





Content



HEAT TREATMENT UNITS – 6 CHANNEL	4
HEAT TREATMENT UNITS – 12 CHANNEL	6
HEAT TREATMENT SERVICES	8
TERMOPROCES HEATING ELEMENTS	10
CONTROL AND MEASURING DEVICES	14
TERMOPROCES INDUSTRIAL FURNACES FOR HEAT TREATMENT	16
ACCESORIES	17
CONSUMABLES	18
REFERENCES	19





Heat treatment units – 6 channel

Termoproces manufactures fully automatic program controlled heat treatment units of all output ratings.

Each control circuit possesses its own program controller, to ensure maximum flexibility.

Our units use 6 channel temperature recorders with accuracy class $\pm 0.5\%$. In order to meet safety standards, our units are equipped with the following safety facilities: temperature control of the transformer with forced disconnection when overstressed, forced air fan cooling, emergency SHUT-Off button switch, maximum touch voltage against ground 30V and single protection of each heating circuit by power fuses.



Heat Treatment Unit - TPN50/6-AR (50Kw)

Power	50kW at 100% duty
Primary rated voltage	3x400V standard (other voltage on request)
Secondary voltage	30V, 60V
Max. Temp.	1150 C
Automatic programmer	Shinko PCD
Manual programmer	ER45
Temperature recorder	Shinko 6 channel recorder
Output	6
Weight	390 kG
Dimension	H 1350 x W 720 x D 550
Thermocouple protection	Yes
Rs232 connection	Yes
Ground fault inerrupter	Yes
Alarm	Yes
Overheating protection	Yes

Heat Treatment Unit - TPN60/6-AR (60Kw)

Power	60kW at 100% duty
Primary rated voltage	3x400V standard (other voltage on request)
Secondary voltage	30V, 60V
Max. Temp.	1150 C
Automatic programmer	Shinko PCD
Manual programmer	ER45
Temperature recorder	Shinko 6 channel recorder
Output	6
Weight	425 kG
Dimension	H 1350 x W 720 x D 550
Thermocouple protection	Yes
Rs232 connection	Yes
Ground fault inerrupter	Yes
Alarm	Yes
Overheating protection	Yes



Heat treatment units – 12 channel

Our heat treatment units are designed to meet the requirements for most preheating and annealing jobs with high precision and quality of provided services.

Program controllers are easy to program, and with memory capacity of 9 program steps even complex heat treatment applications can be accomplished.

To meet your requirements, we manufacture 12 channel units in two versions, TPN90/12-AR, with 90Kw and TPN130/12-AR with 130Kw. Units can also be manufactured according to your specific requirements.



Power	90kW at 100% duty
Primary rated voltage	3x400V standard (other voltage on request)
Secondary voltage	30V, 60V
Max. Temp.	1150 C
Cooling	AF
Automatic programmer	Shinko
Manual programmer	ER45
Temperature recorder	Shinko 2 x 6 channel recorder
Output	12
Weight	610 kG
Dimension	H 1350 x W 1100 x D 800
Thermocouple protection	Yes
Rs232 connection	Yes
Ground fault interrupter	Yes
Alarm	Yes
Indication of active channel	Yes
Overheating protection	Yes

Heat Treatment Unit - TPN130/12-AR (130Kw)

Power	130kW at 100% duty
Primary rated voltage	3x400V standard (other voltage on request)
Secondary voltage	30V, 60V
Max. Temp.	1150 C
Cooling	AF
Automatic programmer	Shinko
Manual programmer	ER45
Temperature recorder	Shinko 2 x 6 channel recorder
Output	12
Weight	610 kG
Dimension	H 1350 x W 1100 x D 800
Thermocouple protection	Yes
Rs232 connection	Yes
Ground fault interrupter	Yes
Alarm	Yes
Indication of active channel	Yes
Overheating protection	Yes



HEAT TREATMENT SERVICES

INDUSTRIES WE WORK FOR

- Power plants, conventional and nuclear
- Chemical and petrochemical industries
- Steel construction industry
- Pipeline constructions
- Shipyards

COMPANY "TERMOPROCES" IS SPECIALIZED FOR PROVIDING HEAT TREATMENT SERVICES:

- Preheating
- Normalizing
- Stress relieving
- Tempering
- Re-crystalized annealing
- Construction of assembly and disassembly of furnaces according to the client request

Over the past 25 years, we have successfully worked for more than 300 companies. In Europe, Africa and Asia.



Flexibility of electrical heaters enables the application of electro-resistant heating at heat treatment of all kinds and forms of welded joints.

Construction of assembly and disassembly of furnaces according to the request of the client enable heat treatment of whole welded constructions of large sizes.

SERVICE

Termoproces performs servicing of all types of induction and electro-resistant devices for heat treatment as well as all accessories.

RENTING

Termoproces owns more than 30 heat treatment units which are for rent in case you intend to conduct heat treatment with your own personell.

WORLDWIDE SERVICE

No project is too far away; we will travel to all corners of the Earth.





TERMOPROCES HEATING ELEMENTS

Termoproces produces high quality multipurpose heating elements, which can be used for almost every application. It is especially appropriate for heating of working pieces with different thickness cuts, by application of partial heaters each having a special thermo-element and special regulation channel.

Application range: pipe and circumferential welds, flange welds, longitudinal welds, connecting piece welds, area heating

Application limit: 1050 °C material temperature.



Ceramic pad heater

Insulation composition: Aluminium oxid ceramic (96%)
Radiator: Ni-Cr wire 80/20
Temperature: max. 1050 °C
Power: 1.35 / 2.7 kW
Voltage: 30 / 60 V
Amperage: 45 A



Preheaters with magnets

Insulation composition: Aluminium oxid ceramic (96%)
Ceramic fibre
Protective housing: Stainless Steel
Radiator: Ni-Cr wire 80/20
Temperature: max. 460 °C
Power: 1.35 / 2.7 kW
Voltage: 30 / 60 V
Amperage: 45 A





Spreader mats

Insulation composition: Aluminium oxid ceramic (96%)
Radiator: Ni-Cr wire 80/20
Temperature: max. 1050 °C
Power: 1.35 / 2.7 kW
Voltage: 30 / 60 V
Amperage: 45 A



Heating tapes

Insulation composition: Aluminium oxid ceramic (96%)
Radiator: Ni-Cr wire 80/20
Temperature: max. 1050 °C
Power: 1.35 / 2.7 kW
Voltage: 30 / 60 V
Amperage: 45 A



Application limit: 1050°C

Heaters

Dimensions AxB mm	Dimensions Ceramic Beads	Voltage V	Power kW	Order No.
175x105	7x5	30	1,35	1000 200
175x125	7x6	30	1,35	1000 201
175x150	7x7	30	1,35	1000 202
200x105	8x5	30	1,35	1000 203
200x125	8x6	30	1,35	1000 204
225x85	9x4	30	1,35	1000 205
225x105	9x5	30	1,35	1000 206
255x85	10x4	30	1,35	1000 207
280x85	11x4	30	1,35	1000 208
50x505	2x24	30	1,35	1000 209
75x275	3x13	30	1,35	1000 210
100x215	4x10	30	1,35	1000 211
125x175	5x8	30	1,35	1000 212

Dimensions AxB mm	Dimensions Ceramic Beads	Voltage V	Power kW	Order No.
255x175	10x8	60	2,7	1000 300
255x195	10x9	60	2,7	1000 301
280x175	11x8	60	2,7	1000 302
280x150	11x7	60	2,7	1000 303
305x150	12x7	60	2,7	1000 304
305x175	12x8	60	2,7	1000 305
330x125	13x6	60	2,7	1000 306
330x150	13x7	60	2,7	1000 307
355x125	14x6	60	2,7	1000 308
355x150	14x7	60	2,7	1000 309
380x105	15x5	60	2,7	1000 310
380x125	15x6	60	2,7	1000 311
405x105	16x5	60	2,7	1000 312
430x105	17x5	60	2,7	1000 313
455x85	18x4	60	2,7	1000 314
200x235	8x11	60	2,7	1000 315
175x275	7x13	60	2,7	1000 316
150x295	6x14	60	2,7	1000 317
125x360	5x17	60	2,7	1000 318
100x440	4x21	60	2,7	1000 319

Application limit: 1050°C

Dimensions AxB mm	Dimensions Ceramic Beads	Voltage V	Power kW	Order No.
280x235	11x11	84	3,78	1000 401
305x215	12x10	84	3,78	1000 402
330x195	13x19	84	3,78	1000 403
330x215	13x10	84	3,78	1000 404
355x175	14x8	84	3,78	1000 405
380x175	15x8	84	3,78	1000 406
405x150	16x7	84	3,78	1000 407
430x150	17x7	84	3,78	1000 408
455x125	18x6	84	3,78	1000 409
480x125	19x6	84	3,78	1000 410
510x125	20x6	84	3,78	1000 411
535x125	21x6	84	3,78	1000 412
585x105	23x5	84	3,78	1000 413
610x105	24x5	84	3,78	1000 414
635x85	25x4	84	3,78	1000 415
665x105	26x5	84	3,78	1000 416
690x85	26x5	84	3,78	1000 417
75x845	3x40	84	3,78	1000 418
100x630	4x30	84	3,78	1000 419
125x500	5x24	84	3,78	1000 420
150x420	6x20	84	3,78	1000 421
175x360	7x17	84	3,78	1000 422
200x315	8x15	84	3,78	1000 423
225x275	9x13	84	3,78	1000 424
255x275	10x13	84	3,78	1000 425

Other Voltage and Dimensions by request



CONTROL AND MEASURING DEVICES

Shinko HR 700 – TEMPERATURE RECORDER

Measurement range- 0 – 1200°C
Number of measurement places- 6 Precision- $\pm 0.5\%$
Working temperature - 0...50°C
Tape width: 100mm
Communication RS232



Okhura VM7000 – TEMPERATURE RECORDER

Measurement range - 0 – 1200°C
LCD 5,7 inch
Number of measurement places - 12 Precision- $\pm 0.1\%$
Working temperature - 0...50°C
Type of record : SD card
Internal memory: 100Mb
Communication: Ethernet, Wireless, RS485



Calibration device PROVA125

Measurement range: 0 +1200°C
Resolution: 0.1 0C
Precision: $\pm 0,25^{\circ}\text{C}$
Power: 9V alkaline battery
Temperature resistance: -20 do 60°C
Dimensions: 88x168x26mm
Weight: 330g



Digital thermometer

Mobile digital thermometer for work with thermocouples type K.



Laser thermometer ST8839

Measurement range - 50 - 1000°C
Resolution 0.1°C do 200°C, 1°C preko 200°C
Precision $\pm 2\%$
Optical resolution 50:1
Response time < 1 sec
Power 9V alkaline battery
Dimensions: 9 x 3.9 x 2.2



Laser thermometer ST8859

Measurement range -50°C to 1600°C
Resolution 0.1°C do 200°C, 1°C preko 200°C
Precision: $\pm 2\%$
Optical resolution: 50:1
Response time < 1 sec
Power: 9V alkaline battery
Dimensions: 9 x 3.9 x 2.2





TERMOPROCES INDUSTRIAL FURNACES FOR HEAT TREATMENT

Termopros manufactures heat treatment furnaces according to client's specifications. We specialize in producing furnaces for stress relieving, normalizing, preheating and tempering. Our assembly and disassembling furnaces enable heat treatment on site according to the requirements of a client. We also produce fixed furnaces for heat treatment.

The furnaces for heat treatment enable heat treatment of whole welded constructions which because of their sizes are not appropriate for local heat treatment.



ACCESSORIES

Thermocouple welding unit

Device for spot welding of electro-elements, automatic and manual work type.
Wire thickness \varnothing 0,5 - 1,0 mm



Twin cable



Compensation cable



Splitter cable



Jack for thermocouple wire



Rs232 cable



Rs232 to USB converter





CONSUMABLES

Thermocouple wire

Thickness - 2x 0,7 mm²
Material - NiCr-Ni
Insulation - Glass fiber



Ceramic fibre mats

Thickness - 2/3 mm
Width - 1000mm
Mex temp- 1260°C



Glass fibre cord

Thickness - Ø 2/3mm
Mex temp- 650°C



Tightening strap

13mm x 0.7mm
High quality steel type for tightening of heaters and insulation



Wire for heater installation

Ø 1 mm
Possible to be tightened to metal with thermocouple welding unit.



Glass fibre cloth

Thickness - 2/3 mm
Width - 1000mm
Mx temp- 650°C



Rockwool

Thickness - 50/100 mm
Max temp - 750°C



Ceramic fibre cord

Thickness - Ø 2/3mm
Mex temp- 1000°C



Locks

Locks for tightening strap



Ribbon tape



Tape for temperature recorder



REFERENCES

Significant jobs where “Termoproces” has worked

Livnica Kikinda
 Power plant “Nikola Tesla A and B”
 Power plant “Drmno”
 Power plant “Kolubara A”
 Power plant “Pljevlja”
 Oil refinery Novi Sad
 Oil refinery Pancevo
 “Hip” Pancevo
 Nitrogen factory Pancevo
 “MB Farmakom” Guca
 Nitrogen factory Subotica
 Shipyard Belgrade
 “M.S.K.” Kikinda
 “RAPP Zastava” Kragujevac
 Sugar refinery Jagodina
 “Gosa” Smederevska Palanka
 “Via Ocel” Belgrade
 “Termoelektro” Belgrade
 Institute for welding
 “Minel” (steamer construction)
 “Viskoza” (Viscose) Loznica
 “Birac” Zvornik
 Yugoslav Airlines Belgrade “JAT”
 Wagon factory Kraljevo

REIK Kolubara – place for drying
 “Feromont” Belgrade
 “Procesing”
 “Termopro”
 “NIS GAS”
 Port “Danube”
 “Kolubara Metal”
 “NS termomontaza”
 “UTVA” Kacarevo
 “Mito Petrovic” Cacak
 “Mont-R”
 “Minel equipment”
 “HIP nitrogen factory”
 “Termotehnika ADS”
 “MIN Holding”
 “Proleter” Arilje
 “MIN Inspekt”
 “USS Serbia”
 “Termokomerc”
 “Remming”
 “Montavar Lola”
 “Rubikon”
 “ATB FOD”
 “Rotis Group”
 “Prva Petroletka”
 “NIS Petrol”
 “Kopex MIN-FITIP”
 “RoTech ei”

From the international partners we have collaborated with the following:

Power plant “Gacko” Bosnia
 Power plant “Sostanj” Slovenia
 Power plant “Kakanj” Bosnia
 Refinery Bosanski Brod Bosnia
 “PCK Ranery Schwedt” Germany
 Refinery “Tobruk” Libya
 Refinery “Sarir” Libya
 “Montavar” Slovenia
 Aluminium factory Montenegro
 Shipyard “Bjela” Montenegro
 “Dimce Banjarot” Macedonia
 “Montavar” Niksic Montenegro
 “Birac” Zvornik Bosnia and
 Herzegovina
 “Avce invertible power plant”
 Slovenia
 “RAFAKO”
 “KW Boxberg” Germany
 “KW Morburg” Germany
 “Enikon Kakanj” Bosnia and
 Herzegovina
 “Fuell Boss” Zenica Bosnia and
 Herzegovina
 “Kontis” Krizevci Croatia

Facilities and jobs “Termoproces” has worked on in past 5 years:

KW Boxberg, Germany	————	Heat treatment of steam line
KW Morburg, Germany	————	Heat treatment of steam line
PCK Refinery Schwedt, Germany	————	Heat treatment of steam line
Refinery Tobruk, Libya	————	Heat treatment of steam line
Refinery Sarir, Libya	————	Heat treatment of steam line
Power plant Ugljevik, Bosnia	————	Heat treatment of steam line
Power plant Gacko Bosnia	————	Heat treatment of steam line
Power plant Sostanj, Slovenia	————	Heat treatment of steam line
Power plant Kakanj, Bosnia	————	Heat treatment of steam line
Power plant Drmno, Bosnia	————	Heat treatment of steam line
Power plant “Nikola Tesla”	————	Heat treatment of steam line
Power plant “Kolubara A”	————	Heat treatment of steam line
Oil refinery Novi Sad	————	Heat treatment of cisterns, reservoirs and other welds
“Montavar Metalna Nova” Slovenia	————	Heat treatment of pipe welds
Oil refinery Pancevo	————	Heat treatment of cisterns, reservoirs and other welds
“HIP” Pancevo	————	Heat treatment of spheral reservoirs
Nitrogen factory Pancevo	————	Heat treatment of spheral reservoirs
Nitrogen factory Subotica	————	Heat treatment of spheral reservoirs
Shipyard Belgrade	————	Heat treatment of steering rack
Shipyard Bjela, Montenegro	————	Heat treatment of steering rack
Wagon factory Kraljevo	————	Heat treatment of wagons, weight: 17 tons and 15 tons
“Kolubara Metal” Vreoci	————	Heat treatment of working wheel of excavator, weight: 14 tons
“Feromont” Belgrade	————	Heat treatment of steam line for Powerplant “TENT B” Obrenovac
“REIK Kolubara” Vreoci	————	Heat treatment of bidons
Oil refinery Pancevo	————	Heat treatment of welds on industrial furnace
“REIK Kolubara” Vreoci	————	Heat treatment of reducers and shafts
“Minel” (steamer construction)	————	Heat treatment of rotating wheel of mill

