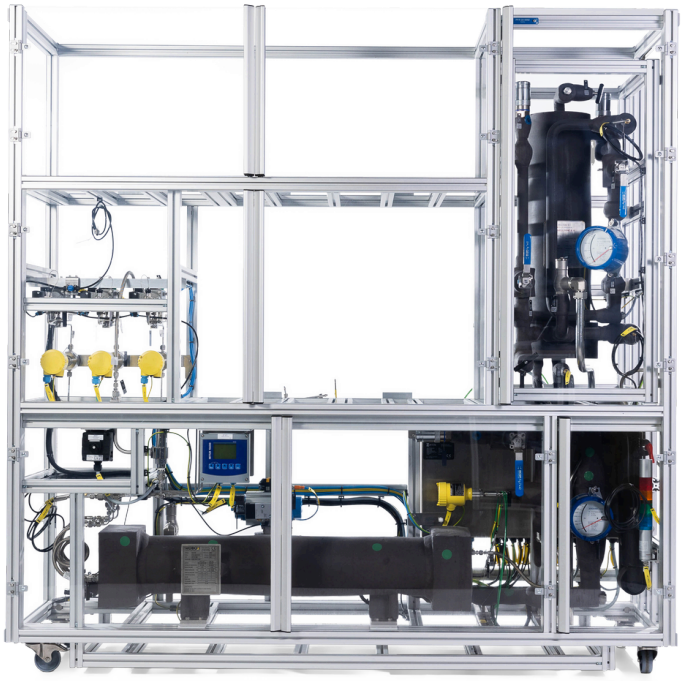
ContiUnity®
by ZETON

Technical Specifications Plug Flow Reactor Tubular



Zeton has partnered with Robox Heat Management (part of Hydac BV) to integrate their advanced tubular plug flow reactor into the ContiUnity® ecosystem, delivering a highly flexible solution for controlled, continuous reactions, even under demanding process conditions.

The ContiUnity® tubular plug flow reactor module is built around a Robox reactor, featuring configurable flow paths, exchangeable static mixers, and robust instrumentation.

Designed for efficient reagent blending and optimized heat and mass transfer, this module provides stable, predictable plug flow performance from development to commercial operation. The Robox reactor uniquely combines functionality as a reactor, heat exchanger, and quencher in a single unit, and is capable of both exothermic and endothermic reactions, offering enhanced process flexibility.

Implement with ContiUnity® for:

- Integrated continuous flow chemistry
- Robust process control from R&D to production
- High configurability through flexible feed and flow routing
- Seamless pairing with other reaction, separation, and control modules

Key advantages of the Robox Reactor

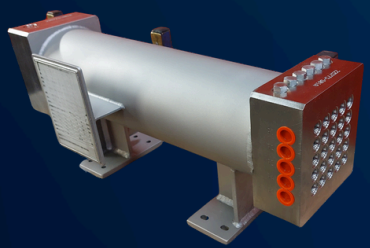
ROBOX
HYDAC INTERNATIONAL

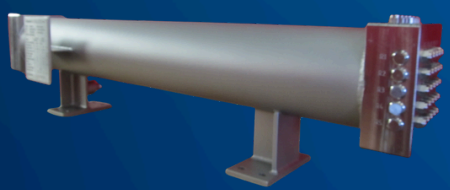
Precision Reaction Technology:
- Configurable flow paths for tailored residence time
- Stable plug flow performance across a wide range

Integrated Monitoring & Control:
- In-reactor temperature measurement for direct insight
- Outlet pressure and temperature transmitters for stability

Compact & Modular:
- Small footprint, easy to integrate into ContiUnity®
- Seamless connection with other reaction and flow modules
- Suitable for lab, pilot, and production environments

Robust & GMP-ready:
- Wide operating window for demanding chemistry (including exo- and endothermic reactions)
- Reliable, low-maintenance design
- Supports pharmaceutical and fine chemical workflows





Technical data and product features

Module	
Module, Model number	PFR-A1
Module options:	Process inlet 4; Heat exchanger inlets; Heat exchanger outlet.
Process	
Reaction type	Up to 4 in – 1 out
Reactor model	Robox PEP 141
Tube configuration	25x 1 meter
Flow path	Configurable with plungers
Tube diameter	7 | 10 mm
Default static mixer configuration	25 x (10 cm CSE-X/4 + 90 cm CSE-W)
Operating temperature	-30 ÷ 145 °C
Operating pressure	-0.9 ÷ 30 bar(g)
Operating volume 10 mm reactor without static mixers	Up to 2.1 l
Operating volume 7 mm reactor without static mixers	Up to 1.5 l
Operating temperature heat transfer fluid inlet	-35 ÷ 130 °C
Mechanical	
Process design pressure	-1 ÷ 34 bar(g)
Process design temperature	-40 ÷ 175 °C
Module process wetted material of construction	C276/C22 | SS316L
Module surface roughness	<0.8 µm Ra
Process wetted seals and gaskets	White FFKM / PFTE
Main process connectors	Staubli Quick couplings | VCO
Frame material of construction	Aluminium ITEM® profiles | SS316L box profile welded | SS304 ITEM® profiles
Frame dimensions w x d x h	2010 x 600 x 2000 mm
Frame features	Castor wheels / drip tray / one shelf for other module
Frame options	Enclosure
Module weight	400 kg incl. heat exchanger outlet option
Electrical properties & interfaces	
Control platform	ContiUnity® | MTP | Remote input/output
PLC	Beckhoff with TwinCAT 3 runtime
Power connector	Stahl miniCON
Control connector	Stahl miniCON
Communication protocol	OPC-UA
HMI	Emerson DeltaV / Web interface for stand-alone use e.g. maintenance / TwinCAT 3 HMI
Rated voltage	24 VDC
Rated current	6 A
Marking, approval & standard	
Marking	CE
ATEX rating	II 3G Ex h IIB T4 Gc
Material certification	3.1 material certification, FDA approved soft goods & lubricants, TSE declaration

** The module design and operating ranges are not constrained by the reactor; the module defines the operational limits.