News Release

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LANXESS' LewaPlus design software receives numerous new functions

- **Design of new plants and optimization of existing ion exchange systems**
- **Calculation and evaluation of mixed-bed systems**
- **Determination of resin performance in condensate polishing applications**
- **Reliable calculation of operating costs**
- **Food module now helps to design systems for the production of aqueous sugar solutions**

Cologne, March 27, 2024 – LANXESS has now released a new version of its LewaPlus design software with a significantly expanded range of functions. The calculation tool, which enables the dimensioning of ion exchange systems including individual process configurations, has been updated with improvements and additions in the modules for mixed-bed calculation, condensate polishing, and the design of polishing stages in food and beverage production. The software also enables users to check the efficiency of existing systems and identify potential savings in operating costs.

Dr. Nadja Hermsdorf, Technical Marketing Manager in the Liquid Purification Technologies (LPT) business unit at LANXESS, explained: "We often find that the capacity of the ion exchange resin units to be better utilized and that there is also potential for optimization in terms of water and chemical consumption. With LewaPlus, we provide a powerful tool for determining such operating parameters in advance or retrospectively using simulation. After all, sustainability considerations and data are becoming increasingly important for our customers in order to reduce operating costs."

Design and evaluation of mixed-bed systems

The new functionalities in the water treatment application area include a module for designing mixed-bed systems with ready-to-use mixed bed (MB) resins. The starting point for this was standard mixed

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beds for which reliable data on operating capacity are available. The module makes it possible to design the filter hydraulics and allows a good estimate of the expected cycle time. As soon as the database is sufficiently accurate for a realistic calculation of the cycle time, high-end mixed beds will also be integrated in a further update.

In addition to designing new systems, LewaPlus now also makes it possible to evaluate existing mixed-bed systems, optimize them, and monitor the performance of the installed resins. The MB-Check module was introduced as a logical next step. It is based on the proven Demi-Check module, a very efficient tool for evaluating the performance of systems by simulating the aging of the installed resins or changes in the composition of the feed water.

Determination of resin performance in condensate polishing applications

When it comes to condensate polishing, the further development of LewaPlus ensures a much more comprehensive calculation of resin performance. The revision of this module includes the following key improvements.

In an arrangement consisting of a strong acid cation exchange (SAC) resin and a downstream mixed-bed stage, the cycle times can be calculated separately. Such a configuration is often used if the raw condensate has a high pH value. The SAC stage removes most of the conditioning agent so that the mixed bed can be operated for a much longer time. The cycle time of the SAC stage can now be set individually, independently of the mixed bed.

The volume ratio of SAC and strong base anion exchange (SBA) resin in the mixed bed can be varied in the range from 1:2 to 2:1. This means that the hydraulic requirements, such as compliance with the recommended minimum height or the maximum specific volume load (BV/h), can be met without having to adjust the safety factor. The actual operating capacity and the theoretical maximum operating capacity are shown.

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Furthermore, the calculation of the silica capacity has been revised. In addition to the laboratory data, data from real applications was included in the calculation. This leads to a higher theoretical maximum operating capacity.

Food module expansion

For the first time, LANXESS is offering a feature within LewaPlus that can be used to estimate the use of mixed-bed ion exchange systems to produce the best possible sugar quality. Investment costs and potential savings in operating costs can also be identified. The former include the installation of the system and the procurement of the ion exchange resins. Operating costs include the cost of regeneration and water supply and disposal. With the help of a cost forecast, the user can estimate the costs over the planned total operating life of the system (total cost of ownership, TCO).

As a design tool for the industrial production of aqueous sugar solutions, the LewaPlus FD module helps to dimension new systems and check existing systems. To complete the portfolio of ion exchange processes for the food and beverage industry, LANXESS has expanded the existing module for corresponding applications. It is now also possible to design mixed-bed systems that are used as a polishing stage for sugar solutions in the production of high-purity sugar. Such sugar-containing solutions are either a component of end products that are produced from starch in a multi-stage process, for example glucose, dextrose or concentrated fructose syrup, or a liquid sugar obtained from sugar cane or sugar beet.

Detailed information about LewaPlus and LPT products and services can be found at https://lanxess.com/en/Products-and-Brands/Brands/Lewatit. The new version of the design software is now available for download here and can be used free of charge.

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LANXESS has added new functions to its LewaPlus design software. They make it possible to dimension or check ion exchange resin systems even more precisely. The LewaPlus FD module, for example, helps with system calculations for the industrial production of aqueous sugar solutions.

Photo: LANXESS

News Release

LANXESS is a leading specialty chemicals company with sales of EUR 6.7 billion in 2023. The company currently has about 12,800 employees in 32 countries. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives and consumer protection products. LANXESS is listed in the leading sustainability indices of the Dow Jones Sustainability Index (DJSI World and Europe).

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