

ΤΕΧΝΙΚΕΣ ΠΡΟΔΙΑΓΡΑΦΕΣ ΔΙΑΤΑΞΗΣ/ΣΥΣΤΗΜΑΤΟΣ ΠΥΡΟΣΥΣΣΩΜΑΤΩΣΗΣ ΣΩΛΗΝΩΤΟΥ ΦΟΥΡΝΟΥ ΜΕ ΕΛΕΓΧΟ ΑΤΜΟΣΦΑΙΡΙΚΩΝ ΣΥΝΘΗΚΩΝ

Σύντομη περιγραφή διάταξης

- Σωληνωτός φούρνος υψηλών θερμοκρασιών με ενσωματωμένο σύστημα ελέγχου
- Computer/gas/control panel with industrial Simatic S7 PLC, and Profibus DP interface units , switchgear for kiln functions, gasmixing parts
- Αναλυτές οξυγόνου
- Ηλεκτρονικός υπολογιστής ελέγχου
- Καλωδίωση συνδέσεων μεταξύ των επιμέρους μερών του συστήματος

Παροχή ρεύματος: 230/400V, 3phase, 50Hz.

Τεχνικές προδιαγραφές φούρνου

Furnace technical specifications

Tabletop design with horizontal working tube
Compact design with integrated switchgear
Housing made of textured stainless steel in rust-proof design
Active cooling of housing for low surface temperatures

Furnace

Outer dimensions furnace :	1.070 x 430 x 580 mm (W x D x H)
Weight approx. :	90 kg
Power rating furnace approx.:	13,8 kW
Power supply furnace :	400 V, 3/N/PE, 50 Hz, fuse protection without earth-leakage breaker
Max. tube diameter outer :	80 mm
Heated tube length :	710 mm
Heating zones :	1
Tmax :	1.500 °C
Tmax in working tube approx. :	1.470 °C
Max. heat-up ramp working tube :	300 K/hr
Thermocouple type, furnace chamber :	type S
Length constant temperature +/- 5K:	235 mm after a dwell time of at least 20 minutes at Tmax -100 K

Working tube with grinded ends for operation with flanges

Material	Ceramic C799
Outer/Inner diameter	80/70 mm
Length	1470 mm
Max. heat up ramp	300 K/h
Tmax	1800 °C
Tmax, vacuum	1400 °C

Included 1x Spare Vacuum tube ceramic C 799, 80/70 x 1470 mm
Gastight, Tmax 1800 °C, Tmax vacuum 1400 °C, heat-up/cool-down ramp max. 300 K/h

with grinded ends, for operations with flanges

SiC heating rods

Rods installed parallel to the work tube
furnace heating consists of 4 elements
Included 2x Spare SiC heating element

Solid state relays provide for low-noise operation

- Heating controlled in 1 zone
- Temperature measurement in furnace chamber outside of the working tube. Process-dependent temperature difference between displayed temperature on the controller and inside the tube can occur See additional equipment for charge control (not included): Temperature control in the working tube as well as in the furnace chamber outside the working tube for very precise and rapid control

Insulation

- Insulation made of non-classified fiber material, allows for allows energy-saving operation and fast heat-up times due to low heat conductivity
- No use of fiber materials which are classified as carcinogenic

Controllers

- 2 PID loops
- 50 Programs
- Precision PV input
- Carbon potential
- Maths/logic/timers
- Custom user interface
- Recipes

Temperature limit controller with adjustable switch-off temperature for thermal protection class 2 in accordance with EN60519-2 as temperature limiter to protect the furnace and material.

Flanges

2x Water cooled flanges with water cooled stainless steel flanges made of 1.4301 with fitting on the outlet side. (Cooling water supply with NW9 hose)

Snap buckle for flanges for easy dismantling of the flange

Closed Cooling Loop for water cooled flanges

- Very low coolant water consumption and therefore cost-saving
- The water cooling set contains all components required for the fully automatic cooling process and is ready for connect
- Atmospherically open coolant runoff
- Without active refrigerating machine
- Plastic tank with water level indicator
- Heat dissipated into ambient air

Τεχνικές προδιαγραφές συστήματος ελέγχου

Control functions

- Simatic S7 – 1500 with network and peripheral interfacing.
- Thermocouple temperature measuring units based on Profibus DP.
- Temperature safety controllers.
- I/O boards for the analog and digital kiln peripherals via Profibus-DP.
- Power supplies, distribution blocks, connection blocks, fuses, switches, cabling, etc.

Profibus DP modules mounted on DINrail

The S7-1500 executes the process control, the PLC functions and the interfacing with the supervisory PC.

Gasmixing

- Mixing and volume control of the atmosphere gases oxygen/air/nitrogen, based on based on Mass Flow Controllers or on digital time-proportional control via solenoid/flowmeter combinations with a maximum volume of 5 ltr/min.
- Profibus-DP gas panel interface.

Supervisory PC

Advantech supervisory PC mounted in a 19" rack.

- PC with LAN for connection to the PowerPC.
- TFT-monitor/keyboard for process presentation. status presentation, alarming and operator functions.
- HDD for storing curves, parameters and process data.
- LAN for remote diagnostics and software updates via Intranet/Internet.

The PC performs

- Process presentation, alarming and operating via several operator levels.
- Process tracing.
- Status information, Failure diagnostic.
- Data logging.

All parts for control and gas must be mounted in a Rittal cabinet.

O2 measurement

- O2-Analysing system, 0.001% up to 100% O2 in N2.
- Based on Zirconia cell measurement principle.

Cable set

- Computer and Profibus cables

[Engineering / Software / Documentation](#)

Technical design

- Drawingset on paper
- Software package for the Simatic S7 PLC
- Software package for the operator PC with Windows 10 (64bit) and LabWindows/CVI
- Documentation