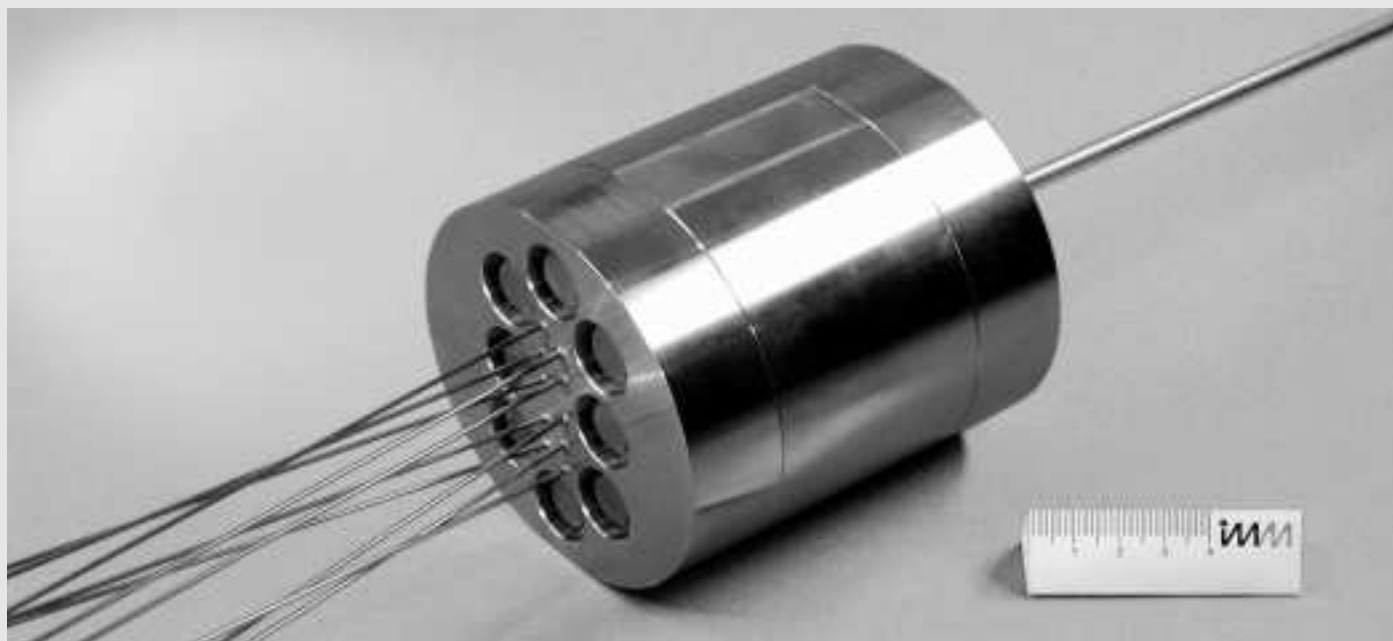


CATALYST TESTING MICRO REACTOR

CTMR



Catalyst Testing Micro Reactor with end caps for parallel operation

Principle

The Catalyst Testing Micro Reactor consists of a housing comprising twenty micro structured plates positioned pair-wise face to face resulting in ten levels of parallel microchannels. On demand, the micro structured plates can be coated with various carrier/catalyst systems. They are easily exchangeable using an included mounting tool and relatively inexpensive due to mass fabrication by wet-chemical etching. By simple exchange of the end caps a decision can be made whether to operate the micro reactor in serial or in parallel mode.

Parallel operation (1 in, 10 out):

Using a diffuser-type end cap, the microstructured plates are fed simultaneously by the one common inlet stream. The sub-streams leave then through the ten separate outlets that can be analyzed accordingly.

10 levels with different catalysts but same feed gas.

Screening of catalysts.

Parallel operation (10 in, 10 out):

Even testing ten different catalysts using ten different gases (at similar pressure) can be applied by assembling the reactor with two end caps for parallel operation.

10 levels with different catalysts and/or different gases.

Screening or numbering-up of catalysts.

Serial operation (1 in, 1 out):

Using two other end caps similar in shape, the one inlet stream flows serially in a zigzag manner from one plate to the other, being turned around and guided to the next level and so on, finally resulting in a path of ten times length compared to the single plate length, respectively ten times the residence time.

Up to 10 plates with identical catalyst may be installed.

Variation of the reactor length.



Stack of cartridges with coated microstructured plates



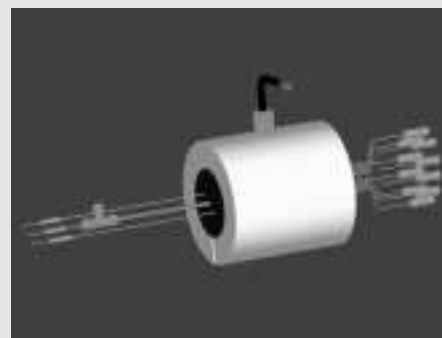
Two end caps for parallel operation



Special version for 800°C and 20 bar operation



Standard version disassembled



Alternative heating option with one heat jacket instead of 10 heat cartridges

Technical Data

Name	Catalyst Testing Micro Reactor
Order number	CTMR
Size (L x B x H)	100 x 100 x 108
Connectors (Inlet/Outlet)	1/4" / 1/16" for parallel operation 1/8" / 1/8" for serial operation
Standard material	1.4841 for housing 1.4742 for catalyst plates
Number of catalyst plates	20
Size of catalyst plate (mm)	50 x 14
Options	Other materials on request

Operating Conditions

Temperature (°C)	800
Pressure stability (bar)	20 (100 bar at 400°C)
Standard flow velocity (m/s)	0.4 – 40
Residence time (ms)	0.025 – 2000
Leakage Class	< L _{0.1}

Options

Catalyst plates can be delivered with various channel geometries:			
Channel geometry (width µm x depth µm):	2900 x 300	Number of channels:	3
	2000 x 300		4
	1000 x 300		7
	1000 x 100		7
	750 x 300		9
	750 x 100		9
	500 x 300		12
	500 x 100		12