



# CATALOG

## INDUSTRIAL FURNACES AND DRYERS



ART OF  
HEATING



ART OF  
HEATING

## COMPANY PROFILE

LAC, s.r.o. has been a successful manufacturer and seller of industrial furnaces, dryers and refractory castable shapes for almost three decades. It operates both on domestic and foreign markets. Since its foundation in 1992, the company has developed into a leading global manufacturer and has delivered more than 14,000 furnaces and dryers. The products are used in many technological processes of heat treatment, especially:

- heat treatment of ferrous and non-ferrous metals
- alloy technologies for non-ferrous metals
- heat treatment and chemical- heat treatment metal processing
- low-temperature applications
- laboratory technologies
- production of industrial and hobby ceramics



The LAC manufacturing program includes the manufacture of a complete standard range of furnace and dryer lines, and also accommodates the individual requirements of the customer through the design and manufacture of customized furnaces tailor-made to meet customer specifications. The LAC development and design office works in tandem with a team of service technicians to ensure quality service to customers and pave the way for future company growth. Progress in technological development is proven by orders for the automotive, aerospace and defense industries that meet the demanding standards of AMS 2750 E, NADCAP, CQI-9. In 2018, the construction of a new LAC complex in Židlochovice worth CZK 220 million was completed. Investments in the form of a new furnace and drier production hall and office space allow us to streamline the production process and produce even higher quality products for our customers.

A significant part of the LAC business is the manufacture of refractory castable shapes, the bulk of which are used in the manufacture of industrial furnaces. Refractory castable shapes are also used by metallurgy companies and manufacturers of boilers for burning wood, pellets, and biomass. The investments in the extension of the premises for production of refractory castable shapes at Hrušovany nad Jevišovkou have reached a total of CZK 67 million.

The company also supplies heating elements, refractory and insulation materials, regulating elements, and reconstruction of furnaces, heating systems and switchboards to its customers.



6 custom projects  
per month



Over 14 000 furnaces  
manufactured



We deliver to 35 countries  
worldwide

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# CONTENT ACCORDING TO PURPOSE AND APPLICATION OF FURNACES

## NON-FERROUS METAL FOUNDERIES

Melting and holding	Drying	Preheating	Heat treatment	
<b>700-1400 °C</b>	<b>200-450 °C</b>	<b>200-450 °C</b>	<b>450-500 °C</b>	
• Melting and holding	• Drying molds and cores	• Preheating molds and blanks	• Solution annealing	
PT Mk.II 36	S 10	S 10	KNC/H 16	
PTE Mk.II 36	SV Mk.II 12	SV Mk.II 12	VKNC 18	
PTT Mk.II 36	SVK 14	SVK 14	PP 22	
PTS 40		KNC/H 16	KNC/V + KLV 51	
PTP 42		VKNC 18		
PTSP 44		<b>900-1280 °C</b>		<b>20-60 °C</b>
PTPR 46		• Preheating shell molds		• Rapid cooling in bath
PTSPR 48		VKT 20	KLV 34	
		PK 24	<b>450-850 °C</b>	
				• Annealing • Solution annealing
			VKNC 18	
			PP 22	
			KNC/H 16	
			KNC/V + KLV 51	
			<b>250-450 °C</b>	
				• Artificial aging
		SV Mk.II 12		
		SVK 14		

## FERROUS METAL FOUNDRIES

Preheating	Annealing	Heat treatment
<b>250-450 °C</b>	<b>450-1260 °C</b>	<b>900-1280 °C</b>
• Preheating castings • Preheating molds	• Soft annealing • Annealing for stress relieving	• Solution annealing
S 10	KNC/H 16	PKE 26
SV Mk.II 12	VKT 20	PK 24
SVK 14	VKNC 18	PKR 28
	PP 22	PKRC 28
	SC 30	
	SRC 30	

## ADDITIONAL FURNACES AND DRYERS CAN BE FOUND IN THE CATALOG:

Custom Projects

Industrial furnaces for additive manufacturing



## HEAT TREATMENT OF METALS

Preheating	Annealing	Quenching	Cooling	Tempering	Chemical heat treatment
<b>900-1280 °C</b>	<b>900-1280 °C</b>	<b>800-1280 °C</b>	<b>20-60 °C</b>	<b>200-450 °C</b>	<b>900-1100 °C</b>
• Preheating before forging • Preheating molds	• Homogenization annealing	• Quenching	• Water, polymer	• Low temperature tempering	• Carburizing
VKT 20	VKT 20	VKT 20	KK 33	SV Mk.II 12	PKE 26
PKE 26	PK 24	PKE 26	KLV 34	SVK 14	PK 24
PK 24		PK 24		KNC/H 16	SRC 30
	<b>900-1280 °C</b>	PKR 28	<b>60-200 °C</b>	VKNC 18	KSL 35
	• Normalization annealing	PKRC 28	• Oil	PP 22	
		KSL 35	KK 33	SC 30	<b>450-500 °C</b>
	VKT 20	<b>900-1280 °C</b>			• Nitriding • Carbonitriding
	VKNC 18	• Solution annealing		<b>450-900 °C</b>	
	PK 24		<b>450 °C</b>	• High temperature tempering • Curing	PKRC 28
	PKR 28	PKE 26	• Salt bath		SRC 30
	PKRC 28	PK 24		KNC/H 16	
	SRC 30	PKR 28		VKNC 18	
		PKRC 28		PP 22	
	<b>450-900 °C</b>			PKR 28	
	• Soft annealing • Annealing for stress relieving • Recrystallization annealing • Artificial aging			PKRC 28	
				SC 30	
	KNC/H 16			SRC 30	
	VKT 20				
	VKNC 18			<b>450-900 °C</b>	
	PP 22			• Tempering of tool steel with protective atmosphere	
	SC 30				
	SRC 30			PP (semigas) 22	
				PKR 28	
				PKRC 28	
				SC 30	
				SRC 30	
				KSL 35	

## HEAT TREATMENT - LOW TEMPERATURE APPLICATIONS

PROCESSED CHARGE					
Plastics   Rubber   Electrical parts/components   Textil   Building material   Glass   Chemical substances   Food					
<b>50-450 °C</b>					
Drying	Curing	Tempering	Firing	Vulcanization	Preheating
S 10	S 10	S 10	S 10	S 10	S 10
SV Mk.II 12	SV Mk.II 12	SV Mk.II 12	SV Mk.II 12	SV Mk.II 12	SV Mk.II 12
SVK 14	SVK 14	SVK 14	SVK 14	SVK 14	SVK 14

Subject to technical changes.  
The values indicated in the catalogue are only of an informative character.  
Edition 6/2019.

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# Classification of furnaces according to batch processing technology

FURNACE	S	SV Mk.II	SVK	KNC/H	VKNC	VKT	PP	PK	PKE	PKRC	PKR	SRC	SC		SKM SKV	KK	KLO KLV	KSL	PT Mk.II	PTE Mk.II	PTT Mk.II	PTS	PTP	PTSP	PTPR	PTSPR	FURNACE	
temperature	100 - 300 °C	100 - 250 °C	100 - 400 °C	300 - 800 °C	300 - 800 °C	700 - 1200 °C	200 - 800 °C	700 - 1200 °C	700 - 1250 °C	300 - 1050 °C	700 - 1050 °C	300 - 900 °C	300 - 800 °C		200 - 1200 °C	400 - 1280 °C	20 - 200 °C	500 - 1000 °C	650 - 850 °C	650 - 850 °C	650 - 850 °C	650 - 850 °C	650 - 1300 °C	650 - 1300 °C	650 - 850 °C	650 - 850 °C	temperature	
Cementing								🔥	🔥									🔥									Cementing	
Hardening						🔥		🔥	🔥						🔥	🔥	🔥	🔥										Hardening
Nitriding, carbonitriding										🔥		🔥																Nitriding, carbonitriding
Low-temperature material treatment	🔥	🔥	🔥																									Low-temperature material treatment
Elimination of acid brittleness	🔥	🔥	🔥																									Elimination of acid brittleness
Heating and drying							🔥																					Heating and drying
Cooling (air, water, polymer, oil)															🔥	🔥	🔥											Cooling (air, water, polymer, oil)
Soldering										🔥		🔥																Soldering
Tempering of tool steels with protective atmosphere							🔥			🔥	🔥	🔥	🔥					🔥										Tempering of tool steels with protective atmosphere
Low-temperature - tempering		🔥		🔥	🔥		🔥																					Low-temperature - tempering
High-temperature - tempering				🔥	🔥		🔥			🔥	🔥	🔥	🔥															High-temperature - tempering
Preheating	🔥		🔥	🔥	🔥		🔥								🔥													Preheating
Preheating (moulds) before forging						🔥		🔥	🔥																			Preheating (moulds) before forging
Preheating moulds	🔥		🔥			🔥		🔥	🔥																			Preheating moulds
Preheating reusable moulds and semi-finished products	🔥	🔥	🔥	🔥	🔥																							Preheating reusable moulds and semi-finished products
Preheating castings	🔥		🔥			🔥																						Preheating castings
Preheating shell moulds						🔥		🔥																				Preheating shell moulds
Sintering powdered metals										🔥		🔥																Sintering powdered metals
Sintering							🔥	🔥		🔥	🔥																	Sintering
Drying, drying of moulds and cores, drying	🔥	🔥	🔥																									Drying, drying of moulds and cores, drying
Melting of aluminium and aluminium alloys																			🔥	🔥	🔥	🔥	🔥	🔥	🔥	🔥	🔥	Melting of aluminium and aluminium alloys
Melting of copper and copper alloys																							🔥	🔥				Melting of copper and copper alloys
Tempering	🔥	🔥	🔥																									Tempering
Tempering of rubber and electric components		🔥																										Tempering of rubber and electric components
Material testing	🔥						🔥	🔥		🔥	🔥																	Material testing
Holding of aluminium and aluminium alloys																			🔥	🔥								Holding of aluminium and aluminium alloys
Artificial ageing				🔥	🔥	🔥	🔥					🔥	🔥															Artificial ageing
Artificial ageing of aluminium and its alloys		🔥	🔥																									Artificial ageing of aluminium and its alloys
Vulcanisation	🔥	🔥																										Vulcanisation
Enamel firing							🔥	🔥																				Enamel firing
Firing (of e.g. Insulation paints)	🔥	🔥	🔥																									Firing (of e.g. Insulation paints)
Mould drying				🔥	🔥																							Mould drying
Granulate drying		🔥	🔥																									Granulate drying
Surface finish hardening	🔥	🔥	🔥																									Surface finish hardening
Burning-in of electrical components		🔥	🔥																									Burning-in of electrical components
Incineration, combustion, annealing loss	🔥						🔥	🔥																				Incineration, combustion, annealing loss
Annealing				🔥	🔥		🔥																					Annealing
Annealing for relieving internal stress, soft annealing				🔥	🔥	🔥	🔥					🔥	🔥															Annealing for relieving internal stress, soft annealing
Homogenisation annealing						🔥		🔥																				Homogenisation annealing
Recrystallisation annealing				🔥	🔥	🔥	🔥					🔥	🔥															Recrystallisation annealing
Solution annealing								🔥	🔥	🔥	🔥				🔥	🔥												Solution annealing
Normalisation annealing				🔥	🔥			🔥		🔥	🔥	🔥																Normalisation annealing

# S dryers

up to 200 / 300 °C

S dryers are robust industrial furnaces, devices designed for drying, vulcanising, preheating, hardening, and other low-temperature treatments of a variety of materials. The dryer's stainless steel muffle ensures the long service life of the unit as it is very chemically and mechanically resistant. Thanks to the horizontal internal atmosphere circulation, S dryers also boast an even temperature distribution.

Mechanical durability

Chemical durability

Easy increase of heating output

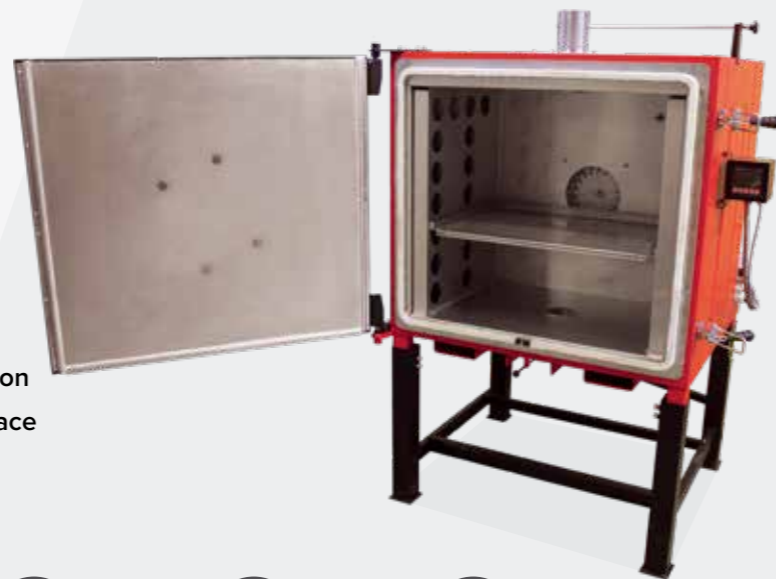
Robust industrial design

S 400



## STANDARD DRYER EQUIPMENT:

- Ht40AL controller
- resistance heating (heating elements)
- thermostat (use as a limit unit)
- manually controlled exhaust flap
- manually controlled suction flap
- "K" type thermocouple
- contactless switching relay for noise-free operation
- door limit switch for the safe opening of the furnace
- stand
- shelf (1 pcs.)



Simple operation and installation



Atypical modifications



Shipment from 6 weeks



Warranty 24 months

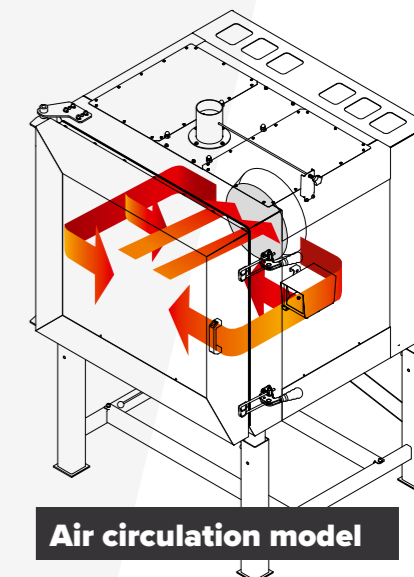


Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht205 controller (30 programmes with 15 steps) or Ht200 controller (30 programmes with 25 steps, USB interface)
- automatic ventilation flap for cooling the furnace's operational space (Ht205 or Ht200 controller is needed)
- exhaust fan for cooling and the exhaust of flue gases (Ht205 or Ht200 controller is needed)
- modification for the rubber industry
- optimisation of the temperature field for compliance with DIN 17052-1 ΔT 10 °C
- HtMonit set (include software + interface)
- additional shelves

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Air circulation model



Ht205 controller



Exhaust fan

Type	Tmax	Recommended operating temp. range	Volume	External dimensions (w×h×d)	Internal dimensions (w×h×d)	Heating power	Weight	Voltage	Number of fans	Protection*	Max. load capacity of shelves	Max. load capacity of bottom
	°C	°C	l	mm	mm	kW	kg	V	ks		kg	kg
S 60/02	200	100-200	60	1050×1350×950	450×300×450	2	60	230	1	16/1	15	40
S 100/02	200	100-200	100	1050×1550×1000	450×500×450	3	180	230	2	16/1	15	50
S 250/02	200	100-200	240	1400×1550×1200	800×500×600	4	250	400	1	16/3	25	70
S 400/02	200	100-200	380	1400×1750×1200	800×800×600	4	350	400	1	16/3	25	70
S 60/03	300	100-300	60	1050×1350×950	450×300×450	3	60	230	1	16/1	15	40
S 100/03	300	100-300	100	1050×1550×1000	450×500×450	3	180	230	2	16/1	15	50
S 250/03	300	100-300	240	1400×1550×1200	800×500×600	4	250	400	1	16/3	25	70
S 400/03	300	100-300	380	1400×1850×1200	800×800×600	6	350	400	1	16/3	25	70

\* Protection can vary depending on the accessories chosen (for an extra charge).

# SV Mk.II dryers

up to 300 °C

Chamber dryers are suitable for a wide range of production processes (drying, hardening, preheating, vulcanisation, artificial ageing of aluminium, etc.). They are characterised by the very precise distribution of temperatures in the furnace. A wide range of custom modifications, very short delivery period and quick supply of spare parts are indisputable benefits.

We have spare parts in stock

Temperature distribution  $\Delta T$  6 °C/ $\Delta T$  10 °C

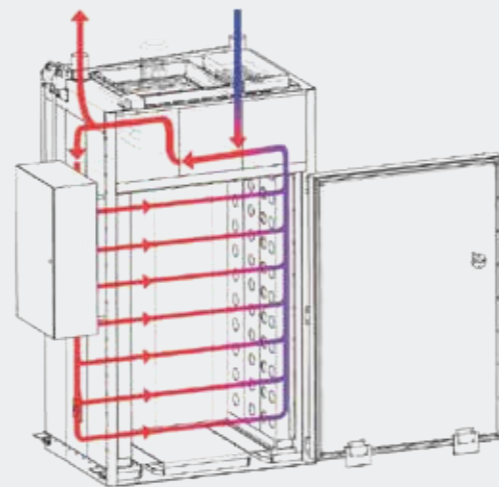
Quick run-up to max. temperature



SV Mk.II 8000



SV Mk.II 3002



Air circulation model

## STANDARD DRYER EQUIPMENT:

- Ht40P controller (10 programmes with 15 steps each)
- resistance heating (heating elements)
- bottom modification for a trolley or smooth bottom
- safety handle
- thermostat (use as a limit unit)
- manually controlled ventilation and suction flap
- "K" type thermocouple
- contactless switching relay for noise-free operation
- door limit switch for the safe opening of the furnace
- switchboard on side of the furnace
- one-wing door manually opened to the right (for volumes up to 4,000 l); two-wing door (for volumes over 4,000 l)



Simple operation and installation



Atypical modifications



Shipment from 7 weeks



Warranty 24 months



Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht205 controller (30 programmes with 15 steps) or Ht200 controller (30 programmes with 25 steps, USB interface)
- automatic ventilation and suction flap for cooling the furnace's operational space (Ht205 or Ht200 controller is needed)
- controlled underpressure forced cooling
- modification for the rubber industry
- optimisation of the temperature field for compliance with DIN 17052-1  $\Delta T$  4 °C (applies for dryers capacity up to 6 000 l)
- can be delivered in the design meeting AMS 2750 E, CQI-9 standard
- HtMonit set (include software + interface)

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.

Type	Tmax	Recommended operating temp. range	Volume	External dimensions* (w×h×d)	Internal dimensions (w×h×d)	Heating power	Weight	Voltage	Protection**
	°C	°C	l	mm	mm	kW	kg	V	
SV 650/30 Mk.II	300	100-300	650	1800×1750×1200	1000×800×800	12	610	400	25/3
SV 1001/30 Mk.II	300	100-300	1000	1800×2150×1200	1000×1200×800	12	715	400	25/3
SV 1002/30 Mk.II	300	100-300	1000	1800×1950×1400	1000×1000×1000	12	760	400	25/3
SV 1501/30 Mk.II	300	100-300	1500	1800×2750×1200	1000×1800×800	18	870	400	40/3
SV 1502/30 Mk.II	300	100-300	1500	1800×2050×1800	1000×1100×1400	18	990	400	40/3
SV 1700/30 Mk.II	300	100-300	1700	1800×2650×1400	1000×1700×1000	24	970	400	50/3
SV 2400/30 Mk.II	300	100-300	2400	1800×2650×1800	1000×1700×1400	24	1200	400	50/3
SV 3001/30 Mk.II	300	100-300	3000	1800×3150×1800	1000×2200×1400	24	1400	400	50/3
SV 3002/30 Mk.II	300	100-300	3000	1800×2650×2200	1000×1700×1800	24	1450	400	50/3
SV 3300/30 Mk.II	300	100-300	3300	1900×2950×1900	1100×2000×1500	24	1450	400	50/3
SV 4000/30 Mk.II	300	100-300	4000	2000×2950×2000	1200×2000×1600	30	1550	400	63/3
SV 4500/30 Mk.II	300	100-300	4500	2800×2150×2300	2000×1200×1900	36	1800	400	80/3
SV 5000/30 Mk.II	300	100-300	5000	2500×2650×2100	1700×1700×1700	48	1750	400	100/3
SV 6001/30 Mk.II	300	100-300	6000	2700×3150×1800	1900×2200×1400	58	1850	400	125/3
SV 6002/30 Mk.II	300	100-300	6000	2800×2450×2400	2000×1500×2000	58	2050	400	125/3
SV 8000/30 Mk.II	300	100-300	8000	2800×2950×2400	2000×2000×2000	72	2300	400	160/3

\* External dimensions are listed without switchboard.

\*\* Protection can vary depending on the accessories chosen (for a surcharge).

## Additional technical parameters

Type	Max. load capacity of bottom (kg)	Max. load capacity of shelves (kg)	Spacing of entries for trolley
SV 650 Mk.II	150	25	750
SV 1001 Mk.II / SV 1002 Mk.II	200	25	750
SV 1501 Mk.II / SV 1502 Mk.II	350	50	750
SV 1700 Mk.II	400	50	750
SV 2400 Mk.II	600	50	750
SV 3001 Mk.II / SV 3002 Mk.II	700	50	750
SV 3300 Mk.II	800	50	850
SV 4000 Mk.II	1200	50	950
SV 4500 Mk.II	2000	50	1750
SV 5000 Mk.II	2000	50	1450
SV 6001 Mk.II / SV 6002 Mk.II	2000	50	1650/1750
SV 8000 Mk.II	2000	50	1750



Switchboard of the dryer



Modification for a trolley

# SVK bogie-hearth dryers

up to 250 / 450 °C

SVK bogie-hearth chamber dryers and low-temperature furnaces are suitable for convenient loading of bulky and heavy charges. Whether using a crane or by some other method. They excel in the long service life of their chambers, which are resistant to corrosion and mechanical stress. They are useful not only for drying, tempering, and artificial ageing, but also for heat treatment of a variety of materials in the plastics, rubber, automobile, electrical, and foundry industries.

Mechanical durability

Chemical durability

Uniform temperature distribution

## SVK 2000



### STANDARD DRYER EQUIPMENT:

- manually driven carriage
- Ht205 controller (30 programmes with 15 steps each)
- resistance heating (heating elements)
- insulation of mineral fiber mats
- limit unit
- manually controlled ventilation and suction flap
- "K" type thermocouple
- contactless switching relay for noise-free operation
- door limit switch for the safe opening of the furnace
- manual door opening to the left on C-type hinges
- rails with length equal to 2.5 times the furnace length, designed for on-floor installation
- ammeters for checking heating elements' condition
- switchboard on side of the furnace



Simple operation and installation



Atypical modifications



Shipment from 8 weeks



Warranty 24 months



Instant technical support

### RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht200 controller (30 programmes with 25 steps, USB interface)
- automatic ventilation and suction flap for cooling the furnace's operational space
- exhaust fan for exhaust
- HtMonit set (include software + interface)
- electrically drive bogie
- door opening upwards (electro-hydraulic)
- pressure cooling
- optimisation of the temperature field for compliance with DIN 17052-1 ΔT 10 °C (applies for dryers capacity up to 6 000 l)

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Switchboard of the dryer



Bogie

Type	Tmax	Recommended operating temp. range	Volume	External dimensions* (w×h×d)	Internal dimensions (w×h×d)	Heating power	Weight	Voltage	Protection**	Max. load capacity
	°C	°C	l	mm	mm	kW	kg	V		kg
SVK 1000/25	250	100-250	1020	1600×2400×1650	900×900×1260	27	1200	400	63/3	1000
SVK 1500/25	250	100-250	1500	1800×2500×1900	1000×1000×1500	45	1400	400	100/3	2000
SVK 2000/25	250	100-250	2000	1800×2500×2400	1000×1000×2000	54	1500	400	125/3	3000
SVK 3600/25	250	100-250	3600	2100×2900×2900	1200×1200×2500	63	1800	400	160/3	4000
SVK 4500/25	250	100-250	4330	2100×2900×3400	1200×1200×3000	72	1900	400	160/3	5000
SVK 7200/25	250	100-250	7200	2400×3600×3400	1500×1600×3000	84	2800	400	200/3	6500
SVK 1000/45	450	100-400	1020	1600×2400×1650	900×900×1260	40,5	1250	400	100/3	1000
SVK 1500/45	450	100-400	1500	1800×2500×1900	1000×1000×1500	49,5	1450	400	100/3	2000
SVK 2000/45	450	100-400	2000	1800×2500×2400	1000×1000×2000	66	1550	400	160/3	3000
SVK 3600/45	450	100-400	3600	2100×2900×2900	1200×1200×2500	78	1850	400	160/3	4000
SVK 4500/45	450	100-400	4300	2100×2900×3400	1200×1200×3000	84	1950	400	200/3	5000
SVK 7200/45	450	100-400	7200	2400×3600×3400	1500×1600×3000	96	2850	400	250/3	6500

\* External dimensions are without switchboard.

\*\* For currents higher than 250A, circuit breakers 400A and 630A with tripping current can be used. Protection may vary depending on the accessory option.



# KNC/H horizontal chamber furnaces with forced circulation

up to 650 / 850 °C

The chamber furnaces with forced air circulation is used for all types of heat treatment (tempering, artificial ageing, preheating, hot connecting, charge testing, drying out, etc.) under normal atmosphere, where demand exists for very precise temperature distribution and a dynamic course to the temperature curve.

Precision furnace control

Uniform temperature distribution

Robustness

KNC/H 1000



## STANDARD FURNACE EQUIPMENT:

- Ht205 controller (30 programmes with 15 steps each)
- resistance heating (heating elements)
- "K" type thermocouple
- door limit switch for the safe opening of the furnace
- limit unit
- hydraulically operated rear-up door



Simple operation and installation



Atypical modifications



Shipment from 10 weeks



Warranty 24 months



Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht200 controller (30 programmes with 25 steps, USB interface)
- automatic ventilation and suction flap
- ammeters to check the condition of heating elements
- HtMonit set (include interface + software)
- optimisation of the temperature field for compliance with DIN 17052-1 ΔT 10 °C
- controlled forced pressure cooling
- exhaust fan for exhaust

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



KNC/H 1500 – manually opened door



KNC/H 2000 with hardening bath

Type	Tmax	Recommended operating temp. range	Volume	External dimensions (w×h×d)	Internal dimensions (w×h×d)	Heating power	Weight	Protection*	Voltage	Max. load capacity
	°C	°C	l	mm	mm	kW	kg		V	kg
KNC/H 1000/65	650	300-600	1000	2300×3200×2200	1000×1000×1000	36	1400	80/3	400	800
KNC/H 1500/65	650	300-600	1500	2800×3200×2200	1500×1000×1000	48	1600	100/3	400	1000
KNC/H 2000/65	650	300-600	2000	3300×3200×2200	2000×1000×1000	72	1900	160/3	400	1500
KNC/H 1000/85	850	300-800	1000	2300×3200×2200	1000×1000×1000	42	1500	80/3	400	800
KNC/H 1500/85	850	300-800	1500	2800×3300×2200	1500×1000×1000	54	1500	100/3	400	1000
KNC/H 2000/85	850	300-800	2000	3500×3300×2200	2000×1000×1000	80	2000	160/3	400	1500

\* Protection may vary depending on the accessory option.

# VNKC bogie-hearth chamber furnaces with forced circulation

up to 650 / 850 °C

In VNKC furnaces, the charge is loaded onto the bogie, which is then driven into the furnace. The door closing mechanism ensures excellently tight door sealing; combined with the high-quality insulation material, this brings lower furnace operating costs. The even heat distribution ensures forced internal atmosphere circulation, and you can easily control the whole heat treatment process thanks to a programmable PID controller.

Precision furnace control

Uniform temperature distribution

Robustness

## STANDARD FURNACE EQUIPMENT:

- Ht205 controller (30 programmes with 15 steps each)
- resistance heating (meanders on the furnace sides)
- air circulation
- limit unit
- door manually opened to the left placed on the "C" hinge
- manually operated ceiling vent
- hand-driven car
- a rail of about 2.5 times the depth of the furnace on the floor
- switchboard on the side of the furnace
- contactless switching relay for noise-free operation



VKNC 7200



Automatic ventilation flap



VKNC 1500 – manually opened door

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht200 controller (30 programmes with 25 steps, USB interface)
- electric car drive
- door opening (electrohydraulic)
- ammeters to check the condition of heating elements
- optimisation of the temperature field for compliance with DIN 17052-1 ΔT 10 °C
- controlled forced pressure cooling
- automatic ventilation flap
- HtMonit set (include interface + software)

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.

Type	Tmax	Recommended operating temp. range	Volume	External dimensions (w×h×d)	Internal dimensions (w×h×d)	Protection*	Heating power	Voltage	Weight	Max. load capacity
	°C	°C	l	mm	mm	A	kW	V	kg	kg
VKNC 1000/65	650	300-600	1000	2200×3400×1800	900×900×1260	80/3	42	400	1450	1000
VKNC 1500/65	650	300-600	1500	2300×3500×2100	1000×1000×1500	100/3	54	400	1600	1500
VKNC 2000/65	650	300-600	2000	2300×3500×2600	1000×1000×2000	125/3	74	400	1950	2000
VKNC 3600/65	650	300-600	3600	2500×3700×3100	1200×1200×2500	160/3	87	400	2400	3000
VKNC 5500/65	650	300-600	5240	2600×3900×3700	1300×1300×3100	200/3	95	400	4800	3500
VKNC 7200/65	650	300-600	7200	2800×4500×3800	1500×1600×3000	200/3	110	400	5500	4000
VKNC 1000/85	850	300-800	1000	2200×3400×1800	900×900×1260	80/3	45	400	1500	1000
VKNC 1500/85	850	300-800	1500	2300×3500×2100	1000×1000×1500	120/3	60	400	1650	1500
VKNC 2000/85	850	300-800	2000	2300×3500×2600	1000×1000×2000	160/3	80	400	2100	2000
VKNC 3600/85	850	300-800	3600	2500×3700×3100	1200×1200×2500	200/3	95	400	2550	3000
VKNC 5500/85	850	300-800	5240	2600×3900×3700	1300×1300×3100	250/3	150	400	4950	3500
VKNC 7200/85	850	300-800	7200	2800×4500×3800	1500×1600×3000	315/3	160	400	5600	4000

\* Protection may vary depending on the accessory option.



Simple operation and installation



Atypical modifications



Shipment from 12 weeks



Warranty 24 months



Instant technical support

# VKT bogie-hearth furnaces

up to 900 / 1260 °C

Thanks to its sturdy construction, this chamber furnace holds up in even the heaviest operations. The charge is loaded onto the furnace bogie, which is then driven into the furnace. They are used for different kinds of heat treatment of the charge at temperatures from 900 °C to 1260 °C.

Precision furnace control

Easy chargingy

Robustness



VKT 1500

## STANDARD FURNACE EQUIPMENT:

- Ht205 controller (30 programs in 15 steps)
- resistance heating (meanders on the sides and spirals in the car)
- 5 sides heating (4 walls and car)
- limit unit
- hand-operated left-hand door mounted on "C" hinge
- manually operated ventilation flap
- rails 2.5 times the floor depth of the furnace
- switchboard on the side of the furnace
- contactless switching relay for noise-free operation



Simple operation and installation



Atypical modifications



Shipment from 10 weeks



Warranty 24 months



Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht200 controller (30 programs in 25 steps, USB interface)
- metal plates on the work surface (only up to 1000 °C)
- ammeters to check the condition of the heating elements (number according to the number of phases connected for heating)
- automatic ventilation flap
- optimisation of the temperature field for compliance with DIN 17052-1 ΔT 20 °C
- HtMonit set (include interface + software)
- electric car drive
- door opening (electrohydraulic)

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Bogie



Resistance heating – meandres

Type	Tmax*	Recommended operating temp. range	Volume	External dimensions (w×h×d)	Internal dimensions (w×h×d)	Heating power	Weight	Protection**	Voltage	Max. load capacity
	°C	°C	l	mm	mm	kW	kg		V	kg
VKT 800/09	900	700-900	800	2350×2650×2500	900×600×1500	32	2100	63/3	400	2000
VKT 1000/09	900	700-900	1000	2350×2650×3050	900×600×2000	40	2300	80/3	400	2000
VKT 1500/09	900	700-900	1500	2450×2500×3500	1000×600×2500	60	2550	100/3	400	3500
VKT 2000/09	900	700-900	2000	2250×3100×3500	1000×800×2500	80	2800	160/3	400	3500
VKT 3000/09	900	700-900	3000	2650×3250×4000	1000×1000×3000	110	3500	200/3	400	4500
VKT 5000/09	900	700-900	5000	2700×4500×4050	1200×1400×3000	130	4200	250/3	400	5000
VKT 7000/09	900	700-900	6700	2700×4500×5050	1200×1400×4000	150	4900	250/3	400	8000
VKT 800/12	1260	700-1200	800	2350×2650×2500	900×600×1500	40	2100	80/3	400	2000
VKT 1000/12	1260	700-1200	1000	2350×2650×3050	900×600×2000	60	2300	100/3	400	2000
VKT 1500/12	1260	700-1200	1500	2450×2500×3500	1000×600×2500	80	2550	160/3	400	3500
VKT 2000/12	1260	700-1200	2000	2250×3100×3500	1000×800×2500	110	2800	200/3	400	3500
VKT 3000/12	1260	700-1200	3000	2650×3250×4000	1000×1000×3000	120	3600	250/3	400	4500
VKT 5000/12	1260	700-1200	5000	2700×4500×4050	1200×1400×3000	180	4300	400/3	400	5000
VKT 7000/12	1260	700-1200	6700	2700×4500×5050	1200×1400×4000	250	5000	630/3	400	8000

\* Tmax is the maximum temperature at which the furnace cannot be operated for a long time.

\*\* Protection may vary depending on the accessory option.

# PP tempering furnaces

up to 450 / 650 / 850 °C

Uniform heating of the charge thanks to horizontal internal atmosphere circulation – this is the greatest advantage of the tempering furnaces. The precision of the temperature distribution, its guided increase and decrease and controlled cooling will, when used together, give you complete control over the process taking place within the furnace's chamber. PP furnaces are regularly used in industry, and so they are truly robust and sturdy, and the smaller volume furnaces are also very compact and space-saving.

Mechanical durability

Chemical durability

Many variations



PP 70



PP 20

## STANDARD FURNACE EQUIPMENT:

- Ht40AL controller for furnaces for the temperature of 450 °C (1 program: 4 steps)
- Ht205 controller (30 programmes with 15 steps each) for PP 650 °C and 850 °C
- resistance heating (resistance heater or spirals)
- stainless steel or refractory muffle furnaces
- 2 stainless steel or refractory shelves (except for the PP 20)
- manually controlled ventilation flap for cooling the furnace's operational space
- contactless switching relay for noise-free operation
- limit switch for safe opening of the furnace
- door manually opening towards the right-hand side
- stand (except for the PP 20 table version)



Simple operation and installation



Atypical modifications



Shipment from 6 weeks



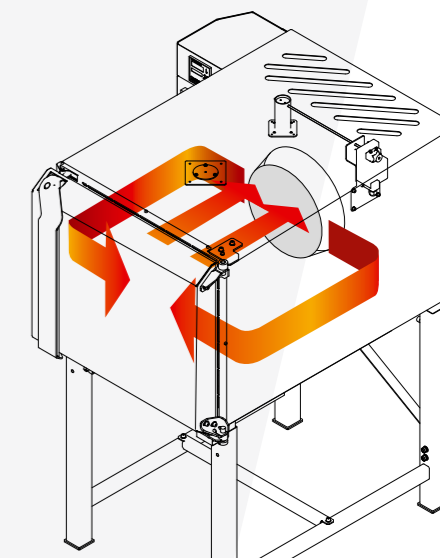
Warranty 24 months



Instant technical support

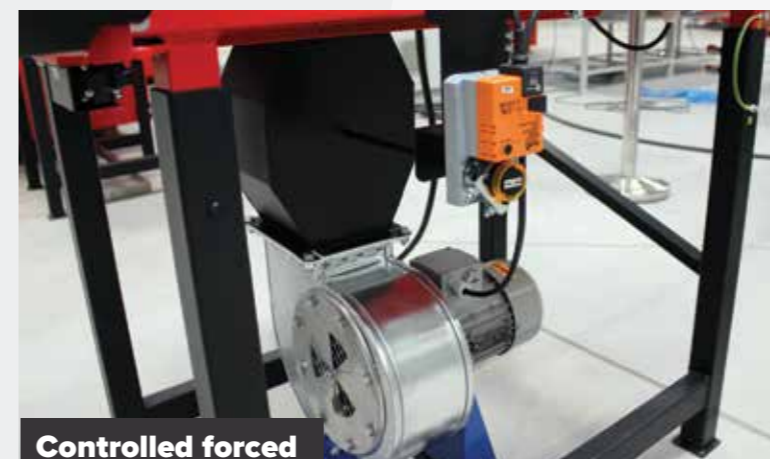
## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht200 controller (30 programs in 25 steps, USB interface)
- protective atmosphere supply
- automatic ventilation flap
- optimisation of the temperature field for compliance with DIN 17052-1  $\Delta T$  10 °C
- HtMonit set (include interface + software)
- controlled forced pressure cooling

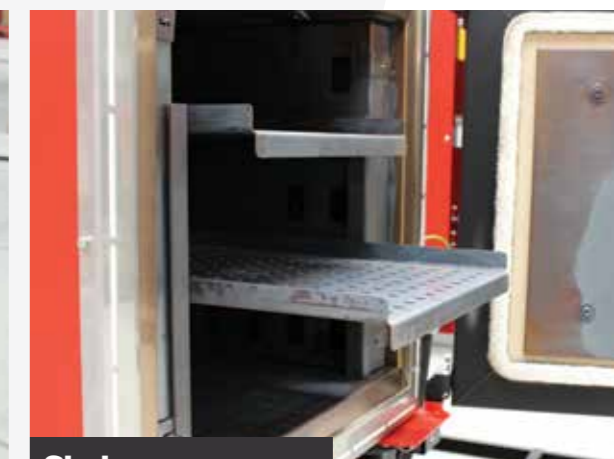


Air circulation model

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Controlled forced pressure cooling



Shelves

Type	Tmax**	Recommended operating temp. range	Volume	External dimensions (w×h×d)	Internal dimensions (w×h×d)	Shelf	Heating power***	Weight	Protection*	Voltage	Max. load capacity of shelves	Max. load capacity of bottom
	°C		l	mm	mm	ks	kW	kg	A	V	kg	kg
PP 20/45	450	200-450	20	800×650×1000	300×200×350	-	3	115	16/1	230	-	30
PP 40/45	450	200-450	35	850×1450×1050	300×300×400	2	6	160	16/3	400	15	50
PP 70/45	450	200-450	70	850×1550×1150	350×400×500	2	8	190	20/3	400	25	80
PP 140/45	450	200-450	135	950×1650×1300	450×500×600	2	12	300	20/3	400	40	150
PP 270/45	450	200-450	270	1200×1750×1450	600×600×750	2	20	580	40/3	400	35	200
PP 540/45	450	200-450	540	1300×1950×1750	750×800×900	2	24	750	50/3	400	40	250
PP 20/65	650	300-600	20	800×650×1000	300×200×350	-	3	130	16/1	230	-	30
PP 40/65	650	300-600	35	850×1450×1050	300×300×400	2	6	200	16/3	400	15	50
PP 70/65	650	300-600	70	850×1550×1150	350×400×500	2	8	250	20/3	400	25	80
PP 140/65	650	300-600	135	950×1650×1300	450×500×600	2	12	350	20/3	400	40	150
PP 270/65	650	300-600	270	1200×1750×1450	600×600×750	2	20	580	40/3	400	35	200
PP 540/65	650	300-600	540	1300×1950×1750	750×800×900	2	24	850	50/3	400	40	250
PP 20/85	850	300-800	20	850×700×1050	300×200×350	-	3	130	16/1	230	-	30
PP 40/85	850	300-800	35	850×1450×1050	300×300×400	2	7	200	20/3	400	15	50
PP 70/85	850	300-800	70	900×1550×1150	350×400×500	2	9	250	20/3	400	25	80
PP 140/85	850	300-800	135	1000×1650×1250	450×500×600	2	14	350	25/3	400	40	150
PP 270/85	850	300-800	270	1200×1750×1650	600×600×750	2	20	580	40/3	400	35	200
PP 540/85	850	300-800	540	1350×1950×1800	750×800×900	2	30	850	50/3	400	40	250

\* Protection may vary depending on the accessory option.

\*\* Tmax is the maximum temperature at which the furnace cannot be operated for a long period of time.

\*\*\* The power input for the fan motor in the PP 20 models is 0.25 kW. For the PP 40 - 140 models and for the PP 270/45 and 65, it is 0.37 kW for all temperatures. For the PP 270/85 and PP 540 models, it is 1.1 kW for all temperatures.

# PK hardening chamber furnaces

up to 1280 °C

PK chamber furnaces are very durable facilities for hardening, annealing, or preheating metal charges before forging under an oxidising atmosphere. Heating from three sides, meanwhile, is a guarantee for even heat distribution within the operating area. At your request, we also manufacture these furnaces in a semi-gastight version with a working tub, so that you can also use them for the heat treatment of a charge under a partially protective atmosphere.

Industrial robustness

Silent operation

Mechanical durability



PK 55



PK 130

## STANDARD FURNACE EQUIPMENT:

- Ht205 controller (30 programmes with 15 steps each)
- spirals made of resistor wire
- ventilation chimney
- rotary table for charge located on the right for PK 105/12 through PK 540/12 furnaces
- "S" type thermocouple
- contactless switching relay for noise-free operation
- limit switch on door
- limit unit
- manually controlled door (PK 55/12 through PK 540/12)
- electro-hydraulic door opening towards the top (PK 680/12 through PK 1400/12)
- stand
- PK 55 – 540 come without a switchboard, with the electrical installation located in the rear portion of the furnace
- PK 680 – PK 1400 have electrical installation elements located on a switchboard on the right side



Simple operation and installation



Atypical modifications



Shipment from 6 weeks



Warranty 24 months



Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht200 controller (30 programs in 25 steps, USB interface)
- protective atmosphere supply
- measuring loop calibration
- HtMonit set (include interface + software)
- metal plate for the bottom (only up to temperatures of 1,000 °C)
- controlled overpressure forced cooling (this cannot be combined with the semi-gastight version)
- set of SiC side covering plates

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Turntable



PK 1000

Type	Tmax**	Recommended operating temp. range	Volume	External dimensions (w×h×d)	Internal dimensions (w×h×d)	Heating power	Protection***	Weight	Voltage	Max. load capacity of bottom	Max. load capacity of folding table
	°C	°C	l	mm	mm	kW	A	kg	V	kg	kg
PK 55/12	1280	700-1200	55	1350×1450×1750	400×250×550	13	25/3	450	400	150	-
PK 105/12	1280	700-1200	105	*1450×1550×1850	500×350×600	21	40/3	660	400	150	50
PK 130/12	1280	700-1200	130	*1450×1550×2000	500×350×750	21	40/3	750	400	200	50
PK 180/12	1280	700-1200	180	*1500×1550×2000	550×400×800	29	50/3	830	400	200	50
PK 225/12	1280	700-1200	225	*1550×1700×1950	600×530×750	29	50/3	920	400	250	50
PK 350/12	1280	700-1200	350	*1650×1700×2300	700×530×1100	50	80/3	1100	400	300	50
PK 540/12	1280	700-1200	540	*1550×1900×2650	600×600×1500	50	80/3	1540	400	350	50
PK 680/12	1280	700-1200	680	2285×2790×2670	900×500×1500	70	125/3	1620	400	400	-
PK1000/12	1280	700-1200	1000	2300×2850×2900	900×700×1800	70	125/3	1980	400	500	-
PK1400/12	1280	700-1200	1400	2500×2850×3300	1100×600×2100	95	160/3	2500	400	800	-

\* Furnace dimensions without manipulation table.

\*\* Tmax is the maximum temperature at which the furnace cannot be operated for a long period of time.

\*\*\* Protection may vary depending on the accessory option.

# PKE hardening chamber furnaces

up to 1280 °C

These furnaces are smaller versions of the PK furnaces. They are designed with the durability of the internal lining, even in these smaller furnaces. Although heat accumulation in the lining is somewhat inferior to that in the PK, the PKE furnaces are, on the other hand, quicker to heat up, which you will especially appreciate if they are only used occasionally. We recommend these primarily for relatively small charges that are handled manually.

Industrial robustness

Silent operation

Economic variant



PKE 45

## STANDARD FURNACE EQUIPMENT:

- Ht40P controller (10 programmes with 15 steps each)
- heating elements on the sides in ceramic panels
- heating element at the bottom of the furnace in ceramic panels covered with a ceramic refractory plate
- ventilation chimney for venting the furnace's operational space
- "S" type thermocouple
- the PKE 12/12 through the PKE 18/12 are designed for 230 V
- the PKE 18/12R through the PKE 90/12 are designed for 400 V
- door opening manually downwards
- contactor
- door limit switch for the safe opening of the furnace
- tabletop (PKE 12 and PKE 18) or standalone option with a stand (height of loading edge 900 mm)



Simple operation and installation



Atypical modifications



Shipment from 5 weeks



Warranty 24 months



Instant technical support

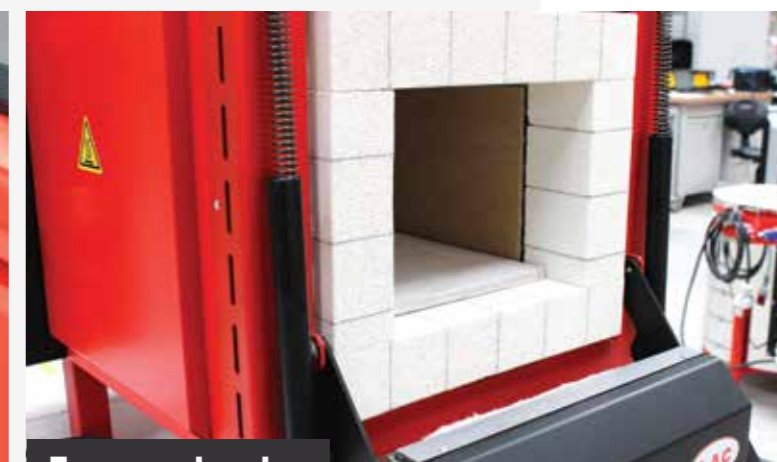
## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- protective atmosphere supply (see Inlet datasheet) (cannot be produced in the semi-gastight option)
- measuring loop calibration
- HtMonit set (include interface + software)
- metal plate for the bottom (only up to temperatures of 1,000 °C)
- controlled overpressure forced cooling (only with the HT 205 controller, only for furnaces PKE 25 and PKE 45, can not be combined with hardening table)

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Controller



Furnace chamber

Type	Tmax***	Recommended operating temp. range	Volume	External dimensions (w×h×d)	Internal dimensions (w×h×d)	Heating power	Weight	Protection*	Voltage	Max. load capacity of bottom
	°C	°C	l	mm	mm	kW	kg	A	V	kg
PKE 12/12	1280	700-1200	12,2	700×650×850	250×200×250	3	95	230	16/1	20
PKE 18/12	1280	700-1200	17,5	700×650×900	250×200×350	3,5	101	230	16/1	30
PKE 18/12R	1280	700-1200	17,5	700×650×900	250×200×350	5,5	101	400	16/3	30
PKE 25/12	1280	700-1200	25	700×1300**×1100	250×200×500	7	132	400	16/3	50
PKE 45/12	1280	700-1200	44	800×1350**×1100	350×250×500	13	160	400	25/3	100
PKE 65/12	1280	700-1200	65	800×1350**×1300	350×250×750	16	195	400	32/3	130
PKE 90/12	1280	700-1200	87	800×1350**×1550	350×250×1000	18	225	400	32/3	150

\* Protection may vary depending on the accessory option.

\*\* Height of furnace with stand.

\*\*\* Tmax is the maximum temperature at which the furnace cannot be operated for a long period of time.

# PKRC, PKR gastight chamber furnaces with retort

up to 950 °C

PKRC and PKR gastight chamber furnaces with circulation of internal atmosphere are characterized especially by their precise temperature distribution. They are used especially for heat treatment of materials in the defined protective atmosphere (argon, nitrogen, moulding gas) with low consumption of protective gas up to max. temperature of 950 °C. The technologies include especially annealing, tempering, curing, or internal stress relieving.

Gas-tight design

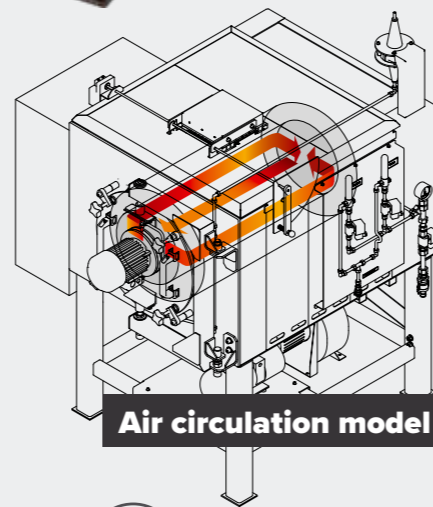
Chemical durability

Mechanical durability

## PKRC 55

### STANDARD FURNACE EQUIPMENT:

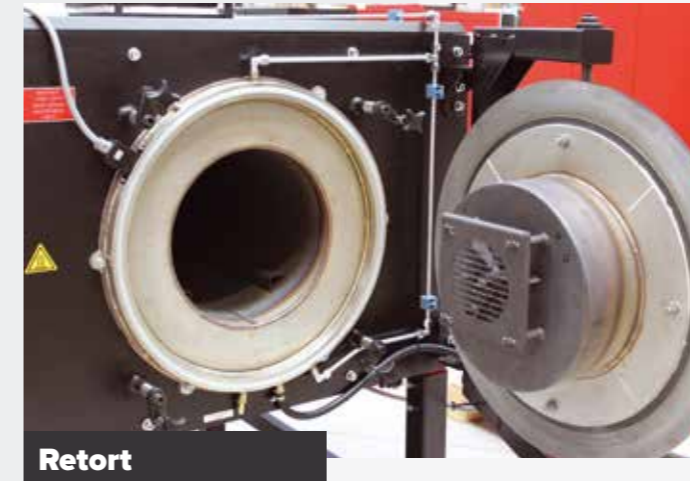
- Ht205 controller (30 programs of 15 steps each)
- heating coils wound on ceramic tubes outside the working area of the furnace
- manually controlled ventilation and suction flaps for cooling outside of the retort
- manual door opening to the side, limit end-switch for safe opening of the furnace
- door sealing door sealing with water cooling
- shelf in retort
- limit unit
- automatically controlled protective atmosphere inlet for one gas type (without vacuum pump)
- vacuum pressure gauge for vacuum control in the retort
- vacuum pump connection inlet
- thermistor for temperature control flange, signalling the presence of coolant in the retort collar
- overpressure valve at the retort gas input point with pressure 4-6 mbar
- ammeters to check the status of the heating elements (number depends on the number of stages involved in heating)
- "K" type thermocouple
- contactless switching relay for noise-free operation



### RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- retort made of type Inconel material and cast-iron propeller for long-term operation up to 1000 °C
- Ht200 controller (30 programs in 25 steps, USB interface)
- vacuum pump for extraction of the atmosphere + necessary controlled forced cooling
- controlled forced cooling (according to input cooling curve)
- optimisation of the temperature field for compliance with DIN 17052-1 ΔT 20 °C
- HtMonit set (include interface + software)

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Retort



Automatically controlled protective atmosphere inlet

Type	Tmax	Recommended operating temp. range	Volume	Inside dimensions of retort (ød×w×h)****	External dimensions (w×h×d)	Heating power	Protection*	Weight	Voltage	Max. load capacity of bottom
	°C	°C	l	mm	mm	kW	A	kg	V	kg
PKRC 55/95	950**	700-900***	24	267×410×198	1400×1830×1450	13	25/3	600	400	150
PKRC 130/95	950**	700-900***	69	372×635×303	1635×1930×1670	21	40/3	980	400	200
PKRC 180/95	950**	700-900***	83	412×635×338	1700×1960×1670	29	50/3	1100	400	200
PKRC 350/95	950**	700-900***	225	544×895×447	1915×2080×2005	50	80/3	1380	400	300

\* Protection may vary according to the optional accessories selected.

\*\* In case of using retort made of type Inconel material and cast-iron propeller up to 1100 °C.

\*\*\* In case of using retort made of type Inconel material and cast-iron propeller up to 1000 °C.

\*\*\*\* Dimensions of retort.

We also produce furnaces in a version without circulation of the inner atmosphere as a PKR furnaces.

Type	Tmax***	Recommended operating temp. range	Volume	Inside dimensions of retort (ød×w×h)**	External dimensions (w×h×d)	Heating power	Protection*	Weight	Voltage	Max. load capacity of bottom
	°C	°C	l	mm	mm	kW	A	kg	V	kg
PKR 55/95	950*	700-900	30	267×490×198	1400×1830×1290	13	25/3	570	400	150
PKR 130/95	950*	700-900	75	372×715×303	1640×1930×1520	21	40/3	950	400	200
PKR 180/95	950*	700-900	110	412×715×338	1700×1960×1520	29	50/3	1050	400	200
PKR 350/95	950*	700-900	230	544×975×447	1915×2080×1855	50	80/3	1350	400	300

\* Tmax is 1100°C with retort made of type Inconel material for short time.

\*\* Ddimensions of retort.

\*\*\* Tmax is the maximum temperature which can be attained by the furnace, but is not suitable for long-term operation.



Simple operation and installation



Atypical modifications



Shipment from 10 weeks



Warranty 24 months



Instant technical support

# SRC, SC gastight shaft furnaces with internal atmosphere circulation

up to 950 °C

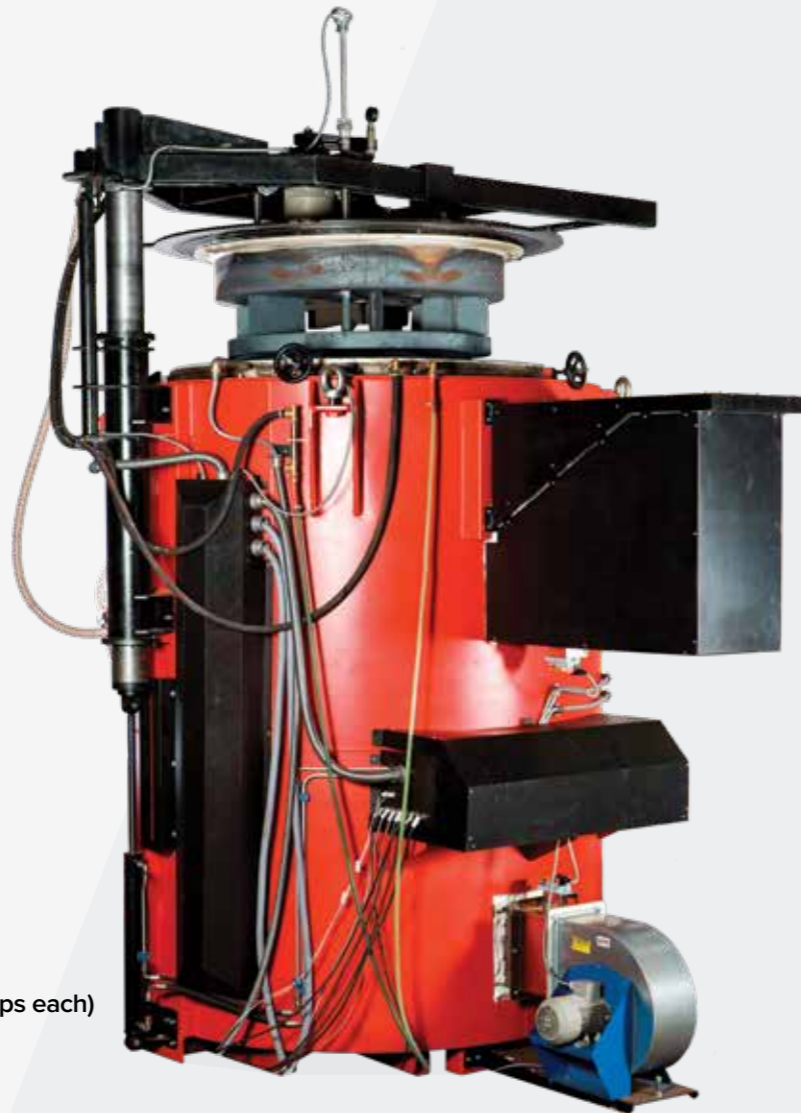
This gastight shaft furnace is primarily used for heat treatment of large and heavy charges in a predefined protective atmosphere (argon, nitrogen, forming gas, etc.), where a crane must be used for loading the charge into the furnace. It boasts, above all, a low consumption of protective gas.

Gas-tight design

Uniform temperature distribution

Low consumption of protective gas

SRC 1700



## STANDARD FURNACE EQUIPMENT:

- retort
- electro-hydraulically lifting lid
- Ht205 controller (30 programmes with 15 steps each)
- limit unit
- resistance heating
- standard pressure gauge for overpressure checking in the retort
- ammeter to check the heating elements
- automatically controlled protective atmosphere inlet for one type of gas (without vacuum pump)
- "K" type thermocouple



Simple operation and installation



Atypical modifications



Shipment from 12 weeks



Warranty 24 months



Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Ht200 controller (30 programs in 25 steps, USB interface)
- optimisation of the temperature field for compliance with DIN 17052-1 ΔT 15 °C
- automatic supply of protective atmosphere for 1 type of gas (with vacuum pump)
- controlled forced cooling
- HtMonit set (include interface + software)
- customization to nitriding furnace

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Electro-hydraulically lifting lid



SC 900

Type	Tmax.**	Recommended operating temp. range***	Volume	Internal dimensions (ød×h)	External dimensions (w×h×d)	Heating power	Protection*	Weight	Max. retort load	Voltage
	°C	°C	l	mm	mm	kW	A	kg	kg	V
SRC 500/95	950	600-900	500	800×1000	2100×2900×2300	50	100/3	2500	350	400
SRC 800/95	950	600-900	800	1000×1000	2350×2900×2300	70	125/3	3200	450	400
SRC 1000/95	950	600-900	1000	1000×1300	2350×3150×2600	90	160/3	3600	600	400
SRC 1700/95	950	600-900	1700	1200×1500	2500×3500×2800	120	250/3	5000	1000	400

\* The fuse may vary depending on the accessory option.

\*\* Tmax is the maximum temperature at which the furnace cannot be operated for a long time.

\*\*\* In case of using retort from Inconel and cast propeller up to 1100 °C.

\*\*\* In case of using retort from Inconel and cast propeller up to 1050 °C.

The furnaces are also produced without the retort as an SC furnaces.

Type	Tmax.**	Recommended operating temp. range	Volume	Internal dimensions (ød×h)	External dimensions (w×h×d)	Heating power	Protection*	Weight	Max. retort load	Voltage
	°C	°C	l	mm	mm	kW	A	kg	Kg	V
SC 500/85	850	300-800	500	800×1000	1700×2450×1900	50	100/3	1500	350	400
SC 800/85	850	300-800	800	1000×1000	1900×2450×2100	70	125/3	1800	450	400
SC 1000/85	850	300-800	1000	1000×1300	1900×2750×2100	90	160/3	2100	600	400
SC 1700/85	850	300-800	1500	1200×1300	2100×2750×2300	120	250/3	2500	1000	400
SC 2300/65	850	300-800	2300	1200×2000	2100×3300×2400	120	200	3200	1000	400

\* The fuse may vary depending on the accessory option.

\*\* Tmax is the maximum temperature at which the furnace cannot be operated for a long time.



# SKM, SKV hardening operation centre / hardening workplace

up to 1200 °C

The hardening workplace is intended for small charges. They can be used for preheating, hardening in an oil bath or in water, tempering, hardening a charge, cementing in powder, and artificial ageing.

Industrial robustness

Great variability

Comprehensive solution



SKV

## STANDARD TABLE EQUIPMENT:

- hardening tub for water (200 l)
- hardening tub for oil (200 l)
- hardening manipulation basket
- fan for air hardening

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- spare hardening manipulation basket
- fire clay-shaped blocks around the hardening grate
- thermostat-controlled heating of the hardening medium

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.

Type	Fan output	External dimensions (w×h×d)	Tub dimensions (w×h×d)	Grate dimensions (w×d)	Heating power	Weight	Voltage
	W	mm	mm	mm	kW	kg	V
SKM	180	1855×950×750	200×550×550	350×350	3	200 kg	230
SKV	370	2900×950×1200	300×700×1000	600×600	3	450 kg	400

\* With two tubs on the sides.

SKM, SKV furnaces for fitting			
	Hardening		Tempering
SKM	PKE 12/12, PKE 18/12 (R), L, LH		PP 20/45, PP 20/65
SKV	PKE 12/12 - PKE 90/12, PK 55/12		PP 20/45, PP 20/65



Simple operation and installation



Atypical modifications



Shipment from 5 weeks



Warranty 24 months



Instant technical support

# KK hardening container

The hardening container is used for quick cooling in heat treatment of small metallic charges up to 30 kg. Thanks to the charge grate, you can to manipulate the charge easily and conveniently.

Industrial robustness

Easy to move

Easy load handling



KK 250

## STANDARD FURNACE EQUIPMENT:

- system for hardening medium; oil (structural steel internal bath and structural steel grate)
- pneumatic grate
- circulation/mixing of hardening medium
- castors

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- hardening medium heating (3 kW)
- hardening medium cooling
- system for hardening medium; water (structural steel internal bath and structural steel grate)

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.

Type	Volume	External dimensions (w×h×d)	Grate dimensions (w×d)	Max. grid capacity	Weight	Heating power	Voltage
	l	mm	mm	kg	kg	kW	V
KK/250 (oil)	300	1150×1830×1150	600×700	30	350*	3	400
KK/250 (water)	300	1150×1830×1150	600×700	30	350*	3	400

\* With two tubs on the sides.



Simple operation and installation



Atypical modifications



Shipment from 5 weeks



Warranty 24 months



Instant technical support

# KLO oil hardening bath or KLV water hardening bath

Hardening baths are designed for heavy duty operations. Thanks to the charge grate, you can manipulate the charge easily and conveniently. Hardening baths are used for quick cooling during heat treatment of metal charges. It sees regular use, for instance when hardening in water, polymer, or oil.

Industrial robustness

Easy manipulation of the charge

Intensive heat removal from the charge



**KLO 2400**

## STANDARD EQUIPMENT:

- variants for oil hardening medium (KLO) and water hardening medium (KLV)
- electrically controlled grate
- mixing of hardening medium

## DOPORUČENÉ PŘÍSLUŠENSTVÍ ZA PŘÍPLATEK:

- cooling of hardening medium
- heating of hardening medium

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.

Type	Volume	External dimensions (w×h×d)	Grate dimensions (w×d)	Max. charge weight	Weight	Overall input**	Voltage
	l	mm	mm	kg	kg	kW	V
KLO 2400	2400	2400×3200×1850	690×950	300	1200*	4	400
KLO 4320	4300	2700×3300×2300	700×700	400	2200*	4	400

\* Without filling.

\*\* Power input of the mixing mechanism to ensure circulation of the coolant and the drive of the lifting grate. If the bath is equipped with cooling, the total power consumption may vary.



Simple operation and installation



Atypical modifications



Shipment from 10 weeks



Warranty 24 months



Instant technical support

# KSL hardening salt bath

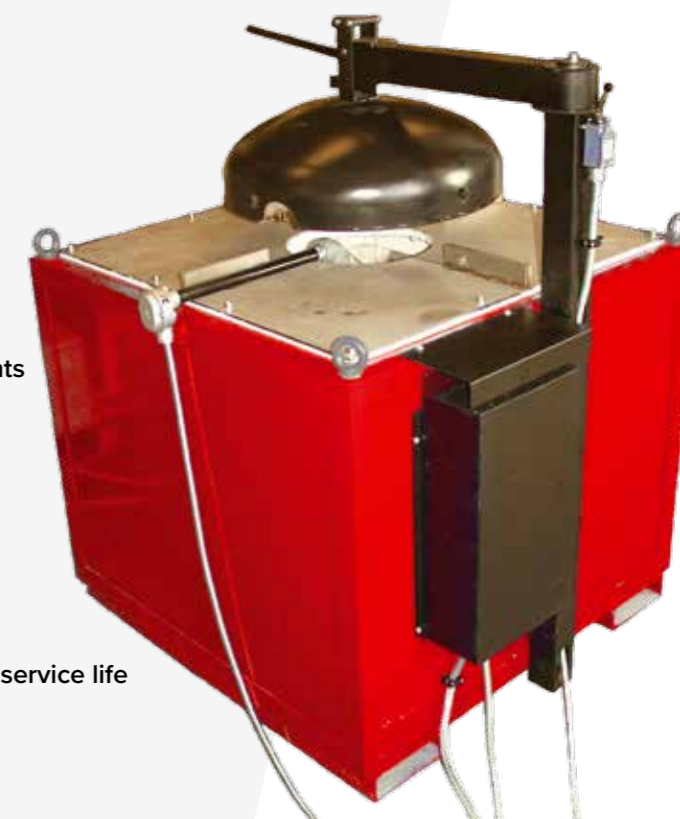
up to 1100 °C

KSL hardening salt baths are very easy to operate. They are mainly used for quick heating of steel parts before hardening without oxidation.

Industrial robustness

Mechanical durability

Easy exchange of spirals and crucible



**KSL**

## STANDARD FURNACE EQUIPMENT:

- Ht40T controller
- Limit unit
- Ammeters for checking the state of the heating elements
- Residual current protector

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- Crucible
- Charge thermocouple with protective steel tube (no warranty is provided for the protective tube and its service life is approximately 1 month)
- Measuring loop calibration (thermocouple + controller)
- Connection of the furnace with the switchboard, within a metal hose with a protective metal sheath
- Exhaustion collar

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.

Type	Tmax	Recommended operating temp. range	Crucible capacity	External dimensions (w×h×d)	Heating power	Weight	Protection*	Voltage
	°C	°C	l	mm	kW	kg		V
KSL 20/11	1100	500 - 1000	20	950×790×950	21	570	40/3	400
KSL 40/11	1100	500 - 1000	38	1100×1135×1100	35	650	60/3	400
KSL 80/11	1100	500 - 1000	90	1400×1300×1300	53	730	100/3	400
KSL 360/11	1100	500 - 1000	400	1600×1900×1600	102	2600	200/3	400

\* The fuse may vary depending on the accessory option.



Simple operation and installation



Atypical modifications



Shipment from 10 weeks



Warranty 24 months



Instant technical support

# PT Mk.II, PTE Mk.II and PTT Mk.II electric melting stationary furnaces

up to 900 / 1100 °C

These furnaces are used as melting and holding units for various aluminium alloys up to 900/1100 °C. They are designed with the emphasis on energy savings and with a view to reduce the dimensions of the equipment. This was achieved thanks to our modern insulation materials and a new system for affixing the heating spirals.

Energy saving

Low purchase costs

Unique protection of heating coils

## PT Mk.II

### STANDARD FURNACE EQUIPMENT:

- Ht40T controller (3 programmes with 10 steps each)
- limit unit
- resistance heating (heating spirals)
- protective collar of crucible made from grey iron
- manually controlled lid
- emergency drain at the bottom of the furnace, with flap
- limit thermocouple of the "S" type and control thermocouple of the "K" type
- output switching
- 3 ammeters for checking the status of the heating elements
- contactless switching relay for noise-free operation
- residual current protector
- braces at the bottom of the furnace to ease manipulation using a forklift truck for the PTE 400/11 and higher cubic capacities
- connection between the furnace and switchboard, within a metal hose with a plastic protector, length of up to 5 m
- wall switchboard



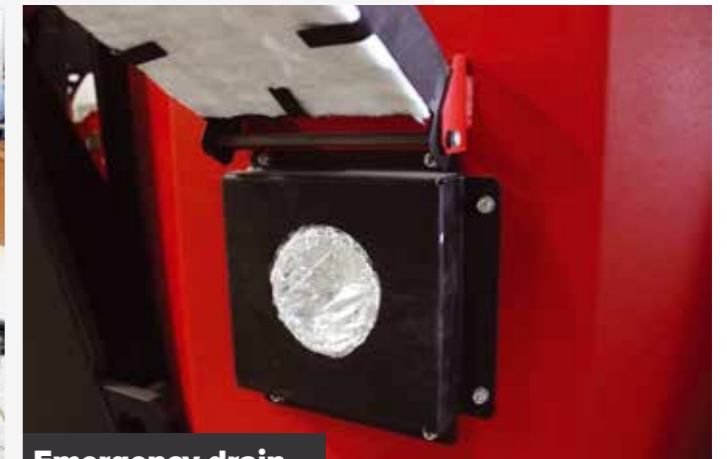
### RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- charge thermocouple of the "K" type with protective tube
- thermocouple of the "K" type in the wall of the crucible
- Ht205 controller (30 programmes with 15 steps each)
- optic indicator of the state of the heating elements
- system to check for cracks in the crucible
- connection of the furnace with the switchboard, within a metal hose with a metal sheath (for lengths exceeding 5 m)
- pedal-controlled lid automatically opening upwards

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



PTE Mk.II with automatically opening lid



Emergency drain



Heating spirals in the grooves of refractory castable shapes



Grey iron protective collar



Simple operation and installation



Atypical modifications



Shipment from 6 weeks



Warranty 24 months



Instant technical support

## Technical parameters.

Type	Capacity	Tmax in furnace chamber	Recommended operating temp. range (in crucible)	Crucible type: Noltina or equivalent	Crucible capacity	Loading height*	External dimensions (w×h×d)	Heating power	Weight**	Voltage	Protection***
	Kg Al	°C	°C		l	mm	mm	kW	kg	V	
PT 100/11 Mk.II	105	1100	650-850	A 300	40	790	950×1360×950	23	450	400	40/3
PT 200/11 Mk.II	185	1100	650-850	BU 200	70	850	1035×1420×1025	46	555	400	80/3
PT 300/11 Mk.II	275	1100	650-850	BU 300	110	950	1125×1520×1115	50	670	400	100/3
PT 400/11 Mk.II	320	1100	650-850	BU 350	135	1050	1125×1720×1115	54	758	400	100/3
PT 500/11 Mk.II	480	1100	650-850	BU 500	180	1100	1285×1670×1275	61	890	400	125/3
PT 650/11 Mk.II	590	1100	650-850	BU 600	220	1300	1285×1870×1275	75	1125	400	125/3
PT 800/11 Mk.II	970	1100	650-850	BN 800	300	1400	1400×1970×1390	95	1210	400	160/3
PT 900/11 Mk.II	1080	1100	650-850	BN 900	370	1500	1400×2070×1390	110	1310	400	200/3
PT 1200/11 Mk.II	1250	1100	650-850	BN 1200	470	1650	1400×2220×1390	130	1460	400	250/3

\* The distance from the floor up to the top edge of the crucible's protective collar.

\*\* The weight of the furnace with the automatic lid is increased by approximately 50 kg.

\*\*\* Protection can vary depending on the accessories selected for an extra charge.

## Furnace's hourly consumption in a stabilised state [kWh], full furnace, new crucible.

Type	Holding at 700°C		Holding at 800°C		Melting output* Kg Al/h
	Closed lid	Open lid	Closed lid	Open lid	
PT 100/11 Mk.II	1,9	3,1	2,5	4,7	64
PT 200/11 Mk.II	2,3	4,4	2,9	6,8	133
PT 300/11 Mk.II	2,9	6,1	3,6	9,5	143
PT 400/11 Mk.II	3,0	6,2	3,8	9,6	155
PT 500/11 Mk.II	3,6	9,3	4,6	14,7	175
PT 650/11 Mk.II	3,9	9,6	5,0	15,2	217
PT 800/11 Mk.II	4,7	12,4	5,9	19,6	275
PT 900/11 Mk.II	4,9	12,5	6,1	19,8	300
PT 1200/11 Mk.II	5,2	12,7	6,5	20,0	350

\* The melting output values specified in the table are the maximum ones.

Approximately 80 % of the maximum value of the melting output is achieved during actual operation.

## LID VARIATIONS:



Manually controlled lid



Automatically opening lid

We make these furnaces also in the PTE Mk.II version as holding units for various aluminium alloys up to 900 °C inside the furnace chamber (approximately 850 °C inside the crucible). The PTE Mk.II furnaces belong among the most effective and energy-efficient facilities on the market for holding metal alloys.

Type	Capacity	Tmax in furnace chamber	Recommended operating temp. range (in crucible)	Crucible type: Noltina or equivalent	Crucible capacity	Loading height*	External dimensions (w×h×d)	Heating power	Weight**	Voltage	Protection***
	Kg Al	°C	°C		l	mm	mm	kW	kg	V	
PTE 100/09 Mk.II	105	900	650-850	A 300	40	780	950×1125×950	15	440	400	32/3
PTE 200/09 Mk.II	185	900	650-850	BU 200	70	840	1035×1185×1035	15	545	400	32/3
PTE 300/09 Mk.II	275	900	650-850	BU 300	110	940	1125×1285×1125	22	775	400	40/3
PTE 400/09 Mk.II	320	900	650-850	BU 350	135	1040	1125×1485×1125	22	660	400	40/3
PTE 500/09 Mk.II	480	900	650-850	BU 500	180	1090	1285×1635×1285	27	880	400	50/3
PTE 650/09 Mk.II	590	900	650-850	BU 600	220	1290	1285×1835×1285	27	1115	400	50/3
PTE 800/09 Mk.II	970	900	650-850	BN 800	300	1390	1400×1935×1400	38	1200	400	63/3
PTE 900/09 Mk.II	1080	900	650-850	BN 900	370	1490	1400×2035×1400	38	1300	400	63/3
PTE 1200/09 Mk.II	1250	900	650-850	BN 1200	470	1640	1400×2235×1400	40	1450	400	80/3

\* The distance from the floor up to the top edge of the crucible's protective collar.

\*\* The weight of the furnace with the automatic lid is increased by approximately 50 kg.

\*\*\* Protection can vary depending on the accessories selected for an extra charge.

## Furnace's hourly consumption in a stabilised state [kWh], full furnace, new crucible.

Typ	Holding at 700°C		Holding at 800°C		Melting output* Kg Al/h
	Closed lid	Open lid	Closed lid	Open lid	
PTE 100/11 Mk.II	1,9	3,1	2,5	4,7	27
PTE 200/11 Mk.II	2,3	4,4	2,9	6,8	27
PTE 300/11 Mk.II	2,9	6,1	3,6	9,5	40
PTE 400/11 Mk.II	3,0	6,2	3,8	9,6	40
PTE 500/11 Mk.II	3,6	9,3	4,6	14,7	50
PTE 650/11 Mk.II	3,9	9,6	5,0	15,2	50
PTE 800/11 Mk.II	4,7	12,4	5,9	19,6	73
PTE 900/11 Mk.II	4,9	12,5	6,1	19,8	73
PTE 1200/11 Mk.II	5,2	12,7	6,5	20,0	75

\* The melting output values specified in the table are the maximum ones.

Approximately 80 % of the maximum value of the melting output is achieved during actual operation.

We make these furnaces also in the PTT Mk.II. version as transport furnaces. PTT Mk.II. furnaces are suitable for transporting the melt between the melting furnace and the workplace where the melted metal is cast.

Typ	Capacity	Tmax in furnace chamber	Recommended operating temp. range (in crucible)	Crucible type: Noltina or equivalent	Crucible capacity	Loading height*	External dimensions (w×h×d)	Heating power	Weight**	Voltage	Protection***
	Kg Al	°C	°C		l	mm	mm	kW	kg	V	
PTT 300/09 Mk.II	275	900	650-850	BU 300	110	940	1125×1285×1125	22	775	400	40/3
PTT 400/09 Mk.II	320	900	650-850	BU 350	135	1040	1125×1485×1125	22	660	400	40/3
PTT 500/09 Mk.II	480	900	650-850	BU 500	180	1090	1285×1635×1285	27	880	400	50/3
PTT 650/09 Mk.II	590	900	650-850	BU 600	220	1290	1285×1835×1285	27	1115	400	50/3
PTT 800/09 Mk.II	970	900	650-850	BN 800	300	1390	1400×1935×1400	38	1200	400	63/3

\* The distance from the floor up to the top edge of the crucible's protective collar.

\*\* The weight of the furnace with the automatic lid is increased by approximately 50 kg.

\*\*\* Protection can vary depending on the accessories selected for an extra charge.

# PTS melting electric tilting furnaces

up to 1200 °C

The furnace is used as a melting device with the possibility of tilting and pouring the melt into the transport pan or transport holding furnace for subsequent processing at temperatures up to 1200 °C (approximately 1100 °C in a crucible).

Industrial robustness

Mechanical durability

Great insulating properties



PTS 30

## STANDARD FURNACE EQUIPMENT:

- crucible
- hydraulic furnace tilting with hand lever control
- Ht40T controller (3 programmes with 10 steps each)
- limit unit
- protective collar of crucible made from grey iron
- manually controlled lid
- emergency drain at the bottom of the furnace, with flap
- "S" type limiting and controlling thermocouple
- 3 ammeters for checking the status of the heating elements
- switching of the heaters using contactors
- residual current protector
- connection between the furnace and switchboard, within a metal hose with a plastic protector, length of up to 5 m
- wall switchboard



Simple operation and installation



Atypical modifications



Shipment from 12 weeks



Warranty 24 months



Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- charge thermocouple of the "K" type with protective tube
- thermocouple of the "K" type in the wall of the crucible
- Ht205 controller (30 programmes with 15 steps each)
- system to check for cracks in the crucible
- connection of the furnace with the switchboard, within a metal hose with a metal sheath (for lengths exceeding 5 m)

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Casting nozzle



PTS 650

Type	Capacity	Tmax in furnace chamber	Recommended operating temp. range (in crucible)	Crucible type: Noltina or equivalent		External dimensions (w×h×d)	Heating power	Melting output**	Weight	Protection*	Voltage
	kg Al	°C	°C	l	type						
PTS 30/12	30	1200	650-1000	9	A70	1540×1850×1300	18	30	1250	32/3	400
PTS 60/12	45	1200	650-1000	16	A150	1600×1900×1200	21	40	1450	40/3	400
PTS 110/12	85	1200	650-1000	33	A300	1850×2000×1550	27	55	1500	50/3	400
PTS 210/12	145	1200	650-1000	55	TP 287	1950×2000×1600	53	120	1790	100/3	400
PTS 400/12	285	1200	650-1000	130	TP 412	2000×2100×1650	63	140	2180	125/3	400
PTS 650/12	490	1200	650-1000	200	TP 587	2150×2450×1900	82	200	2820	160/3	400
PTS 970/12	840	1200	650-1000	320	TBN 800	2250×2450×2000	102	250	3500	200/3	400

\* Protection can vary depending on the accessories selected for an extra charge.

\*\* The melting output values specified in the table are the maximum ones.

Approximately 80 % of the maximum value of the melting output is achieved during actual operation.

# PTP melting gas stationary furnaces

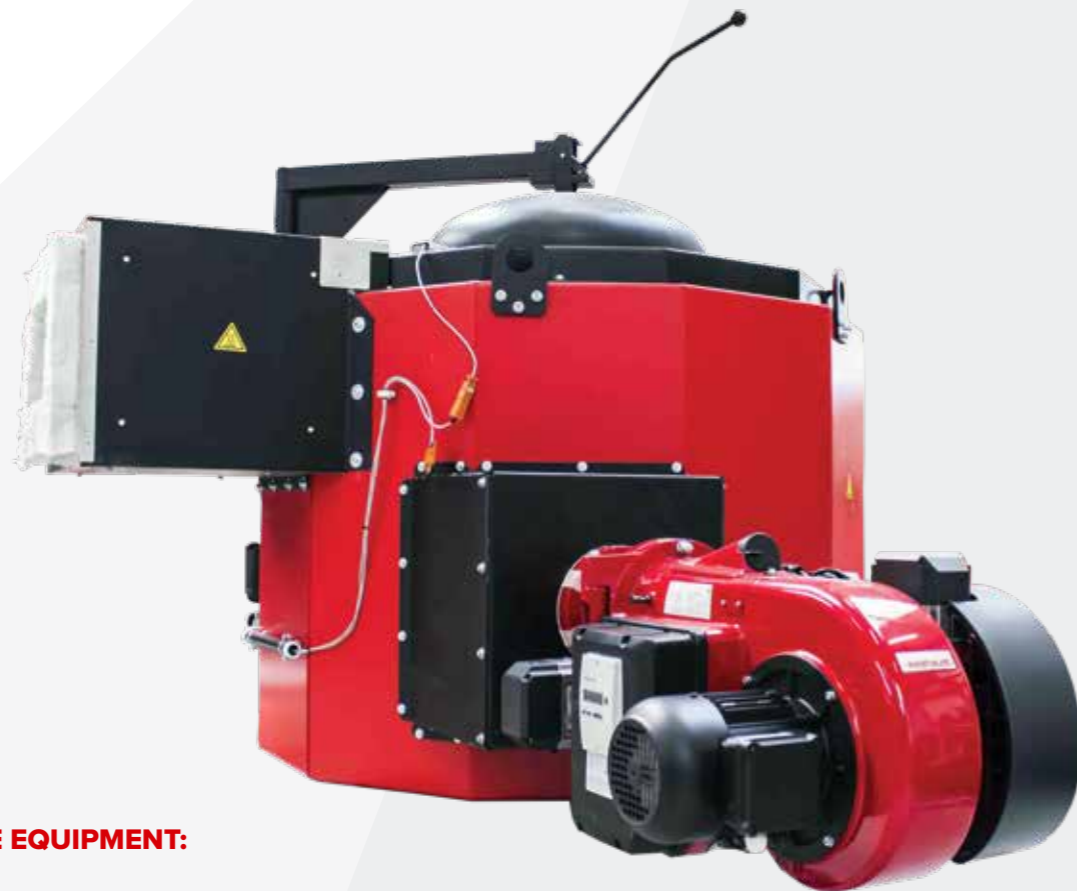
up to 1200 / 1400 °C

The PTP melting and holding furnaces are used for the alloys of a variety of metals (tin, zinc, lead, aluminium, silver, gold, copper). Thanks to the gas burner used, this furnace has a high melting output. We have achieved minimal heat losses, and thus operating cost savings for you, by using top-quality insulation materials and a rotary lid.

Mechanical durability

High melting output

Excellent insulation properties



PTP 600

## STANDARD FURNACE EQUIPMENT:

- crucible
- Ht40B controller (3 programmes with 10 steps each)
- limit unit
- flue gas extraction on the side of the furnace
- protective collar of crucible made from grey iron
- manually controlled lid
- monoblock burner
- connection between the furnace and switchboard, within a metal hose with a plastic protector, length of up to 5 m



Simple operation and installation



Atypical modifications



Shipment from 12 weeks



Warranty 24 months



Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- charge thermocouple of the "K" type with protective tube
- thermocouple of the "K" type in the wall of the crucible (only furnaces for temperatures of 1,200 °C)
- connection of the furnace with the switchboard, within a metal hose with a metal sheath (for lengths exceeding 5 m)
- system to check for cracks in the crucible
- oil burner
- double fuel burner

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Monoblock burner



Manually controlled lid

Type	Capacity	Capacity	Tmax in furnace chamber	Recommended operating temp. range (in crucible)	Crucible type	Crucible capacity	Melting output at 700 °C**	Melting output at 1000 °C**	External dimensions (w×h×d)*	Burner power	Weight
	kg of Al	kg of Cu alloys	°C	°C	Noltina or equivalent	l	kg of Al/h	kg of Cu alloys/h	mm	kW	kg
PTP 200/12	185	-	1200	650-1000	BU 200	70	140	-	2100×1100×1400	180	900
PTP 250/12	270	-	1200	650-1000	BU 250	100	140	-	2100×1100×1400	180	1000
PTP 300/12	275	-	1200	650-1000	BU 300	110	150	-	2100×1300×1400	210	1200
PTP 350/12	320	-	1200	650-1000	BU 350	135	250	-	2100×1300×1400	300	1400
PTP 500/12	480	-	1200	650-1000	BU 500	180	270	-	2250×1300×1550	300	1700
PTP 600/12	590	-	1200	650-1000	BU 600	220	400	-	2300×1450×1600	390	1900
PTP 100/14	40	130	1400	650-1200	A 100	15	-	90	1900×700×1100	210	1000
PTP 150/14	60	200	1400	650-1200	A 150	24	-	100	1950×800×1250	210	1250
PTP 400/14	170	560	1400	650-1200	A 400	55	-	300	2100×1100×1400	300	1500
PTP 500/14	200	660	1400	650-1200	A 500	70	-	320	2100×1100×1400	320	1600
PTP 600/14	230	760	1400	650-1200	A 600	85	-	320	2100×1300×1400	320	1750

\* Stated furnace width is inclusive of the burner inlet. Stated furnace height is inclusive of the closed lid.

\*\* The melting output values specified in the table are the maximum ones.

Approximately 80 % of the maximum value of the melting output is achieved during actual operation.

# PTSP melting gas tilting furnaces

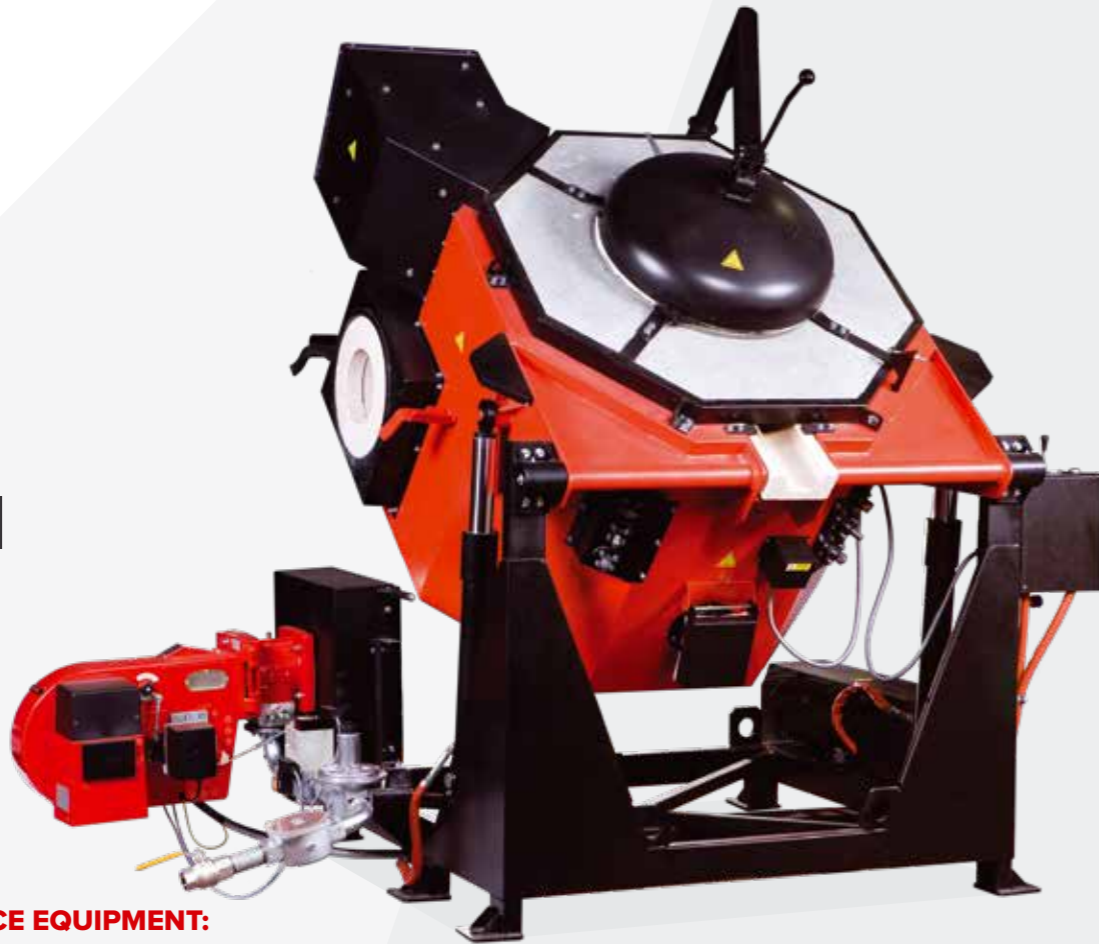
up to 1200 / 1400 °C

PTSP furnaces are used for melting metals at up to 1400 °C (approximately 1250 °C in the furnace's crucible) with the option to transfer the melting product into a transport ladle or a transport holding furnace for conveyance to its next point of processing.

High melting performance

Mechanical durability

Minimum heat loss



PTSP 600

## STANDARD FURNACE EQUIPMENT:

- crucible
- Ht40B controller (3 programmes with 10 steps each)
- limit unit
- flue gas extraction on the side of the furnace
- protective collar of crucible made from grey iron
- manually controlled lid
- monoblokový hořák
- connection between the switchboard and the furnace in metal hoses with protective metal sheath
- hydraulic furnace tilting with hand lever control



Simple operation and installation



Atypical modifications



Shipment from 12 weeks



Warranty 24 months



Instant technical support

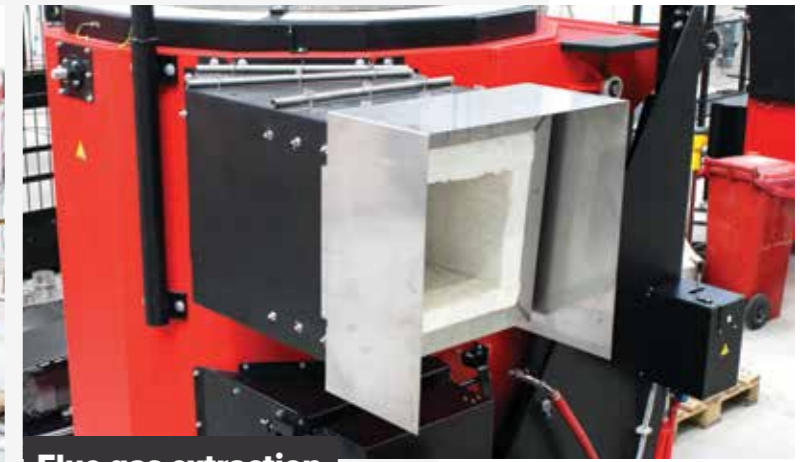
## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- charge thermocouple of the "K" type with protective tube
- thermocouple of the "K" type in the wall of the crucible (only furnaces for temperatures of 1,200 °C)
- connection of the furnace with the switchboard, within a metal hose with a metal sheath (for lengths exceeding 5 m)
- system to check for cracks in the crucible
- oil burner
- double fuel burner

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



PTSP 1000



Flue gas extraction

Type	Capacity kg of Al	Capacity kg of Cu alloys	Tmax in furnace chamber °C	Recommended operating temp. range (in crucible) °C	Crucible type Noltina or equivalent	Crucible capacity l	Melting output at 700 °C** kg of Al/h	Melting output at 1000 °C** kg of Cu alloys/h	External dimensions (w×h×d)* mm	Burner power kW	Weight kg
PTSP 180/12	145	-	1200	650-1000	TP 287	55	220	-	2850×1350×1600	300	2000
PTSP 330/12	285	-	1200	650-1000	TP 412	130	240	-	2900×1550×1750	300	2400
PTSP 370/12	340	-	1200	650-1000	TP 412 H	160	260	-	3000×1850×1700	300	3000
PTSP 570/12	490	-	1200	650-1000	TP 587	200	400	-	3200×1750×1850	390	3800
PTSP 750/12	840	-	1200	650-1000	TBN 800	320	420	-	3400×2050×2000	450	4300
PTSP 1000/12	1050	-	1200	650-1000	TBN 1100	400	450	-	3400×2300×2000	450	5300
PTSP 400/14	75	250	1400	650-1200	TP 723	28	-	330	2800×1400×1600	400	1900
PTSP 500/14	105	355	1400	650-1200	TP 843	40	-	360	2800×1400×1600	400	2100
PTSP 600/14	145	490	1400	650-1200	TP 287	55	-	380	2850×1300×1600	400	2500

\* Stated furnace width is inclusive of the burner inlet. Stated furnace height is inclusive of the closed lid.

\*\* The melting output values specified in the table are the maximum ones.

Approximately 80 % of the maximum value of the melting output is achieved during actual operation.

# PTPR melting gas stationary furnaces with recuperation system

up to 1200 °C

The PTPR furnaces are used for melting and holding metals of up to 1200 °C (approximately 1100 °C inside the crucible). They are fitted with a recuperator which preheats the air intended for combustion in the gas burner. It reduces chimney losses and thus the furnace's consumption. This in turn can give you gas savings of 25 to 30% compared to an ordinary gas furnace.

Low operating costs

Mechanical durability

Minimum heat loss



PTPR 600

## STANDARD FURNACE EQUIPMENT:

- protective collar of crucible made from grey iron
- gas burner with recuperation
- Ht40B controller (3 programmes with 10 steps each)
- limit unit
- "S" type thermocouple in furnace space
- connection between the switchboard and the furnace in metal hoses with a protective metal sheath
- manually controlled lid



Simple operation and installation



Atypical modifications



Shipment from 12 weeks



Warranty 24 months



Instant technical support

## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- charge thermocouple of the "K" type with protective tube
- thermocouple of the "K" type in the wall of the crucible (only furnaces for temperatures of 1,200 °C)
- connection of the furnace with the switchboard, within a metal hose with a metal sheath (for lengths exceeding 5 m)
- system to check for cracks in the crucible

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Gas burner



Hydraulic control of the furnace manhole cover

Type	Capacity	Tmax in furnace chamber	Recommended operating temp. range (in crucible)	Crucible type	Crucible capacity	Melting output at 700 °C**	External dimensions (w×h×d)*	Burner power	Weight	Power consumption for melting
	kg Al	°C	°C	Noltina	l	kg Al/h	mm	kW	Kg	kWh/1 kg Al
PTPR 200/12	185	1200	650-1000	BU 200	70	200	2100×2200×1400	180	950	0,7 – 0,8
PTPR 250/12	270	1200	650-1000	BU 250	100	200	2100×2200×1400	180	1100	0,7 – 0,8
PTPR 300/12	275	1200	650-1000	BU 300	110	200	2100×2400×1400	180	1250	0,7 – 0,8
PTPR 350/12	320	1200	650-1000	BU 350	135	350	2100×2400×1400	300	1500	0,7 – 0,8
PTPR 500/12	480	1200	650-1000	BU 500	180	350	2250×2400×1550	300	1800	0,7 – 0,8

\* Stated furnace width is inclusive of the burner inlet. Stated furnace height is inclusive of the closed lid.

\*\* The melting output values specified in the table are the maximum ones.

Approximately 80 % of the maximum value of the melting output is achieved during actual operation.



# PTSPR melting gas tilting furnaces with recuperation system

up to 1200 °C

The PTSPR furnaces are used for melting metals at up to 1200 °C (approximately 1100 °C in the furnace's crucible) with the option to transfer the melting product into a transport ladle or a transport holding furnace. The furnaces are fitted with a recuperator which preheats the air intended for combustion in the gas burner. These tilting gas furnaces with recuperation can help you save 25-30 % of gas when compared with standard gas furnaces.

Low operating costs

Mechanical durability

Minimum heat loss



PTSPR 750

## STANDARD FURNACE EQUIPMENT:

- crucible
- protective collar of crucible made from grey iron
- gas burner with recuperation
- Ht40B controller (3 programmes with 10 steps each)
- limit unit
- "S" type thermocouple in furnace space
- connection between the switchboard and the furnace in metal hoses with a protective metal sheath
- manually controlled lid
- hydraulic furnace tilting with hand lever control



Simple operation and installation



Atypical modifications



Shipment from 12 weeks



Warranty 24 months

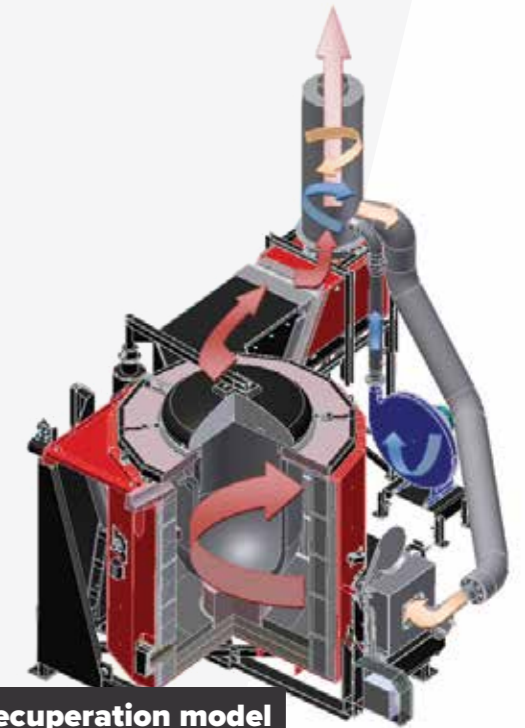


Instant technical support

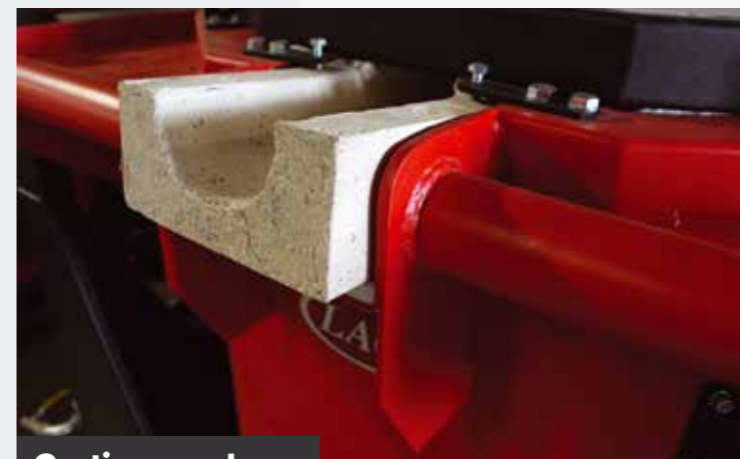
## RECOMMENDED ACCESSORIES AT AN ADDITIONAL COST:

- charge thermocouple of the "K" type with protective tube
- thermocouple of the "K" type in the wall of the crucible (only furnaces for temperatures of 1,200 °C)
- connection of the furnace with the switchboard, within a metal hose with a metal sheath (for lengths exceeding 5 m)
- system to check for cracks in the crucible

After consulting, we offer also other possibilities of modification of your equipment according to your requirements.



Recuperation model



Casting nozzle



2x PTSPR 1000

Typ	Capacity	Tmax in furnace chamber	Recommended operating temp. range (in crucible)	Crucible type	Crucible capacity	Melting output at 700 °C**	External dimensions (w×h×d)*	Burner power	Weight	Power consumption for melting
	kg Al	°C	°C	Noltina	l	kg Al/h				
PTSPR 330/12	285	1200	650-1000	TP 412	130	340	2900×2350×1750	300	2400	0,7 – 0,8
PTSPR 570/12	490	1200	650-1000	TP 587	200	560	3200×2650×1850	300	3800	0,7 – 0,8
PTSPR 750/12	840	1200	650-1000	TBN 800	320	590	3400×2950×2000	300	4300	0,7 – 0,8
PTSPR 1000/12	1050	1200	650-1000	TBN 1100	400	630	3400×3200×2000	300	5300	0,7 – 0,8

\* Stated furnace width is inclusive of the burner inlet. Stated furnace height is inclusive of the closed lid.

\*\* The melting output values specified in the table are the maximum ones.

Approximately 80 % of the maximum value of the melting output is achieved during actual operation.

## Measurement and control

Electric resistance furnaces of LAC, s.r.o. they are fitted with the following types of quality PID controllers Ht 200 / Ht 205, HtIndustry, Ht40 AL, Ht40 B, Ht40 T or Ht40 P. These types of controllers are microprocessor controlled devices that meet all requirements to control the temperature and security of electrothermal equipment.



Type	Ht200/Ht205	HtIndustry	Ht40B	Ht40P	Ht40A / Ht40AL	Ht40T
	Programmable PID controller designed for industrial applications.  Program Ht200: • 30 programs • 25 steps in program  Program Ht205: • 30 programs • 15 steps in program	Programmable PID controller designed for industrial applications.  Program: • 30 programs • 15 steps in program	Universal PID controller. Control with fixed set point: • three-position control • "Slave" controller in of "Master - Slave" system	Cheap PID program controller.  Program: • 30 programs • 15 steps in program	Simple programmable PID controller.  Program Ht40A: • 1 x rise, 1 x hold  Program Ht40AL: • 2x rise, 2x hold	Programmable PID controller governed by a real time clock.  Standalone programs for: • weekdays • Saturday • Sunday
<b>Measuring inputs</b>	1 input: • temperature (Thermocouples + Pt100) • process (voltage, current)  Accuracy 0,1 %	1 input: • temperature (Thermocouples + Pt100) • process (voltage, current)  Accuracy 0,1 %	2 inputs, first measuring, second auxiliary. Measuring input: • temperature • process Auxiliary input: • process • resistance  Accuracy 0,1 %	1 input: • temperature (Thermocouples + Pt100) • process (voltage, current)  Accuracy 0,1 %	1 input: • temperature (Thermocouples + Pt100) • process (voltage, current)  Accuracy 0,1 %	1 input: • temperature (Thermocouples + Pt100) • process (voltage, current)  Accuracy 0,1 %
<b>Digital inputs</b>	2 digital inputs	2 digital inputs	2 digital inputs	No	No	No
<b>Outputs</b>	7 outputs: • 2 controlling • 1 alarm • 4 auxiliary	7 outputs: • 2 controlling • 1 alarm • 4 auxiliary	3 outputs: • controlling, • controlling / auxiliary • alarm	3 outputs: • controlling, • controlling / auxiliary • alarm	3 outputs: • controlling, • auxiliary • alarm	3 outputs: • controlling, • auxiliary • alarm
<b>Control</b>	• PID heating control • PID cooling control • 2pos. heating control • 2pos. cooling control • 3pos. step control	• PID heating control • PID cooling control • 2pos. heating control • 2pos. cooling control	• PID heating control • PID cooling control • 2pos. heating control • 2pos. cooling control • 3pos. control w/o fb • 3pos. step control • 3pos. Control with fb	• PID heating control • PID cooling control • 2pos. heating control • 2pos. cooling control	• PID heating control • 2pos. heating control	• PID heating control • 2pos. heating control
<b>Autotuning</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Communication line</b>	2 communication lines: • 2x EIA485 • LAN interface MODBUS™ RTU protocol	2 communication lines: • RS232 • EIA485 Protokoll MODBUS™ RTU	1 communication line: • RS232 • EIA485 Protokoll MODBUS™ RTU	1 communication line: • RS232 • EIA485 Protokoll MODBUS™ RTU	1 communication line: • RS232 • EIA485 Protokoll MODBUS™ RTU	1 Kommunikationsleit.: • RS232 • EIA485 Protokoll MODBUS™ RTU
<b>Datalogger</b>	• for measured values (10000 / 500 records) • events (5000 / 200 records) • ambient temperatures	• measured values • 25 record (standard) • 4000 record (option)	No	• 500 records (date, time, measured and setting value, program)	No	No
<b>Monitored by program HtMonit</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>HtMonit set</b>	The set contains the program, communication interface for communication with PC. The program is designed for monitoring and archiving the measured values of up to 4 devices fitted usually with a Ht series controller (meter).					
<b>HtMonit EV set</b>	The set contains the program, communication interface for communication with PC. The universal program is designed for monitoring and keeping records of technological processes. It is possible to measure values from up to 4 devices fitted usually with a Ht series controller (meter).					

## Custom Projects

### Hardening line for the heat treatment of aluminum castings KNC/V + KLV

The KNC/V hardening furnace along with the KLV hardening bath form an automatic hardening line for heat treatment of aluminium castings. The line is designed for solution annealing and subsequent artificial ageing of Al alloy castings. The line is controlled by a programmable PLC that controls the temperature profile of the furnace, the temperature of water in the hardening bath, synchronizes the furnace travel, door movement, and charging of the charge basket. The line can be expanded with SV Mk.II furnaces in which artificial ageing takes place. The line can be delivered in the design to meet AMS 2750 E standard.

The charge is loaded into the furnace from the bottom and pulled into the furnace with a chain driven electro-motor with gearbox. After processing, the charge is automatically loaded into the quenching bath using a chain-driven electro-motor with gearbox. The furnace is equipped with an electric trolley that moves along rails built into the floor.

Type	Tmax	Tmax pro dlouhodobý provoz	Charge	External dimensions (š×v×h)	Furnace	Quenching bath	Basket dimension (w×h×d)	Input	Weight	Protection	Voltage
	°C	°C	kg	mm			mm	kW	kg		V
KNC/V + KLV 200/60	600	500	200	5000×3100×3300	KNCV 1000/60	KLV 2000	750×750×750	36	3700	80/3	400
KNC/V + KLV 400/60	600	500	400	5300×3600×4100	KNCV 1800/60	KLV 4000	1200×1000×800	60	4500	125/3	400
KNC/V + KLV 1000/60	600	500	1000	6500×4000×4500	KNCV 4900/60	KLV 12000	1500×1500×1500	90	6500	160/3	400

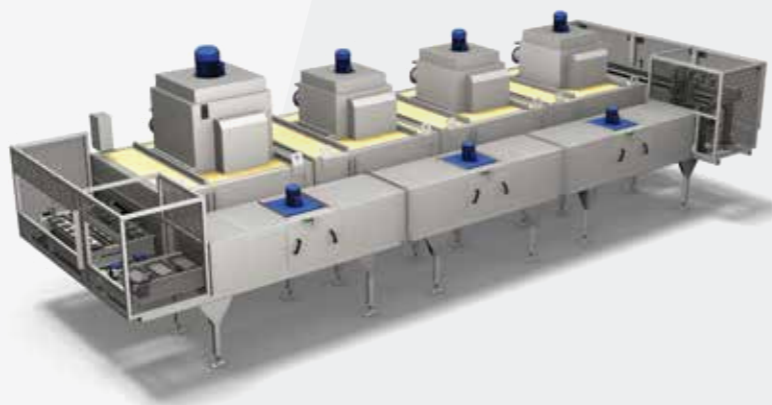


## Continuous electric furnaces with conveyor belt

For heat treatment of parts in continuous operation, it is possible to use furnaces with various types of conveyor. The conveyor is selected according to type and nature of the charge. Furnaces can be part of automatic production lines; they are controlled by a programmable PLC. The furnaces are delivered with electric and gas heating.

Conveyor dryers are designed for the heat treatment of parts at temperatures of 80 °C to 350 °C. It is possible to sync the conveyor movement in individual sections of the dryer to match the heating process temperature profile requirements and allow for the gradual temperature increase of the components.

Continuous furnaces are successfully used in automotive industry for heat treatment of aluminium and steel pistons, automobile glass, brake plates, clutch lining, sensor electronics, etc.



## CONTINUOUS DRYER SP 4900

Heat treating the graphite layer on automotive piston rims after graphitization.

Technical parameters:

Outer dimensions (w×h×d): 3500×2500×8500 mm

Furnace conveyor length: 8225 mm

Cooling conveyor length: 8225 mm

Max. temperature: 250°C

Input: 86 kW

Control system: PLC Siemens

Charge: aluminium pistons

Production capacity: 1 piston /12 seconds

Place and year of installation: Poland, 2019



## CONTINUOUS DRYER PRP 3800

Elimination of internal stress after welding on steel pistons.

Technical parameters:

Outer dimensions (w×h×d): 3100×2600×10000 mm

Furnace conveyor length: 8300 mm

Max. temperature: 650 °C

Gas heating: 300 kW

Control system: PLC Siemens

Charge: steel pistons

Production capacity: 1 piston / 45 seconds

Place and year of installation: Poland, 2018



## Electric dryers with paternoster conveyor

This dryer is for the tempering of welded plastic components to remove stress (automotive tail lights). The furnace conveyor is designed paternoster style for maximum space utilization and requires significantly less space, compared to standard conveyor furnaces. Atmosphere circulation within the furnace is synced with the conveyor so that the charge temperature remains within the proscribed limits as it moves through the first heating zone, and then the soak and the cooling processes.

The flexibility achieved through use of this type of conveyor furnace is can be seen in applications for the preheating and hardening of transformer molds in which each shelf bearing load is up to 450kg (w×h×d) 2300×500×800 mm with 10-shelf capacity in the furnace for a maximum furnace charge load of 4500 kg.



## DRYER SV 19500

Tempering of automobile lights.

Technical parameters:

Outer dimensions (w×h×d): 3200×6100×2700 mm

Load-bearing surface of shelf (w×h×d): 840×360×800 mm

Number of shelves in furnace: 19 pcs

Production capacity: 1 pc /60-70 sec = 200 000 pcs/year

Max. temperature: 150 °C

Input: 45 kW

Control system: PLC Siemens

Place and year of installation: Czech Republic, 2016



## DRYER SV 4200

Preheating of electric motor stators.

Technical parameters:

Outer dimensions (w×h×d): 1900×4800×2200 mm

Load-bearing surface of shelf (w×h×d): 480×460×400 mm

Number of shelves in furnace: 12 pcs

Max. temperature: 350 °C

Input: 40 kW

Place and year of installation: Czech Republic, 2013

## Large bogie-hearth and chamber dryers and furnaces

These furnaces and dryers are suitable for drying, curing, surface layer hardening, drying of granulates, burn-in of electronic components and the preheating of materials before further processing. They are also designed for the heat treatment of materials such as artificial ageing of aluminum and its alloys, and other materials, especially in the plastics, rubber, automotive, electronic and foundry industries. The bogie-hearth dryer construction allows ease of loading for bulky and heavy charges using a crane or other means. They are also suitable for operations in which the charge needs to be loaded onto a bogie and then gradually inserted into the furnace.



### BOGIE-HEARTH DRYER SVKP 20000

Bogie-hearth dryer with forced atmosphere circulation for artificial ageing of aluminium parts.

Technical parameters:

External dimensions (w×h×d): 3000×6000×6000 mm

Internal dimensions (w×h×d): 2000×2000×5000 mm

Max. temperature: 300 °C

Gas heating: 800 kW

Charge: aluminium pistons

Control system: PLC Siemens

Place and year of installation: Russia, 2019



### BOGIE-HEARTH ANNEALING FURNACE VKT 35000

Bogie-hearth furnace for annealing of steel parts.

Technical parameters:

External dimensions (w×h×d): 5000×6600×5000 mm

Internal dimensions (w×h×d): 3800×2400×3800 mm

Input: 450 kW

Charge: cast iron and steel parts

Control system: PLC Siemens

Place and year of installation: Czech Republic, 2018



## Industrial furnaces for additive manufacturing

Additive Manufacturing represents a huge potential. It brings about higher efficiency and reduces costs at production, testing and introducing new products. This technology allows production of 3D products even with a very complicated shape. Objects or products are created on the basis of digital 3D models or other electronic data sources. Application possibilities of 3D printing seem to be unlimited when taking into consideration progressive development of this technology.

### WHAT IS THE ADDITIVE MANUFACTURING?

Additive Manufacturing designates the process at which a product is created by progressive applying thin layers of material on each other (plastic, metal, concrete, ceramic, tissue ...). Additive Manufacturing is basically the same as 3D printing, however, there is a substantial difference in that the term Additive Manufacturing means a process at which a final product is created rather than a prototype.

(source: Encyklopedie 3D tisku, www.3D-tisk.cz)

### ADDITIVE MANUFACTURING TECHNOLOGY

Additive Manufacturing is a general designation of all various methods of 3D printing. E.g. by plastic fibre melting, sintering plastic or metallic powder materials, etc.

Examples of the types of 3D printing technologies:

- FFF (or FDM) – printing of functional models with molten plastic
- SLA (or DLP) – photosensitive resin curing
- SLS – plastic powder laser sintering
- DMLS – metallic powder sintering
- Solidscape – wax model printing
- ProJet – printing of fragile full-colour models from powder
- Mcor – printing of fragile full-colour models from paper



Our furnaces are designated for all the technologies listed below, for metal processing – melting or sintering of metallic powders or fibres which do not contain additional binders.

DMLS – direct metal laser sintering

MLS – micro laser sintering

SLM – selective laser melting

DMLM – direct metal laser melting

LMD – laser metal deposition

LMF – laser metal fusion

up to 450 °C



PP furnace

up to 850 °C



PP furnace

up to 1300 °C



K furnace

up to 950 °C



PKRC furnace

Furnaces are designed for heat treatment after previous additive types of charge production. If you use another type of 3D printing or if your technology is not listed above, contact the LAC sales department where they will recommend you the corresponding equipment.

**YOU WILL FIND MORE IN THE "INDUSTRIAL FURNACES FOR ADDITIVE MANUFACTURING" CATALOGUE.**

## Description of accessories and explanation of terms

### COOLING

#### Ventilation chimney

Ventilation of the inner furnace space, airflow cannot be controlled. On request, a seal made of insulating material can be supplied.

#### Manually-controlled ventilation flap

Ventilation; the flap is opened or closed manually.

#### Automatic ventilation flap

Ventilation of the furnace inner space, flap opening or closing is controlled by the controller. The automatic ventilation flap can only be used in combination with the Ht205 controller.

#### Manually-controlled suction flap

It is used in combination with a ventilation flap for fast ventilation of the furnace space.

#### Exhaust fan

Exhaust fan connected to automatic ventilation flap – serves for forced flue gas exhaustion. The exhaust fan can only be used in combination with the Ht205 controller.

#### Forced cooling

Active cooling of the charge. Cool air is blown by the fan through the valve at the bottom of the furnace and then travels through the automatic ventilation flap into the furnace chamber. The furnace controller starts the fan and opens the flap according to the furnace cooling speed programmed. The forced cooling system can only be used in combination with the Ht205 controller.

### PROTECTIVE ATMOSPHERE

#### Protective atmosphere inlet

Preparation of the furnace for a supply of protective atmosphere into the furnace chamber with hose input on the side of the furnace. In smaller furnaces, e.g. 550 liters volume, a bottle reducing valve with a flow meter is included.

#### Automatically controlled gas inlet

An automatically controlled solenoid valve can also be added to the inlet (in combination with Ht205 controller only).

### CALIBRATION

#### Calibration of the controller measuring entry

Issue of a calibration certificate defining the deviation between the temperature values displayed by the controller.

#### Calibration of the measuring system

Issue of a calibration certificate which defines the deviation and the theoretical values entering the controller from the thermocouple and reflecting the deviation of all elements used in the measuring system.

#### Optimization of the temperature field to fulfill DIN 17052-01

Adjustment of the internal airflow, or adjustment of the furnace heating system according to the information detected by furnace measuring equipment. These adjustments provide optimization of temperature distribution in the furnace; alternatively the furnace can be fine-tuned for a specific charge. Treatment is carried out at one temperature in the usable space of the furnace. The size of the usable space is defined by the size of the charge. Including the measurement report.

### ELECTRO

#### Wall switchboard

The switchboard is ready for hanging on the wall.

#### Residual current device

Furnace protected by residual current device to disconnect protected electrical circuit in case of power leaks (e.g. damage of insulation or contact with person).

#### Solid state relay - SSR

Switch devices which contain no moving parts that can make noise or that can be worn out by frequent switching are used to control furnace operations.

#### Ammeters for checking heating elements' condition

Ammeters monitor incoming current to check the status of heating elements. Three ammeters are usually connected (according to the number of connected phases), An ammeter can be connected to each heating element separately for an additional surcharge.

#### Connection between furnace and switchboard in hose with protective metal sheath

The armored braided metal hose connecting the furnace to the switchboard provides protection from mechanical damage or damage due to possible splashing with hot metal.

#### Topné spirály z materiálu Kanthal APM

The use of Kanthal APM material provides longer lifetime of heating elements in comparison with standard production design.

#### Alsint pipes

The carriers of heating spirals (pipes) from Alsint material that is resistant to higher temperatures. They are suitable especially for furnaces that are on a long-term basis operating at temperatures over 1200°C.

#### Digital temperature recorder

It serves for displaying and recording of measured values (usually temperatures in furnace). The transfer of data from the recorder takes place through Ethernet or RS-485 interface. The data from the recorder can be copied onto the data storage units (SD card, USB flash disk).

#### Visual indicator of the condition of heating elements

This is an electronic system that scans and analyze the voltage at the control transformer connected to the heating elements (spirals, meanders). If there is indication of voltage, the green light on the control panel (LED diode) will light up indicating the corresponding element. The operator can identify problem areas by assessing which control lights are off and thus identifying which elements are damaged so action can be taken.

#### Thermocouples – Melting and holding furnaces

##### CHARGE THERMOCOUPLE IN PROTECTIVE TUBE

Thermocouple placed directly in the area of the melt. Accurate measuring of the melt temperature. It is not suitable for applications where thermocouple can be damaged by manipulation with a solid charge or tools. Application mainly for holding furnaces.

##### CRUCIBLE POCKET THERMOCOUPLE

Thermocouple placed in crucible pocket. Measuring with accuracy within a few degrees, no damage possibility during manipulation with the charge. Suitable for holding and melting furnaces.

#### Standards RS232 or EIA485

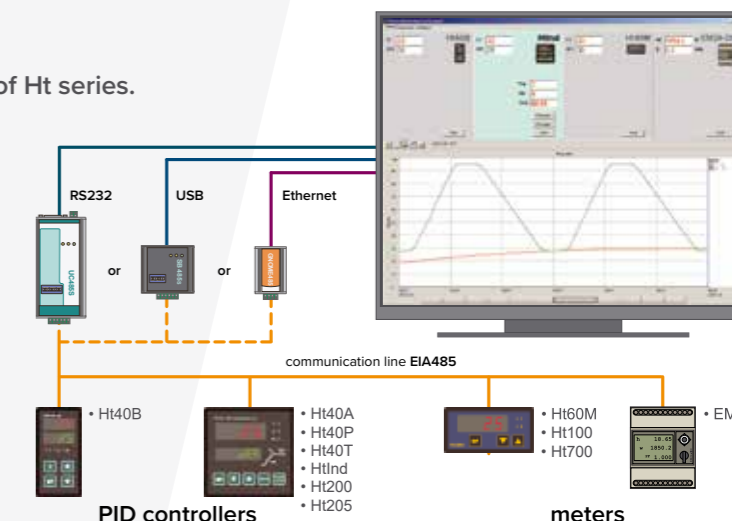
Standards RS232 and EIA485 serve as a communication link between a PC and an external electronic device. RS232 serves to connect one PC with one device, EIA485 can connect up to 30 devices, by using repeaters this number can be further increased. Contains a connector led out to an accessible location on the furnace.

#### Monitoring software HTMONIT (HTmonit set)

This program is designed for monitoring devices of Ht series.

The program allows:

- monitoring connected devices
- insert data into the database
- display measured data in the graph
- search in the graph and print graphs and tables
- program Ht200 controller profiles
- start or end programs



## PRODUCTION PLANTS:



**PRODUCTION PLANT:  
INDUSTRIAL FURNACES AND DRYERS**  
LAC, s. r. o.  
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Czech Republic

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e-mail: [info@lac.cz](mailto:info@lac.cz)  
[www.lac.cz](http://www.lac.cz)



ART OF  
HEATING



**PRODUCTION PLANT:  
REFRACTORY CASTABLE SHAPES**  
LAC, s. r. o.  
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Czech Republic

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[www.lac.cz](http://www.lac.cz)





EUROPEAN UNION  
European Regional Development Fund  
Operational Programme Enterprise  
and Innovations for Competitiveness

**KATALOG**

**LAC**

Žárové tvárné tvarovky pro průmysl  
Feuerbeton-Formstücke für die Industrie  
Refractory castable shapes for industry

**LAC** Art of heating

**CATALOG**

**LAC**

INDUSTRIAL FURNACES  
FOR ADDITIVE MANUFACTURING

**LAC** | ART OF HEATING

**CATALOG**

**LAC**

Laboratory furnaces  
and dryers

Art of heating

**CATALOG**

**LAC**

Custom projects

**LAC** Art of heating



ART OF  
HEATING

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