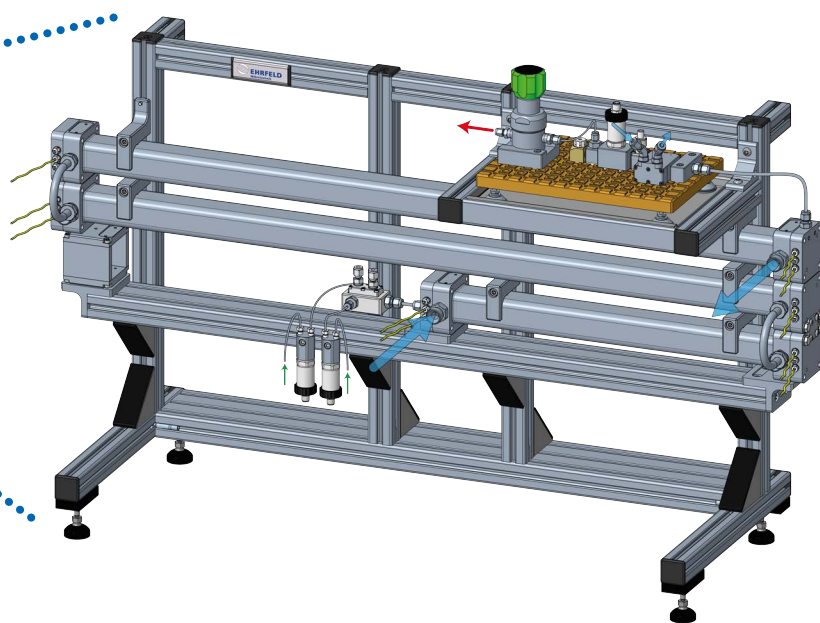
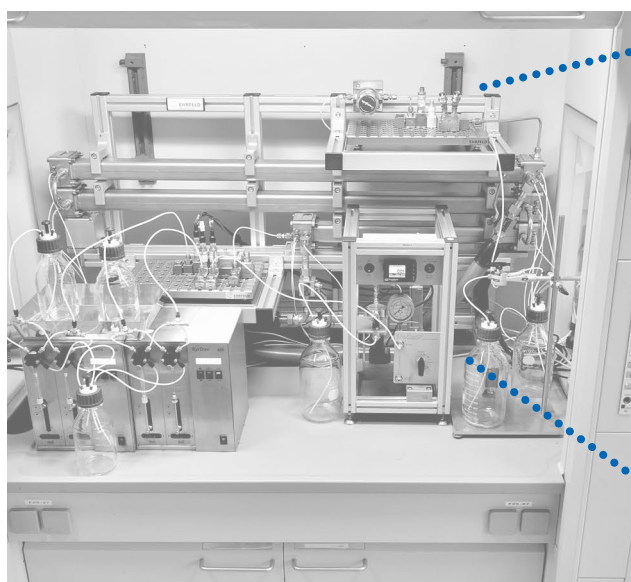


System Solution: Miprowa® Matrix

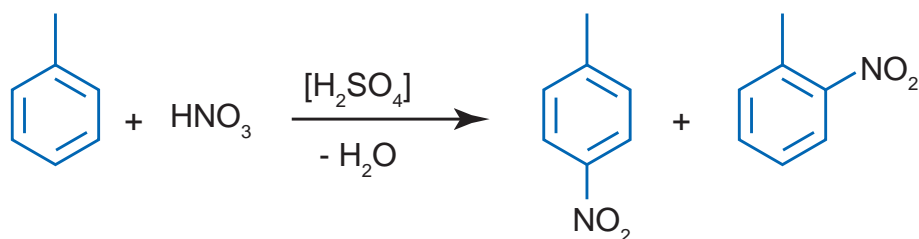
Typical reactions : ethoxylation, peroxide reactions, diazotization, nitration, etc.

Based on our experiences with a large number of different customer projects over many years we have come up with several reactor set-ups combining specific reactors from our portfolio with suitable pumps and other peripherals. These equipment combinations have already proven their usefulness in the field for certain types of reactions and are optimized for customer benefit. For

applications like ethoxylation, peroxide reactions, diazotizations and nitrations the challenges lie in very high reaction enthalpies, and process safety due to the chemicals involved. The Matrix reactor is the scale-up of the Miprowa® Lab to production. It uses the same structures as the production reactor.



Example: Nitration



Operating conditions:

- ✓ Throughput: 80 ... 200 mL/min
- ✓ Residence time: 25 ... 50 s
- ✓ Pressure: 4 ... 20 bar
- ✓ Temperature: 30 ... 70 °C

Reference:

Own research results

Our Process Development Team say:

Small reactor volumes allow for high pressures and temperatures.

Consider corrosion in the case of nitrations.

The feed of the reactants is of critical importance. Reliable pumps are the key to success.

Fast screening of reaction parameters because residence times are short.

The Matrix reactor uses the same channel geometry as the production reactors.

Fast implementation of DOEs.



Technical Specifications

Typical reactions	ethoxylation, peroxide reactions, diazotization, nitration, etc.
Temperature range	-10 ... 250 °C
Pressure limit	24 ... 58 bar
Reactor volume	390 ... 468 mL
Volume flow	40 ... 1400 mL/min
Residence time	20 s ... 10 min
Media-wetted materials	Hastelloy® C22/C276, Alloy 625, Stainless Steel 316, FFKM, PTFE

