

Saving Water through Innovative Technology

Mr. Torsten Erwe, Business Manager Environmental Protection Technology
 Bayer Technology Services GmbH, Building K9, 51368 Leverkusen, Germany
 Email: EPI-Info@bayertechnology.com
 Web: www.bayertechnology.com
 Tel: +49 214 30 80042

Bayer Technology Services is an expert when it comes to treating wastewater. One of its visions for the future is a means of treating heavily contaminated wastewater streams so effectively that they can be returned to production processes for reuse. A sensible way of using a scarce resource

Temperatures in excess of 40°C are nothing out of the ordinary in the Negev desert. The dry heat sometimes makes it difficult even to breathe. Particularly for someone like Henner Schlieper who comes from the Rhineland. Schlieper, an engineer, sometimes has to visit this inhospitable part of Israel because that's where the Ramat Hovav industrial park is located. One of the 22 companies that operate here is Makhteshim Chemical Works (MCW), Israel's largest producer of crop protection products.

MCW has ordered a plant from Bayer Technology Services (BTS) that will treat heavily contaminated production effluent before it is transferred to the biological wastewater treatment facility. Schlieper is not only supervising the construction of the plant; as Head of Infrastructure Engineering at BTS he was also very involved in planning it. The MCW plant will use Loprox® technology. The product name stands for 'low-pressure oxidation'. Contaminated wastewater is pumped into a reactor which operates at a temperature of around 220°C and is pressurized up to 30 bar. But these process parameters on their own are not enough to break down the contaminants. Oxygen, a catalyst and a strong acid are added to turn indigestible substances into a tasty meal for the bacteria downstream of the process. The steel reactor in the industrial park will ultimately stand 24 meters tall under the desert sky, and BTS has lined it with acid-fast titanium so that it will withstand the harsh operating environment.

The Loprox® process is not entirely new. The oldest plant using this technology has been running for nearly 25 years – without a hitch so far. More recent facilities treat wastewater from pharmaceutical production in La Felguera, Spain and from dyestuffs production in Cilegon, Indonesia. Continuous improvements to the process mean that Loprox® still has something to offer even today. "We are constantly refining the technology and adapting it to our customers' specific needs,"



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Schlieper explains. It is extremely cost-effective compared with other processes, particularly for wastewater that contains high concentrations of contaminants.

Three Loprox® reactors are in operation in the Leverkusen chemical park. In December 2006, the then Israeli Environment Minister, Gideon Ezra, visited Leverkusen to look at the wastewater treatment process 'Made by Bayer' that has been working successfully for decades. The visit made a lasting impression on the Minister; shortly after his return to Israel BTS received a request to quote for the construction of an upstream facility to reduce the burden on the biological wastewater treatment plant.

The new reactor is scheduled to come on stream in 2010. It will then pretreat up to 75 cubic meters of wastewater per hour. The timing is good; the start-up will coincide with the introduction of more stringent wastewater thresholds in Israel.

"Thanks to Loprox®, MCW will not only be able to comply with the requirements but to exceed them," Schlieper says. The quality of the pretreated water will be good enough to ensure that the downstream treatment stage functions safely and reliably. But for BTS this plant is a showcase item in more than just this respect. It will also be the largest in the world – and the first for a customer outside the company.



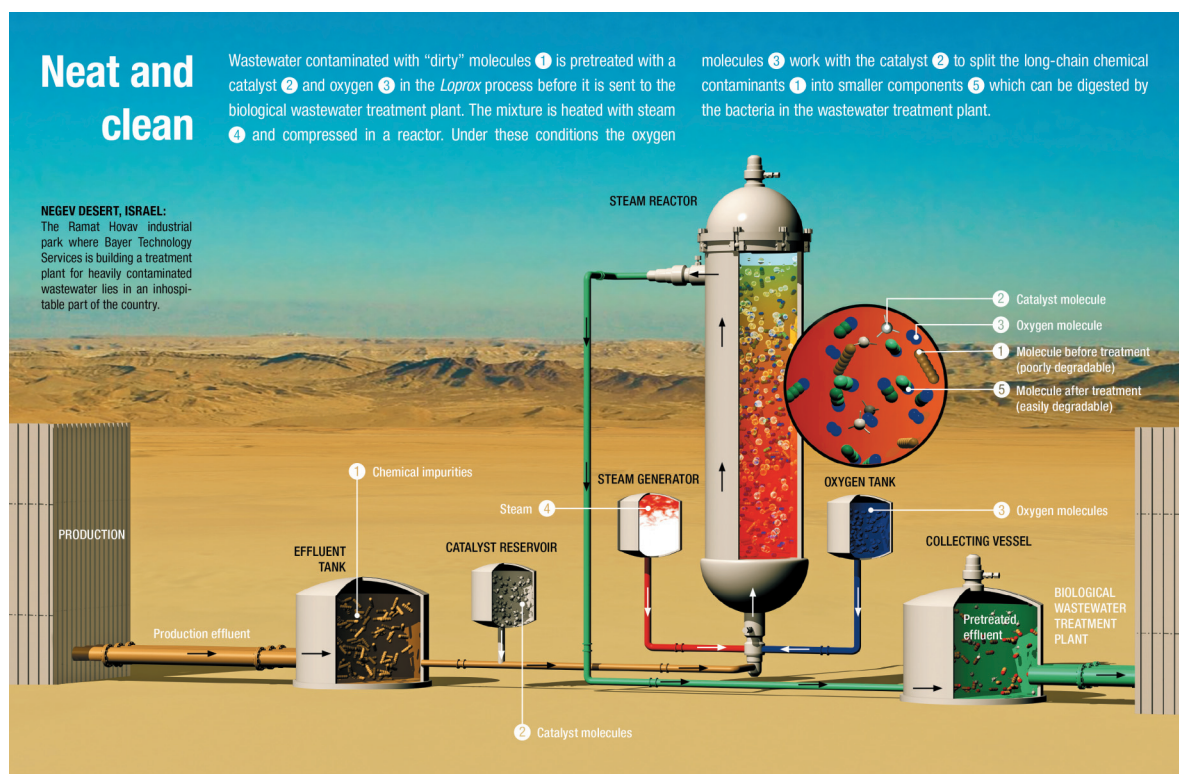
Henner Schlieper, Head of Infrastructure Engineering at Bayer Technology Services

BTS, a Bayer service company, intends to focus more intently on this target group in the future. Schlieper is confident about this new direction. "Bayer has many years of experience with wastewater treatment," he says. He believes that this expertise will even make it possible "to treat wastewater so effectively that it can be used as process water, by returning it directly to the production process, for example."

The engineers at BTS are already working on the next optimization step for the Loprox® process. "Our aim now is for oxidation to take place in a neutral chemical milieu," Schlieper says. Then there would be no need to add the strong acid, and the material used to construct the reactor would not have to meet such tough standards. And as Schlieper says, "That will reduce the general wastewater treatment costs for companies substantially."

If you would like to learn more about the company and its technology solutions with regard to environmental protection and wastewater treatment, you are welcome to visit BTS at the IFAT trade fair in Munich, 13th -17th September 2010 (Hall A1, Booth 305).

For further information about Bayer Technology Services, please visit www.bayertechnology.com.



About Bayer Technology Services

Bayer Technology Services GmbH offers fully-integrated solutions along the life cycle of chemical/pharmaceutical plants – from development through engineering and construction to process optimization for existing plants. The Bayer subsidiary employs almost 2,600 experts worldwide at its headquarters in Leverkusen and other German sites, as well as in regional offices in Belgium, Brazil, China, India, Mexico, Singapore, Switzerland, the United Arab Emirates and the United States.

In 2009, the company achieved sales of approximately EUR 380 million.