Automated Reactors in Process Development and Scale-Up

AutoLAB

Scaling up a chemical process safely and efficiently requires a deep understanding of how the reaction will behave in larger volumes. This knowledge is critical to optimizing operating conditions while mitigating any thermal and pressure hazards.

Optimization for Scale

Jacketed reactors can replicate manufacturing operations at the laboratory scale, enabling the efficiency of the desired reaction to be evaluated under representative conditions. Reaction rate, yield, and selectivity can be assessed, and the information generated can be used to inform further optimization studies.

The **AutoLAB** is a highly configurable automated laboratory reaction system, supporting vessel sizes ranging from 1 L (bench-top) to 20 L (floor standing frame).* It is also available as a high-pressure variant, facilitating the study of reactions operated at pressure, and enabling the replication of the pressure effects found at a manufacturing scale.

By closely mimicking production scale conditions at the bench to pilot scale, it is possible to improve the efficiency of the process prior to costly scale-up. The **AutoLAB** supports optimization of reaction efficiency by enabling the study of factors such as the stirrer design, addition rate, mixing regime, and other operating conditions. Being software controlled, the **AutoLAB** minimizes human error - experiments are reproducible, and the data recorded can be used for further scaling up.

Mitigating Worst-Case Scenarios

Scaling up a process requires accurate knowledge of any potential exothermic events so that appropriate safety measures can be implemented. Please see our **Process Safety & Scale-Up** portfolio for more information.

Bespoke Solutions

H.E.L Group has a well-established history of developing tailored, automated reactor solutions for the chemical and pharmaceutical industries. If you are interested in a customised solution, please **contact us** to discuss your specific requirements.

*Figures stated here are for standard configurations; please see our **Chemical Synthesis Specification Sheet** for more information on other options available.

labCONSOL®

Bringing effortless efficiency to your laboratory automation

Built around the next generation of the proven WinISO software engine and introduces new features that enable scientists to improve laboratory efficiency and boost productivity.

Designed around the user experience, labCONSOL® combines:

- **advanced real-time data display**
- **automated monitoring of experiment completion and failure states**
- **rapid data capture modes**

across single or multiple parallel reaction systems.

Enabling researchers to quickly and accurately track how an experiment is proceeding, focusing on the most critical aspects, avoiding unnecessary repeated lab work, which can be both costly and time-consuming.

Better user experience – increased productivity

- New intuitive design means less training time required
- Creating new plans/recipes is now simplified. labCONSOL® will also provide hints and tips along the way to prevent errors.
- New plans can be created while an existing experiment is running

Fully configurable workspace – improved efficiency by displaying the info you need

- No swapping between windows required; configure the workspace to suit you.

Improved data-logging and graphing functionality

- New SQL database for file management – no risk of data loss from any experiment
- Improved graphing performance – view entire experiment on a single graph

Invest for the future – benefit from additional features and functionality

- Free software upgrades during the warranty period of your equipment
- Can be extended with a Premium Agreement or Extended Warranty

Powerful software

- One piece of software to support the full range of H.E.L equipment
- Powerful and flexible code base combined with intuitive and user-friendly design

For more information, and how to request an upgrade, visit https://helgroup.com/products/labconsol/ or speak to your local H.E.L representative

About H.E.L Group

H.E.L Group's mission is to work together with chemistry, safety and biotechnology experts to engineer and unleash the full potential of the scientific community. To this end, H.E.L develops and manufactures innovative scientific instruments and software designed to optimize the efficiency, safety and productivity of key processes in chemistry and biology applications.

The H.E.L team includes highly skilled process and software engineers, based at their extensive research and manufacturing facilities in the UK, as well as sales and support offices around the world.

H.E.L has a long history of solving complex challenges for customers. For more than 30 years the company has worked with businesses and laboratories globally, providing proprietary automated solutions for the pharma, biotechnology, chemical, battery and petrochemical sectors.
H.E.L is accredited with ISO 9001 : 2015 and ISO 14001 : 2015.

- With a strong focus on the customer, our **service and support** enables our customers to keep working efficiently
- Our **wide range of customizable products** put the customer at the heart of what we do, with solutions designed around their needs

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