Rotary Tube Furnaces for Continuous Processes up to 1300 °C

Rotary tube furnace RSRC 120/750/13

The RSRC rotary tube furnaces are particularly suitable for processes where continuously running batch material is heated for a short time.

The rotary tube furnace is positioned slightly inclined heated-up to the target temperature. The material is then continuously supplied at the upper end of the tube. It passes through the heated area of the tube and falls on the lower end out of the tube. The time of heat treatment results from the inclination angle, the rotational speed and the length of the working tube, as well as from the flow properties of the batch material.

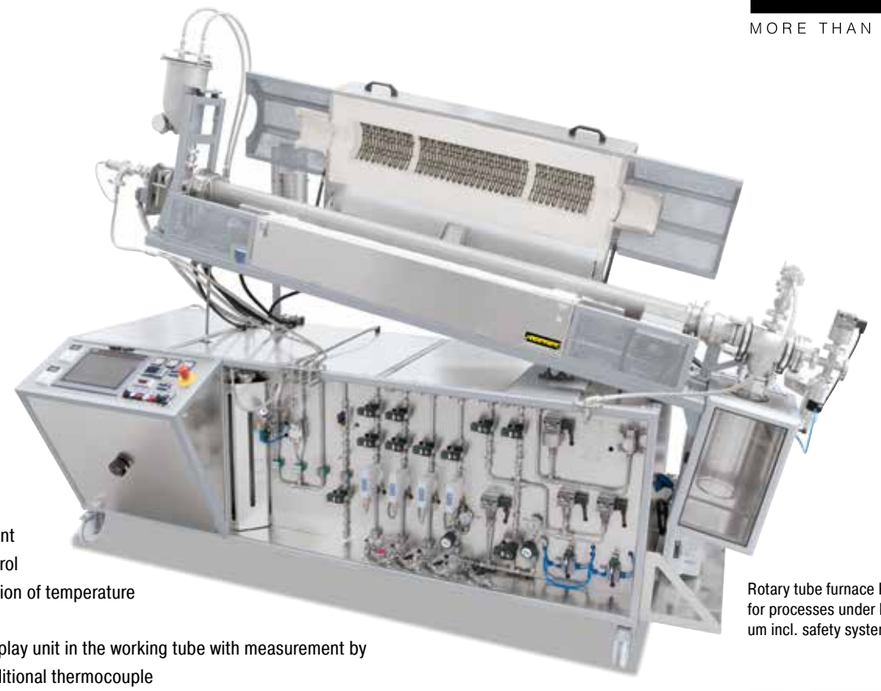
Equipped with the optional closed loading system for 5 liter charge material incl. receptacle, the rotary tube furnace can also be used for processes under protective gas or vacuum.

Depending on process, charge and required maximum temperature, different working tubes made of quartz glass, ceramics or metal to be used. This rotary tube furnace is therefore highly adaptable for different processes.

Screw-conveyor with adjustable speed

- Tmax 1100 °C
  - Working tube made of quartz glass open at both sides
  - Thermocouple type K
- Tmax 1300 °C
  - Open tube made of ceramics C 530
  - Thermocouple type S
- Heating elements on support tubes provide for free radiation
- Housing made of sheets of textured stainless steel
- Adjustable drive of approx. 2-45 rpm
- Digital display unit for the tilting angle of the rotary tube furnace
- Beltless drive and split-type furnace housing (opening temperature < 180 °C) provide for very easy tube removal
- Compact system, rotary tube furnace positioned on a base frame with
  - Manual spindle drive with crank to preset the tilting angle
  - Switchgear and controls integrated
  - Castors
- Defined application within the constraints of the operating instructions
- NTLog Basic for Nabertherm controller: recording of process data with USB-flash drive

Screw-conveyors with different pitches for the adaption to the charge



Rotary tube furnace RSRC 120/1000/13 H_2 for processes under hydrogen or in vacuum incl. safety system

Additional equipment

- Three-zone control for the optimization of temperature uniformity
- Temperature display unit in the working tube with measurement by means of an additional thermocouple
- Charge control by means of an additional thermocouple in the working tube
- Different gassing systems with good flushing of the charge with process gas in counterflow (only in combination with feeding system below)
- Check valve at gas outlet avoids intrusion of false air
- Vacuum design, up to 10^{-2} mbar depending on the applied pump
- Charging system for continuous material transport, consisting of:
  - Stainless steel funnel incl. electric vibration generator to optimize the material feeding into the working tube
  - Electrically driven screw-conveyor at the inlet of the working tube with 10, 20 or 40 mm pitch and adjustable speed between 0.28 and 6 revolutions per minute, different gear transmissions for other speeds on request
  - Collecting bottle made of laboratory glass at the outlet of the working tube
  - Suitable for operation in gas atmosphere or vacuum
- Working tubes made of differents materials
- Quartz glass batch reactors, Tmax 1100 °C
- Higher temperatures up to 1600 °C available on request
- Digital display unit for the tilting angle of the furnace
- Electric linear drive for the adjustment of the tilting angle
- PLC controls for temperature control and the control of connected aggregates such as gearshift and speed of the screw-conveyor, speed of the working tube, switching of the vibration generator, etc.
- Process control and documentation via VCD software package or Nabertherm Control Center (NCC) for monitoring, documentation and control

Adapters for alternative operation with working tube or process reactor

Vibration generator at the charging funnel for improved powder supply

Model	Tmax	Outer dimensions in mm			Max. outer tube Ø	Heated length	Length constant Temperature +/- 5 K in mm[3]		Tube length	Connected load	Electrical	Weight in
	°C[3]	W	D	H	in mm	in mm	single zoned	three zoned	in mm	kW	connection*	kg
RSRC 80-500/11	1100	2505	1045	1655	80	500	170	250	1540	3.7	1-phase	555
RSRC 80-750/11	1100	2755	1045	1655	80	750	250	375	1790	4.9	3-phase[2]	570
RSRC 120-500/11	1100	2505	1045	1715	110	500	170	250	1540	5.1	3-phase[2]	585
RSRC 120-750/11	1100	2755	1045	1715	110	750	250	375	1790	6.6	3-phase[1]	600
RSRC 120-1000/11	1100	3005	1045	1715	110	1000	330	500	2040	9.3	3-phase[1]	605
RSRC 80-500/13	1300	2505	1045	1655	80	500	170	250	1540	6.3	3-phase[1]	555
RSRC 80-750/13	1300	2755	1045	1655	80	750	250	375	1790	9.6	3-phase[1]	570
RSRC 120-500/13	1300	2505	1045	1715	110	500	170	250	1540	8.1	3-phase[1]	585
RSRC 120-750/13	1300	2755	1045	1715	110	750	250	375	1790	12.9	3-phase[1]	600
RSRC 120-1000/13	1300	3005	1045	1715	110	1000	330	500	2040	12.9	3-phase[1]	605

[1]Heating only between two phases
[2]Heating only between phase 1 and neutral
[3]Values outside the tube. Temperature inside the tube up to + 30 K