



## 2019 Catalog



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## **1. TT Heat treatment machines**

## **2. TT Machine accessories**

1. Heater splitter boxes
2. Power cables
3. Power connectors
4. Heaters
5. Fixing for heaters and insulation
6. Insulations
  1. Ceramic wool
  2. Insulation blankets
  3. Joints
7. Spare accessories for P7/8/9\* range  
*\*made by FOFUMI and SEPT*

## **3. Temperature measuring equipment**

1. Thermocouples
2. Compensating cables
3. Pyrometer (contact / optical)
4. Thermocouple attachment unit
5. Connectors
6. recorders

## **4. Gas heat treatments**

1. PR10
2. Gas supply system
3. Gas control cabinet
4. Infrared gas burners

## **5. Electric radiant panels**

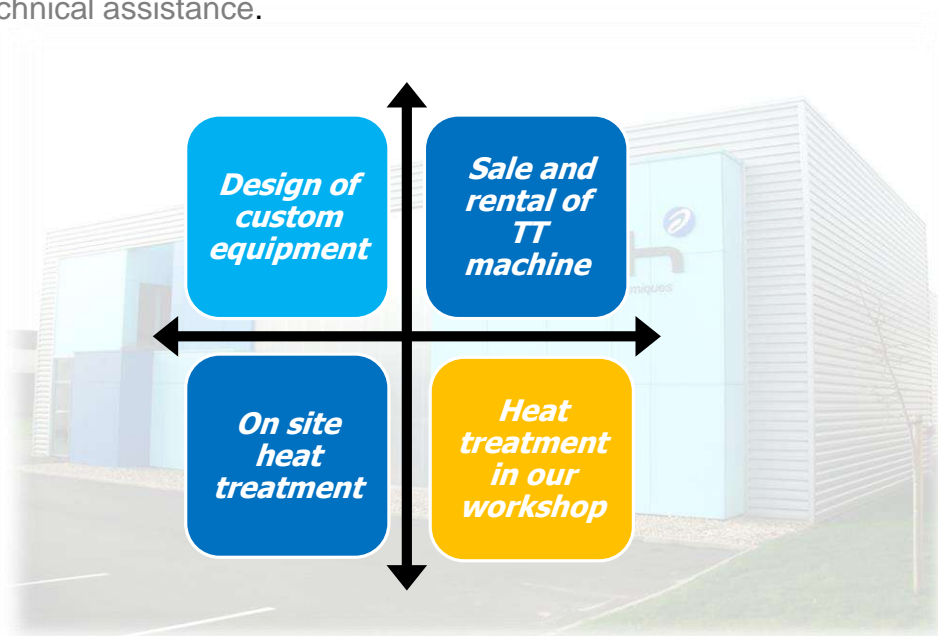
## **6. Insulated heaters pads**

**CETH** designs, manufactures and installs thermal equipment for the heating of mechanically welded parts in order to ensure the welding preheating, as well as the stress relieving.

**CETH** provides maintenance and modernization services for any thermal equipments.

**CETH** technical teams provides:

- Thermal calculations (isotherms and mechanical stress ).
- Since 2018, CETH benefits from Datadock certification, which gives us recognition and qualification for training in the use of our equipment.
- On-site services with our technicians and equipment.
- Gas or electric equipment for on site or in our workshop, heat treatment of mechanically welded parts.
- Design and manufacture of equipment for heat treatment (furnace, custom equipment... ).
- Technical assistance.



### Sectors of activity :

- Nuclear (*civilian & military*)
- Oil
- Aerospace
- Power
- Mechanical & naval construction



# 1. Heat treatment TT machines

Central to our activity, we have developed a range of low voltage heat treatment machines capable of meeting the most demanding expectations of our customers (pre-heating/post-heating, stress relief...).

Our machines are standard-equipped with tactile interfaces. Developed by CETH, the CH6000 regulator/programmable-controller is configurable from the HMI. Highly flexible, 6 programs from 6 segments can be operated totally independently from one another. At any time during the treatment, the recorded values can be easily modified (setting, speed, time of temperature increment...). CETH TT machines can also be equipped with RJ-45Lan port, allowing for remote maintenance, message services and machine networking.

#### 4 control strategies:

1. **Automatic** (*Regulation according to the programmed setpoint*)
2. **Programmed** (*Control following the programmed cycle*)
3. **Manual** (*Works as a % of heating*)
4. **Coupled** (*Coupling one or several zones on the measurement /exit of another zone. It can work with the 3 previous strategies*)

Equipped with Yokogawa or Eurotherm video recorders, our machines can also be equipped on demand, with strip chart recorders.

We can also easily achieve developments in the regulation and programming process.

We support you in the development of your projects: advice, training, **benefits**, etc ...

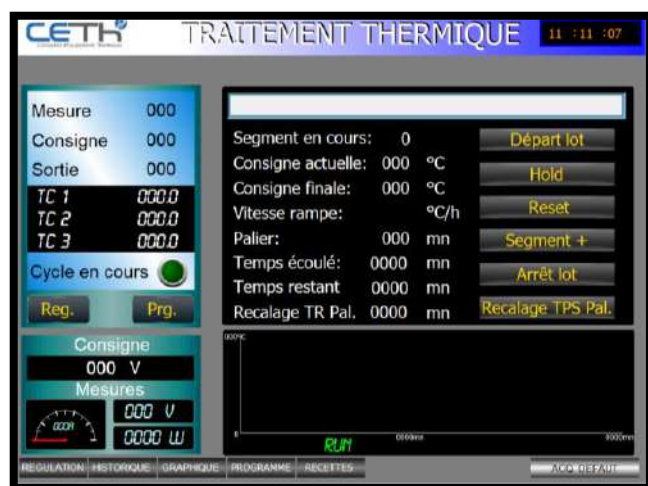


TECHICAL DATAS	TT <sub>2</sub>	TT <sub>12</sub>	TT <sub>30</sub>	TT <sub>60</sub>
Power	2kW	12kW	30kW	60kW
Primary suply (tri+three phases)	220V 10A	400V tri 20A	400V tri 50A	400V tri 90A
Secondary output	46V	46V	46V	46V <sup>1</sup>
Control panel & regulator	Série γ2	CH2000	CH6000 <sup>2</sup>	CH6000 <sup>2</sup>
Controlled heating zones	1	2 ou 6	3 ou 6	6 ou 12
Recorder	-	FX1000 <sup>3</sup>	FX1000 <sup>3</sup>	FX1000 <sup>3</sup>
Dimensions (Widthxdepthxheight - mm)	180 x 400 x 180	270 x 670 x 580	700 x 700 x 1700	800 x 1100 x 1200
Weight	-	95kg	300kg	390kg

All the CETH machines are **CE** certified



CH6000 regulator

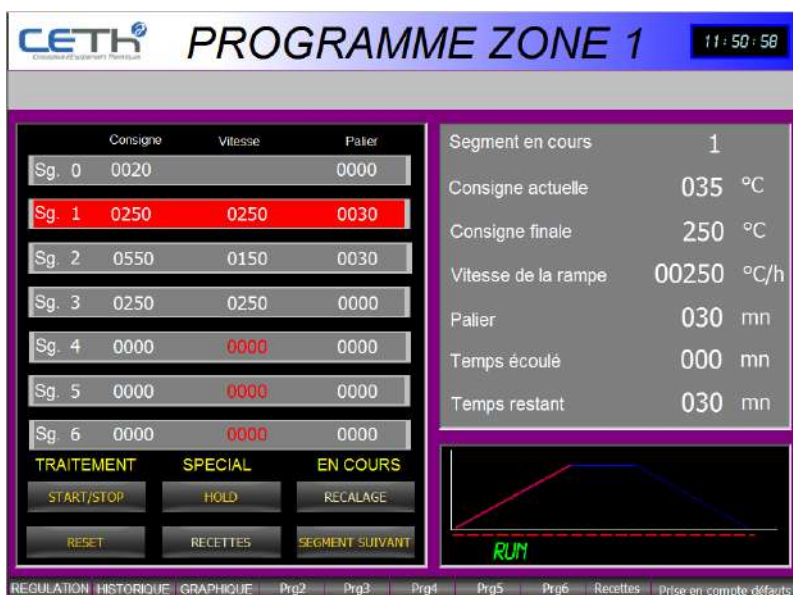


CH2000 regulator

1. Customizable in 80V.
2. Supports γ2 single loop digital controller.
3. Supports integrated or external strip chart recorder.

TECHNICAL DATAS	TT90	TT120	TT180	TT130*
<b>Power</b>	90kW	120kW	180kW	130kW
<b>Primary suply (tri+three phases)</b>	400V tri 140A	400V tri 180A	400V tri 270A	400V tri 190A
<b>Secondary output</b>	46V <sup>1</sup>	46V <sup>1</sup>	46V <sup>1</sup>	46V <sup>2</sup>
<b>Control panel &amp; regulator</b>	CH6000 <sup>2</sup>	CH6000 <sup>2</sup>	CH6000 <sup>2</sup>	CH6000 <sup>2</sup>
<b>Controlled heating zones</b>	6	6 ou 12	6 ou 12	8 + 2 sécu
<b>Recorder</b>	FX1000 <sup>3</sup>	FX1000 <sup>3</sup>	FX1000 <sup>3</sup>	4x FX1000
<b>Dimensions (Widthxdepthxheight - mm)</b>	950 x 1100 x 1200	1750 x 900 x 1250	1750 x 900 x 1250	800 x 900 x 2000
<b>Weight</b>	500kg	900kg	1000kg	650kg

All the CETH machines are  certified



Programmer, loop control and PID parameters

## TT6o kW 46V 6 controlled heating zones



## Poste TT12 kW 46V 2 or 6 controlled heating zones

Small volume  
Possible version with video recorder



Optional additional grounding  
to work safely in sensitive environments



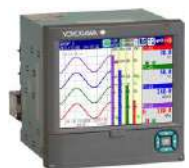
## TT13o kW 46V 8 controlled heating zones

Optional removable recorder, for calibration





1 - Triple cable  
(3 x 35/50 mm<sup>2</sup>)



Thermocouple  
connection



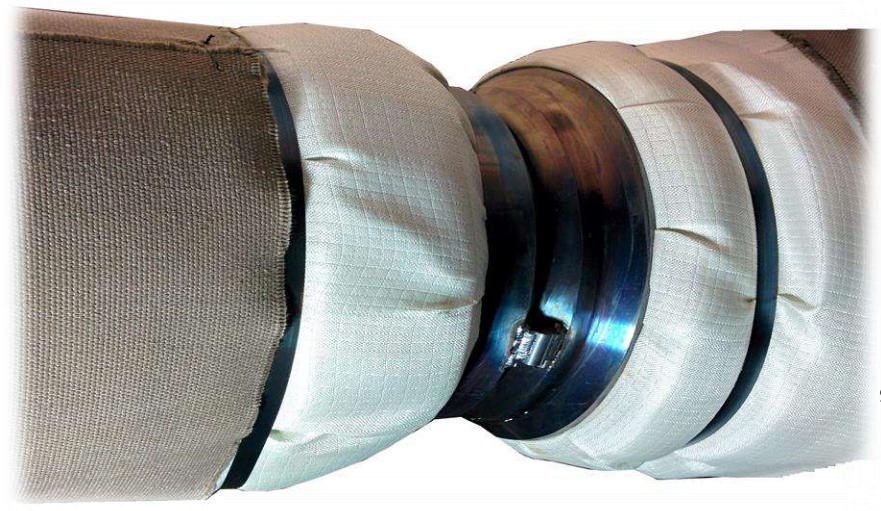
2 - 12/18 plugs heater splitter  
box

3 - Double  
cable  
(2 x 10 mm<sup>2</sup>)



5 - Settings of heaters and isolation for  
weld pre-heating

4-Heaters  
connection





## 2. TT Machines accessories



## TT13cc

The new TT13cc machine allows the use of eight DC - 1,6kw heaters on 6 temperature controlled output channels. Developed on the basis of a Gys EXAGON 400 the TT13CC is a compact machine equipped with the same interface as on our other units, allowing easy control of your heat treatment.

### Technical datas :

11

Power	13	kW	Primary supply	400V	tri 50Hz	Primary current	20A
Secondary output	46	V 50Hz	Régulator	CH2000	6 zones		
Dimensions (mm)	350x310x680		Weight	25kg			

## Description

## Reference

### 2.1 Splitter boxes



12 plugs splitter box for TT60 unit  
connect 6 heaters  
Dim : 330 x 150 x 120 mm

BJ12



18 plugs splitter box for TT90/180  
units  
connect 9 heaters  
Dim : 480 x 150 x 120 mm

BJ18

### 2.2 Power cables



Power cable for TT units  
and 46V splitter boxes  
Length 20 m, 50 mm<sup>2</sup>, HO7R-NF

CaPu/50<sup>2</sup>/20/1/4T



Power cable for TT units  
and 80V splitter boxes  
Length 20 m, 35 mm<sup>2</sup>, HO7R-NF

CaPu/35<sup>2</sup>/20/1/4T






Power cable for splitter box/heater  
Length 5 m, 10 mm<sup>2</sup>, HO7R-NF

CaPu/10<sup>2</sup>/5/1/4T/PUF




*Possibility of custom length and quality .*

Description	Reference
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## 2.3 Power connectors

	1/4 turn male plug for cables and splitter boxes	TT unit (M) : CX0021 Boitier (F) : CX0041 Boitier (M) : CX0020
	Female 1/4 turn plug for TT units and splitter boxes	TT unit (F) : CX0058 Boitier (M) : CX0072 Boitier (F) : CX0030
	Heater connector plug Brass male/female plug Composite male/female plug	PUFL PUFC PUML PUMC


## 2.4 Heaters

	Resistance Heater 46V 1600W Active length = 3000 mm Cold part = 430 mm Diametre = 12 mm	46V : RL46/1600/430 80V : RL80/1600/430
	Resistance pad heater 46V 1600W Active surface= 300 x 150 mm Cold part = 430 mm Diametre = 12 mm	46V : RP46/1600/430 80V : RP80/1600/430
	Resistance Heater 46V 1600W Active length = 3000 mm Cold part = 430 mm Diametre = 12 mm with 200mm HT outlet	46V: RL 46/1600/430 NS 80V:RL 80/1600/430 NS
Photo non disponible	Resistance pad heater 46V 1600W Active surface= 300 x 150 mm Cold part = 430 mm Diametre = 12 mm with 200mm HT outlet	46V : RP46/1600/430 NS 80V : RP80/1600/430 NS

**Outlet equipped with high temperature cables, allow longer lifetime for the connections.**



Our resistances are designed to work in harsh environments and are all coated with a metal sheath making them mechanically more robust than resistors with ceramic beads without external protection.

CETH can make special resistances for your applications and shape them, see § 6. Mittens.

Description	Reference
<i>2.4 Special resistance</i>	
	Resistance heater 23V 800W Active length = 500 mm Cold part = 150 mm Diametre = 12 mm  23V : RL23/800/4150
<b>Photo non disponible</b>	Resistance heater 23V 800W Active length = 500 mm Cold part = 150 mm Diametre = 12 mm with 200mm HT outlet  23V: RL 23/500/150 NS
<b>WARNING!</b>	The 23V resistance heaters have to be used in series ( by 2 for the 46V stations and by 4 for the 80V stations).

Our resistances are designed to work in harsh environments and are all coated with a metal sheath making them mechanically more robust than resistors with ceramic beads without external protection.

CETh can make special resistances for your applications and shape them, see § 6. Mittens.

Description	Référence
<b>2.6 Matelas Chauffants</b>	
 <p>Insulated heater Dim 250x350 mm Maxtemp 700°C Power 1600W</p>	<p>46V : MC46/1600 80V: MC80/1600</p>
 <p>Insulation blanket Dim 250x350 mm Max temp 700°C</p>	<p>MI 700/ 250x350</p>

### Remarque importante

Our insulation blankets are equipped with straps allowing them to hang allowing to hang them by all sides

*Exemple of use: 3 MC46/1600 blanket on pipe .*



**CETh can realize special insulated heaters for your applications, by modifying the supply voltage, the dimensions or the power.**

## Description

## Référence

### 2.5 Accessoires de fixation



Steel straping  
Width 20 mm, thickness 0,5 mm  
20 kg/roll

BOB CERC



Steel straping dispenser reel

DEVID



Steel strap banding tool

PIN CERC








Steel straping seals  
Boxes of 1000

CHAPE







Annealed wire  
1,5 mm- 3 kg/roll

FIL diam 1,5

	Description	Reference
		<i>2.6 Insulation</i>
	Insulation (mineral fiber) Roll of 7.4 m Width 600 mm, thickness 25 mm Density of 128kg / m3	LM1200 (1 carton)
	Insulating mattress Mineral insulation wrapped in ceramic cloth Thickness 25, 50 mm or customized	Consult us
	High temperature seal (100 to 800 ° C) <u>Circular</u>	Consult us
	High temperature seal (100 to 800 ° C) <u>Music note profile</u>	Consult us
	High temperature seal (100 to 800 ° C) <u>Bandaged</u>	Consult us

***We remain at your disposal to study your particular needs.***

Description		Reference
<b>2.7 Spare parts for P7/8/9 series</b>		
	Power cable 6 holes case Length 20m, 3 x 10 mm <sup>2</sup> , HO7R-NF Souriau male connector / 6-hole housing	CAPu/3G10/20SM/BoF M
	Pyrometer cord Liaison poste TT/thermocouples Length 25 m, Souriau male connector	Cpy/20/S/S
	6 holes bare case for special cables 3 x 16 mm <sup>2</sup>	BoFM
	15m length, pyrometer cord with Souriau plug	Cpy/15/S/S
<b>Résistances with Camlock connector</b>	Resistance heater 46V. length 1,5m. diam 12mm with camlock connector	RL46/1,5m/430 CAM
	Resistance heater 46V. length 3m. diam 12mm with camlock connector	RL46/1600/430 CAM
	Resistance pad heater 46V S=0,3x0,15m diam 12mm with camlock connector	RP46/1600/430 CAM
	Resistance heater 46V. length 0,75m diam 12mm with camlock connector	RL46/0,75m/430 CAM
	Resistance heater 46V. length 3m diam 12mm with camlock connector with 200mm HT outlet	RL 46/1600/430CAM NS
	Resistance pad heater 46V S=0,3x0,15m diam 12mm with camlock connector and 200mm HT outlet	RP 46/1600/430CAM NS
	Complete female camlock connector	CAM F
	Complete male camlock connector	CAM M
<b>Camlock connectors</b>	Insulator for male Camlock connector	ICAM F
	Insulator for female camlockconnector	ICAM M
	Camlock pins	CAM IV60



## 3. Temperature Measuring equipment

## Description

## Reference

### 3.1 Thermocouples



Stainless steel sheathed K type  
thermocouple (0°C to 1100°C)  
Length 500 mm, dia 3 mm  
With female fitted plug

TC K 3/500



Stainless steel sheathed N type  
thermocouple (0°C to 1200°C)  
Length 500 mm et dia 3 mm  
With female fitted plug

TC N 3/500



100m roll thermocouple  
For capacitive discharge attachment  
(0°C to 1100°C)

TC K CONSO 100



100m roll thermocouple  
For capacitive discharge attachment  
(0°C to 1200°C)

TC N CONSO



K type, pressure thermocouple  
Length 150 mm et dia 3 mm  
With female fitted plug

TC TK P3/150

### 3.2 Cordon pyrométrique



K type compensating cable unit for TT  
unit /recorder  
Length 25 m  
With male fitted plug

CP TK 25/M/M






N type compensating cable unit for TT  
unit /recorder  
Length 25 m  
With male fitted plug

CP TN 25/M/M


***Possibility of custom length for Stainless steel sheathed / pressure thermocouple,  
and compensating cable.  
We can also offer all the references in N typ connection.***

Description	Reference
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### 3.3 Pyrometers (contact/optical)

	<p>Digital thermometer with K type surface thermocouple probe Length 200 mm For the measurement of pre- and post-heating temperature</p>	Consult us
	<p>Digital thermometer with N type surface thermocouple probe Length 200 mm For the measurement of pre- and post- heating temperature</p>	Consult us
	<p>Pyrometer for low-temperature measurements (from 20°C to 300°C) Temperature monitoring on rotating parts for pre- and post-heating</p>	Consult us

### 3.4 Capacitive discharge unit

	<p>Capacitive discharge unit Fore wire-thermocouple welding on parts</p>	IMPACTEUSE
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### 3.5 Connectors

	<p>K type thermocouple cocket SC= cable clamp</p>	<p>Male : CoPyM/TE/SC Female : CoPyF/TE/SC</p>
	<p>N type thermocouple cocket SC= cable clamp</p>	<p>Male : CoPyM/TEN/SC Female : CoPyF/TEN/SC</p>

### 3.6 Temperature recorders

CETh can provide you with temperature recorder mounted in steel case, so that you can make your recordings independently of the heating machine.



Strip chart recorder :

- SR10000 1 to 6 channels
- Steel case 400 x 300 x 240 mm

Digital recorder :

- GX10 10 to 30 channels (tactil)
- FX1000 2 to 12 channels
- Steel case 200 x 250 x 250 mm

Equipped with K or N type socket, 220V power supply, handles and aplexiglas protective cover. \*.

***\*We can study any special requests.***

Our standard equipments are not delivered with calibration certificate . We can support you to obtain a COFRAC calibration certificate and qualify your entire measurement chain.

#### SR10000

#	Designation	Reference
1	Strip chart paper roll	B9565AW
2	Ink ribbon	B9901AX00
3	Marker	B9902AR
4	Green pen refills	B9902AN
5	Red pen refills	B9902AM



## 4. Gas burner heaters

## 4.1 PR10 gas heater

**CETh** has developed a radiant burner that is easy to use and maintain.



- ✓ No flame, no unburnt gas.
- ✓ High power for rapid temperature setting of thick parts.
- ✓ Thermocouple safety gas valve.

Technical datas :

- Power 18 to 93 kW\*
- Pressure 0,3 to 2 bar (4,35 to 29 psi)
- Max temperature 1200°C
- Natural gas, propane, butane
- Radiant bowl 230 mm



*\*CETh can provide its special gas lighter.*

## Parts

#	Designation	Reference
1	Bowl-ceramic filling-cup	PR10-bolco
2	Thermocouple for safety gas valve	PR10-TS
3	safety gas valve	PR10-VS

## 4.2 Gas supply system



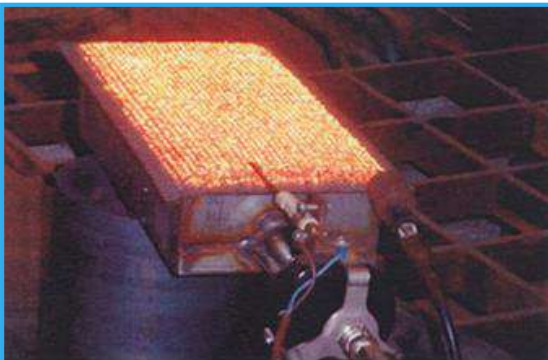
**CETh** can also provide the gas supply ramp adapted to your needs according to the **NF 746 – 2** standard .

## 4.3 Gas control cabinet

**CETh** can realize the control cabinet of your gas heating installation from our high performance CH6000 module.

**Contact us to study all your requests.**

## 4.4 Infrared gas burners



Shape, surface and power tailored to your needs.



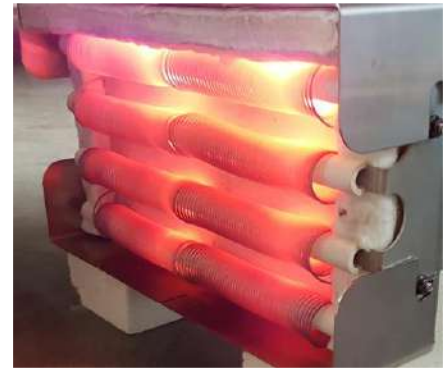
## 5. Electric radiant panels

- **CETh** has developed an electric radiant panel

Technical datas :

- Power 2600W
- Power supply 46v or 80V
- Specially designed radiant resistance

(Spiral heating Resistance temperature ~ 900°C )



*Double panel. 2x 2600W*



- ✓ High density of heating
- ✓ Power supply with TT machine or control cabinet
- ✓ Possibility of automatic control
- ✓ Works in polluted environments
- ✓ Does not pollute
- ✓ Operational safety
- ✓ Require low maintenance

## **CETh PRE 46 2,6-300 x 90**

Ideal for performing the pre- / post-heating of rotating part.  
On request we can offer multiple layouts.





## 6. Insulated resistance heater pads

On request, **CETh** can make custom shape isolated heaters pads (set consisting of heating resistors fixed on a heat-insulated metal sheet).



- ✓ Insolated heater pad with integrated magnets

- ✓ 6 resistances insolated heater pad.



- ✓ Cylindrical heater pad.

- ✓ High dimensions heater pads.





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