



HYDROFORMYLATION

FROM PROCESS DEVELOPMENT TO COMMERCIAL MANUFACTURING

SAFE – FLEXIBLE – SCALABLE

One of the most important homogeneously catalyzed reactions on industrial scale

Hydroformylation is a key homogeneous catalytic technology for the synthesis of aldehydes and advanced chemical intermediates.

At Valsynthese, we combine decades of expertise in process development, optimization and industrial scale-up with a flexible manufacturing infrastructure — ensuring seamless transfer from laboratory to commercial ISO and cGMP production.

From feasibility to full-scale manufacturing

We deliver safe, efficient and robust hydroformylation solutions tailored to your project requirements — at every development stage.

Complete Scale-Up Capabilities

Laboratory Development

- 1–5 L laboratory reactors
- Process development & optimization
- Catalyst and ligand screening
- Design of Experiments (DoE)
- Analytical method development
- Kilogram laboratory synthesis
- Operating conditions up to 60 bar

Kilo & Pilot Scale

- Pilot campaigns for process verification
- Process safety evaluation
- Scale-up studies
- Process robustness & reproducibility
- Operating conditions between 6 and 25 bar

Industrial Manufacturing

- Commercial production under ISO and cGMP
- Reliable technology transfer
- Secure supply chain
- Flexible manufacturing campaigns
- Operating conditions up to 25 bar



Technical Platform

- Independent dosing of hydrogen and carbon monoxide
- Operating conditions up to 25 bar and -20°C to $+200^{\circ}\text{C}$
- High-performance Hastelloy reactors for demanding chemistries
- Advanced process monitoring and robust safety systems
- Multipurpose equipment enabling efficient downstream processing (extraction, distillation, crystallization, isolation)

Quality & Compliance

- Valsynthese operates under internationally recognized standards to support regulated and non-regulated markets:
- Fully cGMP manufacturing
- ISO 9001
- ISO 14001
- ISO 45001
- Food & Feed compliant manufacturing
- Kosher and Halal manufacturing available upon request

Why Valsynthese?

- Proven expertise in catalytic and hazardous chemistry
- Seamless scale-up from lab to industrial production
- Flexible multipurpose production assets
- Dedicated project management and technical support
- Reliable CDMO partner for Fine Chemicals, Specialty Chemicals, Pharmaceutical Intermediates and APIs

LET'S GROW TOGETHER

Valsynthese SA

Process Development | Scale-Up |
Custom Manufacturing