

Enhanced production for ion exchange resins

Specialty chemicals company, LANXESS, is investing in its ion exchange resin production facility at its Leverkusen site in Germany. The company is optimising its process technology and operating efficiency for a seven-figure EUR amount. The project is scheduled for completion in the first half of 2019. Rainier van Roessel, member of the board of management at LANXESS AG, explains.

For our ion exchange resins business, we see great potential in numerous future-oriented industries. We intend to make even better use of this potential by optimising our technology," says Rainier van Roessel. "At the same time, with this investment, we are further strengthening the position of the Leverkusen site as the heart of our production operations in Germany."

Demand for ion exchange resins is rising, in the battery industry, for example, driven in particular by the trend toward electric vehicles. The metals essential for battery cell production – lithium, nickel and cobalt – can be extracted by means of ion exchange resins.

Ion exchange resins are polymer beads that absorb undesirable substances in flu-

ids. Depending on the substance, differently functionalised beads are used.

Possible household applications include, for example, softening water in dishwashers and cartridges in household water filters. Here, ion exchange resins remove undesired calcium and magnesium salts or lead and copper ions from tap water. This improves the quality and taste of the drinking water.

In power plants, the polymer beads are used in the production of highly purified water and steam. Deposits and corrosion can thereby be prevented and efficiency, operational safety and service life increased.



Furthermore, ion exchange resins help in removing selected heavy metals, such as mercury and cadmium, and organic pollutants from both groundwater and industrial wastewater.

Leading provider of water treatment solutions

LANXESS is a major, global provider of liquid purification technologies with almost 80 years of experience in water treatment and purification applications and is



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one of very few companies to offer these two different, complementary water treatment technologies from a single source.

The LANXESS Liquid Purification Technologies (LPT) business unit is one of the world's most important providers of water treatment solutions. In addition to ion exchange resins, the specialty chemicals company offers membrane filter elements for reverse osmosis and ultrafiltration membranes.

The LANXESS high performance products are used in numerous industries to treat and purify water to the required specifications, to purify processing streams, and to recover valuable ions from solution. Products include the Lewatit® ion exchange resins, Lewabrane® reverse



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osmosis membrane elements, and iron oxide adsorbers under the tradename Bayoxide®.

LANXESS is a leading specialty chemicals company with sales of EUR 9.7 billion in 2017 and about 19 200 employees in 25 countries. The company is currently represented at 73 production sites worldwide.

The company's core business is the development, manufacturing and marketing of chemical intermediates, additives, specialty chemicals and plastics. LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World and Europe) and FTSE4Good. □

New Lewabrane HP reverse osmosis series

Jens Lipnizki, head of technical marketing membranes for LANXESS, introduces the expanded Lewabrane HP (high performance) series from LANXESS, which now includes elements with enhanced brackish water membranes for service in applications where high rejection and energy efficiency are important.

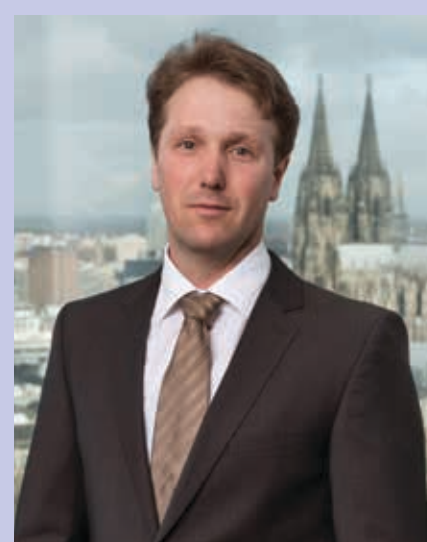
With an average salt rejection rate of 99.7% (at 2 000 ppm NaCl and 225 psi) and high permeability, the new product types from LANXESS are a further development of the high cross-linked polyamide membrane, which the company launched in 2012. Controlling the degree of polyamide cross-linking during the production process provides a smaller effective pore size that results in high rejection of solutes, regardless of their charge. "By optimising the process, the flux could be improved without compromising permeate quality. Therefore high rejection, even at changing feed parameters such as pH or salinity, can be achieved at high flux rates," explains Jens Lipnizki, head of

technical marketing membranes in the Liquid Purification Technologies business unit.

LANXESS is showcasing its new Lewabrane HP membrane elements for the first time at the Membrane Technology Conference & Exposition, hosted by the American Membrane Technology Association (AMTA) and the American Water Works Association (AWWA) in New Orleans (LA) in the USA from February 25 to 28, 2019.

Efficient even in changing conditions

Reverse osmosis is used for desalination and purification of water and has been growing rapidly in industrial, municipal and wastewater reuse applications, where parameters



can change quickly. The Lewabrane HP types ensure high rejection of critical ions, even at changing temperature and pH levels. Depending on the application, different contaminants are identified as critical. For

boiler feed water, silica is critical, while for wastewater applications, the focus is on nitrates or organics, for example.

"In a number of industries, high salt rejection combined with high energy efficiency is useful, especially if the RO process is designed in combination with another separation process such as ion exchange. The benefits is derived from the lower applied pressure and higher rejection rates, which lead to longer cycle times of the ion exchange units," says Lipnizki.

This makes these membranes ideally suited to applications involving combined processes, such as the production of boiler feed water for power generation, zero liquid discharge processes (ZLD), or production of ultrapure water. Yet the product can also be used in innovative processes such as closed circuit reverse osmosis (CCRO), in which the feed water composition changes with each cycle, this is because a constant rejection rate is an important benefit of the new Lewabrane HP type.

In addition, LewaPlus, the engineering tool developed by LANXESS, enables easy

and reliable design of water treatment facilities. The software tool allows ion exchange and RO membrane based plants to be designed separately and as combined systems.

LewaPlus pools the knowledge and experience of LANXESS in both technologies and is giving plant designers a recommendation

on how they can best arrange membrane components to suit their needs.

The latest 2.0.9 version already incorporates the new Lewabrane HP reverse osmosis membranes so that designers can immediately begin to improve the performance of their plants. □



The new Lewabrane HP series of reverse osmosis membranes is ideal for use where high salt rejection combined with high energy efficiency is useful, especially if the RO process is designed in combination with another separation process such as ion exchange.