

FLOW TECHNOLOGY FOR GRIGNARDS

BRING CHEMIUM's **Mg^{Flow}**® TECHNOLOGY IN HOUSE

Mg^{Flow}®, A GAME CHANGING TECHNOLOGY

Mg^{Flow}® is a novel continuous flow process designed especially for the safe synthesis of Grignard reagents in an innovative reactor.

Thanks to exceptional control of the temperature as well as the mixing of the reagents, the reaction time is substantially reduced to minutes, generating a constant flow of product, also possible at your production facility.

At CHEMIUM, we are convinced that safety is not an option. Thanks to the limited reactive volume, not exceeding litres, the typical process **safety concerns** of Grignard batch production **are eliminated**.

The on-site compact skid based production is providing customer with an ideal alternative to complex logistics and handling of portable tanks.



Mg Flow



PROCESS SAFETY

- Less work-in-process materials
- Easy and fast initiation step
- Optimum thermal and mass transfer
- Safety by design
- Ability to stop reaction in < 60s

QUALITY

- Real-time inline quality monitoring
- Consistent quality by design
- No batch variations

COST EFFICIENCY

- Low investment cost
- Low operating cost
- Very low footprint

PROCESS EFFICIENCY

- High flexibility - most Grignard reagents available
- Fully automated process
- High operability
- Continuous operations
- Easy transition

NEW DEVELOPMENT

- Shorter development time
- Easy screening of solvents
- Seamless scale-up
- Small consistent quantities

The design principles of the **MgFlow[®]** technology make it fully scalable from grams to hundreds of tons with a highly favourable scale-up factor on investment costs.

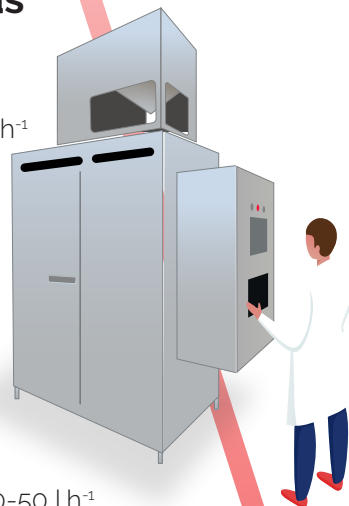


CHEMIUM offers moveable skids in different sizes, which can be placed at customer site for as long as needed.

MgFlow[®] Skids

Proprietary P-Flow reactor : 2-13 Lh⁻¹

Skids are fully configured and programmed to produce one or several Grignard reagents in a fully automated manner.



Proprietary M-Flow reactor : 10-50 Lh⁻¹

Skids have a small footprint and are easily installed (Plug & Play) at appropriate industrial facilities.

MgFlow[®] to License



For larger volume requirements, CHEMIUM offers to license its **MgFlow[®]** Technology for Licensee to build and integrate in its own process plant.

From 1000 MTpa