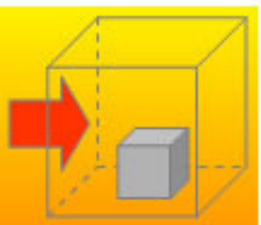
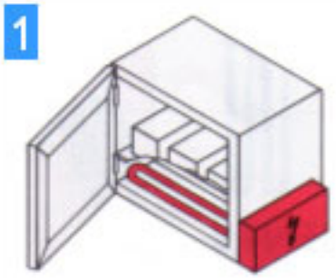
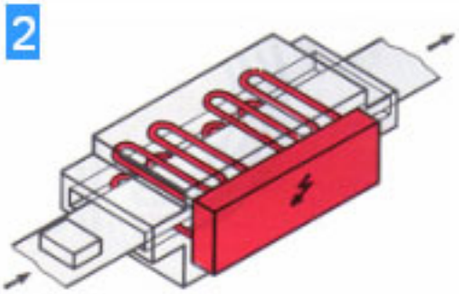
APPLICATIONS : TUBULAR HEATING ELEMENTS OPTIMIZED FOR PROCESSES

CETAL

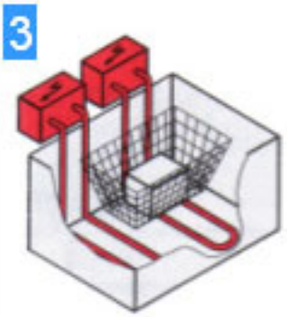


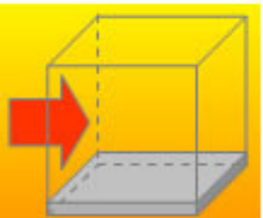
Heating
SOLIDS



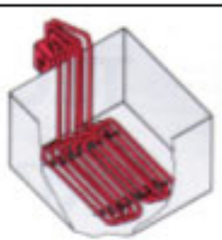


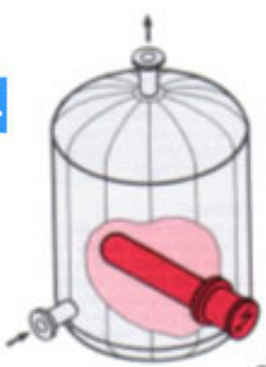
1. Drying stove
2. Heating tunnel
3. Immersion heating
4. Heating plate
5. Form heating

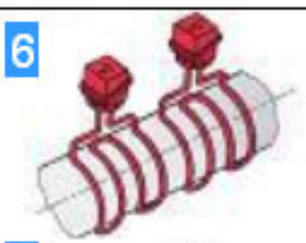


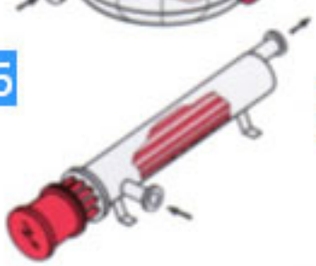


Heating
LIQUIDS



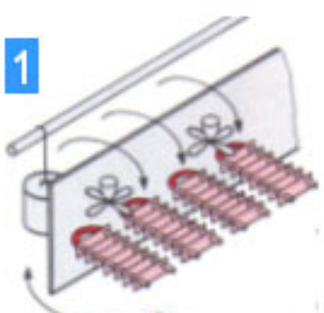


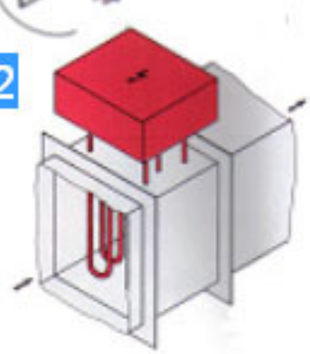




1. Open tank heating
2. Bottom tank heating
3. Side tank heating
4. Closed tank heating
5. Circulation heater
6. Tube Heating
7. Water bath
8. Liner heating for fuel oil tank

Heating
GASES





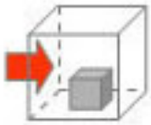
1. Air drying
2. Air duct heater
3. Circulation heaters
4. & 5. Radiators

9

APPLICATIONS : HEATED PRODUCTS

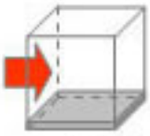
CETAL

• SOLIDS



Solids	Cp (KJ/kg.K)
Aluminium	0,39
Copper	0,45
Cast iron	0,50
Brass	0,13
Asphalt	0,45
Plastics	0,84 à 2,26
Paraffin	3,26

• LIQUIDS



Liquids	Cp (KJ/kg.K)	Liquids	Cp (KJ/kg.K)
Acetone	2,22	Heat transfer fluids	1,55 à 2,00
Acetic acid	2,13	Freon 12	0,971
Hydrochloric acid	2,51	Glycerine	2,427
Formic acid	1,63	Naphta oil	2,093
Nitric acid	2,76	Paraffin oil	2,176
Sulphuric acid	1,38	Industrial oils	1,75 à 1,80
Ethyl Alcohol	2,85	Milk	3,767
Ammonia (liquid)	4,60	Mercury	0,138
Benzene	1,88	Perchlorethylene	0,879
Beer	4,19	Gasoline	2,093
Bromine	0,46	Phenol	2,344
Chloroform	0,96	Carbon sulphide	0,963
Methylene Chloride	2,51	Carbon tetrachloride	0,879
Water	4,19	Toluene	1,758
Sea water	4,00	Trichloroethylene	0,963
Glycol water 35 %	3,88	Glass	0,837
Turpentine	1,76	Wine	3,767
Ether	2,26	Vinegar	3,850
Ethylene glycol	2,32	Liquid hydrocarbons	-
Fuel oil	1,72 à 2,22	Dyes (drying)	-

• GASES

Gases	Cp (KJ/kg.K)	Gases	Cp (KJ/kg.K)
Air	1,01	Natural gas	2,51
Ammonia	2,09	Helium	5,19
Nitrogen	1,04	Hydrogen	14,34
Butane	1,66	Methane	2,24
Chlorate gas	0,48	Oxygen	0,91
Carbon dioxide	0,85	Ozone	0,82
Sulphur dioxide	0,61	Propane	1,70
Ethane	1,77	Steam (100°C)	2,01

6 ATEX, 12" flange
immersion heaters
in series (6 x 72.5 KW)
Fluid : Hydrogenated wax
at 325°C

331 KW, 16" flange
Circulation heater
for gas re-refining at
290°C

320 KW, 380 V, 12" flange
Skid according to
ASME sect. VIII,
division 1 and SQL
Fluid : Thermal oil

488 KW, 16" flange, ATEX
Circulation heater
for catalytic unit 534 °C

437 KW, ATEX, high pressure
Circulation heater
Fluid : Wax at 325 °C

57 KW, 6" flange
Circulation heater
Fluid : Glycol water
Pharmaceutical sector

600 KW 400 V 3 Ph
Circulation heaters
equipped with 17
35KW THP elements
Fluid : Heat transfer oil
Aeronautic sector

Hot air generator
Power 145 kW / 380 V
Flow rate 1730 Nm3/h
Input/output temperatures
7/200°C

APPLICATIONS : INDUSTRIAL SECTORS CONCERNED

CETAL

• THERMAL PRODUCTION AND PROCESSING

Circulation heater
500 KW, ATEX
Fuel oil heating
Flange : 24"

• LIFE SCIENCES INDUSTRY

- Pharmaceutical
- Biomedical

Re-refining
500 kW, 650 °C
Preheating of fuel oil
Flange : DN350

• AGRI-FOOD INDUSTRY EQUIPMENT

• ENERGY PRODUCTION EQUIPMENT

- Diesel turbines
- Steam overheating
- Liquid and gaseaous hydrocarbons heating

Natural gas over heater
Drilling platform
100 kW
Flange : 12"

• POWER PLANTS

- Conventional
- Nuclear

Out-freezing device on exhaust stack,
ATEX classified site
1 kW

• AEROSPACE ENGINEERING

• PETROCHEMICALS AND GAS INDUSTRY

- On-/off-shore extraction
- Cracking
- Refinery treatment processes
- Chemical industry
- Petroleum products shipping

Air duct heater 800 KW
Heating of air at 750°C
Agri-food industry

• OTHER INDUSTRIAL SECTORS

- Glass
- Textile
- Ceramics
- Paper

Industrial oven, 3 zones
ATEX, 1.5 kW
Hydrocarbons cracking

• PLASTIC INDUSTRY AND PACKAGING

Demercurization process
on gas producing site,
45 kW
Heating gases

Nitrogen vaporization and
regeneration on metallurgical
plant, 610 kW
Flange : DN450

Flange immersion heater
1875 kW
Heating nitrogen
Flange : 88"

Use of bolt heaters
Equipment for turbines
Energy production plant