AutoLAB
Bench & Kilo Scale Reactor Systems

Manual or Computer Controlled

www.helgroup.com
BENCH SCALE REACTORS

Reactors for Research
- Compact designs for busy laboratories
- Various vessel sizes available - up to 5 litres
- Wide range of pressures and temperatures
- Choice of manual, touch screen controllers, or full function PCs
- Standard designs for routine applications, as well as highly customized, flexible systems fully integrated with sensors, pumps, valves etc. Installed on site, full training and guarantee

Standard or custom modular designs, add features as you require
FLOOR STANDING, KILO-LAB REACTORS

Pilot Reactors
- Floor standing design with choice of support stands
- Typical reactor sizes up to 20 litres. Larger custom reactors available on request
- Simple manually controlled vessels
- Systems customised for specific applications (such as hydrogenation, polymerisation, crystallisation etc)
- Electrical and oil circulating jackets (and combinations) to suit wide temperature range

AutoLAB is a flexible and expandable system, backed up by over 20 years in reactor design
PROCESS OPTIMISATION/CALORIMETRY

Real-time calorimetry
Add to any:
- High or low pressure AutoLAB
- Designed for development chemists, no calibration, or knowledge of calorimetry theory required

Enhanced software plus "heat flow meter"

Parallel reactors, independently controlled, for hydrogenation

Selection of internals for heterogeneous catalytic reactions

On-line calorimetry without the need for any user expertise. Enables more rapid process development and successful scale-up.

HYDROGENATION

Gas liquid reactions under pressure
- Liquid and gas dosing
- Gas consumption online
- Homogenous or heterogeneous catalysis
- Single or parallel systems

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CRYSTALLISATION

**Turbidity for solubility & MSZW**

![Graph showing solubility and MSZW](image)

Customised probes use HEL's proprietary 'turbidity' sensing system, for accurate detection of solubility boundaries.

**LasenTrack™ for on-line particle sizing**

![Graph showing particle size data](image)

LasenTrack™ probes

PETROCHEMICAL & POLYMERISATION PROCESSES

**Complex Synthesis Reactions**

- Research scale and complete pilot plants
- High viscosity reactions
- High temperature and pressure
- Batch and continuous processes

![Range of conventional stirrers](image)

- Range of conventional stirrers
- Helical stirrer for high viscosity
- Pressurised feed vessel
- 20 litre electrically heated, 1000 bar/350°C reactor on trolley

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**Process Monitoring and Control (and PAT)**

Range of probes (pH, turbidity, particle sizing, FTIR, NIR, etc.) can be monitored and fully integrated into the control system. Feedback control based on these signals is available for both PAT applications and process improvement generally, and can be fully customised to your requirements.

**Liquid dosing**

Range of pumps for different gas and liquid applications.

**Gas measurement**


**Reflux / distillation**

Manual and computer controlled distillation – both standard Dean Stark and distillation / reflux controlled versions.

**Powder dosing**

Gravimetric, fully automated dosing for free flowing powders. High and low volume versions available.

**Sampling**

Automated and manual sampling system, including at high pressure and temperature.
COMPLETE PILOT PLANTS

- Custom designed systems
- Glass or metal reactors
- Manual and computer controlled

What AutoLAB can’t do, can’t be done!

AutoLAB USERS INCLUDE

FAR CHEMICALS & BIOTECH
- Amgen
- AstraZeneca
- CIPLA
- Dr Reddy’s Laboratories
- Bi-Lilly
- GlaxoSmithKline
- Boehringer Ingelheim
- Merck
- Novartis
- Pfizer
- Bristol Myers Squibb
- Sanofi Aventis
- Schering Plough

- Air Products
- AKZO Nobel
- Sasol
- Chevron
- DSM
- Degussa
- Lonza
- DuPont
- Eastman Chemical
- Exxon
- Fujitsu
- Johnson Matthey
- Shell

FINE CHEMICALS, PETROCHEMICALS
- Cambridge University
- Imperial College
- Leeds University
- Max Planck Institut
- McMaster University
- Newcastle University
- Queens University, Belfast
- Defence Science and Technology Laboratory (DSTL)
- Trinity University, Dublin
- University College London
- University of Massachusetts
- University of Mumbai
- University of Warsaw

UNIVERSITIES, RESEARCH, GOVERNMENT

- University of Warsaw
Over the past 20 years we have developed expertise and become industry leaders in:

- Reaction hazards, calorimetry, vent sizing
- Process development and optimisation
- Dust and powder flammability
- Other hazard consultancy services, including expert opinion, HAZOPS, DERS, incident and accident investigation and professional training

CONSULTANCY & TESTING SERVICES

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ABOUT HEL

HEL is an international company that specialises in research and pilot scale chemical reactors and related data logging/automation tools for process R&D in the pharmaceutical, fine chemical and petrochemical industries. Established in 1987 and with clients worldwide our key strengths are:

- Knowledgeable staff - highly qualified and experienced chemical engineers and chemists
- Quality - underpinned by ISO9001 certification for over 16 years
- Service - choice of service contracts backed by established culture of unmatched client support
- Range of products - both off-the-shelf and custom designs, manual and fully automated controls, low and high pressure/temperature applications, single and parallel/multi-vessel products

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