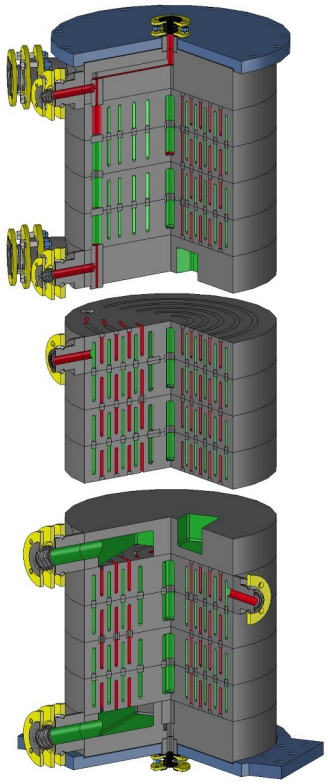
Mixer and Heat Exchanger
K Series

K

Product Information
(RN-S3)

Graphite Continuous Reactor

- Equipment dedicated to mixing and heat transfer tasks for corrosive applications in organic and inorganic chemistry
- Mixing, heating or cooling of two or more exothermically or endothermically reacting media in a continuous process
- Forced flow in a dedicated channel
- Isothermal residence sections
- Several heating or cooling circuits possible
- Maximum residence time / reaction time depends on equipment size and flow rates (e.g. 15 min at 0,7 m³/h)
- Corrosion resistance on both sides



Cross-section of a continuous reactor

Design

- Cylindrical graphite discs with spiral arrangement of annular groove channels
- Different channel widths possible
- Parallel connection of 1 to 21 channels on each side
- Gasket-free design with fused discs
- Graphite nozzles on products and utilities sides as well as for instruments
- Optional carbon fiber reinforcement

- Heat transfer area: up to 55 m² (592 ft²)
- Disc diameter: up to 900 mm (36”)

Applications (Examples)

- Synthesis of agrochemical active ingredients in three separately controlled, sequential steps
- Continuous chlorination

Advantages and Special Features

Equipment perfectly adapted to the individual process

Potential for heating or cooling at any point in the equipment

Process parameters can be measured at any point in the equipment

Controllable, continuous mixing and heat exchange processes with isothermal residence areas in one single piece of equipment

High efficiency / yield

Prevents overheating / overcooling

Cost reduction by combining reactor, heat exchangers, measurement, and control equipment in one single unit

Design Parameters

Max. allowable pressure:
-1 bar to +6 (+10) bar.
-14 psig to 87 psig (145 psig)

Max. allowable temperature:
-30 (-60)°C to +180 (+200)°C.
-22°F (-74°F) to 356°F (392°F)

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Graphite and SiC Heat Exchangers and Process Equipment

Mixer and Heat Exchanger
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Materials and Material Options

Graphite	Synthetic resin-impregnated graphite GAB GPX1 / GPX1T, or GAB GPX2 (optional)
Gaskets	No gaskets (fused discs)
Steel parts	Shell, flanges, and pressure plates: carbon steel Tie rods, bots, and nuts: stainless steel

Design and Approval

- The continuous reactors are designed, manufactured, and tested in accordance with the European PED, the ASME code, the Chinese Pressure Vessel code, or any other national pressure vessel codes on request

Continuous reactor for the manufacturing of active ingredients in agrochemistry

Specifications and Quotes

In order to write up a complete quote, we need the following information:

- Nature, properties, and quantities of the reacting media
- Inlet temperatures, heat tints and desired outlet temperatures
- Residence and reaction times
- Cooling and heating energies
- Operating pressure and allowable pressure drop
- Description of the case

Additional Information

- Documents (brochures, corrosion resistance tables, product information, data sheets,...) can also be found at www.gab-neumann.com.

Advantages of the Annular Groove Design

High turbulent flow

Self-cleaning design

Minimal fouling tendency

Limited number of gaskets

Technical Perfection

Can be used in mono- and multi-purpose plants

High overall heat transfer coefficients

Compact

Long service life

Economically Sound

Low price

Short delivery time

Low operating cost

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