in EBITDA in 2007 and account for less than 1 % of Agrium's total 2007 EBITDA. The facility produced about 325,000 t of urea and ammonia in 2007 during the five months it was operational, with the shutdown expected by month-end. It is expected the resulting reduction in nitrogen supply will further tighten the global nitrogen market in 2008.

Agrium purchased 53 billion ft^3 of natural gas in 2001 and this supply has steadily diminished to only 10 billion ft^3 in 2007. The book value of the asset was written down in 2003 and shutdown costs were accrued at that time, therefore no further impairment charge is required. Incremental costs associated with the shutdown are expected to be less than five cents per share. Agrium's plant was shutdown for the winter period of 2006/2007 but no layoffs occurred. Closing the facility will result in the lay-off of over 100 employees.

▶ www.agrium.com

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Cost Saver With Long-time Effect

Why the Future Belongs to the Fieldbus

The fieldbus not only opens completely new aspects in process automation. It also cuts costs all the way from the planning stage to long-term operation of the plant. New technologies, such as advanced diagnostics, allow pro-active maintenance. Innovative concepts like the High-Power Trunk are the basis for easy installation even when it comes to explosion hazardous areas.

The fieldbus is on the way to becoming the established standard in the process industry. Both Profibus PA and Foundation Fieldbus H1 provide a proven infrastructure offering countless advantages which plant operators simply cannot ignore. One only needs to think of drastically simplified wiring and consider the time-saving effects during the design, engineering and commissioning phase of a process control system. Not to forget improved maintenance processes and the time and cost saving effects during long time operation of the system.

Digital communication via the fieldbus opens the way for a totally new generation of intelligent field devices. For example, digital measuring instruments deliver a higher level of precision and allow display of the measured results directly at the control, maintenance and engineering station. This offers comprehensive visualization of the complete process along with a detailed view of all aspects of the plant. Not to forget improved functionality – for example due to field devices with multiple variables for precise temperature, pressure and flow control.

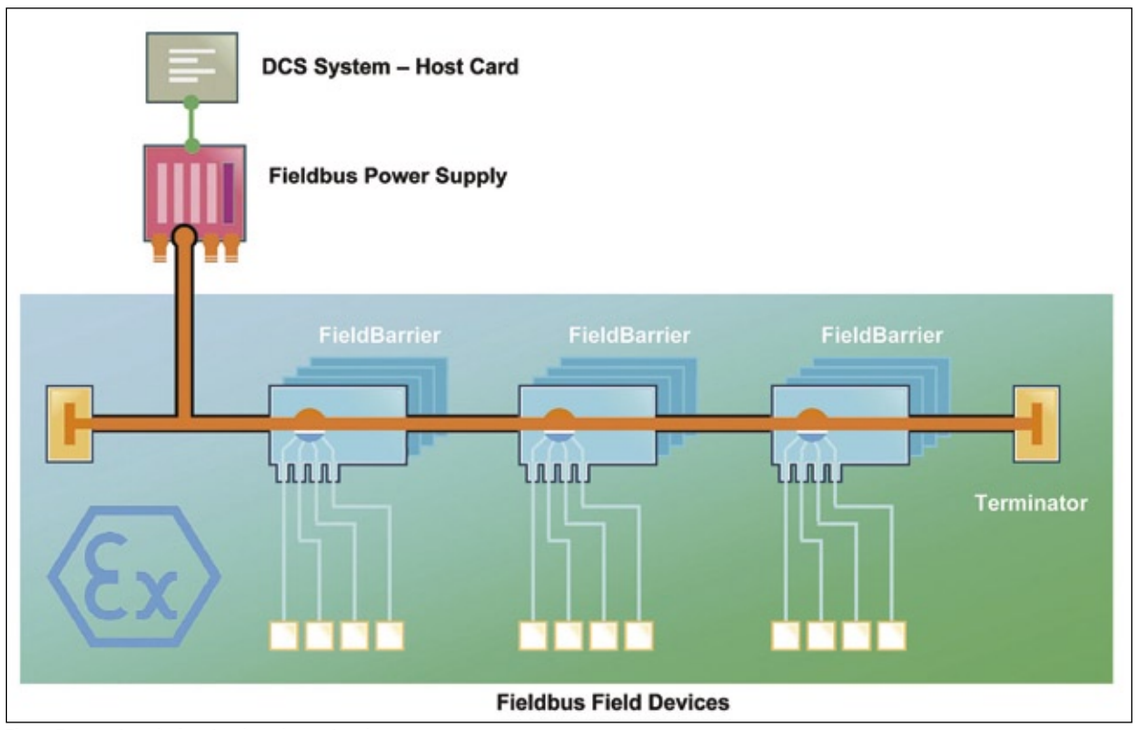

Fig. 1: Easy system design: trunk-and-spur topology

Due to intelligent self-monitoring, modern fieldbus instruments are able to detect critical operating conditions which are then automatically reported. Due to this feature, they are the key to efficient pro-active maintenance.

Despite such innovations, the fieldbus does not represent a totally new technology which still needs to prove its reliability in everyday plant life. To the contrary, there are already numerous processing plants which were equipped with a fieldbus infrastructure some ten years ago and are a living demonstration of the fact that the fieldbus is fully capable to take care of reliable plant operation in the process industry.

Less Hardware and Less Space

With a fieldbus infrastructure, there is no need to connect each individual field device to the control system via its own cable and I/O card. Instead, one and the same fieldbus trunk allows the connection of up to 31 sensors, actors or measuring instruments via only one controller. This does not only result in drastically reduced wiring. It also requires less space in control cabinets, resulting in smaller cabinets that take less space on the plant floor. Needless to say that such a reduction in hardware and wiring also speeds up installation and leads to a considerably lower overall cost structure.

There is another aspect that leads to easier installation and simplified system design: According to IEC 61158-2, the fieldbus does not only take care of effective data communication, but also supplies the needed energy to the field devices. Typically, this is achieved by a trunk-and-spur topology, where each device is connected via a short cable to the trunk. The trunk itself leads to the control room where all host adapters and power supplies are located. In comparison to conventional wiring, this type of topology requires considerably lower planning efforts and drastically simplifies operation and maintenance of the complete system. The use of Fieldbarriers for Zone 1/Div. 2 areas and segment protectors for Zone 2/Div 2 areas takes care of needed short circuit protection while allowing time-saving maintenance work and plant modifications during normal operation without the need of a hot work permit.

Advanced Diagnostics for More Insight

Field devices work at the very center of the process. In many cases, they are exposed to extreme environmental conditions or aggressive process media leading to increased corrosion. Yet, correct operation of the field devices is the key to availability and safe operation of the complete processing plan.

The latest innovations in fieldbus technology provide the basis for a higher level of reliability and dependability. For example, advanced diagnostics allows comprehensive remote diagnosis of the complete fieldbus physical layer. This technology allows monitoring of the signal quality and the transmission quality of each segment of the fieldbus infrastructure directly at the control center. Significant physical layer values, such as load current, earth leakage per segment and signal level, noise or jitter per field device are monitored and recorded. Such parameters provide dependable and detailed information about the physical condition of the fieldbus infrastructure and point to any deterioration of the signal quality before it leads to signal losses that may affect the operation of the plant.

Such functionality is simply not possible with classic 4…20 mA technology at an economic cost level. Not only does it allow setup of a comprehensive asset management system. It also leads to substantial cost reductions for commissioning and maintenance. Values representing the physical state of the system do not need to be collected on site, but are available at any time directly at the maintenance station. After installing a new system or expanding an existing system, verifying the reliable operation of all field devices and assuring the correct operation of the processing plant itself, is as simple as pressing a button.

An intelligent software application assists the operator with the help of an analysis and commissioning wizard to set up the system to provide all relevant information about the physical condition of the fieldbus infrastructure. Measured results can be provided either in electronic form or as a printout.

This means advanced diagnostics result in comprehensive transparency and offer a detailed view of the complete fieldbus infrastructure all the way down to each individual field device. After maintenance work or system extensions, only little effort is needed to verify that the fieldbus infrastructure still provides the required quality. It is also possible to schedule required maintenance work in advance to secure the availability of the complete processing plant by taking care of any deterioration of the signal quality before it reaches a critical level.

Explosion Hazardous Areas

In many process plants the fieldbus is also used for data communication and power supply inside explosion hazardous areas. For such applications, intrinsically safe power supply with hazardous area certification takes care of safe operation. It not only limits the energy to a safe level, but also allows maintenance work at the field devices while the process is running. Such a concept, however, imposes severe limitations on infrastructure design, since not only the maximum cable length, but also the maximum number of field devices per segment are limited.

The High-Power Trunk frees the system designer from such limitations. This concept was originally developed by Pepperl+Fuchs and is now available from most manufacturers. It does not require any limitation of the power provided via the trunk. Instead, the trunk is installed with increased safety (Ex e) or non-arcing (Ex nA) explosion protection. Smart wiring blocks located near the field devices limit the energy supply per spur to intrinsically safe (Ex i) or non-incendive (Ex nL) levels.

This infrastructure design offers a variety of advantages: cable lengths of close to two kilometers within each segment are possible to connect a high number of field devices. These devices can be operated in combination with standard power supplies without requiring special certification. Where needed, field devices can be used redundantly. Maintenance work is possible at any time during normal operation of the plant without requiring a hot work permit.

Simple Topology

Validation of explosion protection normally requires complex calculations taking into account the specific attributes of cable connections and field devices. In order to simplify such calculations, manufacturers take into account specific limitations defined in safety regulations according to FISCO (Fieldbus Intrinsically Safe Concept) and Entity, which are described in IEC standards 60079-27 and 60079-11. Both FISCO and Entity have developed into generally accepted standards. Devices and infrastructure components with FISCO declaration simplify the design of fieldbus systems and validation of explosion protection.

Using the Power-Trunk concept allows the integration of any FISCO and Entity approved field devices in mixed mode. For explosion protection validation each spur connection is considered the power supply and the instrument is the only power drain. If wiring blocks and field instruments meet Entity or FISCO standards, validation of explosion protection is instantaneous.

Simply More Efficient

Considering the hardware investments alone, a fieldbus infrastructure is about on the same level as any conventional solution. During daily operation, however, the fieldbus results in continuous savings, leading to considerably lower total cost of ownership during the complete life cycle of a process plant. Primary reasons for such a positive situation are trouble-free operation and improved availability of the plant, resulting in lower operating costs and creating a better return on investment.

Since the field devices are able to automatically report their operating condition, pro-active maintenance has finally become reality. Maintenance work can be scheduled long in advance and repairs are only necessary if the system indicates an actual need to fix a mechanical or electrical problem. Continuous monitoring of the fieldbus physical layer leads to a transparent view of all aspects of process communication. It also guarantees that the complete system always works under best-possible operating conditions and contributes to trouble-free operation of the plant.

To summarize: The fieldbus provides the basis for a higher level of reliability and availability, thereby contributing to a higher production output. At the same time, it leads to long-term cost reductions and therefore in lower cost of ownership for the complete process plant.

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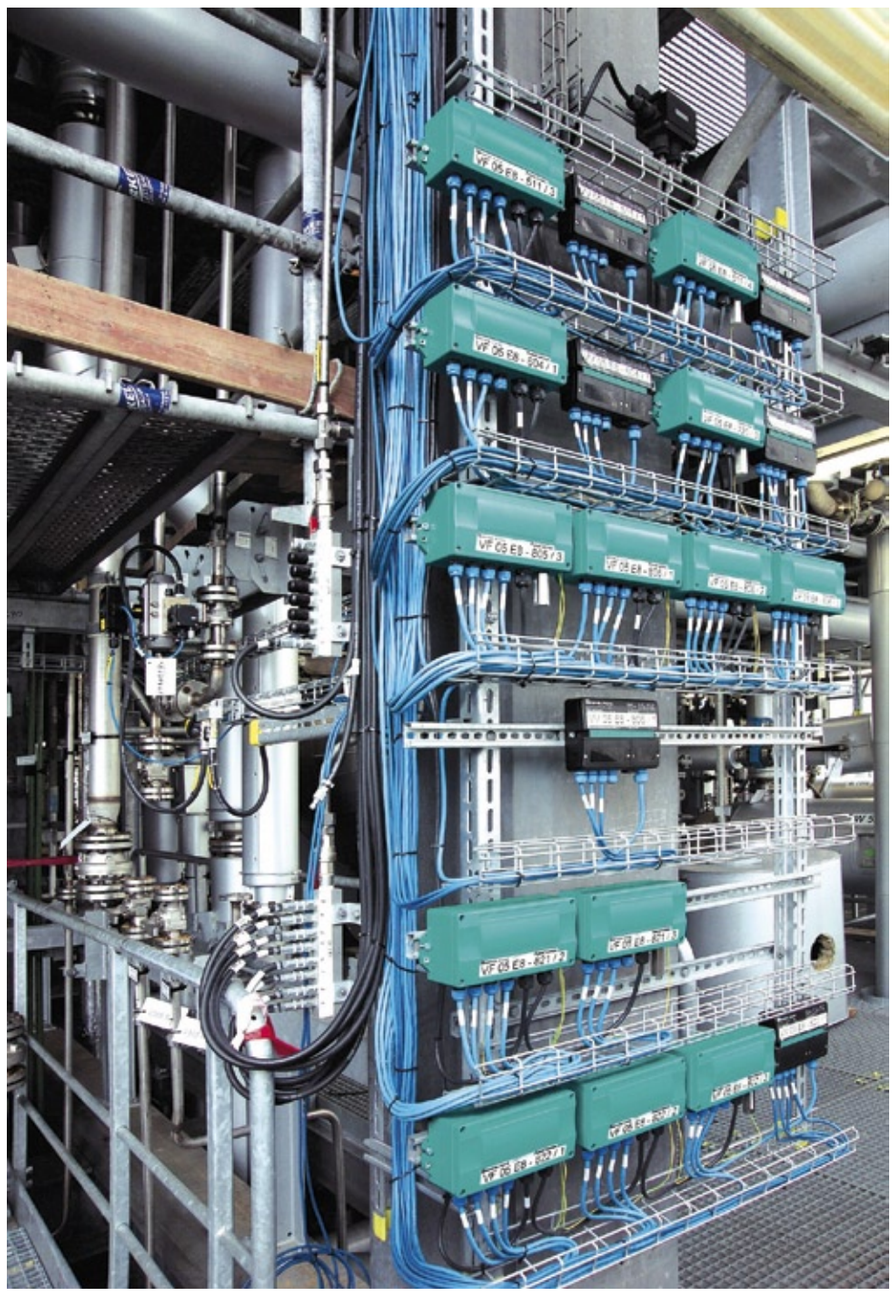

Fig. 2: Practical application of the High-Power Trunk: fieldbus distributor with intrinsically safe connections close to the field device

Sanofi-Aventis Receives Approval

Sanofi-Aventis said the FDA has approved the use of its cancer drug Taxotere to treat another form of the disease. The drug can now be used to treat locally advanced head and neck cancer prior to chemoradiotherapy and surgery, Sanofi-Aventis said in a statement. Advanced clinical trials showed that using Taxotere in combination with standard induction chemotherapy resulted in a more than three year improvement in patient survival rate. Taxotere is now approved in Europe and the U.S. to treat five cancer types: breast cancer, lung cancer, prostate cancer, gastric cancer, and head and neck cancer. More than 640,000 people worldwide are diagnosed with head and neck cancer each year, and more than 350,000 die from the disease annually, the company said.

▶ www.sanofi-aventis.com

Online Analysis for Drying Processes

Through the use of online analysis with a mass spectrometer (MS), the termination of drying process can be determined and documented with precision and without costly and time-consuming manual sampling. In the U.S., the FDA PAT initiative calls for the closest possible supervision and coordination of the entire production process in the manufacture of pharmaceutical products. The end of the drying process is reached at different times depending on the method of drying and the size and character of the batch. Online analysis using an MS provides a fast and automated solution. The exhaust air, and consequently the drying progress, is constantly monitored and documented. The online analysis can also be used to establish optimal drying temperature and pressure. Process optimisation offers advantages in terms of more efficient use of plants and facilities as well as provides increased consistency in the product quality.

▶ www.in-process.com

Reap What You Sow

International Biotech Clusters: A Global View

Interest in biotechnology clusters is growing. Where are the successful hotspots of tomorrow? What will make them successful? Do established clusters have to worry? Data collected from recent studies and global biotech databases such as www.biotechgate.com reveals some interesting trends.

Dr Patrik Frei
Founder and CEO of Venture Valuation

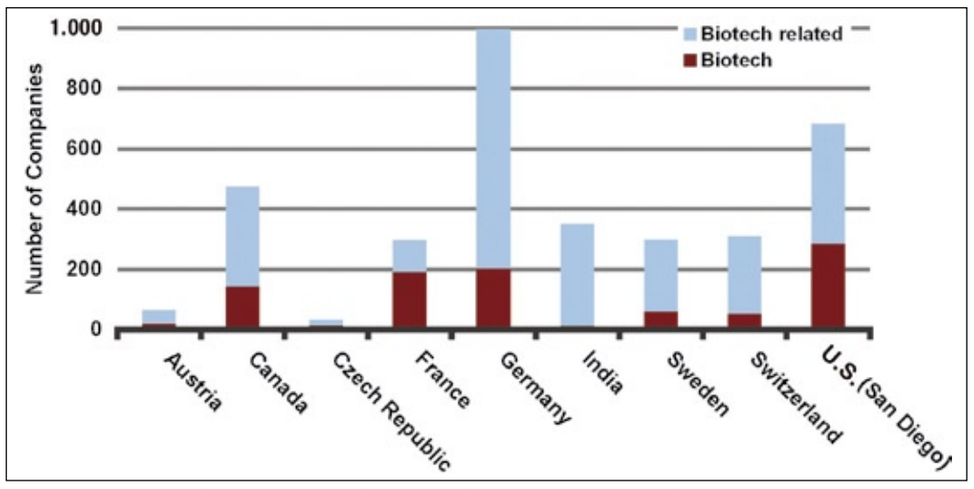

Fig. 1: Number of companies in selected countries operating in red biotechnology and biotechnology related (other green or white biotech, instrumentation, services and diagnostics) as listed on the global life sciences database, biotechgate. The scale of biotechnology in individual clusters in the U.S. is clear: the San Diego cluster (Biocom) alone is as large as the total biotech industry of major European players and dwarfs that of the Czech Republic. However, investment in technology transfer and business incubators prepares new-comers for competition in the coming years. Source: www.biotechgate.com

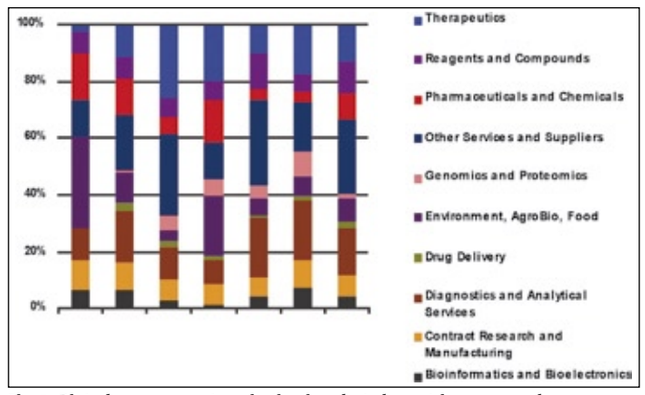

Fig. 2: Biotech company categorisation in selected countries expressed as a percentage of total national companies suggests differentiation of industry infrastructures. The strong position of therapeutic biotech is upheld in the U.S., with countries such as Canada and India exploiting key agricultural resources for green biotech. Source: www.biotechgate.com

nearly three times as much in R&D (US$21 billion vs. US$7.6 billion) and generating nearly twice the revenues (US$41.5 billion vs. 21.5 billion). Debt-financing clearly demonstrates the differing maturity of the two markets; with the U.S. accessing 10 times the amount of debt as the EU (Mitchell, 2005).

Positioning For Success

Although Europe lags behind the U.S. in terms of revenues, there are signs of a promising future. This includes maturing pipelines, increased M&A and licensing activity from the pharmaceutical giants and examples of strong financial results. Outside of the U.S., established clusters are developing sustainable pipelines. For example, Canada also has a rich and diverse array of biotech companies, with nearly 500 listed in the Canadian life sciences database (fig. 1).

With a large number of early stage companies with innovative ideas and later stage companies with promising clinical pipelines, European biotech is on the move. The Swiss, with over 300 companies in four primary clusters, are supported by a strong tradition in pharmaceuticals and academic research. Several recent high profile IPOs along with the success of biopharmaceutical companies such as Actelion consolidates Switzerland's position as an international biotech hotspot. The UK has developed great potential with numerous national clusters and rich and diverse product pipelines, and Sweden also has a disproportionately high number of biotech companies for its size.

National and Federal Interest in Biotech

National and Federal interest in Biotech intensifies, with the EU refocussing actions to promote a competitive and sustainable European knowledge based economy and investment in biotech being actively encouraged. An EU-FP6 project to gather data on the biotech scene in the new member states sheds light on early stage clusters in countries such as the Czech Republic, Hungary and Poland (www.14allbio.eu). With funding opportunities from Brussels, tech transfer incubators and national biotech associations have appeared with the aim to support and develop the biotech infrastructure and to attract financing from international investors.

Challenges

The seeding of new clusters does, however, create new challenges. In the new EU member states, competition for federal and private investment is likely to increase. Many countries with developing biotech sectors are likely to differentiate themselves from the more mature biotech clusters of established nations by exploiting key resources. For example, nations such as India have the potential to exploit vast natural resources for green biotech purposes. Information from biotechgate suggests that approximately one third of the 350 Indian companies operate in green biotech. The future: aware of the potential of biotechnology, nations are developing carefully targeted strategies to compete in the global arena.

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Bringing Up The Standard

Centres of Excellence in Norway

The Research Council of Norway (www.rcn.no) has established centres of excellence and centres for research-based innovation as a part of its efforts to strengthen the basis for applied research and development in Norway. The intention is also to bring more Norwegian researchers and research groups up to a high international standard. The centres are devoted to long-term basic research. According to the research council the main objective for the centres for research-based innovation is to enhance the capability of the business sector to innovate by focussing on long-term research based on forging close alliances between research-intensive enterprises and prominent research groups.

Thor Amlie
Director, Norwegian Bioindustry Association

Norway in brief	
Population (2005):	4.623.291
GDP (million current PPP US$, 2005):	218.1899
GDP per capita in US$:	47.206
Inflation (GDP deflator) (2005):	8.437
Expenditure on R&D in % of GDP (2004):	1.61
Number of triadic patent families (2003):	112

Source: OECD

Increased internationalisation is cited as a main priority in the government report "Commitment to Research", the current Government's political manifest as well as the Research Council's overall strategy.

The internationalisation of Norwegian research is a strategic tool for enhancing scientific merit, increasing collaboration with and funding from abroad, and equipping Norwegian researchers to generate and accumulate new knowledge that will in turn promote innovation and the development of a globally competitive, knowledge-based industrial sector in high-cost Norway.

Among the centres of excellent you will find the following related to biotechnology:

Aquaculture Protein Centre

Focus is on improved utilisation of protein resources based on knowledge about the nutritional requirements of fish:

- Increased understanding of antinutrients in protein sources, thus enabling their elimination in the long run,
- securing a supply of suitable protein sources,
- focus on vegetable and microbial sources of protein,
- using feed technology to solve problems associated with antinutrients.

Centre for Molecular Biology and Neuroscience

The Centre shall take on a leading role in elucidating the role of DNA repair and genome maintenance mechanisms in preventing neurological disease and brain ageing. The Centre will develop and apply stem cell technology and targeted repair to broaden the range of therapeutic strategies in neurological disease.

Centre For Cancer Biomedicine

Institute for Cancer Research, together with the Cancer Clinic and the Norwegian Cancer Registry, constitute the main parts of the Comprehensive Cancer Centre within the RR. The co-localisation of a strong basic research centre with the Cancer Clinic is a great advantage for translational research.

Centre for Ecological and Evolutionary Synthesis

The Centre for Ecological and Evolutionary Synthesis (CEES) focuses on how environmental, ecological and evolutionary processes are interrelated. Combining the skills of population ecologists, evolutionary biologists, geneticists and statisticians, CEES represents a unique interdisciplinary research effort. This also includes the development of sustainable strategies for the management, conservation and rehabilitation of ecosystems.

Centre for Geo-Biosphere Research: Deep Seafloor, Deep Biosphere & Roots of Life

The Geomicrobiology Group is interdisciplinary with members from Department of Earth Science and Department of Biology, and explores the influence of microorganisms on water-rock interactions such as weathering, diagenesis and hydrothermal alteration, and on global element cycling.

Centre For Immune Regulation

Rikshospitalet's research extends from clinical studies involving patients to cellular and molecular research. Emphasis is put on competence at all these levels, as it is essential in order to develop and establish new medical diagnostic procedures and treatment.

Centre for Software Components for Biomedical Flows

Simula Research Laboratory conducts basic research in the fields of communication technology, scientific computing and software engineering. The research will focus on fundamental scientific problems with a large potential for important applications in society. Simula will actively support, and create the conditions necessary for, the establishment of businesses based on the research it conducts.

Centre for the Biology of Memory

The scientific goal of the Centre is to understand the biological processes responsible for memory. The Centre brings together internationally leading neuroscientists in a geographically localised Centre associated with NTNU in Trondheim, Norway.

The centres for research-based innovation count among others:

Centre for Research-based Innovation in Aquaculture Technology

The Centre for Research-based innovation in Aquaculture Technology (CREATE) will carry out research and development to enable innovation of technology, products and solutions specifically to improve the grow-out phase of marine fish culture. This phase involves the largest problems and uncertainties concerning production, both financially and environmentally.

MabCent – Centre on Marine Bioactives and Drug Discovery

The object of MabCent is to lay the foundation for the development of high-value bioactive products by screening organisms from the arctic marine environment.

Medical Imaging Laboratory for Innovative Future Healthcare

The overall goal of MI Lab is to facilitate cost efficient health care and improved patient outcome through innovation in medical imaging, and to exploit the innovations to create industrial enterprise in Norway. The MI Lab host, NTNU, offers a unique research environment in MRI and Ultrasound, combining an internationally recognised scientific track record with a strong industrial background and a close integration between technology researchers and medical doctors in the university hospital (St. Olavs Hospital).

Statistics For Innovation

The centre's objective is to make modern statistics into a tool for development of competitive service and products in different trades: Finance, biotechnology and petroleum, and to become leading in Europe in the field of applied statistics.

Stem Cell Based Tumour Therapy – (SENIT)

The overall aim of the present project is to shift the focus in cancer research and cancer treatment from the tumour as a whole to an entity called the "tumour stem cell". Bearing in mind that with few exceptions most of our knowledge about cancer and its treatment today is based on the characteristics of the bulk of tumours rather than that small fraction of cells with stem cell character, a shift of focus may have significant consequences. It is the firm conviction of the members of this consortium that this will change the way we understand and treat cancer in the near future, and that it is within our reach to contribute to such a change by bringing together basic scientists from several disciplines, clinicians and partners in Norwegian biotech industry.

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Deep in the Heart of Europe

Biotech in the Czech Republic

The Czech Republic offers a favourable strategic position due to its location in central Europe. It also offers a stable business environment, highly educated and skilled workforce and well-developed infrastructure and technical base. With a long tradition in classic biotechnology, the biotech sector in the Czech Republic is now developing rapidly.

Biotechnology in the Czech Republic does not only mean genetically modified corn: it was Czech researchers who invented contact lenses in the 1960s and, more recently, the filtering material made out of nanofibers used in the medical industry. The most successful sectors in the Czech Republic today are the pharmaceutical industry (microbiology and immunology, molecular genetics), the food industry, industrial engineering and nanotechnology.

Czech Republic in brief	
Population (2005):	10.220.58
GDP (million current PPP US$, 2005):	210.8839
GDP per capita in US$:	20.606
Inflation (GDP deflator) (2005):	0.6832
Expenditure on R&D in % of GDP (2004):	1.27
Number of triadic patent families (2003):	14

Source: OECD

Research And Cooperation

The level of research in the Czech Republic is high and comparable to the leading international laboratories. The main academic centers are in Brno, Prague, Ceske Budejovice and Pilsen. The country's 56,777 Life Science students and 7,400 graduates every year also help to maintain the sound scientific base. The most significant biotech center in the Czech Republic is Brno, which offers very favourable conditions for the biotech industry, including universities with a total of 26 biotech research centers. A partnership of all Brno's universities with its local and regional governments has just helped to launch the Central European Institute of Technology (CEITEC or CETI) project. The aim of this project is to create a common knowledge base for all the participating researchers.

Thanks to the combination of the academic campuses, CETI project and ICRC Brno, the city could, according to experts, become one of the two largest European biotech centers. Overall investment is expected to be close to US-$ 1 billion. "This cluster can help Brno to put the Czech Republic on the European biotechnology map," says the executive director of ICRC, Tomáš Kára.

In addition, the Czech Republic hosted the first Conference on Biotechnology in Central Europe, Biotech 2006, as part of the medical exhibition HOSPIMedica, with more than 500 companies from 27 countries.

The South Moravian Innovation Center (SMIC) is also well known, providing space and resources for innovations, consultancy and help with financing. SMIC has successfully established a technological incubator for innovative start-ups. Another technological incubator and a biotechnological incubator, INBIT, will be finished by 2007. The prospects are very promising. "There could be several thousand people working in the biotech sector in Brno by the year 2013," said SMIC Director, Jiří Hudeček (Ekonom, 29 November 2006).

But Prague, the capital city, does not want to lag behind. The Czech Academy of Science has come up with its own project to establish a new biotechnological center near Prague. The location should be close to the seat of four biotech companies, which would help to create a common biotechnological cluster supporting the cooperation of the business and academic communities.

Funding Resources

Annual spending on R&D in the Czech Republic is 1.3% of GDP, with 0.55% of GDP coming from public sources. There are three governmental programs to support manufacturing industry, services supporting business and technological centers, and employment in specific areas.

Although the risks of funding start-ups are unfavourable for banks and risk capital funds, there are some cases of newly founded companies which have managed to get the resources needed. For example, the joint-stock company Bio-skin was successful in raising capital for the development of a new biological product.

In order to assist with financing, the government agency CzechInvest has come up with the idea of organizing financial platforms. These should become meeting points for small and medium enterprises and potential providers of financial support. Funding could, therefore, be attracted from alternative sources, e.g. from venture capital funds or business angels.

EU structural funds, European framework programs and the EUREKA program provide other sources for the financing of activities in the fields of science, research and innovation.

"It is difficult to predict developments in such a dynamic area, especially the level of state support. However, thanks to the existing background and tradition, biotechnology can help the Czech Republic on its way to a knowledge economy," says Jiří Heřmánek, General Manager of Genzyme for South Central Europe.

Biotechnology Business

The group of technological companies focusing on research and development in this field in the Czech Republic is growing constantly. Whereas there was not a single project in this field in 2001, last year the country attracted 12 projects. Moreover, there were another seven companies announcing investments and creating a total of 330 jobs in the first half of 2006.

"Biotechnology is a branch which is booming right now and Czech companies are definitely keeping up," said the director of the Chicago branch of Czechtrade, Ivana Ingram (Profit, 11 December 2006). This was confirmed by her experience of attending, along with some Czech companies, the world's biggest biotechnology fair, Bio 2006, which took place in Chicago. Although there was only a small group of Czech representatives, the success achieved was outstanding. As a result, there will be an official representation with more support next year.

More than 65 biotechnology companies are now active in the Czech Republic. Located mainly around research institutions, 22 companies are in Prague and 12 in south Moravia. The companies in this sector are usually small (BioTest, BioVendor, Exbio, Silroc, Micep) and often suffer from a lack of private funding and of managers trained in science. There is one biotechnological cluster, the Water Treatment Alliance, in Brno.

Significant foreign investments in this area include Baxter International, the Lonza Biotec plant in Kouřim, and the acquisitions of the plants Rakona, Lechona and Galena. Successes for Czech biotechnology companies include Bioreactor, invented by the company Lambda; the Watersaving Device, invented by Watersavers; Viread, a drug for AIDS treatment; and Hespera, a medicine for treating Hepatitis.

Summary

The future of the local biotech industry in the Czech Republic depends on the ability of entrepreneurs to capitalize on the EU funds available, on successful partnerships of business and universities, on the future level of available state support and on the success of the major projects mentioned above. Generally, we sense a positive feeling in the community. Kára said he sees the biggest potential for local initiatives to be in medicine and agriculture. Heřmánek believes that the current limitations regarding access to capital can be overcome and that there is potential for biotechnology to become an important sector in the Czech Republic.

We believe that the Czech Republic and central Europe as a whole can leverage their strategic position, proximity to major markets and high standard of education of their scientists to make a real breakthrough in the field of biotechnology.

Note:

The Czech Biotech Report, published in 2006, contains more information about the biotechnology industry in the Czech Republic. The report provides profiles of the country's biotechnological companies and an overview of the Czech Biotechnology Research Entities. The website www.gate2biotech.com is also a useful source of information.

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The French (Biotechnology) Connection

Key Milestones for 2001 – 2006

The financial, fiscal, and academic landscape for innovation and biotechnology has dramatically improved in France since 2001. France is becoming a favoured and attractive country for research, innovation and the creation and growth of innovative SMEs.

Angelita de Francisco
Secretary General, France Biotech

France in brief	
Population (2005):	60.873.48
GDP (million current PPP US$, 2005):	1.897.777
GDP per capita in US$:	30.266
Inflation (GDP deflator) (2005):	1.867
Expenditure on R&D in % of GDP (2004):	2.16
Number of triadic patent families (2003):	2.356

Source: OECD

The "Young Innovative Company" (YIC) fiscal status was conceived in France and already benefits more than 1,600 of the country's hi-tech companies (20% of which are in the biotechnology sector) and their shareholders. The status notably offers total exemptions from social security costs and corporate tax. These exemptions have been immediately reinvested by companies in R&D: 76% recruited R&D employees (an average of 1.7 FTE per company), 71% started new R&D projects, and 64% purchased new R&D equipment.

The various reforms undertaken since 2002 are now well on the way to radically changing the landscape of academic research in France, thus putting the excellence and attractiveness of France's public-sector research back at the top of the list of national priorities; 10 research foundations (including four in the healthcare field) have been created within the last two years; the 35 calls for proposals launched by France's new National Research Agency since inception have attracted 5,400 projects, with a total funding commitment of €540 million for 2005 (which comes on top of the existing budget for research institutes, universities and private-sector R&D); the new Industrial Innovation Agency is refining its scope of operation and has started selecting large-scale projects that will receive a total of €1.3 billion in funding; two world-class "competitiveness clusters" (Medicen Paris-Region and Lyon Biopole) and five national emerging clusters in the healthcare field are ready to move forward and, lastly, the European Institute of Technology in Paris (a project promoted by the Strategic Council for Innovation – SCI) should be starting operations in the near future.

2005 and 2006 witnessed the implementation of a number of fiscal reforms – undoubtedly testifying to the French government's growing interest in the role of private equity in financing company growth. The idea of activating the colossal amount of money that French citizens have invested in life insurance and feeding it into more productive investments for the French economy and its innovative SMEs is gaining ground; entrepreneurs and venture capital investors are working with the life insurers to implement the latter's commitment to invest an additional €6 billion in private equity by

▶ Continues Page 19

Tab. 1: A tough financial environment. Although Europe has now more biotech companies than the U.S., the financing gap persists. Although European companies have raised as much money via IPOs as the U.S. ones did in 2005, the U.S. stock exchange is much more dynamic for secondary offerings and overall. In 2005, VC investments still represented a high proportion (43%) of the total amount invested in the European biotechnology industry, whereas the figure for the U.S. was just 23%.

US-$ million	U.S.	Ratio	Europe
Number of companies	1415	1:1	1613
IPO	626	1:1	691
Follow-on and other offerings	40,740	26:1	1,577
venture financing	3,328	2:1	1,738
Total	14,694	3,5:1	4,006

Source: Ernst&Young, 2005

Tab. 2: The French Biotechnology industry – key figures for 2006

2006 Status	(Financial data in € million)
Companies Total (est)	350
Total Employees (est)	6,000
R&D Employees (est)	3,600
Total Equity (of which)	268
Venture Capital	163
Public Equity Offering	105
Healthcare Pipeline	
– Products in Phase I	41
– Products in Phase II	38
– Products in Phase III	7

Source: France Biotech

The figures were published in the fifth edition of the annual French Biotechnology Industry Report (presented by France Biotech).

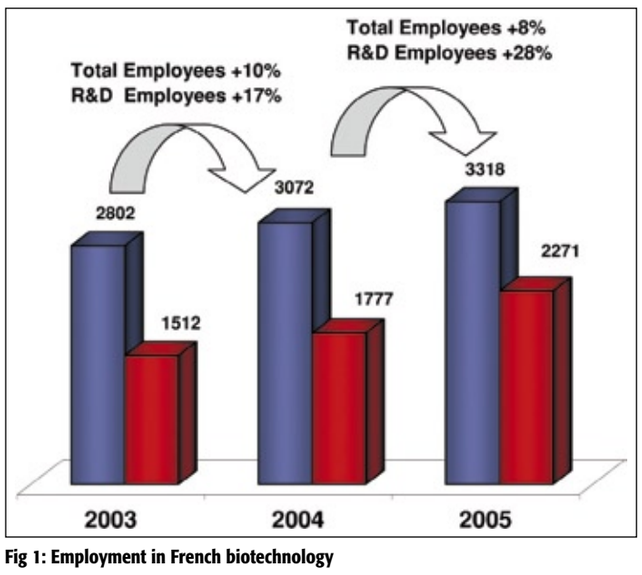

Fig 1: Employment in French biotechnology

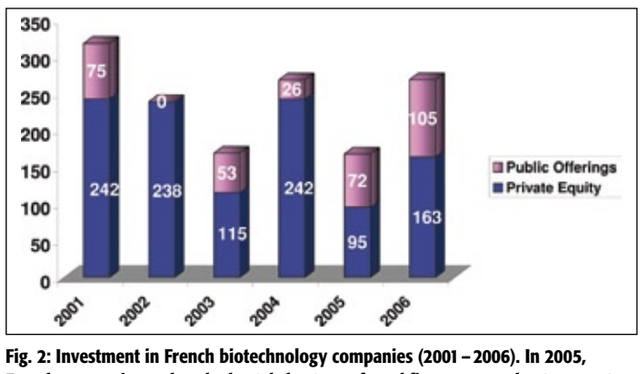

Fig. 2: Investment in French biotechnology companies (2001 – 2006). In 2005, French companies endured a brutal shortage of seed finance or early-stage venture capital, due to a bear stock market. Very good news (such as the IPOs from Innate Pharma, Genfit and Cellectis and products launches by BioAlliance and by Flamel) finally enlightened the financing climate in France in late 2006 – early 2007, with a total of €268 million having been invested in French biotech companies by the end of 2006.

A Dynamic Network

Research, Development and Production in Chemical Parks

Continued Page 1

employees on our identity as an independent service provider. We now have to breathe life into this new identity to further increase customer satisfaction.

BIS was established four years ago and is thus one of the newer industry park operators in a comparatively small market. During this time, the market has developed very rapidly and conditions have changed. What were BIS's main problems? What aspects were criticized by customers and how does the strategy project seek to address these?

K. Schäfer: First off, I feel it is important that we are perceived specifically as a chemical park operator rather than just an industry park operator. Although we have also attracted other industrial and logistics enterprises to our sites, our infrastructure – our utilities supply and especially our waste management systems – are tailored to the demanding requirements of the chemical industry. This is why our focus remains on customers and investors in that industry. Our main problem lay in uncompetitive cost structures, and therefore prices, in some areas, especially personnel-intensive services. We have responded to this with the company-specific collective agreement and numerous efficiency-enhancing measures that have greatly improved our cost structures. Moreover, as a former central service division of a major corporation, we were often too slow and inflexible. We have also greatly improved our response times through our new organizational structure.

What were the main principles you needed to consider in developing the new structure that came into effect on 1 July?

K. Schäfer: For one thing, we have realigned the business units, reducing their number from nine to five. This has streamlined interfaces and eliminated around one third of managerial positions. We have also standardized our basic processes and systems, to name just some of the many measures we have implemented. The overriding goal in all our efforts has been to become faster, leaner and more efficient.

The Bayer Chemical Park is the largest chemical park in Germany. In our last interview a year ago, you said that size was your advantage. Which new structures do you intend to implement so as to better leverage this advantage in the future?

K. Schäfer: We view our three sites in Leverkusen, Dormagen and Krefeld-Uerdingen as one chemical park, and that is reflected in our structure. This approach creates synergies and provides economies of scale, such as in the procurement and optimization of gas, electricity and coal supplies. We could not achieve the same effect at a single site. Other advantages include our integrated network of waste management facilities, where our size gives us considerable room for maneuver, and our central logistics function. We pass the resulting savings on to our customers.

The reduction from nine to five business units also involves the carve-out of Technical Services into a limited liability company which will be a wholly owned subsidiary of BIS. What were the considerations behind this decision?

K. Schäfer: The carve-out of Technical Services into a limited liability company from 1 January 2008 gives us the opportunity to adapt this organizational unit to

the needs of the maintenance market. As an independent company, Tectrion will have greater scope and flexibility, giving it a much better chance to develop. The new collective agreement forms the basis for this solution within the BIS Group, with pay structures adjusted to market levels. Both these factors are essential conditions for surviving in the prevailing competitive environment.

BIS last year posted sales that were ahead of expectations. How much of this improvement was due to the booming chemical economy and how much to the success of your restructuring?

K. Schäfer: The sound chemical economy certainly helped us to increase sales and improve earnings. However, we will not let up in our efforts. This year we are already experiencing the success of our programs. True to the principle of making hay while the sun shines, we must act now to prepare for future dips in the economy so that we can weather those periods too. We aim to become the leading chemical park operator in Northwest Europe, offering our customers the best value for money. By maintaining the cost-effectiveness of our services, we are helping our customers to compete in their respective environments and stay with us for the long term. And, of course, the fact that we are a service provider means our customers' success is our success.

The transformation into a new and leaner company makes job cuts unavoidable, and these have already been announced. To safeguard as many jobs as possible, the company-specific collective agreement has been negotiated. What are the main features of this agreement?

K. Schäfer: The new collective agreement for service companies reflects the specific nature of the environment in which we render our services as the chemical park operator. A new scale of pay grades will apply to all employees covered by the collective agreement. Employees' current monthly pay will not be reduced but will continue to be paid in full. In order to achieve the necessary savings, a certain proportion of employees' pay in uncompetitive units of the company will be offset against future pay increases. Rates of pay will be calculated mainly on the basis of a comparison with similar units of competing companies. At the same time, weekly working hours for all employees will be increased by two-and-a-half hours without any increase in pay. In two units, in view of existing overcapacities, a 35-hour week will be introduced with a proportionate reduction in pay. It is intended to eliminate about another 300 positions by 2009 in addition to the severance and pre-retirement part-time working agreements already concluded. This reduction in employment is to be achieved in a socially responsible manner through severance agreements and natural attrition. In addition, a job center will be established that will arrange retraining opportunities for employees and help them to find new jobs.

How do you intend to position BIS in the future? What identity will you give the new company and what growth strategy will you pursue?

K. Schäfer: We are competing with other chemical park operators in Northwest Europe and seeking a leadership position. We aspire to be the partner of choice for potential investors in the future. This will not be easy to achieve because investors will only go where they get reliable services at the best prices. Our customer satisfaction surveys show we are offering the right services. Therefore, it is our aim to be the cost leader among the chemical parks. The result should be reflected in a more closely integrated innovation and production network within the Chemical Park.

The Bayer Chemical Park is an example of how a number of separate sites can be managed by one operator. Given the expanding number of chemical parks and growing price pressures on the operators, do you foresee a wave of consolidation that could lead to the establishment of new, multi-site operators?

K. Schäfer: I can well imagine a wave of consolidation occurring within a few years that could eliminate some of the present chemical park operators. Perhaps new ones will appear. Whatever happens, we intend to focus fully on our chemical park and ensure its optimal development in the interests of both existing and future customers. We have already proved that, by serving as the common link between several sites, we can achieve synergies and exploit economies of scale.

BIS is a member of the Chemical Parks and Sites Group within the German Chemical Industry Association. The goal of the group is to strengthen German sites in the face of foreign competition. What new results has its work yielded so far?

K. Schäfer: In representing the interests of the German chemical park operators, the group is pursuing two goals. Firstly, it seeks to make legislators and authorities aware of the structural changes at the German chemical industry's locations. The focus is on attracting chemical companies to locate to Germany, thus strengthening the country's chemical industry and creating jobs. This means achieving the necessary improvements in the operating environment, such as reducing bureaucratic and regulatory hurdles. Second: The joint marketing activities undertaken to date have enabled the German chemical parks to more clearly position Germany as a chemical industry location of global standing. However, these activities must be intensified in order to define and explain the country's benefits as a chemical industry location. This work is ideally supplemented by close collaboration with "Invest in Germany", the site marketing organization of the Federal Republic of Germany.

What were once Bayer sites for manufacturing chemicals and pharmaceuticals are now high-tech locations for more than 60 different companies with a diversified product and technology offering. What is your vision for the chemical park of the future?

K. Schäfer: We want our chemical park to be the most attractive of its kind in Northwest Europe. I would like investors to think of us first because we are a cost leader and reliable service provider. The result should be a dynamic network of research, development and production facilities of international repute.

▶ www.bayerindustry.com

Go Southeast Asia

Foreign Investment in the Thai Chemical Industry

Since the coup and overthrow of the former Thai Prime Minister Thaksin in September 2006, Thailand has been facing with criticism. In particular the foreign press is drawing a picture of political and economic instability and stagnation while predicting strong economic growth in Malaysia, Singapore and Vietnam for the years to come. Is Thailand's bright light for foreign investment becoming a shadow behind its neighbours and Asean member states?

Susann Porzig

Photo: Pixelio

Thailand is a country that is heavily involved in exportation. The Thai government seeks to attract foreign investors by offering a growing range of investment incentives including activities which qualify for special promotions and in turn benefit the country. Foreign investors can generally participate in the Thai market. Limitations address economic sectors where Thai nationals are promoted.

The main restrictions to foreign activities on the Thai market are imposed by the Foreign Business Act B.E. 2542 (1999). Its regulations apply to every natural or juristic person qualified as "foreigner." "Foreigner" is legally defined as every natural person without Thai nationality or legal person in Thailand with 50% or more of its shares held by foreigners.

Furthermore, the Foreign Business Act includes in its Annex 3 lists with activities which are prohibited or restricted for foreigners. List No. 1 prohibits foreign activities in the media sectors and in real estate business. Lists No. 2 and No. 3 require foreigners to previously obtain a Foreign Business License. Business activities on List No. 2 comprise transportation, businesses affecting arts cultures or natural resources and mining activities. To get a Foreign Business License, foreigners need to obtain special permission. List No. 3 includes all business activities, in which Thai nationals are not yet ready to compete with foreigners and includes almost the entire service sector. Activities in manufacturing and assembly of parts are not listed and therefore do not require a Foreign Business License.

Since last year, the Foreign Business Act has been under consideration for amendment. The most significant amendment is the proposal to change the definition of "foreigner." The draft law contains a new regulation that qualifies legal persons as "foreigners" not only in case 50% or more of the shares of a Thai company are held by foreigners but also in case the majority of voting rights is in foreign hands. At present, voting rights are not considered under the Foreign Business Act when calculating the majority of Thai shareholders in a company. As a common practice, foreign invested companies issue shares with limited voting rights to its Thai shareholders. Such, they are keeping de facto management control over the company in Thailand while avoiding the strict regulations of the Foreign Business Act. As the draft was rejected by the Thai National Assembly, it is unclear whether the new government to be elected at the end of this year will continue with the draft amendment to the Foreign Business Act at all.

Most companies investing in Thailand choose the limited liability company (Thai Company Limited "Co. Ltd.") which is comparable to the German GmbH as a suitable entity form. The foundation requires at least seven "promoters". The registration fee accounts for 50 THB per registered 100,000 THB (minimum 500 THB, maximum 25,000 THB). The minimum capital is 5 THB per share. Generally, for four employees of Thai nationality one foreigner can be employed. The corporate structure consists of a board of directors, appointed by shareholder decision and of the managing director. Besides the limited liability company, suitable corporate structures include ordinary partnership (comparable to the German GbR), registered partnership (comparable to OHG), limited partnership (comparable to KG) or public limited company (comparable to AG).

To avoid the limitations under the Foreign Business Act projects can apply for investment promotion to the Thai Board of Investment (BOI). The BOI grants tax incentives and other benefits to the applicants. The respective company can be exempted from import duties on machinery, on raw and essential materials and from corporate income tax. Furthermore, the foreign invested company can obtain work permits for its foreign employees and can be permitted to own land.

Foreign investors are actively encouraged by the BOI to engage in the chemical industry in Thailand. The BOI grants investment promotion for the manufacturing of basic chemicals and of most other chemicals, fertilizer, pesticides, herbicides, petrochemicals, plastics or plastic coated products, and of body care products in Thailand provided that the production utilizes a chemical process. Among other criteria, the value added of the product in Thailand must not be less than 20% of sales revenue and the project uses a modern production process involving high technology.

Incentives are granted depending on the investment zone where the production facilities are located. The BOI has set up three different investment zones. In Zone 1 (Bangkok and surrounding areas) incentives comprise a 50% reduction of import duties on machinery, up to three years exemption of corporate income tax and one year of exemption of import duties on raw and essential materials. Zone 2 (other central areas of Thailand), incentives involve an exemption of import duties on machinery and exemption of corporate income tax for up to seven years. In Zone 3 (covering mostly remote areas within Thailand), the highest incentives are granted, being exemption of import duties on machinery and up to eight years exemption of corporate income tax.

The investor can therefore find several opportunities to expand into the Thai market. Furthermore future prospects for the time post general elections, and with the formation of a new government at the end of the year expectations are on the rise regarding political stability and a continuing of industrial growth.

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The French (Biotechnology) Connection

Key Milestones for 2001 – 2006

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2007. France Investissement (a new equity finance scheme for SMEs) was launched rapidly after announcement of its creation by President Jacques Chirac and has set itself ambitious targets. The state-owned Caisse des Dépôts investment bank ("CDC Entreprises") has doubled its commitment to the scheme (€300 million per year for six years). The scheme (in which CDC Entreprises plays a pivotal role and which combines public funds with private contributions from investors in one of its financial instruments) should enable around €3 billion in funding to be injected into innovative, high-growth SMEs.

This situation argues in favour of one of France Biotech's major proposals to the government, the "Young Innovative Listed Enterprise" fiscal status (YILE) which is aimed at stimulating the stock market and encouraging innovative SMEs to use public offerings to finance their international growth.

Designed by the SCI and by France Biotech to boost the last link in the financing chain for innovative SMEs, YILE status would be awarded to any innovative SME on request. Innovative SMEs raising more than €5 million via an IPO on a regulated or managed European market would enable their shareholders (either direct shareholders or those who invest indirectly via an investment company) to benefit from full exemption from capital gains tax, full exemption from France's net wealth tax ("ISF") and full exemption from inheritance tax for shares held directly or indirectly. In exchange for a relatively modest reduction in the French state's tax revenues (estimated at no more than around €25 million per year), YILE status would have a strong leverage effect on private investments from French and international investors and would promote the emergence of world-beaters from amongst France's high-potential SMEs. The measure would stimulate employment, high-tech research and economic growth.

However, the dynamism of the French biotechnology companies stands out in what has long been a barren environment. France's 350 biotechnology companies remain robust and productive, despite several years of financial undernourishment. Since late October/early November 2006, a series of events have marked a significant improvement of the investment climate in France.

There are a significant number of drugs under development in the French industry (testifying to the latter's high levels of productivity); with 87 products in clinical trials (of which 46 are in phase II and III), the pipeline has clearly expanded between 2004 and 2005.

The IPO window (which had been shut since 1999) reopened at the end of 2005, with five more companies having listed. The IPOs from Exonhit Therapeutics on Alternext and Bio-Alliance Pharma on Eurolist in late 2005 were encouraging signs for the French market.

The equity raised in a busy six week period boosted the total investment in French biotech from €132 million up to 20 October to €268 million by the end of 2006. Although it is difficult to identify a particular triggering factor as such, it is likely that a combination of all the various reforms achieved in the past four to five years with the intensive work and commitment from French companies has stimulated progress and warmed the investment climate and sharpened investor appetite for biotechnology.

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Chemical Industry In Poland

A Brief Outlook on Industry Development in Recent Years

The situation in Polish chemical industry in recent years has been constantly improving. Sales of manufactures of chemicals, chemical products, rubber and plastic products (24+25 NACE) in the last five years (2000 – 2006) were increasing on average 10 % year to year. The chemical industry achieved in 2006 a total value of sales of €21.1 billion, what made up 11 % of the sales value of the whole industry. Comparing the sales value of production of chemical products (24 NACE) of about €12 billion with the whole European Union production amounting to €600 billion we can see that the Polish share is still only about 1.8 %.

Wojciech Lubiewa- Wielezynski
Polish Chamber of Chemical Industries

Poland in brief	
Population (2005):	38.161.000
GDP (million current PPP US$, 2005):	530.1932
GDP per capita in US$:	13.893
Inflation (GDP deflator) (2005):	2.8493
Expenditure on R&D in % of GDP (2004):	0.58
Number of triadic patent families (2003):	11

Source: OECD

Year 2006 can be considered very good for chemical industry in Poland. Production of chemical products increased by 13 % and production of rubber and plastic goods by 16 %. The high growth of production was influenced by the development of foreign trade in chemicals and also the domestic market. Among the traditional consumers of chemical products the strong revival was noted in automotive industry (22 % growth) and furniture manufacturing (13 %). In slower but still in significant pace was growing the production of groceries (7 %) and textiles (8 %). The good prosperity in building is sustaining (17 % growth) and because of preparations to Euro 2012 the prospects for this segment are particularly positive.

Despite significant growth of sales, financial results of chemical sector were lower on a year-on-year basis. Net financial result of chemical enterprises declined 4 % in 2006 following soaring manufacturing costs.

The index of profitability in chemical industry also decreased in 2006. Comparing to previous year net profitability of production of chemical goods achieved 5.5 % and 4.4 % for production of rubber and plastic goods, what was 6.6 % and 5.3 % respectively in 2005.

In 2006 the increase was observed in production of almost all chemical products. The highest growth was noted in manufacturing of plastics:

- polyethylene – 143 %;
- polypropylene – 119 %;
- polymers of styrene – 111 %.

This significant growth is mostly due to the new plant of Basell Orlen Polyolefins which became operational at the end of 2005, capacities of which are 400 tt/a of polypropylene and 320 tt/a polyethylene.

The production of basic olefins has also improved in 2006. The growth

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Table 1: Profitability of chemical industry in 2004 – 2006
Source: Statistical bulletin GUS No. 2 – March 2007

Specification		Industry in total	Manufacturing industry	Production of chemical goods	Production of rubber and plastic goods
Gross profitability in %	2004	7.4	7.3	8.7	7.7
	2005	6.0	5.6	8.1	6.4
	2006	6.7	5.9	7.0	5.3
Nett profitability in %	2004	6.0	6.0	7.1	6.5
	2005	4.8	4.5	6.6	5.3
	2006	5.4	4.9	5.5	4.4

Table 2: Chemicals, chemical products and synthetic fibres (in tt/a)
Source: PPIC on the basis of "Production of major industrial goods" (GUS)

Products	Production (in tt/a)		
	2004	2005	2006
Sodium hydroxide in term of 96%	452	491	461
Soda ash in terms of 98%			
– light	371	371	360
– heavy	820	841	840
Ethylene	348	313	593
Propylene	246	249	413
Butadiene	46	40.9	61.3
Toluene	86.2	89.9	128
Phenol	53.0	43.5	44.5
6-hexanolactam (epsilon-caprolactam)	149	160	160
Technical nitric acid (in terms of 100%)	2117	2245	2235
Synthetic ammonia in terms of pure ingredient	2409	2519	2434
Mineral and chemical fertilisers in terms of pure ingredient			
– nitrogenous	1629	1726	1707
– phosphoric	580	591	588
– potassium	336	290	260
Polyethylene	150	152	369
Polymers of styrene, incl.:	96.3	91.6	102
– Expandable polystyrene	57.6	59.3	72.4
Polyvinyl chlorine not mixed	268	215	278
Polypropylene	138	148	324
Synthetic rubber	106.6	106.5	122.7
Pesticides	30.7	30.7	30.9
Paints, varnishes and similar coating materials , printing inks and off the shelf sicciatives	979	837	877
Soaps and surfactants	50.6	51.4	53.9
Chemical fibres incl.:	103.0	99.3	90.9
– synthetic	102.0	98.7	90.4

Chemical Industry In Poland

A Brief Outlook on Industry Development in Recent Years

Continued Page 17

in ethylene was about 90%, in propylene about 66% comparing to the year 2005. The only manufacturer of olefins in Poland is PKN Orlen SA. After modernisation of new production line "Olefiny II", the total capacities of PKN Orlen SA are: 700 tt/a of ethylene and 380 tt/a of propylene.

Year 2006 was mostly period of stagnation for inorganic chemicals producers. Unfavourable weather conditions (hot summer), lower demand and production of farmers resulted in slight decrease of fertilizers manufacturing.

New investments in BOP and PKN Orlen contributed significantly to the improvement of the situation and increase of supply on Polish olefins and polyolefins market. Assuming full utilisation of capacities by BOP in 2007, it will need production input of about 410 tt/a propylene and 330 tt/a ethylene. This proves that the demand and supply side on the olefins market remains unbalanced and many plastics producers will be made to buy olefins from abroad for a much higher price.

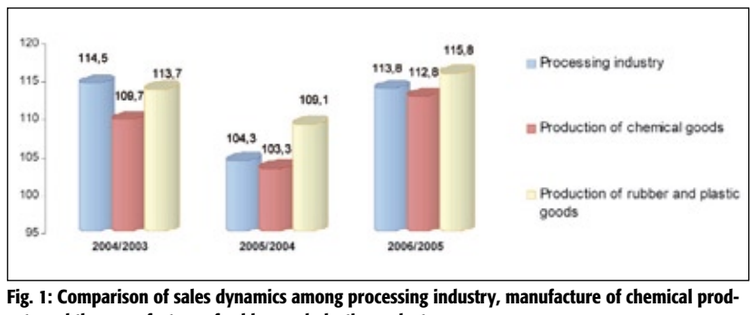

Fig. 1: Comparison of sales dynamics among processing industry, manufacture of chemical products and the manufacture of rubber and plastic products

Source: PIPC on the basis of Statistical Bulletin GUS No. 2 – March 2007

The accession of Poland to European Union resulted in significant growth of the foreign trade in chemical products (24+25 NACE). In 2005 the export increased by 26% and import by 17% comparing to 2005. The import of chemicals however remains higher than export (respectively €17.9 and €10.1 billion) which causes the high negative balance of about 7.8 billion. Traditionally the highest gap has been noticed in the pharmaceutical sector (€2.4 billion) and plastics (€1.7 billion).

In comparison with other European countries the consumption of chemicals (24 NACE) per capita is definitely low. Whereas in Germany for example this indicator approximates to about €1,500 and in Belgium €2,500 per capita, in Poland it is about €508. The demand for chemicals however is growing fast.

The structure of production is considered the main drawback of polish chemical industry. Many years of negligence and lack of funds for investments in modern plants resulted in situation that the Polish chemical industry produces insufficient volume of basic chemicals (olefins, aromatics) and plastics. The production of ethylene is much lower than average for the countries with similar macroeconomics indicators. The deficit of basic chemicals has a fundamental influence on mass polymers production and plastic processing segment which are undeveloped as well. The other problem is the transportation capabilities of basic chemicals, which are, due to few olefin pipelines, insufficient. On the other hand well developed is the inorganic sector in particular production of fertilisers. These segments however in the European Union must be regarded as mature and most forecasts predict whether insignificant growth or even decrease in demand and profitability in the next few years.

Another important issue is the privatisation and consolidation of Polish chemical industry (in particular fertilisers industry) which is currently underway. According to the new strategy of Polish Government the further privatisation of PKN Orlen SA and Lotos SA is not predicted, ZA Kędzierzyn SA will be sold to sectorial or financial investor, ZA w Tarnowie-Mościcach SA on the other hand will be made public on Warsaw Stock Exchange. Because of the difficult financial situation of these two companies (high indebtedness, outdated assets) and the urgent investment needs the fast action is advisable. Actual government does not foresee the continuation of privatisation process in case of ZA Puławy SA and ZA Police in the short term. There are some analysis being made on the possibilities of consolidation in Polish chemical industry, in which the leading company would be Ciech. In the making is also operational consolidation of PKN Orlen SA with Unipetrol (Czech Republic) and Mażeikiu Nafta (Lithuania) of which the largest petrochemical company in central and east Europe will emerge.

For the more information on Polish Chemical Industry please see our Annual Report 2006 which can be obtained from PIPC web site: www.pipc.org.pl/eng/ (Expected date of publishing June 2006).

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Intelligent Logistics in Aerosols Production

Refined Intralogistics Lead the Motip Dupli Group to Higher Efficiency

Motip Dupli has a good name in the aerosol industry. The family-led enterprise with its headquarters in Hassmersheim, Germany is celebrating its 50th anniversary. The Motip Dupli Holding manages up-to-date production plants in Hassmersheim and Schwerte in Germany, Wolvega in The Netherlands, and further 12 subsidiaries, as well as additionally 20 dealers and 13 warehouses in European countries and Turkey. In the global market of paint aerosols and touch-up pencils the group holds a share of 10%.

In the last years, the European orientated and global acting management successfully introduced centralization measures and intelligent multi-brand strategies. In its expansion strategy, the group target is on Eastern Europe, the Near East, the U.S., Brazil and India.

Logistics for Colourful Mixture

Motip Dupli has just celebrated the production of its billionth spray can at the Hassmersheim production site near Heilbronn. The enterprise started here in 1955 with the production of the first chemical rust converter. Today the paint aerosol and touch-up pencils assortment consists of over 50,000 articles and covers more than 8,000 different colours. The filling capacity of cans runs from 12 ml up to 600 ml. Under an enormous logistic expenditure approximately 64 million spray cans (for Group), 5,5 million touch-up pencils and approximately 2,000 t of putty are produced, labelled, packed, centrally stored, picked, loaded and delivered per year with an increasing tendency.

The Hassmersheim production plant possesses storage areas for various basic chemical production materials. Separate gas and solvent warehouses are furnished with large tank storages and unloading stations. Up to four gas and solvent tank trucks arrive daily.

Factories I and II share the same warehouses for raw materials and finished products. These storage areas as well as the space up to the stations of the transportation line in front of factory II are the area of operation of three OM electrical forklifts with minimum dimensions. The two E8N- and the E10N-electric forklift trucks can turn 360° with an extremely small turning radius. These narrow, compact and dynamic forklift trucks are ideal for operating in warehouses with limited space, railway wagons, and containers. In the new factory III, the manufacturing of aerosols with a unique 2-component technology has recently started. Here a warehouse with pallet shelves is settled, in which a XE20ac electrical forklift truck transfers the entire pallet handling. In this facility three gates can be used to load and unload trucks. Company owned trucks transfer the palletized units between the factories I and III.

Ring Transport for Optimal Supply

Within the plant area around factories I and II an "Express" transportation line runs in order to ensure the fast flow of raw materials into the production supply ranges. It also serves for the transportation of palletized spray cans into the supply ranges of the warehouses. Furthermore it delivers ordered goods for dispatch.

The OM electrical forklift truck XE22ac pulls three trailers and helps loading and unloading at several stations and is described as a "double worker". With a driving speed of 20 km/h it is ranked among the fastest ones of its category and is very well suited for the express transportation line at Motip Dupli plant area. A steering angle of 103° in combination with co-ordinated functions of the driving axle allows rotation around its own axle. The minimized turning circle proves to be favourable during the loading procedures at the stops. The automatic speed decrease guarantees safe driving in curves. The forklift truck proves to be adequate on uncomfortable surfaces and shows good handling characteristics. The driver's seat is comfortable with an ergonomically designed cockpit. The design has been created in cooperation with the well-known Italian design studio Zagato.

Production lines for different processes are located in factory I. The plant manager coordinates the production of aerosols that must be available in storage for customers as well as for the production of unexpected individual orders on time. An automatic roller system provides the supply of standard cans necessary for production from two trailers with a capacity of 33 pallets in each case.

Five XOP2 vertical order pickers in man up version equipped with additional fork lengths for confortable picking.

Labelling of cans is merged into the automated processes. The labels are manufactured in the company owned printing department, for different language groups, including bar codes. Appropriate labels also carry warnings in braille. Control protocol documentation carries all the data of different quality management steps and provides the necessary retracement. At the end of the manufacturing line the cans are automatically packed into different packing units, which are then closed and labelled. Afterwards XE20ac electrical forklift trucks transport the wrapped pallets into the warehouses.

Warehouse as Intralogistics Turntable

The logistics center is located close to production in factory I. The receiving area, the warehouse, the picking area, the customs department, goods delivery and the dispatching department are located on a space of over 7,000 m². The commodity warehouse management system IBM AS 400 controls all warehouse procedures in real time. Analysis and continuous control of sales figures allow quick reaction to the market tendency.

The warehouse plays a key role as an intralogistic turntable. It has a height of 8m and offers 12,000 storing positions for pallets. For more efficient intralogistics the Motip Dupli logisticians co-operate with OM service partner Artos. This partner provides professional service in the optimum usage of the OM forklift trucks fleet. All trucks are equipped with mobile scanner technology to read bar codes. The electrical rider transpallet TLR18 is used for loading and unloading trucks by means of a loading ramp also made for medium-long distance pallet transportation. With a loading capacity of 1.8 t it transports the equipped pallets between production, order picking and supply area. Here, three electrical XNAac VNA trucks for narrow spaces, in man up version, transfer the storage to the 22 aisles of the warehouse.

With the A.C technology the XNAac forklift truck increases the productivity up to 25%. Its ergonomic operator cockpit allows a direct view of the field of action of the pallet handling. The manual control elements are appropriate for easier intuitive operation. For unloading operations, the operator is assisted by "electronic-technical assistants", for the important working processes. Thanks to the optional vertical lifting pre selection it can reach five pallets levels automatically and different storage procedures can be chosen. Weight sensors make speed regulation depending on weight and lifting height possible. The truck also offers an integrated mobile personal protection system and end of aisle control. Powered by an 80-volt engine, the truck is engaged in high lift stacking and picking in very narrow spaces.

For fast and safe order picking five XOP2 vertical order pickers are continuously working in the warehouse. Because each of them has a 1.2 t loading capacity and a picking height of approximately 8 m, they are ideal for order picking of single units and pallets. The picking warehouse is equipped with two floors including roller shelves with 11,000 storing positions of different sizes for manual "picking".

CL electrical high lift stackers fill the shelves from the backside, and the goods are taken from the front side. For efficient order picking the stored material is optimized and ergonomically arranged and marked according to languages, regions and access frequency.

Ordered goods go through the packing, weighing, address marking and final control stations on a roller conveyor. A vacuum lifting system facilitates the palletizing or shifting of the cardboards in trailers or containers for the dispatching of goods by external express and freight transport companies on several lines. Altogether the delivery department expedites up to 200,000 shipments to international customer's addresses and to the external storages.

For better and efficient intralogistics at Motip Dupli as well as for the operability of OM forklift trucks fleet Artos is responsible for after sale service.

▶ www.motipdupli.com
▶ www.om-mh.com

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Andrew Witty

GlaxoSmithKline Appoints Andrew Witty CEO Designate The Board of GlaxoSmithKline has appointed Andrew Witty as CEO Designate. Witty is currently president of the division pharmaceuticals Europe and will succeed Dr Jean-Pierre Garnier following his retirement as CEO at the end of May 2008. Witty, who took over as head of European drug operations in January 2003, was picked over candidates including Chris Viehbacher, head of the company's U.S. unit, and Chief Operating Officer David Stout.

▶ www.gsk.com


Patrick M. Sullivan

Sigma-Aldrich Names New R&D VP Patrick M. Sullivan has been named vice president of Sigma-Aldrich's research biotech business unit. In this role, he will help expand Sigma-Aldrich's position through the development of new and innovative products for life science researchers. Sullivan has been involved with Sigma-Aldrich since 2005 as a member of the company's scientific advisory board, where he provided a large pharmaceutical perspective on new strategic plans and product offerings in the company's research biotech business unit.

▶ www.sigmaaldrich.com


Jürgen Schwiezer

Jürgen Schwiezer Named CEO Division Roche Diagnostics Roche has appointed Jürgen Schwiezer, currently Roche Diagnostics' president for the EMEA region (Europe, Middle East, Africa) and Latin America, to CEO Division Roche Diagnostics. Schwiezer will assume his new role on 1 January 2008. He succeeds Severin Schwan, who, as previously announced, will take over from Franz B. Humer as CEO of the Roche Group on 4 March 2008. Schwiezer will also join Roche's Corporate Executive Committee at the start of the new year, and will relocate to Group headquarters in Basel, Switzerland. **Burkhard G. Piper**, Head of Roche Diabetes Care and a member of Roche's Enlarged Corporate Executive Committee, will report directly to the Group CEO from 1 January 2008.

▶ www.roche-diagnostics.ch


Vance D. Coffman

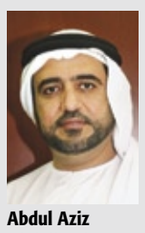
Amgen Appoints Vance D. Coffman to Board Amgen's board of directors has appointed Vance D. Coffman to the company's board. Coffman is the former chairman and chief executive officer of Lockheed Martin Corporation. The addition of Coffman brings the number of Amgen Board members to 11. Coffman was elected chairman of Lockheed in April 1998, having served as CEO and vice chairman since August 1997. Previously, he served in a number of elected corporate leadership positions including president and chief operating officer of Lockheed Martin's Space & Strategic Missile Sector. Coffman currently serves on the boards of Deere & Company and 3M Company.

▶ www.amgen.com


Peter Brandenberg

Clariant Appoints New Textile, Leather & Paper Chemicals Head Clariant has appointed Peter Brandenberg to head of the company's textile, leather & paper business division effective immediately. He will continue to serve as member of Clariant's board of management. Brandenberg, currently responsible for services and international coordination, replaces Philippe Royer, who is leaving the company and will assume the role of CEO of a leading European metals supplier.

▶ www.clariant.com


Abdul Aziz Abdulla Al Hajri

Borouge Polymers Appoints New CEO Borouge has appointed Abdul Aziz Abdulla Al Hajri as CEO Designate of Abu Dhabi Polymers, the Borouge Production Company. Borouge is a joint venture established in 1998 between Borealis, a provider of creating plastics solutions, and the Abu Dhabi National Oil Company (ADNOC). Abdul Aziz Abdulla Al Hajri brings with him 20 years of experience in production and management of production facilities projects. He most recently held the position of assistant general manager, technical, at Gasco, one of the ADNOC group of companies.

▶ www.borouge.com


Martin Kuzaj

Martin Kuzaj Joins Borealis Executive Board Borealis said it has appointed Martin Kuzaj as executive vice president for base chemicals and member of the executive board effective 1 November. He will report to CEO John Taylor and will be located in Linz, Austria. Kuzaj held several management positions within the Shell Group of companies, culminating in his appointment as the Global Business Manager for Styrene at Shell Chemicals Limited based in London. From 2000 to 2003, Martin was president and CEO of Steinbeis Packaging Group located near Munich, Germany, and since 2004, he has been an independent Senior Partner consulting in the chemical and financial industries.

▶ www.borealisgroup.com

BMS Appoints Environmental Governance Manager Bayer Materialscience (BMS) has appointed Lennie Scott as manager of environmental governance in the HSEQ Nafta organisation. Scott will be responsible for overall coordination of environmental governance in the Nafta region. Specifically, Scott will facilitate environmental work groups for air, water and solid waste, and develop the high-level environmental objectives for BMS Nafta. He will also collect and report overall environmental performance data and provide an interface among the environmental work groups and business units, HSEQ and site leadership across Nafta.

▶ www.bayermaterialscience.com

Mylan Appoints Global Chief Information Officer Mylan Laboratories has appointed Gregory L. Sheldon as global chief information officer (CIO). Sheldon brings over 25 years of experience in developing and executing information technology strategy, systems and processes in the pharmaceutical, consumer products, and business services industries. Sheldon has held numerous leadership positions, most recently as the vice president of global program delivery and engineering at Pfizer.

▶ www.mylan.com

Researchers Win EURYI Awards

Twenty young researchers, who have been selected by high-level scientific peer review, will gather in Helsinki to receive awards of as much as €1.2 million from the fourth and final Call of the European Young Investigator Awards (EURYI) scheme. These awards will allow the researchers to create teams in Europe to focus on cutting-edge science.

EURYI is designed to attract outstanding young scientists from around the world to create their own research teams at European research centres and launch potential world-leading research careers. Most awards are between €1,000,000 and €1,250,000, comparable in size to the Nobel Prize.

The average age of this year's winners is 33.1, making it the youngest group in EURYI's history. (The average age of last year's winners is 35.4.) Six of the awardees are women, making it the highest number of female winners in any year.

The list of the 2007 Awardees includes researchers who will be based in eight countries – Czech Republic, France, Germany, Netherlands, Poland, Sweden, Switzerland and Turkey. Their original ideas range from new techniques to manipulate antimatter to disease gene mapping and functional genomics in the domestic dog.

▶ www.chemie.de/news

Glenmark Wins Award

Glenmark Pharmaceuticals has won the award for Emerging Company of the Year 2007 at The Economic Times Corporate Excellence Awards. The award seeks to honour the capacity to take calculative risks, display explosive growth and discover a business model for others to emulate. The other companies in the shortlist for Emerging Company of the Year were Aban Offshore, Axis Bank and Marico.

▶ www.glenmarkpharma.com

Please send your event information to b.schuster@gitverlag.com

Reach for Manufacturers, Users and Importers BASF is hosting a one-day seminar on the new EU chemicals legislation entitled "Together ready for Reach" on 26 November in Ludwigshafen, Germany. The seminar is aimed at manufacturers, users and importers of chemical substances from all industrial sectors. BASF's experts will be providing information on all Reach-related issues ranging from stocktaking through analysis of incomplete data and pre-registration to chemical safety reports.

▶ A.C.A. Riegelsberger
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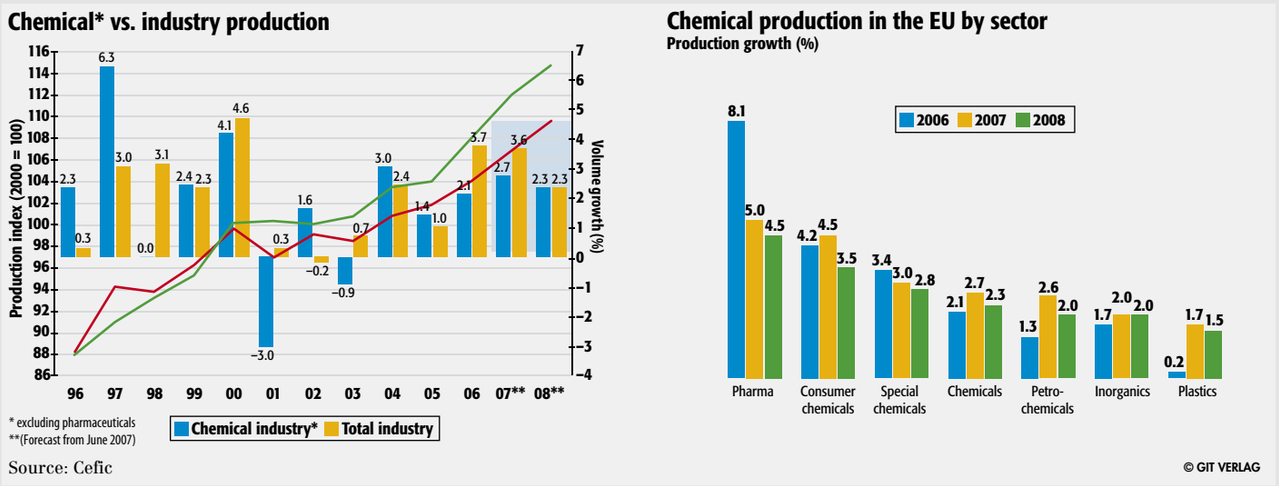
success-team@basf.com
www.basf.com/reach

Document Management in R&D and Drug Regulatory Affairs LogicaCMG, IABG-LSS/ Extedo, I4I and SDL will be conducting a workshop covering document management in R&D and drug regulatory affairs on 20 November at the Dorint Congress Hotel in Mannheim, Germany, from 8 a.m. until 6 p.m.

In the workshop, current topics related to the electronic submission of regulatory dossiers (eCTD) and product information (PIM resp. SPL) are discussed. By introducing XML as the underlying format of the new submission standards, a potential change of paradigm may occur in the creation and management of regulatory documents – moving away from document-centrism and towards a text-component-based approach.

▶ pharma-contact.de@logicacmg.com
www.logicacmg.de

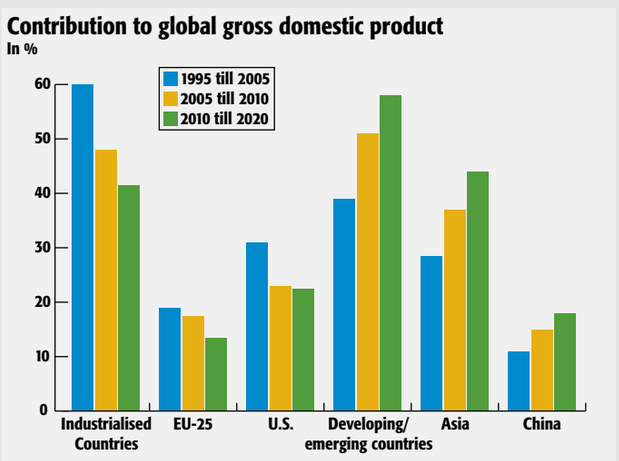
Chemical Production Levels off in 2007



Source: Cefic

According to the European Chemical Industry Council (Cefic), 2007 should see a mere 2.7 % increase in chemical production, which puts it below the average expectations for the rest of the industry (+3.8 %). The growth for the industry is expected to level out at 2.3 % in 2008. However, there are significant differences within the individual branches: While only moderate increases in plastics and inorganics are expected, Cefic expects strong growth in consumer chemicals and pharmaceuticals. Petrochemicals are performing better in 2007 than in 2006.

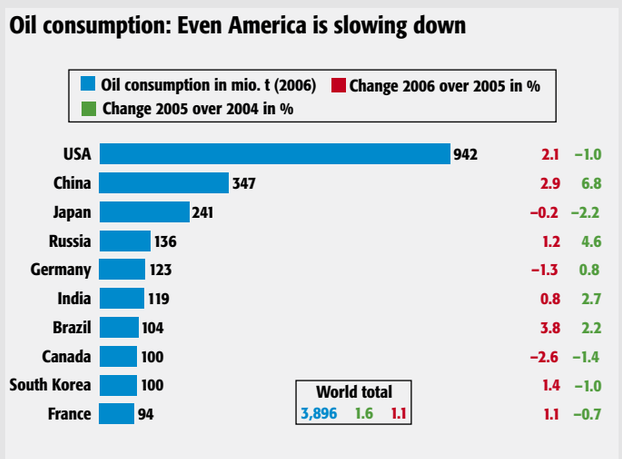
Centres of Growth in 2020



Source: Prognos, BAVC

In 2020, industrialised nations will only contribute two-fifths to the growth of the global gross domestic product. However, developing and emerging nations will contribute almost two-thirds. China's contribution will equal that of the U.S. and the European Union combined. By 2020, other Asian countries could expand their portion of the global economic performance by 10 %, pushing their contribution to 26 %.

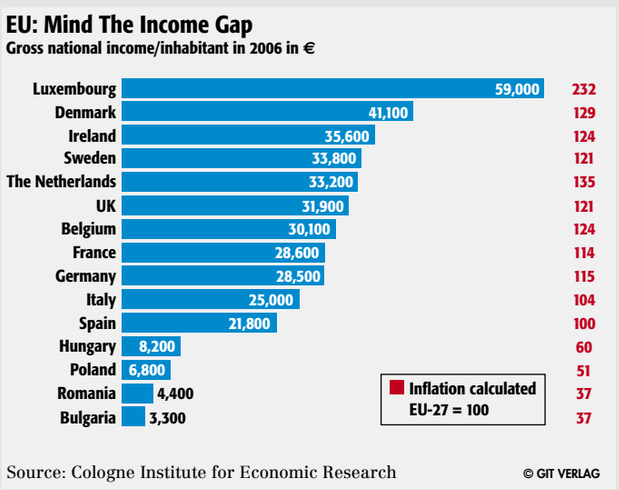
China Is Filling Up



Source: I&W

The U.S. is the world's largest user of oil; however, consumption went down 1 % in 2006, after it increased more than 2 % in 2005. However, China's appetite for oil is growing at a steady pace – its demand went up 7 % in 2006. This increase is equal to a mere fifth of Germany's oil consumption.

Life in Europe



Source: Cologne Institute for Economic Research

With €59,500 per person in 2006, the citizens of Luxembourg had by far the largest gross national income (GNI) in the EU. The country's per capita income was 18 times that of people in Bulgaria, who are at the bottom of the list with €3,300. However, the gap closes significantly when one considers that the cost of living in Luxembourg much more expensive is than in Eastern Europe. The extent and intensity of happiness is not the same through out the European Union.

Source: European Commission

People in the former EU15 countries tend to feel happier than those living in the new Member States (28 % vs. 17 % are very happy). There are three countries where over two-fifths of respondents say they are very happy: Denmark (49 %), Ireland (46 %) and the Netherlands (43 %). Conversely, in the two newest member states, Bulgaria and Romania, less than one respondent out of 10 feels very happy. In fact, in Bulgaria, over half of the interviewees say they do not feel happy (55 %).

CO_2 Emissions Rising Dramatically

In a commentary, a large team of scientists state that human-induced carbon dioxide (CO_2) emissions will alter ocean chemistry to the point where it will violate U.S. Environmental Protection Agency (EPA) Quality Criteria by mid-century if emissions are not dramatically curtailed now. This is the first recognition that atmospheric CO_2 emissions will cause ocean waters to violate EPA water quality criteria.

The paper also says that CO_2 induced "changes in ocean chemistry within the ranges predicted for the next decades and centuries present significant risks to marine biota" and that "adverse impacts on food webs and key biogeochemical process" would result. An international team of 25 leading researchers described the evidence to date regarding the effects of CO_2 emissions on the acidity of the world's oceans.

"About one-third of the CO_2 from fossil-fuel burning is absorbed by the world's oceans," said lead author Ken Caldeira from the Carnegie Institution Department of Global Ecology. "When CO_2 gas dissolves in the ocean, it makes carbonic acid, which can damage coral reefs and also hurt other calcifying organisms, such as phytoplankton and zooplankton, some of the most critical players at the bottom of the world's food chain. In sufficient concentration, the acidity can corrode shellfish shells, disrupt coral formation, and interfere with oxygen supply."

Most of the research today points to a future where, in the absence of a major effort to curtail carbon dioxide emissions, there will be double the atmospheric concentrations of CO_2 (760 ppm) by century's end. Atmospheric CO_2 concentrations could reach 500 ppm by mid-century. Pre-industrial concentrations, by comparison, were 280 ppm and today's concentration is about 380 ppm.

The acidity from CO_2 dissolved in ocean water is measured by the pH scale. Declines in pH indicate that a solution is more acidic. The EPA Criteria for Water state: "For open ocean waters where the depth is substantially greater than the euphotic zone, the pH should not be changed more than 0.2 units outside the range of naturally occurring variation ..." The euphotic zone goes to a depth of about 650 ft (200 m), where light can still reach and photosynthesis can occur.

"Atmospheric CO_2 concentrations need to remain at less than 500 ppm for the ocean pH decrease to stay within the 0.2 limit set forth by the EPA," Caldeira said. "If atmospheric CO_2 goes above 500 ppm, the surface of the entire ocean will be out of compliance with EPA pH guidelines for the open ocean. We need to start thinking about carbon dioxide as an ocean pollutant. That is, when we release carbon dioxide to the atmosphere, we are dumping industrial waste in the ocean."

Keeping atmospheric carbon dioxide concentrations below 500 ppm level would require a rapid global transition to a system of energy production and consumption that releases very little carbon dioxide to the atmosphere.

▶ http://globalecology.stanford.edu

This issue of CHEManager Europe contains inserts from Siemens and Accenture.

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