

German Water and Wastewater Technology

Worldwide Success with Efficient Water Management Technologies

Engineering Know-how – Environmental protection and growth are impossible without modern plants and technologies. The German mechanical and plant engineering industry acknowledges this and has set global standards by developing and constructing reliable and cost-effective plants and systems for saving the resource of water. The complex tasks related with water and wastewater treatment require a great amount of experience and skill on the part of the mechanical and plant engineers/contractors.

Water and wastewater technology is a large and heterogeneous industry that includes a wide range from engineering companies and component suppliers to contractors capable of delivering entire plants. The majority of German suppliers of water and wastewater technology



products are small and medium-sized enterprises with less than a hundred employees. Being dynamic and flexible, the advanced technical expertise and the quality of their products and services have made these companies international leaders and renowned business partners.

Customers expect reliable and sophisticated plants comprising modular automation technology at a reasonable cost/performance ratio. The companies organized in the VDMA are in a position to offer the necessary range of products and services and have influenced R&D in the field of water and wastewater technology significantly.

Market Development

In 2007, the German water and wastewater technology industry generated a total turnover of approximately €1,250 million, thus marking a turn around after having experienced a negative growth in the previous years. The most significant contribution to this economic revitalization was generated by the water treatment and industrial wastewater handling sectors with a share of 50% of all orders. The treatment of industrial process water is becoming increasingly important, particularly with regard to the recovery of service water and the recycling of usable water substances. Flexible and economic plant concepts are the crucial factors for successfully concluding contracts in the water and wastewater engineering industry.

Water and wastewater treatment plants are important components of municipal utilities and waste management facilities as well as of water-intensive industrial production processes. In 2008, the main customers were public and private disposal companies with an average pro-



portion of orders of approximately 30%, food and beverage industries with 15% and chemical and pharmaceutical Industry with 12%.

Export Volume

For the German suppliers of water and wastewater technology export is playing an ever more important role, with exports worth about €658 million. With a volume of €70.4 million in 2008, Russia remains the major export market for German water and wastewater technology. China comes in second with €44.4 million, followed by France (€34.9 million) and Great Britain (€30 million).

New Challenges Create New Opportunities

The modern water management industry is characterized more and more by an integrative approach and is increasingly dealing with water supply (drinking water and service water), wastewater disposal and water resources protection. The world-wide shortage of clean drinking water opens up opportunities for German suppliers of water and wastewater treatment systems and plants. Their products help to secure the future of industries using large quantities of water and they help to provide the urgently needed supply of clean drinking water to people living in regions with limited water resources.

Wastewater from industrial processes needs efficient treatment for its reuse as well as for the removal and the recycling of substances contained in the water. Existing installations have to be upgraded to cope with increasing wastewater quantities and with different pollutants. They have to fulfill the requirements from legal regulations that are getting more and more restrictive. Whenever changes are made, the requirements and resources of the local conditions need to be analyzed again. In many cases, modern process technology and the innovative use of local resources lead towards technologically and economically efficient plant concepts without major structural changes.

Increasingly Efficient Water Recycling Systems

Automotive paint shops have started to recover paint particles, binding agents and salts from process water, returning them to the production process for reuse. The remaining concentrated waste can be incinerated or disposed of in other ways. Other industries are operating similarly – e. g. by now the water used in electroplating processes is recycled by ion exchangers and/or reverse osmosis systems, and the service life of degreasing baths can be significantly increased by modern semi-permeable membrane technologies.

In the chemicals, pharmaceuticals and food and beverages industries a combination of anaerobic and aerobic processes is used to treat wastewater containing high levels of organic pollutants and thus significantly reduces the wastewater levies that companies have to pay. The biogas generated by these processes can be used as fuel for heat generation and hereby further increases the efficiency of the wastewater treatment process.

Nowadays, membrane bioreactor (MBR) plants increasingly become an economically viable option for the extraction of biomass in municipal and industrial aerobic wastewater treatment facilities. Rather than separating the biomass from the wastewater in sedimentation basins, these systems generally integrate the membranes in the main treatment basins, where they are extracting both biomass and organic contaminants from the water.

The advantages of these systems include high biomass concentration, a reduction of waste sludge volumes and a complete extraction of biomass from water. The water flowing out of the MBR plant is free of germs and particles and ready for immediate reuse.

Innovative and more efficient sludge treatment processes help to decrease sludge volumes and improve the amount of usable gas generated in sludge fermentation tanks. These include sludge disintegration techniques, which physically break down sludge particles, including the individual cells of the biological sludge components.

The progress made in IT, in electrical data acquisition and in process control systems allows accurate models of complex systems to be built which can then be used for optimizing processes, making them more efficient than ever. The continuing market globalization is going to be accompanied by a further increase in the level of networking between customers and suppliers. In return, this opens up new opportunities of acquiring business and processing contracts by means of modern information and communication technology.

Online service and maintenance (tel-eservices) have become common practice, enabling fast and efficient intervention in case of irregularities in plant operation. As in other industries, IT becomes more and more standard of all water and wastewater engineering projects.

Ready for the Challenges of the Future

Future developments in water and wastewater technology will have to focus on saving energy and the reduction of pollution emissions within the framework of environmental and other legislation. Engineers designing plants and systems will have to focus even more on the specific requirements of individual production processes and the quality standards required for the process water. Integrated wastewater treatment technologies are facing a promising future, even though they will never completely replace the so-called “end-of-pipe” systems.

German suppliers are strong players and renowned partners on the world market. Their high technological product standard and their commitment to continuous improvement and development will ensure that plant and process engineering “made in Germany” will continue to enjoy an enviable international reputation.

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