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CHEManager EUROPE

THE NEWSPAPER FOR THE CHEMICAL AND LIFE SCIENCE MARKETS

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With its remarkable 2011 results, BASF buoyed the mood in the chemical industry.

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Bayer posted a 9 % drop in fourth-quarter profit due to soaring oil-derived raw materials costs at its plastics division.

Consultancy Accenture takes a look at the European chemical industry in 2030.

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Under Construction
Bayer MaterialScience can begin construction its €150 million TDI plant in Dormagen, Germany.

Lanxess has announced plans to invest €40 million to build a CO_2 concentration unit at its Newcastle, South Africa site.

DSM plants to make further investments in its Kaohsiung polymerization facility in Taiwan.

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'A Fundamentally Different Organization'

Ashland's ISP Purchase Completes Company's Transformation

Focus On Stability – The last several years have been one of metamorphosis for the American chemical company Ashland. The company, which was founded in 1924 in Kentucky, has little resemblance to its beginnings as a refining arm of Swiss Oil. With its acquisition of the privately owned specialty chemical manufacturer International Specialty Products (ISP) in August 2011, the company said it considers its transformation into a worldwide specialty chemicals company complete. Brandi Schuster spoke with Ashland Chairman and CEO Jim O'Brien about the advantages of the company's new direction and his overall outlook for 2012.

Jim O'Brien, Ashland chairman and CEO

CHEManager Europe: Ashland has spent the past few years transforming itself into a specialty chemical company. Did the purchase of ISP last year bring this task to completion?

J. O'Brien: Yes. Ashland's transformation into a high-growth, specialty chemical company is now complete. We have reshaped the company over the past seven years, and today we are a fundamentally different organization. As a company, our focus is on higher-growth, higher-margin businesses that are more stable and far less cyclical, which should enable us to produce strong results and be less affected by volatility in the broader economy.

ISP has been integrated into Ashland's Aqualon Functional Ingredients, which now bears the name Ashland Specialty Ingredients — or ASI — and is the company's largest commercial unit. Has the purchase brought any immediate advantages to the company?

J. O'Brien: There is no question that the addition of ISP has provided us with a clear strategic advantage. First, it strengthened our position in a number of important high-growth, high-margin end markets. These include pharmaceuticals, as well as hair, skin, and oral care. The acquisition also expanded our offerings in markets such as food and beverage, energy and coatings. Second, it broadened our intellectual-property portfolio of water-soluble polymers, film-former technologies, and our global R&D and applications capabilities.

Along with this enhanced product portfolio, we have a stronger pipeline of new products and product solutions. In addition, we combined ISP's strength in acetylene- and acrylic-derived chemistries with our own strengths in cellulosics and guar. We expect this to generate increased sales as we develop new products. Third, it deepened our relationships with existing customers and enhances penetration of existing markets. With complementary product offerings, we will increasingly be seen as the partner of choice in customers' new-product-development efforts. This partnership-based approach has historically led to Ashland's highest-growth opportunities.

How did the ISP acquisition affect your fiscal 2012 Q1 results?

J. O'Brien: We're beginning to see the bottom-line benefits from our broadened business portfolio following the ISP acquisition. For example, Ashland Specialty Ingredients, which now includes the majority of ISP, had a very strong quarter with good volume growth and strong margins. On a stand-alone basis, ISP businesses contributed approximately $450 million of sales in the December 2011 quarter, a 16 % increase over ISP's sales for the prior-year quarter. ISP's adjusted EBITDA was approximately $120 million in the December 2011 quarter, roughly 50 % above the year-ago quarter. Overall, I would say that our December quarter results clearly demonstrate that we are on the right strategic track – especially when you consider that the first quarter is typically our seasonally weakest period. Our improved margins are more reflective of a specialty chemical business. This is the type of performance we expected when we acquired ISP.

> *"While raw-material costs remain a mixed bag, they should be less of a concern…"*

Is Ashland eyeing other major acquisitions that would complement its other business units?

J. O'Brien: I don't anticipate any major acquisitions or divestitures at this point. We're pleased with our current business portfolio. It's possible that there could be some smaller bolt-on acquisitions, likely focused on ASI, but nothing close to what we have done over the past several years. As I have said, our transformation is complete.

The purchase of ISP has also expanded Ashland's R&D clout. What are the most significant areas for Ashland in terms of research and innovation?

J. O'Brien: Innovation is a pillar of our growth strategy, and new products are a crucial contributor to our business success. We're expecting good growth from new products, and we are investing capital there. Our customers are increasingly looking to us to deliver innovative products and solutions, and close collaboration is one key to being able to do that. With more than 400 active patents and a team of 275 scientists, ISP has strengthened our product pipeline and enhanced our relationships with leading consumer product and multi-national pharmaceutical companies. We measure the output of innovation by tracking the percent of top-line revenue coming from new products in the last five years. We also measure the number of breakthrough innovation platforms.

In addition to Specialty Ingredients, how are Ashland's other businesses faring so far in 2012?

J. O'Brien: Ashland Performance Materials and Ashland Consumer Markets both reported improved sequential results in the first quarter on the strength of pricing and improved cost recovery. Since the end of the December quarter, Valvoline's business has begun to come back fairly strong. The combination of pricing and lower raw material costs have helped restore Consumer Markets' gross profit as a percent of sales to more normalized levels.

Ashland Water Technologies faced a more challenging demand environment, and we are focused on returning this business to more profitable levels. The Water Technologies team has a strategic plan in place to help return the business to more profitable levels through pricing and mix improvement. On a positive note, our targeted growth segments – pulp, mining, and food and beverage – outperformed the broader business. And we racked up 100 new business wins for our OnGuard monitoring and control platform.

For Ashland as a whole, overall volume trends should improve as we move through the fiscal year. While raw-material costs remain a mixed bag, they should be less of a concern, especially since Specialty Ingredients – our largest and most profitable commercial unit – has been so successful in recovering its costs. Today we operate in markets that are much less cyclical and less affected by volatility in the broader economy.

With the integration of ISP, about half of Ashland's overall revenues are expected to come from outside of North America. What regions are most significant for Ashland?

J. O'Brien: Ashland today is a truly global company, selling to customers in more than 100 countries. Nearly half of our sales come from outside the U.S., with approximately 20 % coming from fast-growing regions like Asia Pacific and Latin America. By comparison, in 2004 88 % of our sales came from North America.

How does Europe fit into Ashland's strategy?

J. O'Brien: Europe is a part of a bigger region that also includes the Middle East and Africa (EMEA). EMEA as a region is a significant portion of our company. Europe as a whole represents almost 30 % of Ashland sales, so it definitely is an important part of our business. Western Europe is a solid market with significant growth opportunities for our technologies, notably for our specialty ingredients business supplying advanced chemistries for personal care products. But our Western European operations also provide a strong foothold for us to capitalize on the surrounding growth regions, such as the Eastern European countries, and Russia. It is our long-standing experience in operating in the culturally diverse European markets and our outstanding expertise in developing innovative and market-driven products that make Europe an ideal starting ground to push growth in the surrounding markets.

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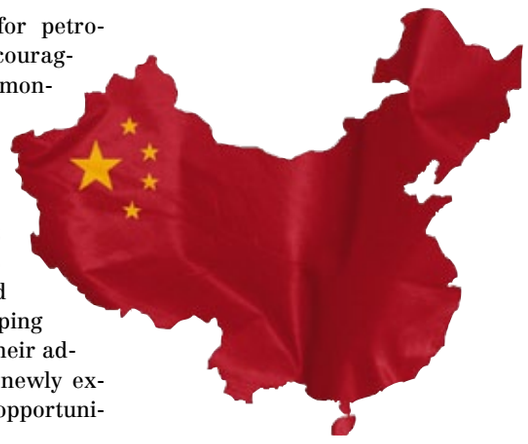
CONTENT

JVs in China Provide Lifeline for Petrochemical Industry



The booming demand for petrochemicals in China is encouraging joint ventures that demonstrate global cooperation, a new report by business intelligence expert GlobalData has found. The new report found that companies from the developed world are working with developing market China to match their advanced technology with newly expanding petrochemicals opportunities in the country.

The petrochemicals industry has undergone rapid changes in the last decade, witnessing China surpassing North America and Europe as the largest petrochemical consumer due to impressive demand from its large population. Growing Chinese demand provides joint venture opportunities for petrochemicals producers from other regions, and many planned projects in the region are established under joint ventures.

China's government has focused on industrialization and urbanization, leading to the recent development of the Chinese petrochemicals industry. China's attempts to match production capacity to the growing demand necessitates the construction of additional petrochemical plants, which provides joint venture opportunities for foreign companies, making the country a catalyst of growth within the global petrochemicals industry. It has become crucial for some major petrochemical producers to develop a presence in China, in order to benefit from significant revenue and maintain a place in the modern market.

Petrochemicals companies worldwide rely upon joint ventures to cope with changing business dynamics in the industry. While Europe and North America suffered significantly from the global economic crisis, the effects were relatively mild in China due to strong government support and resilient end-use sectors. A significant increase has therefore occurred in joint ventures during the last five years, seeing European and North American companies sharing their advanced petrochemicals production technologies with within the Asia-Pacific's lucrative developing market.

The Asia-Pacific was home to 27 new joint venture deals during 2010, representing a majority 58% share of global joint venture deals in the year – and this number is only likely to increase, the report said. ■

Swiss Economy Defies Strong Franc To Grow in Q4

Switzerland may escape a recession caused by the strong franc after data showed the economy unexpectedly grew in the fourth quarter and leading indicators painted a rosier picture, easing pressure on the central bank to do more to shield the economy.

Gross domestic product grew 0.1% in the fourth quarter compared to the previous quarter, the State Secretariat for Economics (SECO) said. It grew 1.3% from a year earlier.

Analysts in a Reuters poll had expected a contraction of 0.2% on the quarter and growth of 0.9% on the year.

"There is now a clear growth slowdown, but according to the latest figures no sign of a recession," Eric Scheidegger, the Swiss government's chief economist, told Reuters.

Since the onset of the global financial crisis, investors seeking a safe haven have been buying the franc, making Swiss exports more expensive and prompting the Swiss National Bank (SNB) to cap its value at 1.20 per euro last September, citing the risk of deflation and recession.

A recession is defined as two consecutive quarters of negative quarterly growth.

Manufacturing sector (PMI) data for February also beat expectations, indicating the economy may be bottoming out. Manufacturing activity fell only very slightly last month after shrinking for five consecutive months.

The data followed February's KOF economic barometer, which

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rose for the first time in nearly a year.

"This is a slightly favorable surprise and confirms that Switzerland is experiencing an economic turnaround, albeit not at a particularly dynamic rate," said Daniel Hartmann, senior economist Bantleon Bank.

The euro zone debt crisis has hurt the Swiss economy as the currency bloc buys more than half of Switzerland's exports.

Nevertheless, exports of goods grew 2.8% in the fourth quarter from a year earlier. Trade in chemicals and related products – such as drugs produced by Novartis and Roche – contributed strongly to that rise, the economics secretariat said. ■

DuPont Car Paint Unit Bidders Team Up

Private equity firms are teaming up to bid for chemical maker DuPont's car paint business to help shoulder the cost, which could be more than $4 billion, according to people familiar with the matter.

A bid for the unit would likely require them to write a relatively large equity check of $1.5 billion to $2 billion, as it is still expensive for buyout firms to secure debt for deals.

Teaming up would help share that cost, prompting several buyout shops to think about forming consortia, the sources said.

The business has attracted interest from as many as 10 buyout firms, they said, adding that the field would likely narrow down to three or four consortia.

Blackstone Group has already paired up with Bain Capital, while

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Clayton, Dubilier & Rice teamed up with CVC Capital, the sources said.

Apollo Global Management, TPG Capital LP, Carlyle Group, Onex and Advent International are among the others looking at the unit, the sources said.

Some strategic buyers are considering bids as well, one source said.

DuPont and the private equity firms declined to comment. ■

BASF Buys Extrusion Technology from B.C. Foam

BASF said it has purchased the PET foam business of the Italian company B.C. Foam, headquartered in Volpiano. The companies have agreed not to disclose the purchase price for the transaction. The acquisition includes production facilities and intellectual property rights, as well as a special extrusion process which enables the production of high-performance PET foams with very high densities.

PET foams are both temperature- and chemical-resistant. As well as being used in the wind energy sector, high quality PET foam boards are employed in lightweight composite materials that are particularly well-suited for applications in the automotive and aeronautics industries, as well as in shipbuilding. ■

'A Fundamentally Different Organization'

How concerned are you about the economic state of Europe?

J. O'Brien: Like many companies, we are closely monitoring the unfolding economic situation in Europe. Clearly there are some tough issues that are being sorted out, but overall we are optimistic about growth opportunities in EMEA.

In which emerging regions do you expect the most potential?

J. O'Brien: Regions such as Asia Pacific, India and Latin America offer exciting opportunities. We have a number of capital investment projects taking place. For example, our ASI plant in Nanjing, China, recently produced the first batch of redispersible powder (RDP), a new product in ASI's product portfolio which will serve the China/Asia Pacific construction market. This new production line was built inside the Ashland manufacturing campus in the Nanjing Chemical Industrial Park.

Zack's recently picked Ashland as a top-value stock, and analyst Tracey Ryniec wrote, "For investors looking for both growth and value in the chemical sector, Ashland is one company to keep on the radar." Where do you see Ashland's growth and value going over the next 12 months?

J. O'Brien: We don't provide annual earnings guidance to analysts. But clearly our first-quarter financial results were better than Wall Street expected. The consensus forecast for adjusted earnings was 99 cents per share, and Ashland reported $1.20 per share. Since then, seven analysts have raised their EPS forecasts for fiscal 2012. In fact, of the 12 analysts following Ashland, 11 currently rate us a "buy." And our shareholders have been rewarded, as Ashland has generated more than $1.2 billion in new shareholder value since completing the acquisition of ISP last August.

What are your expectations for the coming year?

J. O'Brien: We're squarely focused on driving earnings expansion through organic volume growth, margin improvement, cost efficiencies and strategic capital investment. We're off to a good start in fiscal 2012, with overall pricing efforts generating significant improvement in margins and profitability. We are on track for more consistent, predictable earnings and cash flow. As we told investors at our analyst day conference in New York in November, our goal is $1.7 billion n EBITDA by fiscal 2014 and EPS of $9.50-$10.50. We have our plans in place, we're taking the right steps and I am confident that through proper execution, we can deliver these results.

How does Ashland handle the balancing act of bringing shareholder value while also staying daring and innovative?

J. O'Brien: I believe one leads to another. If we are delivering the innovative products and service that our customers expect, we are creating real value for the company and our business will grow. If we can do that consistently and better than anyone else, then the stock price should take care of itself. Over the past 12 months — through December 2011 — Ashland stock outperformed the broader market and our peer group.

"Ashland's transformation into a high-growth, specialty chemical company is now complete," said CEO and Chairman Jim O'Brien.

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BASF Defies Gloomy Forecast

Kurt Bock
CEO, BASF

Germany's BASF, the world's largest chemical maker by sales, dismissed analyst forecasts its business would shrink this year, saying sales and earnings would rise, driven by an economic rebound in the second half led by emerging markets.

"We expect the global economy to pick up speed over the course of 2012 following a moderate start," chief executive Kurt Bock said adding his 2012 targets were ambitious.

Uncertainties over government debt in Europe and the United States would pose a risk, while "positive impetus for the chemical industry will again mainly come from the emerging markets," he added.

Growth would largely be driven by higher chemical sales volumes and by the ramp-up of oil production in Libya, where BASF's Wintershall unit had been the second-largest foreign oil firm before the civil war.

The group also predicted growth next year and – in a sign of further optimism – said it would lift its annual dividend to €2.50 per share, up from €2.20 last year and more than the €2.39 expected by analysts.

Analysts had expected a decline in sales of almost 5% this year and operating earnings to drop 8%, based on 2011 figures of €73.5 billion and €8.4 billion, respectively.

Presenting full-year results for the first time after taking over in May, CEO Bock's remarks contrasted with his predecessor Juergen Hambrecht's notoriously conservative predictions.StarMine data show that in all of the six quarters before Hambrecht stepped down, BASF beat consensus net profit forecasts.

Fourth quarter earnings before interest and tax (EBIT), adjusted for special items, fell 14% to 1.51 billion euros, matching the average analyst estimate in a Reuters poll.

Quarterly sales topped expectations.

BASF added its EBIT this year would exceed its cost of capital before interest and tax in 2012 by a good margin.

EBIT would be below last year's figures in the first half but would rise above the year-earlier comparison in the second half, it predicted.

BASF defines the cost of its capital as a combination of the interest it pays on debt and of what shareholders could reasonably expect in return on their equity capital.

Last year, the cost of capital was 11%, but the rate tends to swing between 9 and 13%.

BASF's main rivals, U.S. diversified chemicals maker Dow Chemical and DuPont struck a cautious tone about business prospects earlier this year. ■

Merck KGaA to Cut Costs, Jobs

Karl-Ludwig Kley
CEO, Merck KGaA

German drugs and chemicals group Merck KGaA announced plans for a cost-cutting program across all its businesses that may include job cuts.

"Over the next two years Merck needs to address unprecedented market shifts, increasing competition in key product areas and existing inefficiencies in its own organization to ensure the long-term success of its business model," Chief Executive Karl-Ludwig Kley said in a statement.

The maker of drugs and liquid crystals used in flat screen televisions did not say how much it aimed to save, how it planned to cut costs or which businesses would be affected.

"We have a view on what needs to be achieved, but we will consult with the employee representatives on a country-by-country basis and we will consider any pragmatic proposals," Kley said.

The move comes after Merck pulled the plug on one of its biggest pipeline drugs last year, saying U.S. drug regulators' concerns about the risks of its cladribine pill will put an end to any development or marketing plans for the multiple sclerosis (MS) treatment.

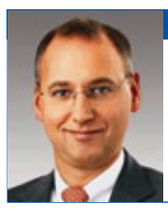
Merck has also brought in new management, hiring Lanxess's finance chief Matthias Zachert to take over as chief financial officer and Stefan Oschmann, an executive from U.S. rival Merck & Co as the new head of its drugs division.

After the first nine months of the year, Merck cut the top end of its 2011 sales forecast after sluggish demand for consumer electronics dimmed prospects for its liquid crystals business. ■

Clariant Starts Innovation Center

The cornerstone of the new €100-million Clariant Innovation Center was officially laid at the Industriepark Höchst in Frankfurt. Over the next several months, the Swiss company will build an innovative office and laboratory facility of roughly 36,000 m² on a site that will soon provide jobs for some 500 researchers. The concept for the building, which aims to offer an optimal working environment through its open architectural design, was developed by the Düsseldorf-based architectural firm of HPP. Clariant's global research activities will, in the future, be centered in Höchst, Germany. ■

Bayer Profit Takes a Hit



Werner Baumann
CFO, Bayer

Marijn Dekkers
CEO, Bayer

Bayer posted a 9% drop in fourth-quarter profit as price rises failed to offset soaring oil-derived raw materials costs at its plastics division.

Bayer's MaterialScience unit, the world's No. 1 maker of foam chemicals and transparent plastics for car lights and sports goggles, reported a 64% slump in adjusted earnings. The result was in sharp contrast to rival BASF , with whom Bayer competes in insulation foam chemicals and pesticides, which surprised investors with its bullish outlook last week.

Unlike BASF, Bayer is reliant on polycarbonates, used for instance in DVDs and for the panoramic roof in Daimler's Mercedes SLK convertible.The polycarbonates industry has seen a margins squeeze as new plants come on line, driven by Saudi Kayan Petrochemical's expansion.

"It always takes a while until a temporary imbalance is absorbed by market demand," Finance chief Werner Baumann said, adding that both the polycarbonates and foam chemicals markets were growing at a healthy 4-6% per year on average.

Baumann said the company would continue hiking prices to counter the impact of raw materials costs driven up by rising oil prices.

"In some markets and regions we're quite happy with the progress we are making. It's a mixed picture."

Bayer sees the MaterialScience unit's earnings recovering markedly in the first quarter from the previous three months, but without matching last year's level.The company said it expected a slight increase in adjusted group EBITDA this year, with an increase in sales by about 3% when adjusted for currency swings and takeovers.Bayer's fourth-quarter adjusted earnings before interest, tax, depreciation and amortization (EBITDA) fell 8.8% to €1.54 billion ($2.06 billion), below the average estimate of 1.62 billion in a Reuters poll. The company said it expects an increase in 2013 sales and adjusted earnings.

While its chemicals division struggles, Bayer, which is Germany's largest drugmaker, is pinning its hopes on new drug launches to lift earnings in coming years.

"We are still, just like in 2011, in a transition year where we are burdened with the cost of new products but without the sales benefits," Chief Executive Marijn Dekkers told a press briefing. ■

In The Year 2030

Trends and Influencers in the European Chemical Industry

Into The Future – Accenture recently embarked on a market study of chemical use in the European Union. The consultancy set out to help chemical producers better determine how to evolve their businesses over the next 20 years. In the process, Accenture evaluated 29 end markets and linked chemical usage to output forecasts for each market. Study results showed that the European chemical industry will be a large, high-value market in the year 2030.

Projected Key Markets

Accenture said it believes that projecting the necessary chemical industry structure, products and service requirements in Europe needs to begin with assessing what kinds of customers will be in Europe over the next 20 years. What will the customer base be like in 2030?

The results the study revealed that the key European chemical markets doing well today will be those that continue to thrive in the coming years. These markets will change in share to some degree by 2030, based on projected downstream industry growth, but will nevertheless remain the largest overall. By understanding market trends and the characteristics of the users of chemicals in the year 2030, chemical producers can accordingly align research and development (R&D) efforts, products and services, supply chain and manufacturing assets for today — and for the long term.

By 2030, the top seven European chemical markets and their projected chemical use are:

- Healthcare: €120 billion
- Services: €70 billion. Services such as: wholesale and retail trade for recreational products, sanitation/sewage, hotel/restaurant uses, R&D chemicals, etc.
- Agriculture: €31 billion
- Construction: €30 billion
- Motor vehicles: €28 billion
- Food and beverages: €18 billion
- Industrial equipment: €18 billion

At the opposite end of the market analysis were industries projected to be less rewarding to chemical companies, such as textiles, basic metals, refining and communications equipment. These markets are either internal resource inhibited and/or have high labor costs. However, there may be niche opportunities in some of these segments, such as biofuels or specialty textiles. Also, hydraulic fracturing chemicals used for shale gas development might find high use in gas extraction, especially in Poland, which is estimated to have the highest shale gas potential in the region.

Shift of Manufacturing to China

World chemical markets continue to evolve and shift regionally depending on the relative competitive dynamics of each segment throughout the supply chain. The shift of labor-intensive downstream industrial chemical users to low-labor cost areas, particularly China, has matured, with remaining European chemical-consuming industries now being less dependent on labor costs. This trend will continue in the coming decades as labor costs rise in China and, in addition, are offset by advances in robotics and automation.

Germany's small to mid-scale firms companies are good examples of how domestic manufacturers carefully select products and services that do not compete with China, but offer the value of reliable, well-engineered products, delivered just-in-time. With regard to talent, these companies collaborate with local universities and utilize apprentice systems. They also maintain refined supply chains by clustering around large manufacturers. It has been estimated that this constantly innovating sector of Germany is growing faster than the Chinese economy itself.

This is not to say manufacturing will cease to be built in emerging markets, but rather it will be built with less of an emphasis on export orientation. This is also not to say that all industries will return to European shores, since the entire supply chains of some industries have already relocated to emerging regions and it would be difficult to envision a transition back to developed regions (e.g., textiles and electronics assembly) in the next 20 years.

It is worth noting that China's new Five-Year Plan emphasizes moving to higher-technology industries, including new-generation information technology, high-end equipment manufacturing, advanced materials, alternative-fuel cars, energy conservation and environmental protection, alternative energy and biotechnology. Participating in these innovation-intensive areas requires some heritage of existing development, most of which is lacking in China.

Therefore, European manufacturers will have much to lend in terms of technology and market knowledge, and are likely to be courted as joint venture partners for Chinese state-owned entities focusing on these markets. European chemical companies can follow these downstream companies, as they have done for their basic manufacturing customers over the past two decades. During the next few years, European petrochemical companies are expected spend about €2.7 billion in plant expansions in China.

Positioning for 2030 Markets

Raw materials cost advantages rising in the United States through the development of unconventional gas, are not likely to occur in Europe. Also, the Middle East will maintain a low raw materials cost position.

Both factors will pressure Europe to enhance its competitive position. As in the past, when European chemical companies responded to the U.S. advantages in hydrocarbon availability and scale process technology by focusing on specialty chemicals, European producers will need to continue the focus on new products and services. They must also carefully invest in their supply chains to serve the needs of Europe's high-growth regions, while maintaining the lowest possible costs. The winning chemical companies of Europe in 2030 will have a clear vision of the future market potential and how global industrial activity will evolve. With this understanding, they will carefully align differentiated products and services according to the explicit needs of individual customers, while not diluting resources on extraneous activities. They will have a good understanding of balancing asset utilization with customer cost-to-serve considerations. Specific producer actions should include:

Emphasizing innovation: Innovation in products and services, as well as manufacturing and business processes, will enable chemical companies to serve the well-positioned EU customer industries of 2030 and to enter emerging markets by way of a technology value proposition. Accenture's customer preferences study for chemicals indicated that buyers value innovation more than achieving a better unit price when the innovation helps them reduce their own costs (by improved productivity, reduced supply chain costs, etc.).

Maintaining "know how" and attracting talent: Productivity improvements have reduced "know how" to fewer employees in the EU chemical industry — and it should be remembered that innovation comes from talent, not assets. Chemical companies need to entice technical students early on to consider careers in the chemical industry and develop training and knowledge retention systems. Other programs may include conducting school partnerships or funding public laboratories; increasing and promoting the "sustainability" contribution of the chemical industry; co-funding education programs; or tapping new talent channels, such as programs to hire science and engineering talent with disabilities or in rehabilitation—a practice successfully conducted, for example, by Swiss insurance companies and Raytheon.

"Innovation comes from talent, not assets."

Becoming the solution: As the "polluting pulp" industry turned to the "green alternative," so should the chemical industry become the ideal partner for other industries in developing sustainable solutions, from catalysis to biology to biochemistry to simple chemistry. EU chemical companies have strong technology to lend to the green alternative area.

Concentrating on large, competitive domestic customers: Many industries in larger EU economies have transitioned to "high-end" or "performance" products. These industries will require higher levels of service, support and innovation. Large-volume customers will remain valuable and should not be viewed as a fading market in the assumption that future investment needs to be made in other regions.

Exploiting Europe's backyard: Europe's internal regions have different advantages that should be harnessed through integration measures (supply chains) by 2030. Areas of low labor costs and high long-term industrial growth, such as Spain, Ireland, Czech Republic, Poland, Slovakia and other Eastern European countries, represent local opportunities. Chemical companies must offer lower costs and improved supply chains to serve these regions. Serving regions with varying industrial characteristics also means providing differentiated service levels according to the nature of each region's markets.

Focusing on "safe haven" markets: Some large markets are not subject to high levels of import competition due to structural or import cost reasons. Examples include construction, agriculture, food and some segments of rubber and plastics (e.g., pipe and packaging).

Enhancing customer competitiveness: Change supply chains to best serve customers. Leading large-scale manufacturing industries, such as automobile production, are growing in developed regions and insisting that parts suppliers manufacture "on site" for instant changes in specifications. Inter-cluster connections and connections to emerging EU regions should be improved.

Supporting policies favoring customers: Besides governmental policies directly impacting chemical manufacture, the chemical industry should investigate and support what is beneficial for domestic downstream industries.

Leveraging technology for overseas expansion: While Accenture emphasizes a needed and logical commitment to the home market, European producers should still continue to leverage current and future expertise to invest in high-growth overseas regions. In fact, this is another reason to continue investing in technology—as a vehicle for new market entry, since it is valuable to potential emerging market alliance/ joint venture partners. Careful capital expansion planning and project management will be necessary to ensure a solid, long-lasting competitive position for greenfield assets.

A Positive, Long-Term Outlook

Despite much talk and speculation that the chemical market in Europe will essentially disappear and move to China or the Middle East, our research indicates the contrary. A European chemical industry will exist in 2030, and it will largely resemble today's landscape. The chemical industry in Europe, as well as in other developed regions of the world, still holds huge potential and will continue to grow as a high-profit industry—not because producers in developed markets are getting higher sales growth for their products, but rather because customers in developed markets expect and are buying more sophisticated products that deliver higher profit margins.

To lead in tomorrow's markets, however, chemical producers will need to be vigilant in continually shaping their strategic plans, manufacturing and business processes, technologies and talent. Producers will need to be very much focused on developing high-technology products and be continually challenged in their abilities to innovate and develop creative ideas in serving customers. The good news is that European chemical companies have had a history of leading in innovation, and by continuing to advance in their sectors, they hold the potential to achieve high performance by producing products with high standards and high quality that meet customer demands in 2030.

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Solvay Sees Market Recovery After Q4 Inventory Hit

Chemicals and plastics firm Solvay said it was experiencing a broad market recovery after a sell-off of inventories depressed its fourth-quarter profit. The company said that while conditions in Europe and some market segments were uncertain it was witnessing a gradual overall recovery. Solvay said fourth-quarter recurring core profit fell 23% to €355 million ($464 million), well below the €411 million average forecast in a Reuters poll. However these results, now incorporating results from recently acquired French specialty chemicals group Rhodia, included a €50 million hit from converting inventories into cash designed as a defense against in uncertain economic times.

Solvay said that sales of vinyls fell by 10% in Europe in the fourth quarter as the sovereign debt crisis made customers cautious about holding stocks of vinyls, a plastic used in building and consumer goods.

Arab Spring Tips Tessenderlo to Surprise Q4 Loss

Belgian chemicals and plastics group Tessenderlo swung to an unexpected fourth-quarter net loss as demand for fertilizers dropped in countries hit by last year's Arab Spring revolutions and raw materials prices rose. Tessenderlo said it had experienced a sharp decline in demand for potassium sulfate fertilizers in North Africa and the Middle East and recession-hit southern Europe, and that margins came under pressure due to higher raw material costs.

The group net loss was €8.6 million ($11.2 million) compared with a forecast net profit of €1.4 million in a Reuters poll of analysts. Tessenderlo said it was cautious about 2012, which would be a year of transition. For 2012, the group has a capex budget of €150 million, against €113.6 million spent last year, with a further €200 million available for acquisitions, its chief financial officer said. Recurring operating profit for the fourth quarter was €1 million below the €7.3 million expected in the Reuters poll of four analysts.

Dow Chemical Profit, Revenue Miss; Shares Slip

Dow Chemical's quarterly profit and revenue missed Wall Street's expectations as demand for electronics, plastics and coatings plunged, causing the company to slash production and aggressively discount some products. The results sent shares of Dow down as much as 3% before they pared back losses following positive comments from executives about first-quarter demand for electronic products. Dow's operating rate, a reflection of its full capacity, fell 9 percentage points to 72% in the fourth quarter, levels not seen since the last recession.

Most of the capacity cuts came in Europe, where the continent's debt crisis has sharply affected exports and where demand for Dow's products is weakest, Chief Executive Andrew Liveris told Reuters. "We quickly intervened and started moving volume and basically gave up on price," he said. "Europe is a headwind for the whole year." The U.S. economy is "actually recovering nicely," with electronic sales improving from a weak fourth quarter, though weak construction demand is a concern, he said. The Chinese economy should continue to be strong, bolstered by large spending on manufacturing and construction, Liveris said. "I don't think we're going to have to worry about China being a less-than-6-percent growth economy for a long time," he said."

W.R. Grace Beats Street, Shares Jump

W.R. Grace posted a higher-than-expected fourth-quarter profit as the chemicals maker raised prices on catalysts and construction products, helping lift its stock to an all-time high. The results came after Grace said its reorganization plan had been approved by a district court, clearing a major hurdle for it to emerge from decade-long bankruptcy protection. Fourth-quarter earnings rose to $58.1 million, or 77 cents per share, from $44.9 million, or 60 cents per share, a year ago. Excluding bankruptcy costs and other one-time items, Grace earned 89 cents per share. By that measure, analysts expected earnings of 87 cents per share, according to Thomson Reuters I/B/E/S. Revenue rose 19% to $825.6 million.

Sales jumped 14% in the company's construction products unit, as it raised prices 4%. Sales rose 21% in the Davison unit, which makes catalysts used in refineries. That unit raised prices 24%, the company said.

Exxon Narrowly Beats, But Production Falls Short

Exxon Mobil reported quarterly earnings that narrowly beat expectations, on higher oil prices and asset sales of about $1 billion, but the company's shares dropped nearly 2% as its oil and gas production fell short of estimates. The company said fourth-quarter production dropped 9%.
While 2011 output rose 1%, this was all natural gas as the production of more lucrative liquids declined. Plus, Exxon's capital expenditures rose to a record $36.8 billion, the top of the range of its multi-year forecast, and oilfield spending generally is expected to increase further this year.

Exxon posted fourth-quarter net income of $9.4 billion, or $1.97 per share, compared with $9.25 billion, or $1.85 per share, in the year-ago period. Analysts, on average, had expected $1.96 per share, according to Thomson Reuters I/B/E/S. Analysts lowered their expectations by a few cents in the past week. The quarterly profit was Exxon's lowest for 2011.

Haltermann Reports Postive First 6 Months

Six months after Haltermann, previously a subsidiary of Dow, became an independent company, Haltermann's CEO, Dr. Uwe Nickel has expressed satisfaction with how business is developing. Dr Nickel is optimistic about the future. Since the company was spun-off in July 2011, Haltermann, which specializes in high-purity refinery chemicals, increased its revenue by 20% over the previous year. In a press release, the company said it has been able to pass on the high price increase of raw materials. Nickel is cautious about 2012 expectations. "We will only have clarity about the market development after the first three to five months of 2012," he said.

A Meeting in the Middle

Domestic, Multinational Companies Compete in China's Midmarket

Raw Materials for the Middle Class – China's rapidly expanding midlevel market appeals to both multinational companies and to domestic chemical companies, though they approach it from different directions. Much has been written about the midlevel market in China — for products from cars and health care equipment to consumer goods and household appliances.

Dr. Kai Pflug
CEO, Management Consulting – Chemicals

Dr. Bernhard Hartmann
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In the past, the Chinese market generally had two key segments. In the premium segment, global companies sold high-end products. In the much larger bottom segment, local companies provided low-quality products at low costs. Recently, however, the rising Chinese middle class and its distinct buying criteria have driven the growth of the midlevel segment. These customers focus on product safety, reliability and reasonable quality, which are getting more prominent to them as their income increases. At the same time, these buyers are still more cost-conscious than high-end customers.

Chemicals are affected because they are important starting materials for almost any kind of product, and the quality of the final product strongly depends on the quality of its chemical raw materials.

Both Sides Now

Facing intense competition and low margins in the low-end market, domestic chemical producers have started moving toward the more profitable midmarket. This particularly applies to established domestic companies that already have the expertise to provide sufficient product quality and service for this segment.

At the same time, multinational chemical companies realize that focusing exclusively on high-end chemical products limits their growth in China, so they also focus on the midmarket. Such a move is sometimes also taken as a pre-emptive attack on Chinese companies as they are expected to try to enter the high-end market eventually.

Local Versus Global

In pursuing the midmarket for chemicals, both domestic and multinational companies have specific strengths and weaknesses.

Chinese companies tend to have good access to local resources and often enjoy the support of local government. Their background in the low-end segment gives them substantial cost advantages even in the midmarket. Finding qualified staff at modest salaries is easier for them than for multinationals, as they do not require knowledge of foreign languages (most Chinese engineers have only limited knowledge of English.). Another major advantage is their broad distribution network outside of tier 1 and 2 cities, as it is already established for their low-end products. Finally, their local knowledge is superior, which allows them to better focus on core requirements of the midmarket.

However, Chinese companies frequently lack technological knowledge to reach the quality requirements of the midlevel. They tend to focus on increasing production volume rather than on improving product quality. Once they understand the quality requirements of the midmarket, they may still rely on Western specialty manufacturers to achieve key properties, undermining some of their cost advantage.

For multinational companies, attacking the midmarket means climbing down from their current high-end production. Therefore they do have sufficient technology and management expertise, and they easily understand the importance of quality in the midmarket. In addition, they own strong high-end brands that may also be utilized in the midmarket.

These multinational companies, however, lack local expertise and a sufficient distribution network outside the major cities. Their costs are generally higher than those of domestic companies, which is a much bigger issue in the price-sensitive midmarket than in the high-end segment. Finally, by entering the midmarket, they may endanger their own lucrative position in the high-end market, for example by cannibalizing their own brands.

Piercing The Midmarket

What do domestic and multinational companies need to do to successfully enter the midmarket? For multinationals, the three key issues are obtaining a cost position that allows profiting from the midmarket, achieving sufficient distribution, and protecting the high-end market.

The first one generally means localizing as many parts of the value chain as possible including production, sourcing of raw materials and reducing the number of expatriate employees.

The second, extending the distribution network, is necessary as potential midmarket customers are more regionally dispersed than the premium customers. At the same time, the lower margins in this segment make the involvement of third-party distributors less attractive.

Thirdly, protecting the profitable premium segment means that the offerings made to the high-end segment cannot just be extended to the midlevel but need to be clearly differentiated, which in effect means they need to be reduced.

An established way to achieve such a differentiation is with a second brand, such as Dow Corning's Xiameter. The offerings sold under this brand are standard silicones, and sales are online only. Technical service is non-existent. Thus cost-conscious customers can obtain standard silicones at lower prices while service-conscious premium customers are prevented from switching to the Xiameter brand. The Xiameter brand now accounts for about 30 % of silicone sales and is being extended.

Another way for a multinational company to establish a second brand in China is to acquire a domestic company. AkzoNobel did this with the acquisition of Prime, a well-established Chinese producer of auto refinish coatings for the midmarket. This approach gives AkzoNobel immediate access to the customer and distribution network of the acquired company and thus speeds up the presence in the midmarket.

In contrast, the key challenges for domestic companies to pursue the midmarket are to establish their brand, to improve product quality, and to provide technical service in line with the demands of the midmarket.

The first challenge of brand building can be done by way of traditional marketing. It may also be promoted by cooperation with established multinational companies (e.g., research cooperation, ingredient branding etc.). The second, product improvement, can partly be achieved by investment in research. In fact, several domestic companies such as Yip (in acetate solvents) and Sinorgchem (in rubber chemicals) recently established R&D centers that will in the long run improve the offerings of these companies. Additional improvement potential is in the establishment of state-of-the-art production facilities and quality control.

Finally, depending on the chemical segment, domestic companies may have to improve their technical service offerings to be successful in the midmarket.

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In pursuing the midmarket for chemicals, both domestic and multinational companies have specific strengths and weaknesses.

Localize To Lead

So who is more likely to dominate the Chinese midmarket in chemicals in the near future, multinational or domestic companies? Only companies that are highly localized will be successful in this segment as it is both price-sensitive and local in its requirements. Therefore only domestic companies or multinationals with a high degree of localization have a realistic chance of becoming the market leaders.

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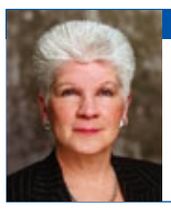
TSCA Reform

Business Strategies in Times of Political Gridlock

Change Is the Only Constant

– Most would agree that legislative reform of the U.S. Toxic Substances Control Act (TSCA) is long overdue. Few agree on what to change and how best to proceed. If you throw in the 2012 presidential election, you have gridlock. Commerce marches on, however, and with the Environmental Protection Agency reinventing TSCA implementation in innovative and effective ways, Reach setting the new global tone, and California creating a new template for sustainable consumer products, TSCA reform is at risk of becoming a distracting afterthought. Stakeholders must develop new strategies to survive and flourish in these fast-changing times.



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Prospects For TSCA Legislation

The prospects for TSCA legislation this year are dim. Congress is especially polarized on chemical management issues, which to Republicans (and even some Democrats) is code for job- and innovation-killing legislation. The Safe Chemicals Act of 2011, the primary vehicle in the first session of the 112th Congress, was introduced on April 14 by Sen. Frank Lautenberg of New Jersey, chair of the Environment and Public Works Subcommittee on Superfund, Toxics and Environmental Health. The bill generally requires chemical companies to demonstrate the safety of industrial chemicals and EPA to evaluate safety based on the best available science.

In response to strong pushback from the chemical community, Lautenberg amended the bill to improve its chances of passage. Broad chemical testing requirements were scaled back and risk-based prioritization categories were identified to enable EPA to focus limited resources on the highest-risk chemicals.

House hearings took place throughout the year, along with some stakeholder discussions. Lautenberg's subcommittee had a hearing on the legislation Nov. 17. Some Democrats, especially Sen. Ben Cardin of Maryland, were critical of the American Chemistry Council (ACC) and the lack of a concrete alternative supported by the chemical industry. Lautenberg said he intended to bring his legislation up for a committee vote "in the near future." That was the last word in 2011. As of this writing, no hearings have been scheduled, and the buzz on TSCA reform is gone.

Enhanced Chemical Management: EPA Gets Tough

Perhaps sensing TSCA reform is not imminent, the Obama administration has moved aggressively to prove enhanced chemical management is an environmental priority. Early in her tenure, EPA Administrator Lisa Jackson rolled out innovative and aggressive Chemical Action Plans to address risks EPA believes are posed by high priority chemicals of concern. Other initiatives are noteworthy. For example:

- EPA submitted several rulemakings to the Office of Management and Budget in 2011, including a proposed Significant New Use Rule (SNUR) that would add nine chemicals (dyes) to the benzidine-based chemical substances (dyes) SNUR at 40 C.F.R. Section 721.1660; create a SNUR for din-pentyl phthalate (DnPP); and create a SNUR for alkanes, C12-13, chloro. EPA also submitted a proposed SNUR concerning hexabromocyclododecane (HBCD) used in textiles.
- In February, OMB completed its review of the proposed HBCD SNUR, as well as a combined TSCA Section 4 test rule and SNUR on certain polybrominated diphenyl ethers (PBDE) submitted to OMB on Dec. 17, 2010. The PBDEs action is particularly interesting in the way it will attempt to combine SNUR requirements with a test rule, thus forcing industry to choose to abide by the SNUR or confront potentially significant testing costs if a chemical such as decabrominated diphenyl ether (decaBDE) is to remain in the market. What emerges from EPA as a proposed rule remains to be seen.
- EPA issued final revisions to its Inventory Update Reporting (IUR) Modifications Rule, now known as the Chemical Data Reporting (CDR) Rule, last year. The CDR Rule expands EPA's ability to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures listed on the TSCA Chemical Substance Inventory. This includes current information on chemical substance production volumes, manufacturing sites and how the chemical substances are used.
- EPA on Feb. 7 announced that Dover Chemical has agreed to pay a $1.4 million civil penalty for TSCA violations, settling alleged violations of TSCA premanufacture notice (PMN) obligations for the production of various short-chain chlorinated paraffins (SCCPs) (an action plan chemical).
- The president's proposed fiscal year 2013 budget would increase funds available to EPA specifically to address chemical risks.

EPA has turned up the heat and is virtually reinventing TSCA in innovative and aggressive ways to achieve enhanced chemical management. These initiatives, which are by no means exhaustive, illustrate EPA's commitment to enhanced chemical management. The commitment is real, and industry is feeling the pressure.

Role of the States and Reach

Two other components of chemical management are critically important to add to the mix: State chemical activism and Reach. Increasingly frustrated with the slow pace of federal chemical reform, state legislatures are enacting chemical-specific or product-specific measures in record numbers. Over the last several years, a growing number of states have enacted chemical- or product-specific bans or limitations on chemicals in products. This trend is not abating. According to Safer States, a coalition of state-based organizations "championing solutions to protect public health," 28 states will consider toxic chemicals legislation in 2012.

Not surprisingly, California is leading the nation and is developing its own Green Chemistry Initiative (GCI). The state intends to roll out this year its implementation of the GCI through the Safer Consumer Products Regulations, requiring that "chemicals of concern" in "consumer products of concern" are identified, and alternatives to toxic chemicals in such products are found and used. This game-changing initiative is expected to have a profound effect on the manufacture and marketing of consumer products well beyond U.S. borders.

Finally, Reach is continuing to cause seismic shifts in chemical management policies and business practices globally. The Reach Authorization List under Annex XIV now boasts 14 chemicals and continues to expand. Listing under Annex XIV has global implications and none of them good for producers and users of listed chemicals. Reach-like measures continue to propagate around the globe with no signs of abating.

Business Strategies

Commercial stakeholders must effectively navigate these changes to regulatory paradigms to survive. At the least:

Know the chemicals your business is most reliant upon, and assess their regulatory vulnerability. If they are on or likely to be placed on the Authorization List, find alternatives now.

Proactively develop measures to limit exposure and make the case for key chemicals or products that pose risks but are not easily replaced.

Make the science case for chemicals that are critically important to your business if their risk profiles are not well developed or are data-poor.

Stay abreast of chemical regulatory developments in key jurisdictions, even if you have no commercial dealings outside the United States (if a U.S. entity), or in California (if a non-U.S. entity). Reach and GCI are game-changers, and both will set the tone globally.

Support TSCA reform to ensure consumer confidence in domestic chemical management is restored, and new chemical technologies that offer enhanced sustainability are rewarded and nurtured.

Engage with all stakeholders that will influence the outcome of the chemical management debate: nongovernmental organizations, state and federal agencies, unions, employees, customers, retailers and others. Diverse perspectives contribute to a rich discussion of the issues and may lead to better solutions.

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The Latest From SOCMA

David Hurder Elected Board of Governors Chairman

David Hurder
SOCMA

The Society of Chemical Manufacturers and Affiliates (SOCMA) recently announced that David Hurder was elected as chairman of its board of governors. Hurder, vice president of the privately held specialty chemical company McGean, said the stagnant economy, coupled with the paralysis in Washington, has made chemical companies realize they need their trade association more than ever before. "Companies are turning to us to help them find new business and send the message to Washington that Congress needs to create a regulatory climate in which businesses can grow and flourish," he added. Hurder succeeds Dr. Larry Brotherton, president and CEO of Ortec, who completed a two-year term as board chairman. SOCMA members also elected the following slate of officers to the Board of Governors for one-year terms:

- Vice chairman – David DeCuir, Albemarle
- Vice chairman and treasurer – Steel Hutchinson, GFS Chemicals
- Secretary – Andy Harris, Syrgis
- Immediate past chair – Dr. Larry Brotherton, Ortec

Additionally, the following SOCMA members were elected to serve three-year terms:

- Brian Denison – Emerald Performance Materials
- Craig Huffman – Ashland
- Eric Neuffer – Cambrex
- Gene Williams – Optima Chemical Group

CFATS Implementation Improvement

As a key U.S. congressional panel examined the implementation of the nation's chemical security rules, SOCMA expressed its support for stronger federal oversight of the regulatory program while warning against overreaction in pursuit of improvements. The association said it believes more congressional oversight of the Chemical Facility Anti-Terrorism Standards (CFATS) will ensure that federal resources steered toward securing facilities against terrorism are used effectively. The Department of Homeland Security, which administers the program, recently identified several challenges in implementing the program.

Despite these hurdles, CFATS has produced positive results, such as driving facilities to reduce hazards. For example, more than 2,000 facilities since 2007 have changed processes or inventories such that they are no longer considered high-risk under CFATS. SOCMA said regulatory certainty over the program provided through long-term reauthorization by Congress will help protect against repeat problems in program implementation. Reliance on temporary extensions and one-year appropriations riders is not a responsible substitute for oversight, which is why the association said it strongly supports the 112th Congress' efforts to date to ensure such regulatory certainty.

Concerns About Chemical Manufacturing Area Sources Rule Remain

SOCMA recently said it acknowledged improvements to proposed changes to the chemical manufacturing area sources rule, but said serious concerns remain over the U.S. Environmental Protection Agency's (EPA) failure to completely exempt "synthetic minors" from a key Title V provision in the rule. The new proposal addresses several of SOCMA's concerns, such as fixing the "family of materials" concept in a way that gives chemical companies certainty regarding the reach of the rule. On others, however – especially the Title V provision – SOCMA said it is concerned about EPA's logic and the rule's cost impact. This rule has been a top environmental priority for SOCMA members over the last few years, leading SOCMA to file a petition for reconsideration of the final rule with EPA in February 2010.

EPA originally proposed to exempt all chemical manufacturing area sources from the requirement to obtain a costly Title V permit, but reversed course in the final rule. The requirement that synthetic minors get a Title V permit – which is currently stayed – would limit the speed and flexibility with which those units can respond to market opportunities.

This is a major issue for SOCMA members, whose batch and specialty businesses have diverse and rapidly changing product mixes. The agency also did not address the urgent need for an extension of the October 2012 compliance deadline, which SOCMA said it has repeatedly raised with EPA.

Given the uncertainty about what the end result of the reconsideration process would look like – including confusion about how the concept of "family of materials" would affect the scope of the rule – SOCMA said its members have been hesitant to begin investing significant sums of money to comply with a rule that is still a work in progress in many significant respects.

New Online Chemical Services Directory and Networking Tool

SOCMA recently launched its online chemical services directory and networking tool, modernizing the way chemical companies market their products and find new business. SOCMA's Marketplace and Chemical Services Directory allows users to search a vast network of chemical companies based on more than 400 different types of reactions and chemistries. Users can further narrow their search by choosing from more than 200 various capabilities and services, as well as equipment and markets served. Users can even verify a company's certification in SOCMA's ChemStewards program, as well as other performance improvement programs such as ISO and OSHAS 18001. Plans are currently under way to create a version of the directory for mobile device users.

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SOCMA is a U.S.-based trade association dedicated solely to the batch, custom and specialty chemical industry. Since 1921, SOCMA has represented a diverse membership of small, medium and large chemical companies and has now a global membership of more than 200 companies.

C3X Top Management Survey

Spotlight on Customer Value Chain Collaboration

Customer Relationships in a Tough Economy – Against the backdrop of an increasingly uncertain economic climate marked by low confidence and a widespread fear of another emerging recession, A.T. Kearney, CHEManager Europe and Westfälische Wilhelms-Universität Münster are launching the sixth edition of their top management panel, Chemical Customer Connectivity Index (C3X). Chemical companies and their customers across all regions show increased alertness and are intensively looking for ways to secure or even improve their competitive position.

The survey examines the interface between chemical companies and their customers and mirrors how they respectively perceive their interaction. This year, a special focus is set on collaboration across the entire value chain, including integration of steps and relocation of operations. The special section will also look into how market players manage the increasing volatility in chemical markets. The survey is available at www.chemanager-europe.com/C3X.

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While in 2011 the vast majority of chemical company and customer industry representatives were already convinced that the pace of growth would slow, they now find themselves confronted with an ever more challenging market environment burdened by the deepening debt crisis and stagnating economies.

"Chemical companies in Europe face mounting pressure to secure their competitive position. On the one hand they face a rather worrisome outlook for the eurozone, and the worst may still be to come. On the other hand they need to counter competition from Middle and Far Eastern players and an increasingly difficult access to raw materials. In order to stay at the top of the game, it is time for companies to more fundamentally question their business model and scrutinize their value chain. Fully exploited, industry customer value chain collaboration may in the utmost case revolutionize the way companies today operate their business," said Dr. Tobias Lewe, partner in the Chemicals and Oil Practice at A.T. Kearney.

Starting March 8, top management panel C3X is again looking at the issues that top the agenda of chemical companies and their customers. Beyond recurring questions on customer requirements and customer interface priorities, this issue will deal with the general cyclical outlook and explore how the industry manages volatility. Moreover, a special section will explore customer value chain collaboration.

This special section will address aspects such as: What types of collaboration — such as joint product or technology development with suppliers or customers — can be observed today and which may become more important? How does collaboration affect sales? It also will cover industry value chain relocation, for example to India or China, and will deal with ways to achieve the right collaboration model, for example M&A.

Joining The Panel

Until April 2, executives of chemical companies as well as executives of customer industries such as automotive, consumer goods, pharma, and pulp and paper, can join the top management panel at www.chemanager-europe.com/C3X and take part in the survey. Participants will help improve the relationship between chemical companies and their customers.

Answering the questions will take 10-15 minutes. All information will be treated in strict confidence, and only anonymous data will be included in the overall evaluation.

As an incentive, participants will receive the survey results in an exclusively edited form. The results of the survey will be published in the June issue of CHEManager Europe.

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AkzoNobel Says Passing On Cost Rises After Q4 Hit

AkzoNobel said it was now passing on to customers most of the rise in raw material prices that pulled down its fourth-quarter core profit.

The escalating cost of materials such as titanium dioxide, a paint pigment, and oil-related resins and solvents was particularly painful last year for paintmakers such as AkzoNobel and rival U.S. maker Sherwin-Williams Co.

Having now priced in most of the increases, AkzoNobel said it was seeing greater price stability in most raw materials except for titanium dioxide, which it expects to rise further.

Its decorative paints division, which accounted for €1.204 billion or about a third of quarterly sales, reported earnings before interest, tax, depreciation and amortization (EBITDA) of just €11 million, down from €63 million a year ago, and €148 million in the third quarter.

"2011 was a challenging year against the background of weaker global economic conditions and unprecedented raw material price inflation," said Hans Wijers, chief executive, who will be succeeded in April by Ton Buechner, CEO of Swiss machinery maker Sulzer.

"The absolute impact of increased raw material prices for the year

Hans Wijers
CEO, AkzoNobel

was approximately €1 billion. Despite this significant headwind, our reported pricing actions have now offset most of this, and for the year ahead we expect to see the full-year benefit of these increases," he added.

Wijers highlighted the "very, very weak" construction market in Europe and moves by Chinese authorities to calm a frothy property market as trends likely to curb demand for paints.

The company, which also makes chemicals for the pulp and paper industry, said the outlook remained uncertain because of the shaky global economic environment, with the risk of recession in Europe, delayed recovery in the United States property market, and a potential slowdown in China.

AkzoNobel said group fourth-quarter EBITDA fell 20% to €301 million, slightly below analysts' forecasts, making a net loss of 62 million euros from continuing operations, on revenue down 5% at €3.787 billion. ■

Huntsman Posts Higher Q4 Profit

Chemicals maker Huntsman fourth-quarter profit narrowly beat Wall Street's expectations, helped by higher prices for chemicals used to make insulation and paint. For the quarter, the company posted net income of $105 million, or 44 cents per share, compared with $30 million, or 12 cents per share, a year ago.

"Looking forward, we anticipate that the corporation will see an improving global economy from this point forward," Chief Executive Peter Huntsman said in a statement. "Most of our businesses have strong upside potential as we see a continued recovery in the world's economy."

Revenue rose 9% to $2.63 billion. Analysts expected $2.69 billion in revenue.

The jump in revenue was highest in the polyurethanes unit, which makes products for insulation markets, and the pigments unit, which makes titanium dioxide pigment for paint. Price hikes in both units also lifted results.

Huntsman's textile effects unit saw sales fall 8% as customers bought fewer specialty clothing materials and due to the high value of the Swiss franc.

The quarterly results are the first since Jon Huntsman Jr., the former U.S. presidential candidate, son of the company's founder and brother to the chief executive, joined the company's board of directors (see page 15). ■

BP Idles Large Washington State Refinery After Fire

BP idled production at its Cherry Point refinery in Washington state after fire broke out near the core crude oil unit of the third-largest plant on the West Coast. The sole crude distillation unit, or CDU, at the 225,000 barrel-per-day refinery was shut following the one-hour blaze in February, said BP spokesman Scott Dean. All other units have been idled in warm standby mode ready for a quick restart while the CDU is being examined and plans made for restoring production.Dean said there was no estimate available for how long it would take to restart the CDU and return production to normal.

The fire was burning residual crude oil from the vacuum unit, Dean said.The residual crude shot out of a flange in a pipe between a heater and the vacuum unit, which boosts production on the crude unit, igniting the blaze, according to a notice the refinery filed overnight with the U.S. National Response Center. ■

Air Liquide Eyes Emerging Markets Boost After Slower Q4

Benoit Potier
CEO, Air Liquide

Air Liquide said demand from emerging markets would help it to lift profits this year after growth slowed in the final quarter of 2011 due to weakness in electronics and steel markets in Western Europe.

The French company, which supplies oxygen for the steel sector, argon for welding, nitrogen for chip makers and hydrogen for refineries, said revenues in its core gas and services division rose 1.9% in the final three months of last year, the slowest growth rate since 2009.

Demand was held back by "a global customer cautiousness, visible in particular, in the steel and electronics sectors," it said.

Net profit for 2011 as a whole rose 9.4%, in line with expectations, driven by cost cutting and emerging economies, which now account for 21% of the sales of the gas and services business.

"Barring a major economic downturn, Air Liquide continues to aim for growth in net profit in 2012," Chairman and Chief Executive Benoit Potier said in a statement.

Air Liquide has focused part of its growth strategy on developing countries like China and India, where the steel, chemical and glass industries are running at full speed and need industrial gases like oxygen to make their products.

The group's 12-month portfolio of opportunities reached a record €4.2 billion at end-2011, with investment decisions totaling 2 billion last year, over 60% of which were in developing economies.

Air Liquide made a net profit of €1.54 billion in 2011, while sales rose 7.2% to 14.46 billion. Both figures were broadly in line with the Reuters poll average for net profit of €1.53 billion on sales of €14.48 billion.

Industrial gas makers are seen less vulnerable to a recession than, for instance, the chemicals industry as they have slimmed down, expanded into emerging markets and won strong order backlogs since the last downturn.

U.S. rivals have so far sent mixed signals with Praxair more than tripling its fourth-quarter profit on new contracts and higher volumes while Air Products missed analysts' estimates, hurt by weaker volumes. ■

DSM Warns Of Tough 2012, Eyes M&A

Feike Sijbesma
CEO, DSM

Dutch food and chemicals group DSM warned of a tough year ahead, particularly in Europe in the building and construction markets, and said the second half of 2012 should be stronger than the first. The company, which has a war chest of more than €2 billion, reiterated on that it is on the lookout for suitable acquisitions, particularly in the more profitable nutrition and life sciences businesses.

DSM also reported fourth-quarter earnings before interest and tax (EBIT) of €166 million, down 2%, on sales of €2.23 billion, up 7%.

An analysts poll commissioned by Reuters forecast fourth-quarter EBIT of €173 million on sales of €2.22 billion.

"We are conscious that risks to the macroeconomic global outlook remain, and that weakness in Europe and some of our end-markets, especially building and construction, persists," Feike Sijbesma, chief executive, said.

He said the company was well placed to achieve its 2013 targets. ■

Achema 2012 Preview

What's to be Gained from the Bio-Based Economy?

Something for Everybody

– What is the real truth about the "bio-based economy"? How close are developments for the renewable energy, food, animal feed, fine and bulk chemical, textile, printing, machinery manufacturing and IT industries to market introduction? These are some of the questions that will be addressed at the BioBasedWorld at ACHEMA 2012 June 18-22 in Frankfurt.

Intelligent Devices and Process Technologies

Forced to deal with commodity market volatility, non-payment risks, financial crises, new trade barriers in agricultural and food markets and regulatory conflicts relating to genetically modified plants, companies are noticeably reluctant to abandon reliable sources of raw materials, replace equipment that works reliably, modify production processes to handle new materials or build new systems from scratch based on new technologies.

Investment – yes, technology revolution – no; me-too products – no, something new – yes, say the decision makers.

As a result, the preference is for components, modules, process solutions and systems that can accommodate different raw materials to produce the same end product and which are suitable for small test series. The expectations of what biotechnology should deliver are high:

- Zero waste, utilization of byproducts
- Ability to process heterogeneous raw materials and input chemicals to produce the same end products
- Changeover during production of multiple products without interruption
- Utilization of existing infrastructure

There have been few biotech solutions outside of the pharmaceutical industry that have proven to be affordable and have met expectations on a large scale. Why? The products are generally precursors and intermediates made of biological material that is subject to variation. They are seldom of the "off-the-shelf" variety, and it takes additional expertise to produce a saleable (end) product. In addition, biotech process systems are also not plug and play at this stage. Customer-specific modifications are always necessary, and customers must have the confidence that after-sales service will provide dependable support and will not increase prices after the fact.

Multiple-Technology Platforms

Combination of multiple technology platforms has gained momentum in recent years. Autonomous machine control, intelligent measurement and control technology, modular extraction, separation and cooling systems and miniaturized fractionation and synthesis machines bring biotech applications to the point where they are suitable for industrial use. Non-proprietary interfaces that provide connectivity to customer systems are becoming more common on automated lab equipment. Among other things, this gives users greater freedom of choice in the selection of reagents. Sensors with autoclavable electrodes which support mobile data acquisition for specific process parameters are now available for fermenters. New differential pH sensors in combination with specialized buffer gels (e.g. maleic acid and diallylamine) eliminate the disadvantages of standard reference, opening the door to real time pH detection under variable temperature conditions.

Rapid advances are also being made in the development of separators that facilitate the lucrative (and climate friendly) utilization of by-products. In the autumn, a large algae production plant went into operation in China. Scrubbed flue gas from a coal-fired power station is fed to the algae. The algae plant is capable of capturing up to 2,500 kg of CO_2 per day in the form of biomass. The algae absorb the carbon dioxide and metabolize it into substances such as fat and carbohydrates. Special separators harvest the algae and concentrate the biomass. The process generates additional value-add from gas emissions through the sale of valuable protein to the animal feed industry. In this instance and in many others, the combination of mechanical engineering, electronics, IT and biotechnology makes it possible to optimize existing production processes and generate profitable by-products.

The plant engineering industry is also exploiting new opportunities. So far, output cost optimization and modernization of old production assets play a bigger role than the construction of new biorefineries. Bioethanol and vegetable oil added to fossil fuel are only the beginning in the petrochemical industry. They are mostly still made from agricultural crops. There is a public consensus however that competition with food production must be avoided. Next-generation biofuels will be made from wood, straw, food residue and plant or animal industrial waste rather than food products. A number of pilot plants are already in operation.

The chemical industry is also getting ready to produce platform chemicals such as glycerin or starch from agricultural feedstock. To do that, it will need components, equipment and process systems that offer production flexibility and are designed to adapt to varying types of feedstock without putting overall operations at risk. Reducing the logistics costs (which can be considerable) is another deliverable for plant engineering. Oil and biomass will be used to fire power stations in either parallel or alternating mode. Supplemental combustion or gasification of vegetable oil or ethanol at the site of an existing oil refinery or power station is an approach that is still in its infancy. Braskem is showing the way. Parallel production of up to 200,000 MT of ethylene and polyethylene resin from cane sugar ethanol started up in the autumn of 2010. The production line was built right next to an existing petrochemical plant, and it uses the plant's polymerization infrastructure.

Organic hydrocarbons are still cheaper on the world market than bio-based materials. However, the price differential compared to renewables is narrowing.

Impetus in the Chemical Analysis Market

Whatever role biotechnology may play, decentralization of the value-added chain is a fact of life in the power generation, food, animal feed, fine chemicals and clean technologies sector. Processing plants are moving closer to their raw material suppliers and customers. Global players now operate similar to regional suppliers by creating specific product lines. Regional suppliers on the other hand buy the same ingredients, additives and production assets as the large corporations. As a result, value-add is becoming increasingly complex, and companies have to manage greater procurement and delivery risks.

The deck is being reshuffled, cutting across existing supply chains and national and industry boundaries. In a world of globalized economic relationships, we will be seeing the inexorable advance of biotech methodologies and process techniques which are cost-efficient and create products that offer greater value-add. Of course the market does not simply soak up innovation. Technology suppliers should not assume that what they have to offer is self-explanatory. They have to work to acquire and retain customers. Potential customers on the other hand who expect the sales force to show up at the door with innovation in hand have already lost the battle.

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EU Chemicals Sector Posts Full-Year 1.1% Growth In 2011

EU chemicals production recorded a 1.1% increase in 2011 compared to 2010, according to the latest Cefic Chemicals Trends Report. The monthly data for December 2011 showed a 1.8% decline compared with December 2010, a significant drop in EU chemicals industry production after an impressive performance by the sector during the first quarter of 2011.

The level of EU chemicals production in December 2011 was 4.3% below its 2007 peak. Data also show a year-on-year price increase in December, up 6.2% for the month against the comparable period in 2010 and led again by an overall price increase in basic inorganics. The EU chemicals sector net trade surplus reached €39.3 billion through November, off by €2.6 billion when compared with the same 11-month period in 2010.

The EU production index for December 2011 was down 1.8% compared with December 2010. Consumer chemicals production climbed, however, by 6.4% on a year-on-year basis in December 2011. Polymers and petrochemicals production were down by 7.5% and 6.7% respectively during the month, while specialty chemicals production and basic inorganics fell by 1.5% each.

EU Trade Surplus Reaches €39.3 Billion through November

The EU net trade surplus with the rest of Europe in the first 11 months of 2011 reached €12.1 billion, more than 30% of the overall trade surplus for the EU chemicals sector. The overall EU chemicals net trade surplus reached €39.3 billion from January to November 2011, down €2.6 billion compared with the comparable period in 2010. The EU-27 posted a €10.4 billion net trade surplus with the NAFTA region during the 11-month period and a €5.5 billion surplus with Asia, excluding Japan and China. The European Union ran a €2.4 billion net trade deficit for chemicals with China during the same period. Prices for basic organics, continue climb Basic inorganics prices climbed 10.7% year-on-year during December. Prices for petrochemicals increased by 4.9%, while consumer chemicals prices continued to increase modestly, up 2.8% year-on-year in December.

November 2011 Chemicals Sales up over 2010

November 2011 chemicals sales were 1.3% higher compared with November the year prior. For the first eleven months of 2011, total sales were 11.5% higher as compared to the same period in 2010. The overall sales level continues to surpass the pre-crisis peak reached in the beginning of 2008. Sales values during the period from January to November 2011 were 4.1% higher compared to the same period in 2008. ■

PORTFOLIO

BASF Buys Merck's Electrolytes Business

BASF announced its third acquisition in battery technology in two months, saying it would buy Merck KGaA's electrolytes business for high-performance batteries to tap into growing demand for electric vehicles.

"This acquisition enhances the expertise we offer to automotive and battery manufacturers around the world," BASF board member Andreas Kreimeyer said in a statement.

The two companies did not say how much BASF was paying in the deal, which includes technologies and products Merck developed to boost the performance of batteries, such as additives for electrolytes used to make lithium ion batteries.Merck said it is selling the business because it has little in common with its other chemicals activities and meets only a fraction of the needs of customers who make batteries.

BASF late last year announced plans to pool all of its battery activities geared towards electromobility into a new business unit, joining the race for next generation lithium-ion battery cells for electric cars.

Since then, it has announced plans to buy U.S.-based nickel-metal hydride battery technology specialist Ovonic Battery as well as a stake in lithium-sulfur battery maker Sion Power.

DuPont Starts Unit Auction, May Fetch $4 Billion

Chemical maker DuPont has started the auction of its car paint business, which could bring in more than $4 billion and has drawn early interest from a number of private equity firms, according to sources familiar with the matter.

DuPont's adviser on the deal, Credit Suisse Group, has sent out financial materials related to the unit to potentially interested parties, the sources said.

Reuters and other news organizations reported in October that DuPont was considering the sale of the unit, and several buyout firms have been preparing for the auction since late last year. The unit could also attract interest from other chemical companies.

Private equity firms find the unit especially attractive as they believe costs can easily be cut to make it more profitable, the sources said (see also page 2).

Mexichem to Buy Wavin for $703 Million

Mexican plastic pipe maker Mexichem will buy Dutch peer Wavin for €531 million after raising its offer a third time, gaining a foothold in Europe where it plans to expand through more deals. Mexichem, a chemicals group based near Mexico City, will pay €10.50 per Wavin share, up from a previous approach at €10. Wavin listed in Amsterdam in 2006 at €11.

Mexichem has grown through takeovers to become a leading plastic pipe maker in Latin America. Acquiring Wavin will make it the world's biggest with annual sales of €4 billion. The company will see its annual earnings before interest, taxes, depreciation and amortization (EBITDA) rise 15% on the deal, an executive told Reuters.

It expects unspecified synergies from Wavin, Europe's biggest plastic pipe maker which competes with Finnish group Uponor as well as Swiss companies Georg Fischer and Geberit.

Wavin, faced with a stagnating European construction market and margin pressure, said it planned to cut 150 jobs to tackle challenging markets in countries including Britain, France, Italy, the Netherlands.

Brachem Raises $769 Million from Sale of Brenntag Shares

Luxembourg-based investment firm Brachem Acquisition said it has raised €577.5 million from the sale of shares in German chemicals distributor Brenntag. The size of the offering was increased to 7 million shares, from 5 million due to investor interest – making it equivalent to 13.6% of the company's share capital.

Brachem, which holds shares in Brenntag for private equity groups BC Partners and Bain Capital as well as Goldman Sachs, said the shares were placed at €82.50.

Brachem said it had cut its stake in Brenntag to 13.7% through the sale. BC Partners, the largest shareholder of the three, last sold down its stake in Brenntag in January when it agreed to a 90-day lock-up on the further sale of any shares. However, a source close to the deal said this had been waived due to high demand for the stock.

ABB to Buy Thomas & Betts for $3.9 Billion in U.S. Push

Swiss engineering group ABB has agreed to buy U.S. electrical components maker Thomas & Betts for $3.9 billion to ramp up its presence in the world's largest market for low-voltage products. Under the terms of the deal, ABB will pay $72 per share in cash for the company, which supplies the construction, communications and power industries with connectors for cables, steel masts and heating and ventilation products.

Chief Executive Joe Hogan said the acquisition would open up a potential U.S. market for low-voltage products of about $24 billion for ABB's most profitable product range. The deal would bring ABB's expenditure on companies in the United States to about $9 billion since Hogan took the helm in 2008, as he seeks to plug gaps in the group's portfolio.

"Eighty percent of the revenue of our low-voltage business is contained between China and Europe, and the U.S. has the world's largest, so our primary intent here is to make sure we penetrate that market," Hogan told a conference call.

Air Products Acquires DuPont's Stake in JV

Air Products has entered into a definitive agreement to acquire all of DuPont's interest in DuPont Air Products NanoMaterials, the two companies' 50/50 joint venture serving the global semiconductor and wafer polishing industries. Terms of the agreement were not disclosed.

DA NanoMaterials manufactures chemical mechanical planarization (CMP) slurries for the semiconductor and wafer polishing industries. Headquartered in Tempe, Ariz., with regional headquarters in Hsinchu County, Taiwan, the company operates state-of-the-art applications and formulation laboratories in Tempe and Taiwan. DA NanoMaterials has established a portfolio of colloidal silica-based products for copper CMP, tungsten CMP and wafer polishing applications.

Platform Chemicals

Insights on the bio-production of light olefins.

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Building Blocks

Is CO_2 a new carbon source for the chemical industry?

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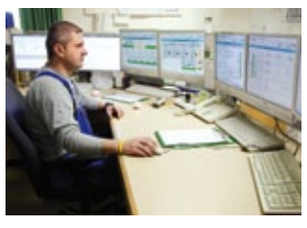

Production

Harmonizing operations through upgrades at Wacker

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The Changing Face of the Planet

The Role of Bioplastics, Bioenergy and Biofuels in Global Land Use

Competing for Land – The way we use our land is changing. As the world's population increases and greater pressure is put on global resources, we need to think carefully about how we manage the ground beneath our feet and what changes to land use will mean to businesses.

Dr. John Williams
head of materials, National Centre for Biorenewable Energy

Dr. Adrian Higson
head of biorefining, National Centre for Biorenewable Energy

Biorenewables are renewable sources of fuel, energy and materials made from biomass. Coal and oil are just biomass that has undergone a physical and chemical change under extreme pressure and temperature, but biomass has one crucial property that makes it unique. It takes just a few years to make instead of thousands or even millions of years.

It also has a key advantage over other renewables. Biomass fixes carbon into something tangible, that can be stored and moved, and will always be available even if the sun isn't shining or the wind isn't blowing. As a source of energy we can use it to meet peak demand in national electricity grids. It is also the only low carbon liquid transport fuel. And as a source of chemicals we can use it to replace traditional plastics.

Drivers For Biomass

Consumers are increasingly familiar with words such as "green," "sustainable" and "environmentally friendly," and this is affecting buying decisions. Consequently brands are looking to demonstrate their green credentials to give them a marketplace advantage. But brands are also wary of the role non-governmental organizations have on consumer choices, as demonstrated by the Greenpeace campaign against Nestle's use of unsustainable palm oil, which resulted in changes to the company's procurement policy.

The role of the consumer in fuel and energy markets is slightly different than the plastics industry in that consumers are less willing to directly bear the higher price of renewables. Instead, more environmentally friendly fuel and energy alternatives are mandated through government targets, and strict sustainability criteria ensure biomass is responsibly sourced.

Growing Biomass

Conventional sources of biomass require land, and the amount we are predicted to need for bioplastics, biofuels and bioenergy could be huge. On paper we have plenty of room to grow enough crops to meet all our short-term needs. According to the Food and Agriculture Organization (FAO) and the Organization for Economic Co-operation and Development (OECD), we could more than double the amount of land in crop production around the globe, from 1,400 million to more than 3,300 million hectares.

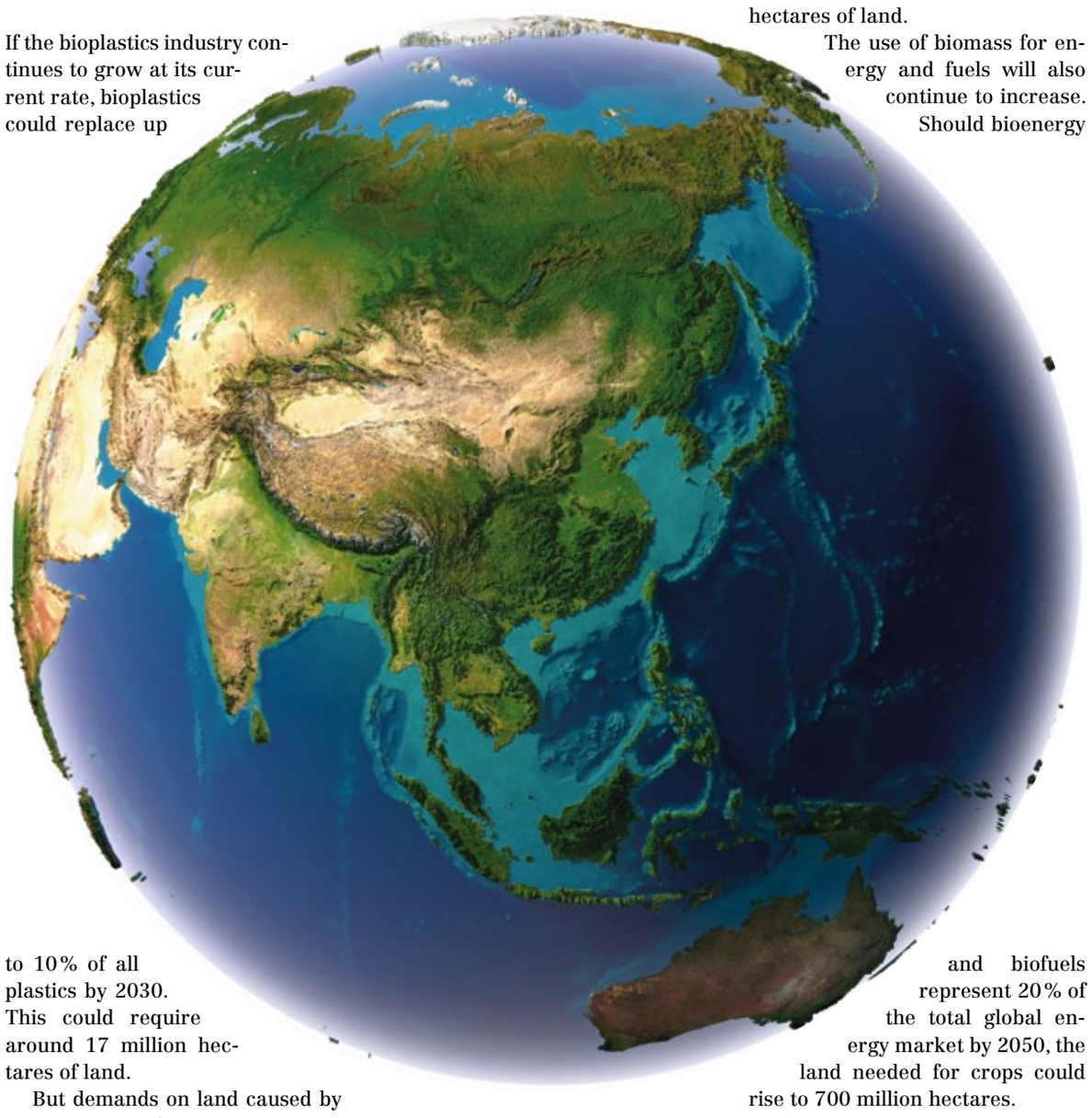
However, using this land may not be sustainable. Population growth, protection of food security and changing diets will increase the competition for land. We also need to protect our forests, areas of high biodiversity and ecosystem services, which leaves between 250 and 800 million hectares of land available for bioplastic, bioenergy and biofuel crops.

But precisely how much biomass do we need, and what could this mean for land use? Much depends on how markets and technologies develop. In addition, just how quickly can we continue toward an economy based on integrated biorefineries, where food, feed and fuel are co-produced efficiently?

These are questions that cannot wait. The decisions we make today could determine the success of the industry. Evidence suggests we have already reached "peak oil," so we need to act now. The world simply cannot afford to wait. Businesses need to be aware of what the future holds and how they can be proactive rather than reactive to the changing marketplace.

Land Availability Up to 2030

If the bioplastics industry continues to grow at its current rate, bioplastics could replace up to 10% of all plastics by 2030. This could require around 17 million hectares of land.



But demands on land caused by the expansion of the global bioplastic market will be dwarfed by the use of biomass for energy and fuels. Although bioenergy and biofuels will increasingly utilize non-food feedstocks to meet sustainability demands, crops grown for energy and fuel production could use between 50 and 300 million hectares by 2030.

Ample Room?

Given this level of market growth it is likely we would require 60-317 million hectares by 2030, which falls within the range of land potentially available for bioenergy, biofuels and bioplastics crops.

But even converting this "available" land remains a challenge, as much of it is on continents such as Africa and South America, often far from agricultural infrastructure; significant investment would be needed to make this land available for cultivating crops.

In addition, when we look further into the future, land is likely to become further constrained, as the finite amount of land we have available is put under increased pressure from the growing global economy. By 2050, bioplastics could account for up to 20% of all plastics or around 142 million tons per year. This would require 30-38 million hectares of land.

The use of biomass for energy and fuels will also continue to increase. Should bioenergy and biofuels represent 20% of the total global energy market by 2050, the land needed for crops could rise to 700 million hectares.

This means that altogether we may need more than 730 million hectares to meet our 2050 requirements for bioplastics, biofuels and bioenergy, which could seriously test the limits of the amount of land sustainably available for crops. As competition for resources increases this could drive up feedstock costs and put greater pressure on sustainability, directly or indirectly affecting biodiversity, water and fertilizer use across the globe. For example, some parts of America, Western Europe and Southern Asia may become almost entirely dependent on imports of nutrients.

What Is the Solution?

Competition for land is here to stay and we must:

- Use our resources better by driving innovation
- Use more lignocellulosic crops, algae, residues and wastes
- Push policies toward sectors with limited alternatives

By building refineries that produce food, feed, fuel, chemicals and nutrients efficiently, we can minimize waste and ensure a wide range of biochemicals and biofuels are produced and tailored for specific purposes. We must also strive to develop bioplastics that minimize land requirements.

Technological advances in fermentation, gasification and pyrolysis have also made it possible to convert household rubbish, waste wood and agricultural residues into fuels and energy. In particular there is growing interest in the fermentation of syngas, a promising combination of biological and chemical treatments.

Innovations in the production of chemicals and materials from agricultural residues are also expanding. There is significant potential to reduce demands on land by using agricultural residues. High volumes of agricultural residues are generated in South America and Asia, and they are expected to increase further in the medium term as food production rises.

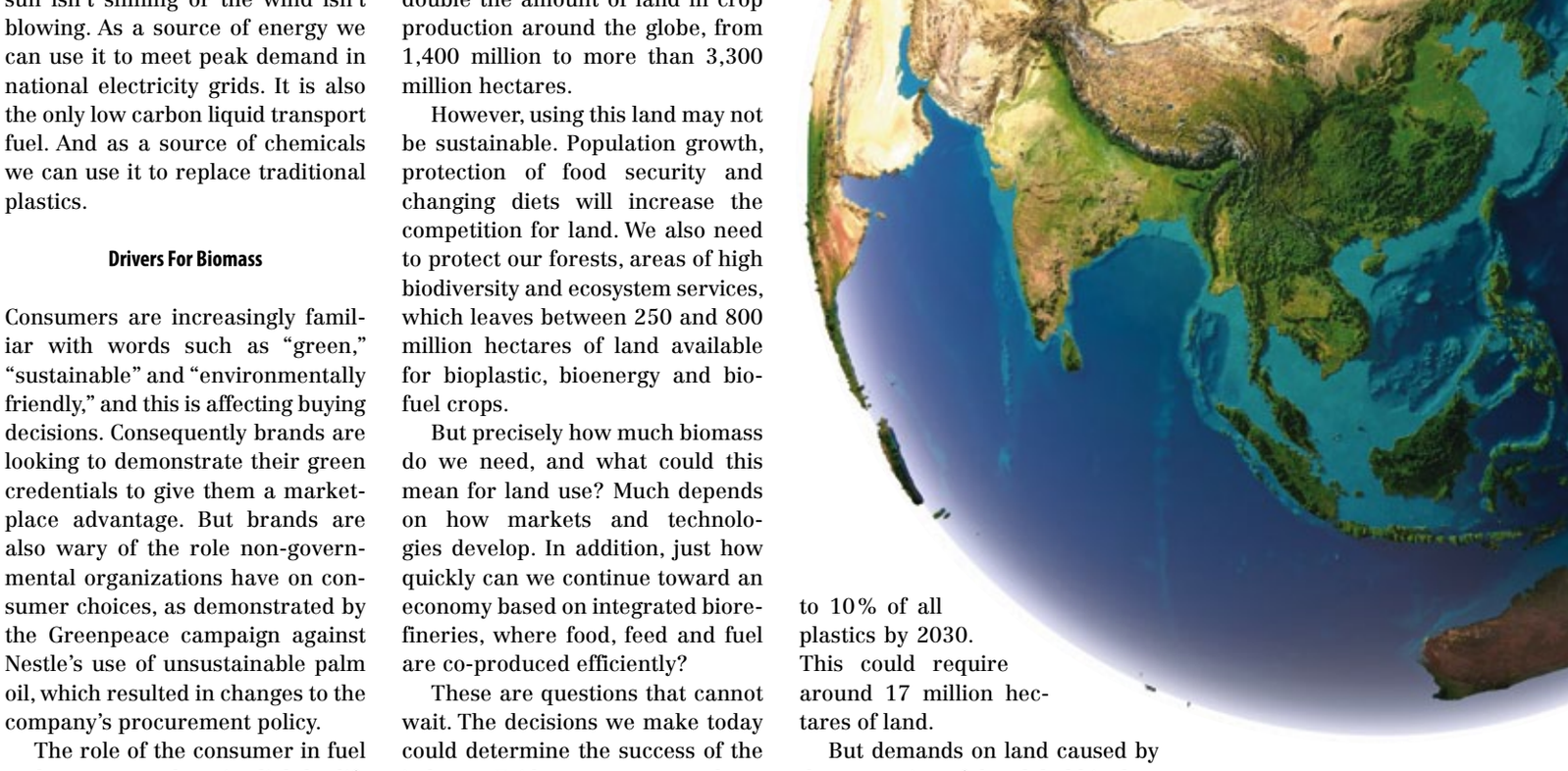
Improved breeding will increase the productivity of crops, particularly lignocellulosic crops, like willow and Miscanthus, which have been largely uncultivated. An annual yield increase of 2% would double production volumes without land expansion.

In many cases there are also alternative sources of renewable energy and fuels that can replace petrochemicals, but biomass is our only low-carbon alternative to aviation and marine fuels and in the manufacturing of plastics. In the short-term these markets will benefit from the growth of biofuel and bioenergy, including logistical and technology developments such as the ability to process lignocellulosic feedstocks like wood. But we urgently need to develop clear strategies and policies to support the development of sectors with limited renewable options.

Conclusion

Businesses will increasingly be judged on their ability to manage supply chains sustainably. This will rely on the development and implementation of suitable assessment tools and procedures.

We must learn how to use the resources we have now to create a more sustainable future. Understanding the future will allow businesses to develop the infrastructure, market and knowledge that will give them the edge over their competitors.



Development of biomaterials is dependent on access to raw materials and on innovation in market opportunities. This should not be prevented by restrictive policies, namely energy directives and waste frameworks.

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Bio-Production of Light Olefins

Direct Fermentation to Platform Chemicals

Alternatives To Oil – Light olefins, or short alkenes, are key platform molecules for the chemical industry. They are almost exclusively obtained from fossil oil. Because of the projected rise in oil prices in the next decade, the chemical industry is looking for alternative resources combined with new transformation methods to cost-efficiently synthesize those molecules.

Thomas Buhl
head of business development, Global Bioenergies

First And Second Generations

Options for renewable resources can be classified into first-generation and second-generation feedstock. First generation means using material that could also be used in the food/feed industry such as sugar from sugar cane or sugar beet, or starch from corn or wheat. Second generation refers to material not usable for food/feed applications such as agricultural or municipal waste, or plants such as seaweed grown on otherwise unused land.

First-generation feedstock is cheaper than second-generation feedstock since the latter needs to undergo costly pretreatment processes such as lignocellulosic degradation or pyrolysis. However, many parties are trying to bring down such costs.

Fermentation Or Thermochemistry

Transformation methods can be classified into fermentation processes, where microorganisms such as bacteria or yeast are used to transform the (possibly pretreated) feedstock, and thermochemical processes such as Fischer-Tropsch.

The attractiveness of fermentation methods lies in the fact that usually no heating is required and that it does not require extremely large-scale production units, which are capital intensive and might lead to problems with feedstock supply. On the other hand, industrial fermentation thus far has been limited to products that are naturally synthesized by microorganisms, such as ethanol or isobutanol. Those natural pathways have then been optimized to increase yield and productivity.

Microorganisms do not naturally synthesize light olefins. Since those molecules are gaseous at room temperature, it would not make sense for a microorganism to put energy and resources into producing a gas which then volatizes into the air. Consequently, no current industrial fermentation processes lead to light olefins.

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Mapping New Routes

Two approaches are being explored by the industry to bring together the economical fermentation technology with the huge markets for light olefins.

The first approach produces a precursor molecule of the light olefin, usually an alcohol such as ethanol, isobutanol or butanediol. Those alcohols are then chemically transformed into the light olefin of interest, for example through a dehydration process (ethylene, isobutene), possibly followed by other steps (e.g., metathesis for propylene). Based on those routes, the Brazilian company Braskem commercializes an ethanol-to-ethylene-and-propylene process, the U.S. company Gevo and the German company Lanxess are collaborating on an isobutanol-to-isobutene route, and the U.S. company Genomatica is working on a butanediol-to-butadiene technology.

The second approach uses metabolic engineering, a rather new scientific discipline, to design new pathways based on new enzymes to directly produce the light olefin of interest by the microorganism. Those efforts are primarily driven by process-advantages: Firstly, being a gas, the light olefin spontaneously evaporates in the gaseous phase of the fermenter. Consequently, unlike alcohols, it does not accumulate in the fermentation broth. At a certain concentration (about 12% for ethanol, 4% for isobutanol), alcohols become toxic for the microorganism and a costly separation step such as distillation or solvent extraction is needed, which is not the case for the gaseous light olefin. Secondly, no further chemical transformation steps are needed, which is not only an advantage in terms of capital expenditures and operational expenditures, but also regarding the isomer purity.

Based on this approach, French company Global Bioenergies has obtained proof of concept on a direct route to isobutene and is working on applying its technology on other molecules such as butadiene and propylene. The developed pathways are supposed to be compatible with microorganisms using different feedstock such as first-generation- and second-generation-derived carbohydrates but also syngas.

Moving toward industrialization, each approach needs to be assessed regarding cost-efficiency, feedstock flexibility and carbon footprint.

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Thermoplastic Solutions for Green Mobility

Thermoplastic composite constructions open up great potential in the automotive industry for weight reduction, thus allowing a significant reduction of the emissions and the fuel consumption of vehicles. Dedicated to the concept of Green Mobility, Lanxess is expanding its position in fiber-reinforced thermoplastic composites for lightweight construction applications. Extensive investments already have been made, in areas ranging from the development of custom materials and simulation methods, and the determination of characteristic material values to component testing. Further, project management is being expanded to support both Lanxess customers and their customers in developing innovative composite components. In view of the trend towards lightweight electric cars and lightweight, fuel-saving motor vehicles, Lanxess is concentrating intensively on thermoplastic composite sheet hybrid technology based on polyamide. Compared to pure metal, or metal/plastic hybrid designs, this technology offers great potential for saving on component weight.

Lanxess CEO Dr. Axel Heitmann said: "Green Mobility is an integral part of our growth strategy. But growth alone is not enough; it must be sustainable. That is why we focus on innovation and technology to develop the products of tomorrow that save energy, help protect the environment and keep people mobile."

PA-based Composite Sheet Hybrid Technology

Lanxess's expertise in thermoplastic lightweight construction solutions builds in part on the plastic/metal hybrid technology used to fabricate, for example, front ends, brake pedals and pedal brackets. Hybrid components are usually 20 to 30% lighter than their pure steel counterparts while offering the same performance. Even more weight can be eliminated if the sheet metal is replaced by lightweight polyamide composite sheet reinforced with continuous fibers, shaped in accordance with hybrid technology and back-injected with polyamide. This cuts component weight by another 10% over aluminum hybrid designs. Even greater savings are achieved compared to hybrid components with steel inserts. According to Lanxess, there is a great potential for polyamide composite sheet hybrid technology in the production of door sills, B pillars and seat cross-members.

Precision Simulation of All Process Steps

The German specialty chemicals and plastics manufacturer is now capable of simulating all the process steps in polyamide based thermoplastic composite sheet hybrid technology. Recently, the company succeeded in simulating the extremely complex processes involved in shaping polyamide composite sheet. Now Lanxess can not only calculate locally varying fiber alignments in a molded polyamide composite sheet, but can also determine when multiple folds will form during shaping, how the semi-finished product is best positioned in the mold and the limit conditions for thermoforming. The locally varying fiber alignments must be known input parameters for mechanical structural analysis in integrative simulation, so that anisotropic material behavior can be taken into account in the component design.

HiAnt – Custom Service for Successful Projects

Lanxess conducts its own, complex experiments to determine the characteristic material values required to simulate various process steps and analyze mechanical structure. For example, the recent investments included a large tensile testing machine to determine, for instance, crash-relevant characteristic material data for polyamide hybrid composites in accelerated tensile strength at break experiments. In collaborative projects, the company incorporates these characteristic values and subsequent calculations in the component design process. These services are part of HiAnt, a competence brand under which Lanxess has pooled its expertise in thermoplastic materials, design, simulation and process engineering. The customer service associated with HiAnt includes material selection support, manufacturing cost estimation, structural CAE calculations, mold filling simulations and warpage minimization, mold construction, component testing and assistance in starting up full-scale production.

www.lanxess.com

Plastics in Automotive Engineering

Lightweight construction and lighting technology for automotive applications are two of the subjects featured at the international VDI Conference and exhibition "Plastics in Automobile Manufacture" in Mannheim, Germany on March 21 and 22.

Energy efficiency, safety standards, high-quality design: The automobile industry must take numerous criteria into account, in order to meet the challenges of the future. Modern plastic applications can make a decisive contribution to success. The conference "Plastics in Automobile Manufacture" of the German Society of Engineers (VDI) will show current examples and trends.

"Plastics are essential construction materials for technical and economical innovations in automobile manufacture," says the conference director, Prof. Dr. Rudolf C. Stauber of the Erlangen-Nuremberg University. "The conference provides an extensive overview of innovative plastics engineering solutions and lighting technologies in car and utility vehicle manufacture."

Experts will share their own experience about the topics of interior, exterior and light/lighting in parallel lecture series.

In addition, parallel lecture series about technologies and powertrain

will be on the agenda. The subsequent plenary lectures will cover, among other things, CFK and functional material composite construction for electric vehicles, plastics in the Opel Ampera battery system as well as nano-composites with plastics.

There will be contributions by BMW, Audi, Porsche, Daimler, Polymaterials, Schaeffler Technologies, Zizala and many other renowned corporations. All German lectures will be simultaneously translated into English. The conference will be rounded off by an accompanying exhibition. It provides for networking and shows current developments and trends.

www.kunststoffe-im-auto.de

Solar Energy in Everyday Life

Printed-plastic solar technology is transforming how and where we harvest power. It represents the newest generation of technologies in solar power generation which will result in flexible, low weight, and low cost panels. Europe has recently launched a four-year, €14.2 million effort to develop advanced flexible plastic solar panels designed to be integrated into new consumer mobile applications and buildings. Led by the Centre Suisse d'Electronique et de Microtechnique (CSEM), the project consortium includes industrial partners such as Agfa, BASF, and DuPont Teijin Films as well as the photovoltaic pioneer Konarka and key European research institutes and universities.

www.csem.ch

From Climate Gas to Raw Material

CO_2 as New Carbon Source for Chemical Industry

Hidden Value – If one thinks about coal-fired power plants, what is it that comes first into one's mind? The picture of high-value starting materials or rather the picture of low value carbon dioxide (CO_2) emissions? Most people will probably end up with the latter one. However, the utilization of CO_2 as a valuable raw material is not as devious as one would expect: Advanced research shows that it could be used as new source of carbon – thus replacing at least partially crude oil from which the element is normally extracted.

Dr. Christoph Gürtler
project leader, "Dream Production"

Bayer's "Dream Production" research initiative is one of the award winners in this year's "365 Landmarks in the Land of Ideas" competition.

At present, the chemical industry is mainly dependent on petroleum, both as a feedstock and energy source – roughly 6-7% of the annual oil production is consumed by this sector. To become more independent in terms of energy, renewable resources and energy storage options are a matter of current research all over the industry.

Realistic Alternatives

Replacing petroleum as product feedstock is also part of the ongoing research. The chemical industry is looking for realistic alternatives, for example biomass, coal or gas. Coal and gas on the one hand both offer interesting options to become major carbon sources. However, their exploitation is energy intensive, and this inevitably leads to an increase in CO_2 emissions – something one would like to avoid in the age of sustainability and climate protection. Biomass, on the other hand, also has pros and cons which are intensively discussed. Is there any other option? How about CO_2?

In the chemical literature, researchers have been discussing for decades to use carbon dioxide directly as a chemical feedstock. All over the world, attempts to make use of this waste product have emerged in regular cycles. Currently, there are various research activities dealing with the utilization of CO_2 as chemical building block. In Germany for example, the Federal Ministry of Education and Research (BMBF) is heavily investing into this research area.

But there is one technical obstacle that makes this appealing idea very challenging: the low energetic level of CO_2. No matter what product one strives for, it will always be necessary to invest huge amounts of energy to enable a reaction with CO_2. Consequently, new CO_2 emissions will be the result.

Advances In Technology

Surely, there are already different possibilities to overcome the low reactivity of CO_2, for example using high-energy reaction partners such as hydrogen, unsaturated compounds or strained cyclic molecules. However, when evaluating the overall energy balance and efficiency of the process, the energy used to generate these high-energy materials has to be taken into account, which is especially relevant regarding hydrogen. For a long time there were only very few reactions using CO_2 that were efficient enough to be used in practice and the chemical utilization of carbon dioxide became known as the "dream reaction."

A core technology for the successful and economically interesting use of CO_2 as a chemical feedstock is catalysis, one of the most sophisticated and complex research areas of modern chemistry. Catalysis is used in the production of more than 85% of all products of the chemical industry, and the catalyst by its nature strongly determines the outcome of the reaction and the final product formation.

Finding The Right Catalyst

In order to find the right catalyst, Bayer initiated the project "Dream Reactions" in 2009, partly funded by the BMBF. Here, the company and numerous well-known academic partners have been investigating the preconditions of using CO_2 as building block for polyurethanes – a class of polymers widely used in every-day life, e.g. in mattresses, car seats, and as insulation materials. Polyurethanes are the reaction product of two components, isocyanates and polyols. The chemical nature of polyols gives them considerable potential for incorporating CO_2. Consequently the possibilities of using it as building block for a new kind of polyols, so called polyether-polycarbonate polyols, have been investigated within the "Dream Reactions" project. A broad catalyst screening helped to identify promising candidates, which were then optimized in terms of activity and selectivity towards the desired product.

Finally, Bayer researchers succeeded in finding the one suitable catalyst for this special reaction – a scientific breakthrough after decades of fruitless research. Consequently, Bayer thought about going one step further: Within the energy industry, strategies for capturing CO_2 from flue gases out of coal-fired power plants are discussed, yielding relatively pure CO_2 in vast quantities. Why not combine the chemical industry with the energy sector and turn the "Dream Reaction" into a "Dream Production"?

A Consortium for 'Dream Production'

Thus, another consortium was established, consisting of Bayer, German energy provider RWE Power and researchers from RWTH Aachen University. The project "Dream Production" is again partly funded by the German Federal Ministry of Education and Research within their strategy to enhance the utilization of CO_2 as chemical building block. The consortium depictures the total value chain of CO_2 utilization in a very unique way – from source to final product.

The overall goal is to make the discoveries from "Dream Reaction" become reality, i.e. to design and develop a technical process able to produce CO_2-based polyether polycarbonate polyols on a larger scale. As a first major step, a pilot facility for the chemical treatment of carbon dioxide from the energy industry was opened at the Bayer Chempark Leverkusen in February 2011. Since then, the CO_2 delivered from RWE Power is converted into the already mentioned polyether-polycarbonate polyols. These are then subsequently transformed into polyurethane samples tested for their material properties and competitiveness. The first results are encouraging. Though having a higher viscosity, the new polyols show similar properties as products already on the market and can be processed in conventional plants as well.

In parallel, the eco-efficiency of the new process is being compared with existing alternatives. Initial research, conducted by an independent team of scientists at RWTH Aachen University, seems to underpin the hypothesis that in the end real CO_2 savings are reached. But the examination is very complex and will still last for a while. If progress continues, "Dream Production" will start bringing CO_2-based products to market at 2015 earliest. The first application could be soft foam matrasses.

In summary, even though the field of research is hardly new, the use of CO_2 as a raw material is one of the most interesting and visionary technologies for the future. Since fossil resources are finite, using CO_2 as a chemical feedstock is a promising approach to global carbon management, helping to pave the way to alternative sources of raw materials. And next time when people are asked to think about coal-fired power plants, the picture that comes into their minds might be just a bit different than before.

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Enhancing MuCell Process Productivity

CoreTech System (Moldex3D), Taiwan and Trexel, Wilmington, Mass., have entered into a joint development agreement for enhancing MuCell process productivity. The MuCell Microcellular Foam technology from Trexel is a complete process and equipment technology that enables the production of high quality plastic parts with significantly enhanced dimensional stability, lower weight/material and reduced cycle time. Trexel is deemed to be the worldwide leader in the development and commercialization of the patented MuCell microcellular foaming process for injection and blow molding process systems, and CoreTech System (Moldex3D) is a "True 3D" injection molding CAE simulation solution innovator. The partners are jointly establishing a detailed plan and specifications for following development and validations. The enhanced capabilities are expected to be available within 2012.

▶ www.trexel.com

PPS: Well Suited for Aggressive Fuels

PRODUCT The use of bio fuels like ethanol and methanol is constantly increasing in the automobile industry. Materials that come into contact with these mixtures must withstand both the aggressive additives in the fuels and the high operating temperatures. Ticona has developed a mineral/glass-reinforced polyphenylene sulfide (PPS): Fortron PPS 6162XF especially for these demands. The engineering plastic meets the precision requirements for pump components in the tank or engine compartment in direct contact with fuel and thus contributes to greater efficiency of the pumps and low fuel consumption. Fortron PPS 6162XF is lighter than metal and corrosion-resistant, has high dimensional stability und low creep over a wide range of temperatures. Faster crystallization allows for for shorter cycle times in processing.

▶ www.ticona.com

Polycarbonate Resins for Medical Devices

PRODUCT Styron has introduced two new globally available polycarbonate resins for the use in medical devices. Single-use medical devices often require gamma or electron-beam sterilization. Calibre Megarad 2091 polycarbonate resins use patented color-compensation technology to offer improvement in color recovery timing following irradiation. This allows manufacturers to reduce inventory hold time and introduce products for functional use 10 to 21 days sooner than with current radiation-stabilized polycarbonate. Powered medical devices require housing materials that are chemical and ignition resistant. Emerge PC/PET 9500CR advanced resin is an advanced polycarbonate polyethylene terephthalate blend that balances these properties and protects the electrical components of equipment from chemical attacks. The Emerge resins provide excellent resistance to chemicals and, thus, extend the functionality, reliability and lifecycle of medical equipment.

▶ www.styron.com

Sourcing Partnerships in China

Drug Development Could Boost Growth

Role of China – China's importance to the global pharmaceutical sourcing industry is no longer in question. Now the issue is how to materialize China's potential value via partnership development. In the past 10 years, the cost to commercialize a new drug has increased to about $1.5 billion. The change has driven the pharmaceutical outsourcing investment to about $36 billion in 2011 and grown the CRO/CMO (contract research organization/contract manufacturing organization) market dramatically, particularly in China and India. While China and India have achieved phenomenal growth in the past 10 years, their combined share in the world market is still less than 15% and has significant upside potential, especially in the more sophisticated service sectors in the value chain, in the next five to 10 years.

China's CRO/CMO market reached about $1.8 billion, or 5% of the global share, in 2011, mainly in the low-end segment of the value chain. China is expected to outpace the overall global growth, especially in the high-end services, in the next five to 10 years, and become a dominant player in the global outsourcing business, mainly because of the following factors:

- Fast growing new drug development in China
- Cheap labor and rich technical resources
- Continued improvement in service quality in China for more high-end service possibilities
- Incentives from the Chinese government, which include high and new technology enterprise
- (HNTE) incentive reducing corporate income tax to 15% from the normal 25% and a tax holiday of two years' full exemption followed by three years of 50% reduction; corporate income tax super-deduction allowing an extra 50% expense deduction for eligible R&D costs; and income tax exemption for the transfer of technology: 100% exemption up to RMB 5 million, 50% exemption for the portion exceeding RMB 5 million during a tax year.
- Role of overseas returnees
- Patient resource and animal resource

While China continues to improve its capability and capacity to serve the global market, it is imperative for sourcing companies to develop strong and strategic partnerships in China.

Value Proposition Of CROs/CMOs

By nature, outsourcing requires customized products and services to achieve custom solutions. Both the sourcing companies and suppliers work toward the same objective — cost savings and shorter development time — and benefit mutually through a strategic partnership development. While the CROs/CMOs in China emphasize improvements in the field, sourcing companies still need to take more customized approaches for their specific sourcing project needs. This demand for custom solutions focuses the supplier's energy on developing better chemistry solutions at a competitive cost. As of now, China is in the transition from repetitive bench work under close supervision to a design-based service arena. It is generally anticipated that China will enter into IP-based, high premium service areas across the entire drug discovery and development process.

Challenges And Opportunities

Continuous growth in global outsourcing gives China the chance to increase its share in the high-end service segments in the market. Rising costs in China likely will force consolidation among CROs/CMOs in China, and result in fewer — but more diversified and better quality — vendors and suppliers. This change puts China in a better position to be a strategic place for sourcing partnership development from the sourcing company, which will allow it to take more global market share.

There are many challenges ahead for China, such as IP protection, quality, cost control and unhealthy competition environment. All of them are closely connected with the quality of the human resource in China at both management and floor levels.

It has taken China the last decade to stand out as a good competitor at the low-end value chain of global drug discovery and development. Going forward, China has to transform itself into a high-end player to continue to grow and benefit from global pharmaceutical development. The key for the transition relies on its human resource quality, which is a big concern now. It is doubtful that its management resource has enough experience and competence to develop and lead a world-class operation in China. Thus China often loses its low labor cost to its high developmental cost. If this situation doesn't improve soon, it will be detrimental for China to continue to compete and grow globally.

The Real Outsourcing Cost in China

Typically, the fixed costs in delivering custom solutions in China, such as labor, equipment, material, and tax, do not vary from vendor to vendor, and are only about 20% to 25% of the costs in the United States. However, China's variable costs, such as development, overhead and supply chain management, have great uncertainty, reflecting its incompetence in technical capability and leadership quality.

It is not uncommon to see CROs/CMOs in China fail in producing challenging chemistries and lose heavily because of variable costs. If a project delivery consists of 70% fixed costs and 30% variable costs in the U.S., it is commonly translated into 70% variable costs and 30% fixed costs in China. China can be costly by the international standard if its variable costs are not well managed. The ability to control and streamline variable costs is the biggest competitive edge for the CROs/CMOs in establishing a healthy and mutually beneficial sourcing partnership with global customers.

To keep China riding on the global sourcing trend not only requires the CROs/CMOs to continuously strive for improvement but also demands involvement and engagement from sourcing companies in a partnership. It is the shared "responsible care" from both sides.

Strategies/Tactics in Developing Manufacturing Partnership

To develop a manufacturing partnership, sourcing companies' strategies and tactics will have to include balancing long-term position and short-term cost savings, focusing on guidance and nurturing the right culture, adopting custom approaches to different vendors, and establishing their own top criteria in vendor selection. A true engagement between customers and suppliers is much more important than short-term savings.

In a successful sourcing process, about 80% of the activities are proactive to prevent pitfalls, and ensure on-time and quality delivery. The remaining 20% are rather reactive, or fire fighting, in case something goes wrong, meaning you don't have much control of them. Proactive activities include deciding which material will be sourced, defining strategic suppliers, and vendor pre-qualification and validation. You can control and leverage these proactive activities, and therefore should invest more time and money on them to maximize effectiveness. Three areas should get the most investment when selecting a strategic supplier: its technical competency, its transparence and skills in communication, and overall awareness and confidence about suppliers.

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chemanager-online.com/en/tags/custom-manufacturing

Global Surfactants Report Puts Asia on Top

Ceresana Research expects the global surfactant market to generate revenues of more than $41 billion in 2018 – translating to an average annual growth of 4.5%. With a roughly 37% share of global consumption, Asia-Pacific is the largest surfactant outlet, followed by North America and Western Europe.Over the next eight years, shares in demand of the individual world regions will shift significantly. The analysts from Ceresana forecast countries in Asia-Pacific to increase their shares in the global surfactant market – mainly at the expense of Western Europe and North America. In addition, South America will see strong growth, above all because of massive increases in production in Brazil.

"We expect non-ionic surfactants to register the strongest growth between 2010 and 2018," said Ceresana CEO Oliver Kutsch.

Despite this global trend to non-ionic surfactants, anionics will remain the most widely used surfactants, especially in Africa, the Middle East, and Asian countries, with the exception of Japan and South Korea.

Ceresana forecasts consumption in Asia-Pacific to grow by 4.3% and consumption in South America to rise by 4.8% annually. Industrial cleaners accounted for just less than 9% of global consumption in 2010. Body care products and cosmetics had a 9.5% share.

Other industrial applications, such as agrochemicals, photo chemicals, oil field chemicals, construction materials, foodstuffs, adhesives, lubricants as well as metalworking, mining, and pulp and paper, accounted for approximately 11% of worldwide consumption. ■

Sigma-Aldrich Completes Acquisition of BioReliance

Sigma-Aldrich said it has completed its acquisition of BioReliance, a provider of global biopharmaceutical testing services, from Avista Capital Partners for $350 million in cash. BioReliance, headquartered in Maryland, U.S. with subsidiaries in UK, Japan and India will become part of SAFC, the custom manufacturing and services business unit of Sigma-Aldrich.

BioReliance, provides critical services that include biologic, specialized toxicology and animal health testing to pharmaceutical, biopharmaceutical, diagnostics, and other life science customers worldwide. As a leading provider of biological safety testing, its service offering helps facilitate the development, manufacturing and commercialization of biological drugs and helps enable its clients to register their products worldwide. As a service provider of toxicology studies, BioReliance also enables its clients to launch new small molecule drugs worldwide. BioReliance employs over 650 people and is headquartered in Rockville, Maryland, with additional operations in Glasgow and Stirling, Scotland and sales offices in Tokyo, Japan and Bangalore, India.

Emerald Kalama Chemical Contracts with Stedin and AVR

Emerald Kalama Chemical, a division of Emerald Performance Materials, announced that it has signed 15-year agreements with both Rotterdam-based grid manager Stedin and energy supplier AVR. These agreements officially give a green light to begin construction of a steam grid in the Rotterdam Botlek, which encompasses the region around the harbor. Many companies operate in the Botlek because of its strategic access to Rotterdam, the largest port in Europe. Emerald Kalama Chemical is the first steam consumer to sign on to the steam grid.

AVR will be the first to supply steam to the steam grid. The steam is produced in AVR's Energy from Waste facility in Rotterdam-Botlek. Given the biogenic content of the waste that is used to produce the steam, the output can be marked as "green."

Endeavour Enters Partnership with AKL Research

Endeavour Speciality Chemicals said it has entered into a formal partnership with UK-based manufacturer AKL Research. Under the agreement, Endeavour will act as the sole scale-up partner for the AKL range of building blocks and chemical intermediates, many of which are commercially novel. Through the partnership, Endeavour customers will now have immediate access to more than 1,300 new compounds, in quantities ranging from grams through to multi-kilos. The additions bring the Endeavour chemical catalogue count to well over 2,100 unique products.

The broad portfolio of new products has been designed primarily for research chemists, and is complementary to Endeavour's existing range of building blocks and reactive intermediates. These products have applications in a range of industry sectors, including pharmaceuticals, agrochemicals and materials sciences.

ECHA Publishes the Evaluation Report 2011

The European Chemical Association (ECHA) has published its details and figures on its 2011 Reach dossier evaluation activities and their respective output. In 2011, ECHA issued 187 draft or final decisions on testing proposals. Also, ECHA adopted 22 final decisions on testing proposals, and closed the examination of 58 cases that were either inadmissible or withdrawn by the registrant. A significant share of the proposals could not be examined or properly concluded due to substance identity problems.

"This report is essential reading for registrants preparing for the 2013 REACH deadline and should be a call for action for companies who have already registered," said ECHA's Executive Director Geert Dancet. The report can be found at http://echa.europa.eu.

BASF Sets New Goals for EHS

BASF said it has established new ambitious environmental, health and safety goals. The company recently announced its intention to increase its energy efficiency – defined as the amount of sales products in relation to the primary energy demand – worldwide by 35% by 2020, compared to the previous goal of 25%. In addition, BASF said it aims to reduce greenhouse gas emissions per ton of sales product by 40%, originally set at 25%. Within the area of occupational health, BASF will measure its performance with a new, expanded indicator, called the Health Performance Index.

Univar Establishes Operations in Romania

Univar has announced that its legal entity in Romania is now fully operational. The business trades under the name Univar South-East Europe from its newly opened office in Bucharest. The company has been expanding its strategic network throughout Central and Eastern Europe in recent years, and said it expects to "engage its global network with local expertise, especially in the coatings market where only 65% of the customers are served by local producers."

Brenntag Opens New Head Office in India

Brenntag has recently inaugurated its new head office in Mumbai, India. The company established its presence in India in 2008 and focuses on various industry segments such as agro, coatings, food and beverage, leather, lubricants, personal care, pharmaceuticals, plastics & polymers, polyurethanes, solvents and textile. The new office adds to the company's six existing offices located in all major industrial locations in India and Brenntag's growing presence in the Asia Pacific region, which includes more than 40 offices in 15 countries. The new head office has a space area covering 15,000 ft² and will have room for more than 100 employees. At present, there are 44 employees based at the new office. In addition, Brenntag has offices and distribution facilities in Baddi, Bengaluru, Chennai, Gurgaon, Haridwar and Hyderabad.

7 Steps to GMP Compliance

How Chinese Satisfy Western Standards

Updating Chinese GMP Guidelines – The Chinese know that implementing good manufacturing practice (GMP) is a prerequisite for a certificate but in the past, the Chinese GMP system could not be compared to Western GMP standards. The first GMP manual in 1988 focused on cleanrooms and cleanroom technology. It appears as if the installation of such a cleanroom would constitute the whole GMP status. Chinese authorities have emphasized the meaning of this technology by issuing special booklets detailing the technology, the qualification and monitoring, including ready-to-use forms and checklists.

Third-party audits of Chinese API manufacturer sites confirm this focus on cleanrooms. While most of the process steps were executed under unacceptable environmental conditions, the last step always was handled in the cleanroom area, which sometimes provided better conditions, as with Western API manufacturers. Only the definition of a typical Chinese 300000 cleanroom class seemed to be less restrictive compared with a Western 100000 cleanroom class — even the air quality was comparable. And since all of the production plants in China are designed by official local design institutes, this situation could be found all over the country.

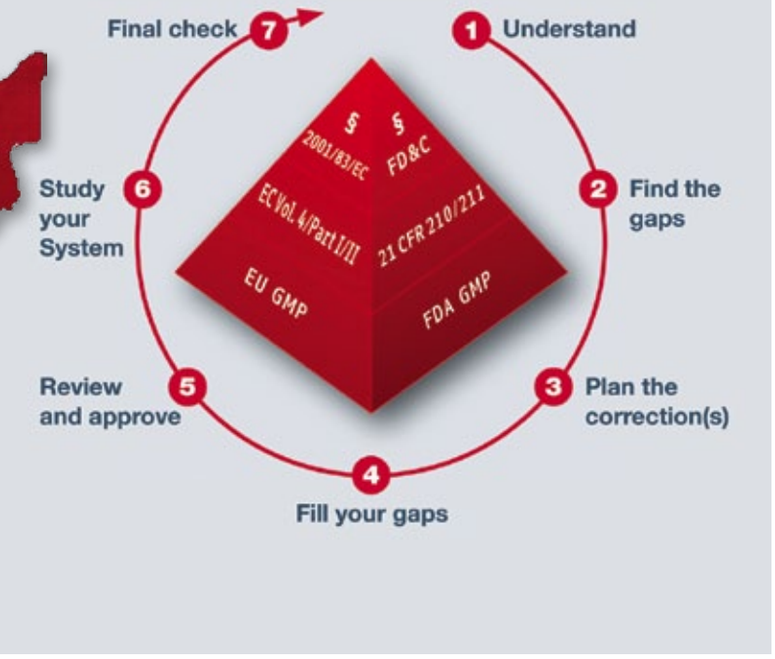
But the Chinese learned quickly, and the government noticed the failure to comply with worldwide pharmaceutical quality standards. Task teams have been set up to adapt the Chinese GMP guidelines, and groups of SFDA (Chinese State Food and Drug Administration) inspectors have been trained on the Western GMP requirements including but not limited to the escorting of Western official inspections.

These activities finally resulted in the Chinese GMP guidelines valid as of March 1, 2011. A booklet comprising 14 chapters, 313 articles and five annexes describes the Chinese GMP system. It's very similar to the Western GMP standard but not exactly the same. As one example, the starting point of GMP in an API production process is addressed but still not finally defined as this is done in the ICH/Q7 GMPs. Other more modern topics like quality management and risk management are integrated and emphasized and even the 300000 cleanroom class is adapted to the 100000 one. The main text as well as the five annexes is available in English but not yet as an official translation. The timeline for adapting to the new regulations is December 2013 for special (e.g., sterile) products and December 2015 for all others.

Auditing Quality into the Product

A basic and substantial philosophy of GMP is "not to test quality into the product but to build it into the product." That is why a pharmaceutical manufacturer has to focus on all items potentially influencing the quality of the final drug products, for example, personnel, buildings and equipment, starting and raw materials, processes, and in-process controls.

In addition, when it became obvious that the quality of the related API is essential, the authority started to force the final drug product manufacturers to buy APIs only from GMP-compliant manufacturers. The well-known and related EC directive 2004/27 caused a rush of audits by the final drug product manufacturers at different API sites. As far as those sites have already implemented GMP and as long as the audit has the intention only to verify the functionality of the system, this procedure may be accepted. If the auditee has not yet implemented GMP or the GMP system is very poor, an audit only can identify this fact and stop the business as long as GMP is not correctly set up. If audits are executed only to salve one's conscience, this is not acceptable and even repeated audits are to be interpreted only as "auditing quality into the product."



China, which is the No.1 source for APIs, still suffers from many API manufacturers not complying with GMP — especially Western GMP. Many audits in China in the past years have had more or less destructive results. And many manufacturers don't know how to interpret the western GMP requirements and how to fill the gaps in compliance. They just wait for the next audit and hope to survive.

Seven Steps to GMP Compliance

So far, audits alone in China will not be sufficient to assure compliance with Western GMP standards. More activities are required for a long-term reliable and good quality API source or even for a location for final drug product manufacturing.

- Step 1: Provide the necessary transparency means to make clear to the manufacturer the differences between Chinese and Western GMP standards. As long as they don't know this in detail, there is no chance to improve the system. Training or even some simple consultancy could be the method of choice. It is the basis for all further activities.
- Step 2: Analyze the gaps of the existing system. Experts or trained auditors are necessary to do this successfully. Also time is needed, as it is not to compare with an audit. Systematic reviews of the different GMP-related systems are required. This includes onsite reviews as well as intensive document reviews.
- Step 3: Install a project management plan to focus on all findings and gaps revealed in step 2. Setting priorities and timelines is essential and should be agreed upon by the related manufacturer. Without such a project management plan, the chance to reach the said goal in China is very low.
- Step 4: Improvement and CAPA (Corrective and Preventive Action)activities.
- Step 5: Adapt most important systems, such as validation or risk management, to Western standards. SOPs must be processed or adapted to the individual needs and structure of the manufacturer's site. Steps 4 and 5 are the most time-consuming and need the most supervision and follow-up.
- Step 6: Train all employees, from basic staff up to high-level management. This will help assure transparency with the new system.
- Step 7: Execute a mock inspection by a Western expert or educated auditor to determine whether the "GMP upgrade" was successful.

Key factors for success are the involvement of experienced Western experts as well as local Chinese experts who bring together Western GMP experience with deep knowledge of cultural and language-related aspects. Neither Western nor Chinese experts can do such a challenging job alone.

Moving Forward

The Chinese pharmaceutical industry is rapidly growing and is on the way to overcoming its problems with outdated GMP standards. The national authority — the SFDA — took the first step in this direction when it issued the 2011 GMP guidelines, which are close to EU standards. Manufacturers still need time to catch up with the new requirements, and simple GMP audits are not the best way to support this. A more detailed and target-oriented program, such as the seven-step procedure outlined here, is necessary. And Western companies cannot successfully execute these as remote programs but need the help of Western and Chinese experts in combination.

The Old Philosophy

Gempex joined the Chinese CPhI exhibition in Shanghai for the first time in 2005. Our booth was small because the company had just been founded and the budget was small.

Our simple banner listed keywords dealing with good manufacturing practice (GMP) and drug master files. Even if it was not the most attractive booth, the result was unbelievable. Hundreds of visitors pressed around the banner, studying those words like a bible. My partner later called it the "$10,000 banner."

But the final result after this impressive response was disillusioning. No real job came from the three days in Shanghai because for all the visitors there was one important question: "How can I get a Western GMP certificate?"

At that time, there was no real understanding of the Western GMP system and the activities behind it. Chinese pharmaceutical and active pharmaceutical ingredients (API) manufacturers thought it should be easy — as it was in the Chinese GMP system — to get a GMP certificate to open the Western pharmaceutical market for them.

We joined the CPhI year after year, and it was interesting to keep track of how the situation changed. One year later it was not only the question of the Western GMP certificate but also of how to fulfill the related GMP requirements. How to fulfill the "real" GMP was the question of the following year. Some years later more and more visitors asked sensitive questions about the differences between Chinese and Western GMPs and what to do to overcome the gaps. And we end up with the question: What has to be done in order to receive an official GMP certificate?

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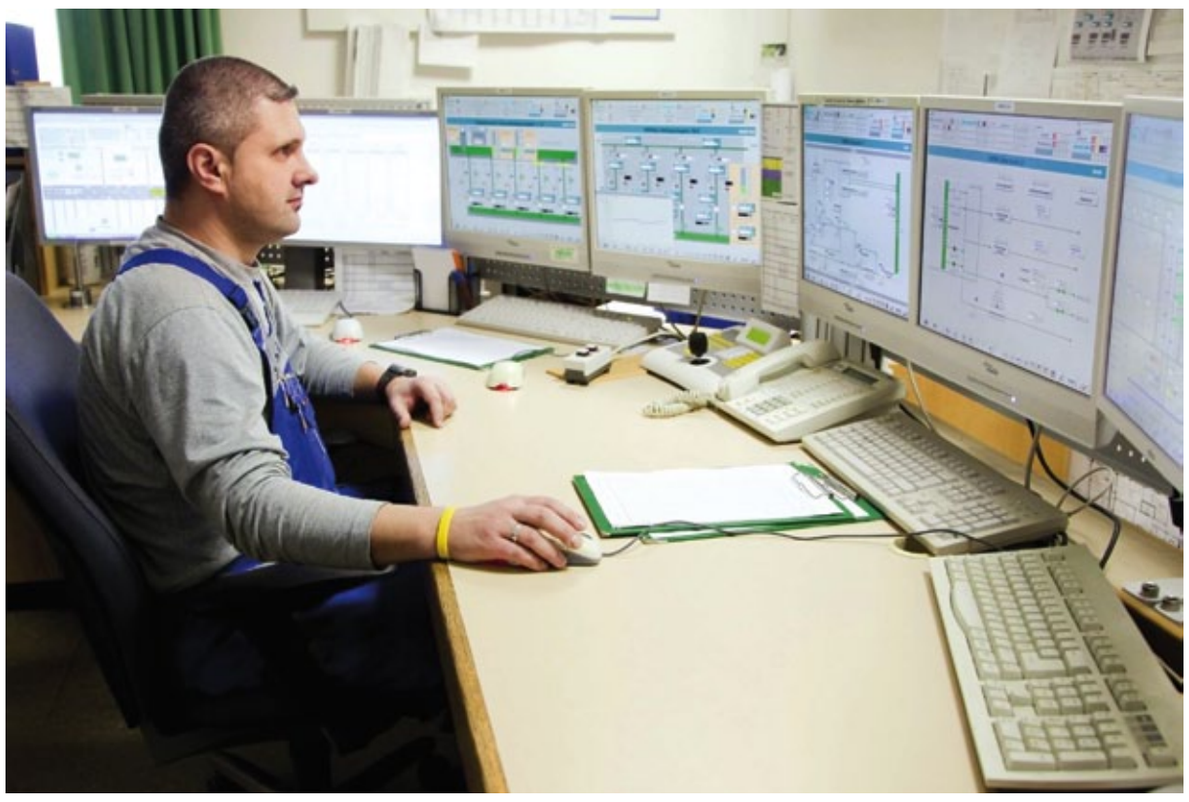
Unified Automation

Harmonizing Operations Through Upgrades

Water, Water Everywhere – Without cooling water, not much works in Wacker Chemie's Burghausen plant. That's why the owners equipped their water supply plants with the Simatic PCS 7 automation system during modernization of water plant No. 5. The result is a uniform operating platform for supplying cooling water, cooling and industrial gases.

Ute Forstner
Siemens, Industrial Automation Systems



Plant operator Christian Friedl monitors and controls the media supply equipment for cooling water, cooling and industrial gases using one operating interface.

"Media supply in the plant is of vital importance," said Hartmut Taubert, production engineer for E&IC and technical support at Wacker, describing the special role of cooling water at the Burghausen plant.

A network of several water supply plants and cooling towers provides a reliable supply of water not only in the right quantity but also at a constant temperature. The plant benefits greatly from natural features in the region — the sources of the water supply are the Alz River (flows out of Lake Chiemsee), together with the Alz Canal, the Salzach River (a tributary of the Inn River), and the Austrian Mühlbach River. Nature is an important helper, not just in terms of controlling the temperature. The water quality, too, is influenced to some extent by these rivers.

Integrated Data Network

This redundant water concept supplied by nature provides ideal conditions. The owners created a similar redundancy in their water supply plants and cooling towers. Every plant works independently, but a closely linked network with plantwide data management ensures that cooling water is supplied to all plant operations. Automation concepts must satisfy the requirements for integration while remaining flexible.

At the end of the 1990s, the water supply plants had already been upgraded from conventional electrical engineering, measurement and (automatic) control engineeringandcontrol-room-based technology to state-of-the-art operator control and monitoring systems available at that time from Siemens. In the course of this standardizing, Water Plant 5 was thoroughly modernized last year. Untreated water from the Alz Canal goes through a basic mechanical cleaning process with screens before other materials are removed from the water by sedimentation. The water is then pumped through gravel filters and fed into the cooling water network. Since it is neither polluted nor warmed strongly during use, it is then returned to the Alz Canal.

The automation system of Water Plant 5 consists of a redundant server and multiple clients. The subsystems such as sand or gravel filters, lift pumps, screening units and sedimentation basins are connected to the automation system by the ET200M distributed I/O and Profibus.

Thanks to the new backplane bus for the ET200M, module replacement during operation is possible. In addition, filtration units and pumps from the phase 1 expansion were integrated and the existing Simatic S7 controllers and WinCC visualization were migrated to Simatic PCS 7 V7.0.

Even the pump monitoring and the motor control for the pumps at the Salzach pumping station are controlled by the new automation system. The pumps convey the water from the Salzach River to the sedimentation basins of the water supply plants over a 64-meter height difference. The performance and thus the flow rate of the pumps can be adjusted to precisely meet the current water needs.

Transparency And Reliability

"We made a conscious decision to select a system that has proven popular and successful in the plant for years," said Taubert.

In addition to the integrated, open system,Taubert said he appreciates appreciates the easy changeover to the new system as well as the cooperation with Siemens and the system integrators in the region. The project was realized in only three months by system integrator Finze & Wagner (fiwa group), one of Siemens' certified solution partners for the chemical industry. Since its founding in 1972, Finze & Wagner has worked for Wacker as engineering company and active provider of complete planning and design services.

Reliable and easy operation is essential for a water supply plant.

"Since the shift workers rotate among the various media supply operations in the central control room, harmonizing these systems simplifies operation," Taubert said.

For the plant operators to easily familiarize themselves with the new system and the user interfaces, only details of the visualization were redesigned. The purpose of these small changes was to provide greater transparency and reliability during operation of the individual plants, which was achieved among other things by newly defined alarm limits, a similar color design and unified arrangement of buttons.

Wacker also places a high value on monitoring, including visualization and documentation of process data, such as water temperatures, water quantities or pressures in the cooling water supply. This is the basic information for the efficient control of the water supply plant equipment. Trend graphs and overviews of measurement values for the plant operation can be accessed easily. This also applies to verifications required by the German Federal Water Act.

Maintaining An Overview

In the course of the modernization and consolidation of supply operations, the old water supply control room was relocated and combined with two other control rooms for industrial gases and cooling into one central control room. All equipment involved in media supply across the plant is now operated and monitored from there. The Salzach and Mühlbach pumping stations are also monitored by video, so the operators can maintain an overview of the remote equipment.

"Time management was our biggest challenge when migrating Water Plant 5," said project manager Josef Ostermeier of Finze & Wagner in Burghausen.

The first idea was to migrate during operation, but a planned shutdown in the colder months was used for the upgrade. Work began in October 2010 with the software engineering for the control replacement and the visualization of Water Plant 5. Three months were left to prepare the functional specifications, to change the complex hardware (which included dismantling an old, but still operable, mosaic-type control panel), for software engineering, and for performing the so-called loop check of about 1,000 inputs and outputs.

Thanks to the cooperation of all partners, commissioning was completed on schedule before Christmas 2010. This meant that the conversion of the switching stations for water plants 4a and 4b, and the migration of the Salzach pumping station to Simatic PCS 7 process control system could start in January 2011 — exactly as planned. The factory acceptance test was passed in March 2011, and thus all modifications of the cooling water supply system were completed just in time for warmer weather.

Outlook Of Water Management

Reliable water management is essential for the successful operation of pumping stations and water supply plants, and for the reliable supply of cooling water to the chemical plant. That's why Wacker in Burghausen has combined the formerly separate control systems for supplying cooling water, cooling and industrial gases into a uniform operating platform with Simatic PCS 7. As a result, the increased demand for sufficient cooling and industrial water in the coming years can be met.

The Alz River, the Alz Canal and the sedimentation basins are — along with the Salzach and the Mühlbach rivers — important components of the cooling water supply system for all plant operations at Wacker Chemie in Burghausen.

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Bayer Permitted to Build TDI Plant in Dormagen

The Cologne, Germany, regional administration has granted Bayer MaterialScience a permit to begin construction on its €150 million TDI(toluene diisocyanate) plant in Dormagen. The final operating permit is expected in the spring. The world-scale plant is planned to have an annual capacity of 300,000 metric tons. In the medium term, it will replace the existing plants for the production of TDI in Dormagen and Brunsbüttel. Bayer MaterialScience said it expects demand for this precursor for flexible polyurethane foams to continue to grow.

Lanxess to Invest €40 million in South African Site

Lanxess is investing €40 million to build a CO_2 concentration unit at its South African site in Newcastle, where it operates a sodium dichromate plant. The production technology requires permanent supply of highly concentrated CO_2.

With its own CO_2 concentration unit, Lanxess said it will become independent of the delivery capacity of external suppliers who provided the CO_2 up to now. Construction of the new unit will start in the first quarter of 2012, and commissioning of the unit is planned for the second half of 2013. The investment will create up to 10 new jobs at the site.

BASF to Invest $33 million in U.S. R&D Facilities

BASF announced a $33 million investment to expand its facilities in Research Triangle Park (RTP), North Carolina. Nearly 80,000 ft2 of office, laboratory and greenhouse facilities will support the company's plant biotechnology and insect control research. BASF said it expects to break ground on the project in this month, and construction is expected to be completed by mid-2013. The planned expansion includes a climate-controlled greenhouse and laboratories for plant biotechnology research, a custom environmentally-controlled insect production facility and office space. RTP is a major BASF location for global insecticide and plant biotechnology research. It serves as headquarters for the North American activities of BASF's Crop Protection division and soon the global headquarters for the Plant Science division.

Ashland Expands PVP Production

Ashland said it is responding to strong demand for Plasdone polyvinyl pyrrolidone (PVP) by adding new low-viscosity, pharmaceutical-grade PVP capacity at its manufacturing facility in Calvert City, Ky. The company said the new capacity will further strengthen its position in the market and will enable the company to continue supporting the growing needs of its pharmaceutical customers. The additional capacity is currently being validated for pharmaceutical-grade PVP production and will be available for sale to Ashland's pharmaceutical customers this month.

Solvay Commissions Largest PEM Fuel Cell

Solvay said it has successfully commissioned its 1 MW industrial demonstration fuel cell at the SolVin plant in Lillo, Antwerp, Belgium. This proton exchange membrane (PEM) fuel cell converts coproduced hydrogen (H2) in the plant into electricity and is now producing for weeks at a steady rate. The fuel cell has generated over 500 MWh in about 800 hours of operation, which amounts to the electricity consumption of 1,370 families during the same time frame.

BASF Inaugurates Sodium Methylate Plant in Brazil

BASF said it has inaugurated its new world-scale production plant for sodium methylate in Guaratinguetá, Brazil, its largest site in South America. The plant has a capacity of 60,000 metric tons per year and is supplying the regional market. Production started at the end of 2011.

It is the first BASF plant for this product in South America and the second in the world, in addition to a plant in Ludwigshafen, Germany. Capital expenditure for the project was in the low double-digit million euro range.

Sodium methylate is an efficient and reliable catalyst for the production of biodiesel, which has developed into an important and increasing alternative for diesel fuels in the past years. Biodiesel meets the requirements of engine manufacturers for high-quality fuels. Legislation in Brazil requires fuel to contain 5% biodiesel. In Argentina, biodiesel makes up 7% of fuel. Other South American countries have similar legislation.

AkzoNobel Strengthens its Global MCA Position

AkzoNobel has announced two steps in strengthening its global position in the market of monochloroacetic acid (MCA). Recently it has commissioned its expanded Delfzijl MCA facility in the Netherlands, which now has a capacity exceeding 100,000 mt/year. In parallel, AkzoNobel is to further increase MCA production capacity at its Taixing site in China to also reach a level of 100,000 mt/year.

Jürgen Baune, general manager of AkzoNobel's MCA business, said the company's key focus will be to serve the increasing demand for high purity MCA in main end markets like agrochemicals, carboxymethylcellulose (CMC), surfactants and thioglycolic acid. The company estimates the global MCA market at about 650,000 mt/year.

Lanxess to Break Ground On World's Largest Nd-PBR Plant

Lanxess will break ground for its new neodymium polybutadiene rubber (Nd-PBR) plant in Singapore on Sept. 11. The German specialty chemicals company plans to invest roughly €200 million in a 140,000 mt/y in Jurong Island Chemical Park. The company said the facility will be the largest of its kind in the world and will serve the growing market for green tires especially in Asia. Lanxess said this is the fastest growing sector in the tire industry, with an annual global growth rate of about 10%. Growth is even more pronounced in Asia at 14% per year, the company said. About 100 jobs will be created. The plant is expected to start up in the first half of 2015.

DSM Announces More Investments in Taiwanese Facility

DSM said it plans to make further investments in its Kaohsiung polymerization facility in Taiwan to upgrade and develop the company's specialty polyamide capabilities for its engineering plastic business. Construction has already begun and the investment is expected to be completed by the last quarter of 2012. The exact amount to be invested has not been disclosed.


Jürg Witmer


Rudolf Wehrli

Change in the Board of Directors of Clariant
Clariant has announced that Chairman and board member Jürg Witmer will step down at the general meeting on March 27. The company's board has appointed current vice-chairman Dr. Rudolf Wehrli as his successor.

The company said Witmer will focus more on longstanding directorship mandates as well as taking on new challenges in Asia.

Furthermore, Dr. Klaus Jenny will not be standing for re-election at general meeting. Dr. Günter von Au will join Clariant's board of directors on April 1, after stepping down from his position as CEO at Süd-Chemie.

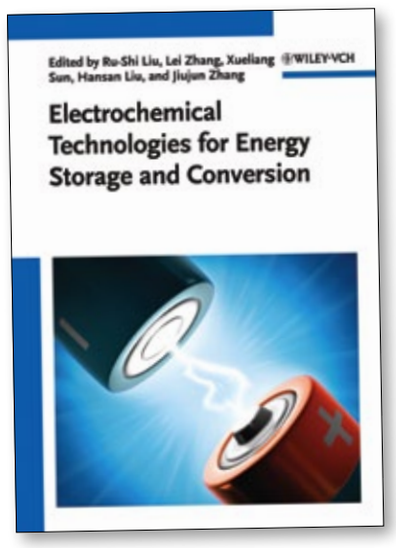
Claes Mittjas Appointed Managing Director of Tikkurila's Swedish subsidiary
Claes Mittjas has been appointed managing director of Alcro-Beckers AB, a Swedish subsidiary of Tikkurila, and Vice President of Tikkurila's Scandinavian business operations as of March 5. Mittjas has worked in various managerial and sales and marketing positions in consumer goods businesses in the Nordic area for almost 30 years.

Jon Huntsman, Jr. Joins Huntsman Board
Jon Huntsman, Jr. has been appointed to the Huntsman board of directors as of Feb. 1. Huntsman was most recently was a candidate for the Republican nomination for U.S. president. He pulled out of the running in January. Huntsman's public service career includes his two-time election as governor of Utah, United States ambassador to China, United States ambassador to Singapore and deputy United States trade representative and ambassador.

Huntsman will serve as a class III director for a term that expires at the company's 2013 annual meeting of stockholders. The Huntsman Board now comprises 10 directors, six of whom are independent directors.

Barbara Cannon elected as new President of the Royal Swedish Academy of Sciences
The Royal Swedish Academy of Sciences (RSAS) has appointed Professor Barbara Cannon as president, starting on July 1 for a period of three years. Between 1985 and 2010, Cannon was director of the Wenner-Gren Institute, Stockholm University, where she still works. As a British citizen she is a foreign member of the Academy, elected in 1989. She has for the past decades had more than 30 high-ranking positions and honorary tasks in the scientific community, both in Scandinavia and in Europe. Among others, she was chairman of the Nobel Foundation's council from 2009-11.

Overview Electrochemical Technologies

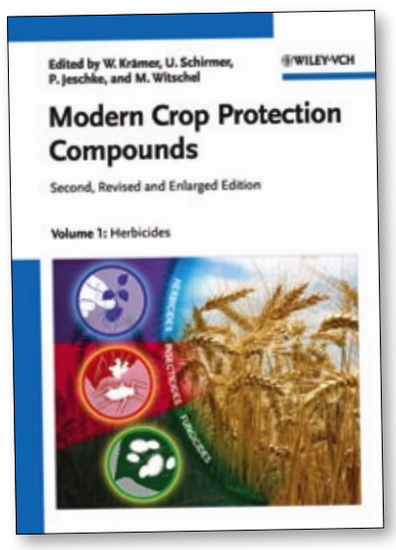


In this handbook and ready reference, editors and authors from academia and industry share their in-depth knowledge of known and novel materials, devices and technologies. The result is a comprehensive overview of electrochemical energy and conversion methods, including batteries, fuel cells, supercapacitors, hydrogen generation and storage as well as solar energy conversion. Each chapter addresses electrochemical processes, materials, components, degradation mechanisms, device assembly and manufacturing, while also discussing the challenges and perspectives for each energy storage device in question. In addition, two introductory chapters acquaint readers with the fundamentals of energy storage and conversion, and with the general engineering aspects of electrochemical devices.

Order your copy before March 31 to take advantage of the introductory offer of €199/£165/$270.

▶ Electrochemical Technologies for Energy Storage and Conversion
Jiujun Zhang, Lei Zhang, Hansan Liu, Andy Sun, Ru-Shi Liu
John Wiley & Sons
2011, 838 pages, €199
ISBN: 978-3-527-32869-7

A Must-Read for the Agro Industry



This one-stop reference for everyone working in the agrochemical business is the leading reference in the field, with first-class authors from all major crop protection companies, including Bayer, Dow, Syngenta and BASF. In three volumes, one each on herbicides, fungicides and insecticides, it provides up-to-date information on the chemical properties, mode of action, range of application, industrial-scale synthesis and commercial products. The new edition has been updated and expanded by more than 50 new compounds and their mechanisms.

Introductory price of €449/ £365/$605, valid until end of June.

▶ Modern Crop Protection Compounds, Second, Revised and Enlarged Edition, 3 Volume Set
Wolfgang Krämer, Ulrich Schirmer, Peter Jeschke, Matthias Witschel
John Wiley & Sons
2011, 1,608 pages, €449
ISBN: 978-3-527-32965-6

LogiChem 2012, April 17-19, Antwerp The 11th edition of LogiChem's program will cover the most pressing issues affecting senior supply chain professionals within the chemical industry in a format that fosters high levels of interactive networking, learning and benchmarking. The market is now very concerned about the volatility of the economic environment, particularly since lower production levels and amid fears about a double dip recession that will ultimately impact even the fairly robust chemical industry.
▶ www.wbresearch.com/logichemeurope/home.aspx

Analytica 2012, April 17-20, Munich The 2012 Analytica will focus on innovative product and system solutions for the entire laboratory in science, research and industry. The exhibits will cover the entire value-added chain for laboratory technology, analysis and quality control, biotechnology, the life sciences and diagnostics in its full breadth and depth.
▶ www.analytica.de

Pharma Outsourcing & Procurement Summit 2012, May 21-22, Berlin The Pharma Outsourcing and Procurement Summit 2012 addresses the urgent need for pharma to identify and locate the best outsourcing partnerships and solutions to stay competitive in an uncertain climate whilst addressing heightened regulatory pressures and need to maintain high quality standards. The summit to address the growing outsourcing requirements in contract manufacturing, bulk, fill finish, drug delivery and formulation, research & development and API sourcing.
▶ www.outsourcingevent.com

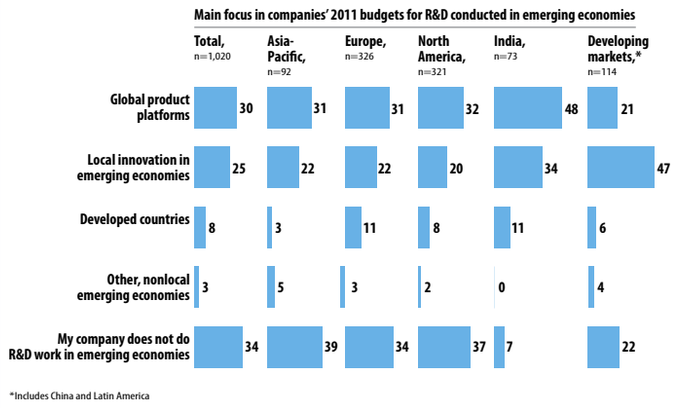
Fecc Annual Congress 2012, May 21-23, Lisbon The Fecc Annual Congress is one of the most important dates in the European chemical industry's calendar. Hundreds of delegates, from business leaders to stakeholders, attend every year. This year's theme is "Sustainable and responsible distribution: The formula for success." The Fecc Annual Congress is the first choice for leaders from the chemical distribution industry for networking to generate new business and reinforce existing relationships, while also learning new methods to improve their performance.
▶ www.fecc.org

Emerson Global Users Exchange 2012, May 29-31, Düsseldorf Tailored to meet the needs of users in Europe, the Middle East and Africa, delegates will learn about best practices and see how colleagues are meeting new regulatory requirements, increasing yields, improving efficiency and reducing costs with enhanced automation.
▶ www.emersonexchange.org

R&D Strategies in Emerging Markets

Disparities in emerging-economy spending

% of respondents, by location of company headquarters

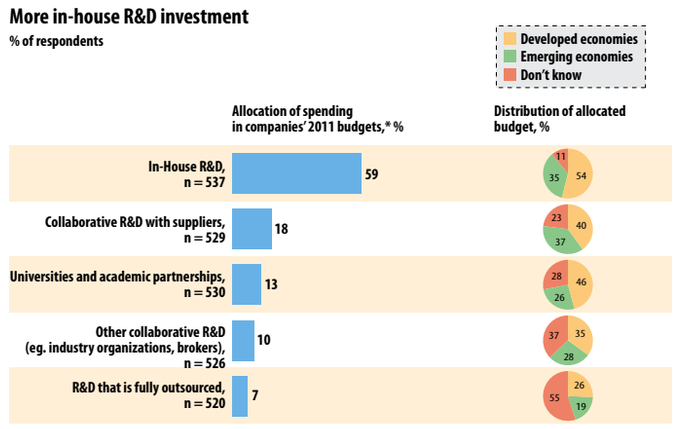


*Includes China and Latin America

Source: McKinsey © CHEManager Europe

More in-house R&D investment

% of respondents

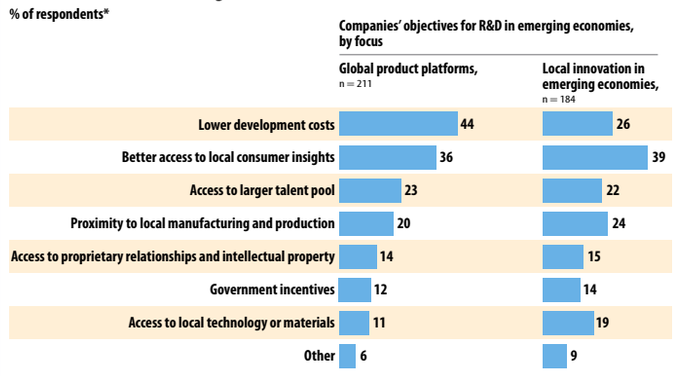


*Figures do not sum to 100%, because respondents could select more than one category of spending.

Source: McKinsey © CHEManager Europe

Lower costs and better insights

% of respondents*

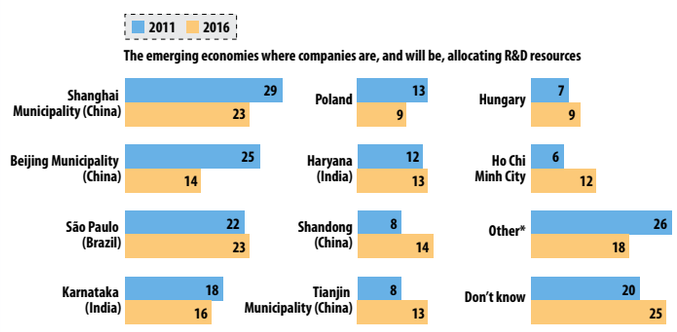


*Respondents who answered "don't know" are not shown.

Source: McKinsey © CHEManager Europe

Investing all over the world

% of respondents, n = 454



*The most frequently cited cities, countries, and regions that respondents wrote in for "other" include: Chennai, Hyderabad, Mumbai, and Kolkata (all in India); Indonesia; Mexico; Russia; South Africa; the Middle East; and countries in Eastern Europe such as the Czech Republic, Romania, and Slovakia.

Source: McKinsey © CHEManager Europe

Economies such as China, India, and Brazil emerged from the global recession with high expectations for growth, presenting global companies with new markets, ongoing access to lower costs, and unprecedented opportunities to broaden their research and development efforts in the coming years. Despite all this, a recent McKinsey survey on R&D showed that one third of executives around the world say their companies are not doing any R&D work in emerging economies.

Four in 10 respondents said their companies' R&D budgets were higher in 2011 than in 2010.
And two-thirds of executives say their companies spent part of their 2011 R&D budgets in emerging economies, with most focusing on the support of either product platforms sold in global markets, or innovation for products made and sold in local, emerging-economy markets. Fewer than one in 10 say the main focus of their company's emerging-economy R&D work is for developed economies.
Executives at companies based in either the Asia-Pacific region5 or North America are the likeliest to say their companies don't pursue R&D in any emerging economy Strikingly, among companies we define as "high-performing innovators," 100 % conduct some R&D in emerging economies (graphic 1).

Among respondents whose companies pursue emerging-economy R&D, the largest share of overall development spending remains in-house, followed by spending on collaborative R&D with suppliers. Broadly speaking, companies' spending appears aligned with their goals. Companies that focus on local innovation in emerging economies, for example, spend significantly more of their in-house R&D budgets in those economies, and companies focusing on global product platforms spend more of their in-house budget in developed economies (graphic 2).

The reasons given for pursuing emerging-economy R&D depend on the companies' goals. Among respondents who say their companies focus on R&D for global platforms, 44 % say the reason for conducting R&D in emerging economies is lower costs; among those pursuing innovation for emerging markets, 39 percent cite access to customer insights (graphic 3).

Looking around the word, China and India are the most common regional choices for R&D destinations, respondents indicate, and Shanghai and Beijing are the cities that respondents are most likely to cite as current destinations for R&D investment. Still, this survey uncovered no single geographic hot spot for R&D in emerging economies; indeed, one-quarter of executives say their companies put R&D resources in geographies outside the 10 leading destinations McKinsey asked about in its survey (graphic 4).

All in all, the McKinsey survey revealed that companies defined as high-performing innovators conduct R&D in emerging economies. In addition, a higher proportion of respondents say their companies are seeking growth in emerging markets than actually conduct R&D there. That being said, McKinsey concludes that the high performers otherwise differ little from others, suggesting that companies will benefit most from pursuing the tactics best suited to their goals for emerging-market R&D.

Source: McKinsey

Spring Has Sprung While those of us in the Northern Hemisphere are still a few months away from being able to hand-pick fresh cucumbers out of our gardens (the vegetables are typically harvested May-August), as this picture shows, a few days are all it takes for the cucumber plant to grow out of its seed coat, which still clings to the seedling. Using the latest biotechnology and breeding methods, they can select plants more precisely and cross-breed them more effectively – creating hardier and higher-yielding varieties. The emerging plant provides valuable benefits for vegetable farming around the world. (Photo: Bayer CropScience)

On A Personal Note

Dear Readers,

This issue of CHEManager Europe will be my last for a while; I'll be going on maternity leave later this month. Luckily, I have a qualified team at home – including my three-year-old daughter and six-year-old Basset Hound – to help me take care of the newest addition to our family when he arrives in early May. I'm also lucky to have a qualified team in our news office who will be running CHEManager Europe in my absence (although there's unfortunately no Basset Hound on the team). Starting immediately, your editorial contacts are:

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In the meantime, I wish you all a successful year and look forward to working with you again in mid-2013!

All the best,
Brandi Schuster
Editor-in-Chief,
CHEManager Europe & CHEManager Europe Online

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