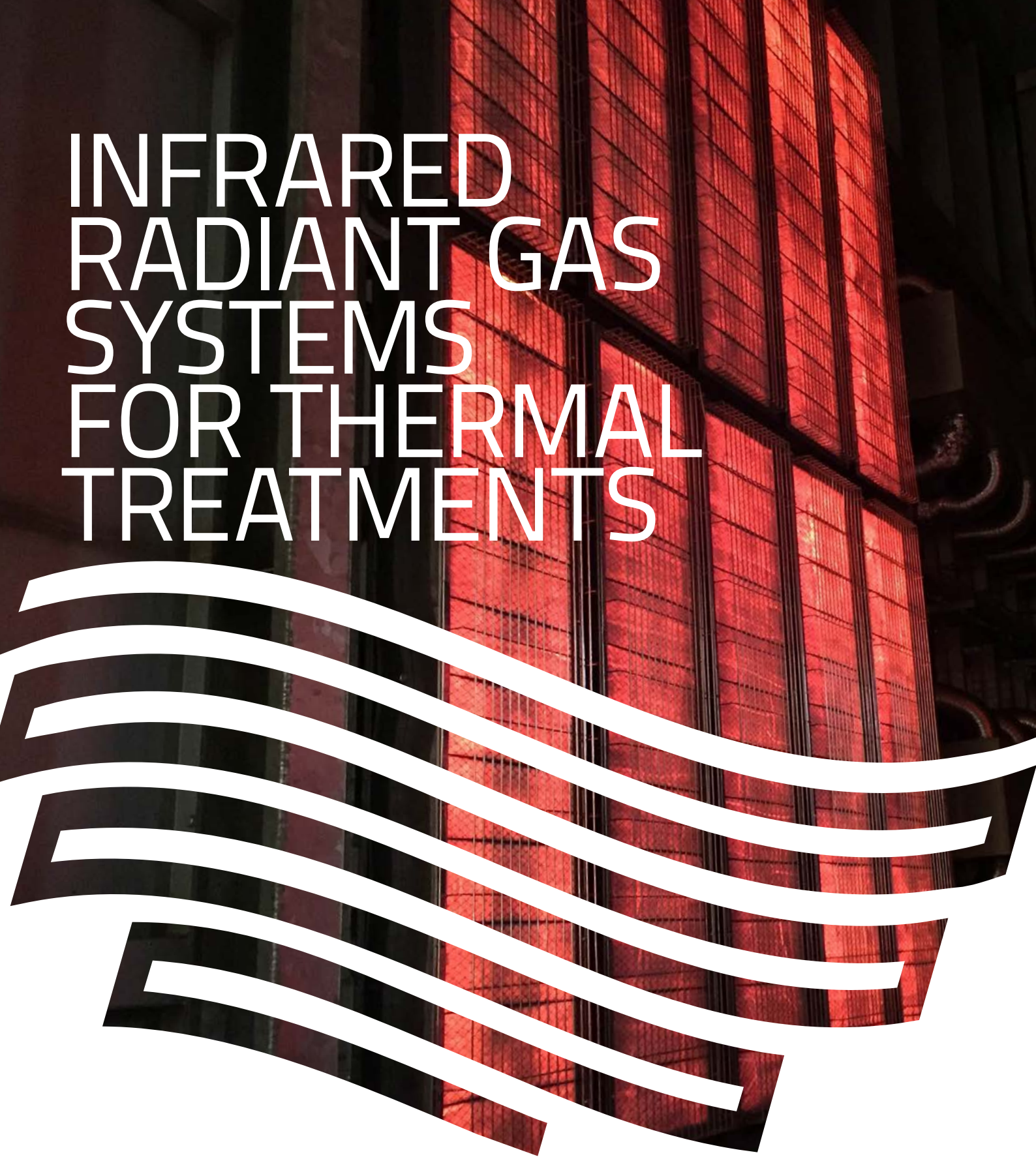
INFRARED RADIANT GAS SYSTEMS FOR THERMAL TREATMENTS



infragas

Explore our World

INFRAGAS IR CATALYTIC GAS HEATERS

WHO WE ARE

Since 1971 INFRAGAS® designes and produces infrared catalytic gas systems specific for surface thermal treatments.

The fuel supply is either Natural Gas (NG) or Propane (LPG). The IR catalytic gas panels are used for the following industrial applications:

- Solvent-based and water-based paint drying (complete treatment)
- Powder coating melting
- Powder coating curing (complete treatment)
- Insulation paint drying on electrical cables
- Thermoforming
- Glass paint drying (decoration, mirroring process)
- Pre-heating of products for further treatments
- Textile treatment (silk screen printing, thermosetting, woven-no-woven fabrics finish)
- Drying after surface treatments (e.g. sandblasting, cleaning...)
- Ink drying
- Vulcanisation
- Thermoplastic treatment
- Wood industry (paint curing on MDF and HDF)
- Food industry
- Oil & Gas applications.

CERTIFICATION

Safety and Quality are basic principles in all Infragas activities. The production of infrared catalytic gas panels is carried out with continuous checking in line with International Quality Standard ISO 9001 procedures. Infragas quality system has also been approved in conformity with the requirements of the European Directive 2014/34/UE, known as ATEX Directive, specific for production of equipments usable in potentially explosive environments.

INFRAGAS IS SUPPLIER OF RADIANT SYSTEMS FOR OVEN MANUFACTURERS AT INTERNATIONAL LEVEL

PRODUCTS

Infragas catalytic infrared heaters are available in the following typologies:
INFRACAT®, infrared catalytic heaters;
BOOSTERCAT®, boosted infrared catalytic heaters.

MAIN CHARACTERISTICS:

- Many sizes to suit different applications
- Working with Natural Gas or Propane
- Made in stainless steel - hard wearing for long life and reliability
- Compact: high power density, taking up little space
- They can be installed in horizontal, vertical or inclined position to suit application
- Equipped with a highly efficient catalyst (quick start-up: 10 minutes!) with reduced electrical power for the pre-heating phase
- Surface temperature capable of being modulated from 180°C (356°F) to 650°C (1202°F)
- FLAMELESS: usable in potentially explosive atmospheres (ATEX and FM certification)
- Designed, made and tested according to International Quality Standard ISO 9001
- INFRACAT available with K type thermocouple, shut-off valve or thermostatic safety Maxitrol valve
- BOOSTERCAT available with built-in motor fans or with rear flanges for directional air feed.

HIGH TECHNOLOGY combined with TIME AND ENERGY SAVINGS
COMPACT OVENS with Infragas IR catalytic emitters

infracat

INFRARED ENERGY AND CATALYTIC TECHNOLOGY

INFRARED CATALYTIC PANELS NAMED INFRACAT®, WHOSE TRADE-NAME IS THE COMBINATION OF INFRARED ENERGY AND CATALYTIC TECHNOLOGY, ARE CHARACTERISED BY SURFACE TEMPERATURE CAPABLE OF BEING MODULATED FROM 180°C (365°F) TO 550°C (1022°F).

INFRACAT heaters are available in the following versions:

- Standard with "K" type thermocouple for modular applications in ovens.
- Integrated "shut-off" manual valve or thermostatic manual valve in case of panels used as independent units for ambient heating or for industrial standing-alone thermal treatments.

According to the size, power ranges from 1,5 kW (1290 kcal/h) up to 17 kW (14617 kcal/h), as they have been designed to develop a specific power of 20kW/m².

INFRACAT HEATERS CERTIFICATIONS:

CSA CERTIFICATION
Canadian Standard Association – GI series Unvented Catalytic Heaters.

FM CERTIFICATION
Factory Mutual Approvals for use in classified areas Class 1, Division 2, Group D - Explosion Proof products.

ATEX CERTIFICATION
CE marking in conformity with the Directive 2014/34/UE for use in potentially explosive atmospheres, Group II, Category 2 G - Explosion Proof products.

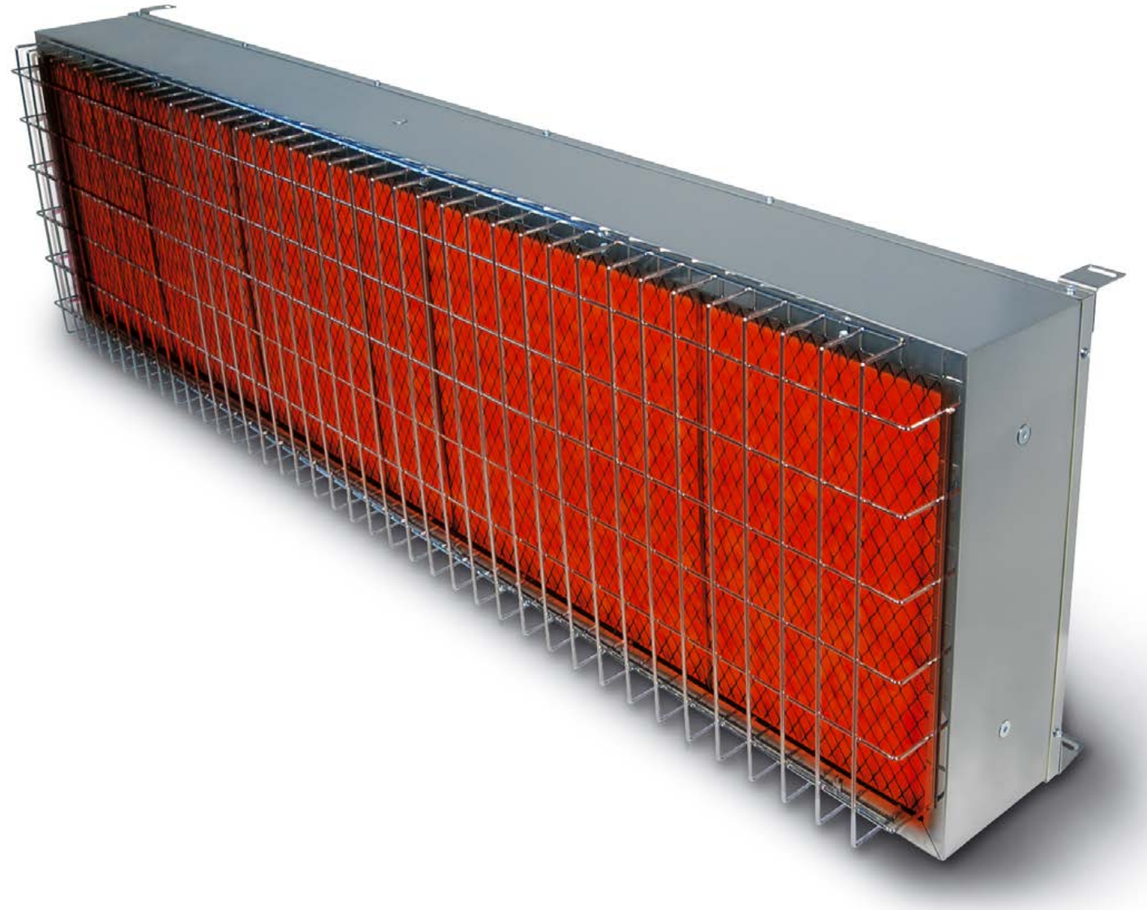
EAC CERTIFICATION
for EurAsian Economic Union.

UKR-SEPRO CERTIFICATION
for Ukraine.

MODEL	SIZES mm/inches			VOLTAGE (FOR PRE-HEATING PHASE)		ELECTRICAL POWER ABSORBED IN PRE-HEATING PHASE	PRE-HEATING TIME (minutes)	GAS ENTRY NPT		POWER kW		POWER Btu / hr		GAS CONSUMPTION			
	height	length	thickness	120V	240V			without valve	with valve	max	min	max	min	LPG g/h max	LPG g/h min	NG m³/h max	NG m³/h min
6.24	150/6"	610/24"	60/2,36"	x	x	400W	10′	1/2"	3/8"	1,5	1,0	5000	3500	113	75	0,15	0,10
8.40	205/8"	1020/40"	45/1,75"	x	x	500W	10′	1/2"	3/8"	4,0	2,4	13500	8000	300	180	0,40	0,24
8.51	205/8"	1305/51"	45/1,75"	x	x	800W	10′	1/2"	3/8"	5,5	3,3	19000	11500	413	248	0,55	0,33
12.12	305/12"	305/12"	60/2,36"	x	x	230W	10′	1/2"	3/8"	1,5	1,0	5000	3500	113	75	0,15	0,10
12.24	305/12"	610/24"	60/2,36"	x	x	460W	10′	1/2"	3/8"	3,0	1,8	10000	6000	225	135	0,3	0,18
12.60	305/12"	1530/60"	60/2,36"	x	x	970W	10′	1/2"	3/8"	8,0	4,8	27500	16500	600	360	0,80	0,48
12.72	305/12"	1830/72"	60/2,36"	x	x	970W	10′	1/2"	3/8"	10,0	6,0	34000	20500	750	450	1,00	0,60
15.30	380/15"	760/30"	45/1,75"	x	x	580W	10′	1/2"	3/8"	5,0	3,0	17000	10200	375	225	0,50	0,30
16.40	410/16"	1020/40"	45/1,75"	x	x	760W	10′	1/2"	3/8"	8,0	4,8	27000	16500	600	360	0,80	0,48
16.51	410/16"	1305/51"	45/1,75"	x	x	855W	10′	1/2"	3/8"	10,5	6,3	36000	21500	788	473	1,05	0,63
18.48	460/18"	1220/48"	60/2,36"	x	x	825W	10′	1/2"	3/8"	10,0	6,0	34000	20500	750	450	1,00	0,60
18.60	460/18"	1530/60"	60/2,36"	x	x	1015W	10′	1/2"	3/8"	12,0	7,2	41000	24500	900	540	1,20	0,72
18.72	460/18"	1830/72"	60/2,36"	x	x	1210W	10′	1/2"	3/8"	15,0	9,0	51000	3100	1125	675	1,50	0,90
24.24	610/24"	610/24"	60/2,36"	x	x	760W	10′	1/2"	3/8"	6,0	3,6	20500	12300	450	270	0,60	0,36
24.48	610/24"	1220/48"	60/2,36"	x	x	1300W	10′	1/2"	3/8"	13,5	8,1	46000	28000	1013	608	1,35	0,84
24.60	610/24"	1530/60"	60/2,36"	x	x	2400W	10′	1/2"	3/8"	17,0	10,2	58000	35000	1275	765	1,70	1,00

boostercat

CATALYTIC TECHNOLOGY COMBINED WITH AN INTEGRATED VENTILATION SYSTEM



INFRAGAS MANUFACTURES INFRARED VENTED CATALYTIC GAS HEATERS NAMED BOOSTERCAT®, WHOSE REGISTERED TRADE-MARK SYNTHETIZES CATALYTIC TECHNOLOGY COMBINED WITH THE ACTION OF AN INTEGRATED VENTILATION SYSTEM OR A FORCED AIR SYSTEM THROUGH FLANGES POSITIONED ON THE REAR SIDE OF THE EMITTER.

BOOSTERCAT surface temperature is capable of being modulated in a range from 180°C (365°F) to 650°C (1202°F) and, according to the specific size, power ranges from 6kW (5159 kcal/h) up to 25kW (21496 kcal/h).

Boostercat heaters have been designed to develop a specific power of 30 kW/m².

BOOSTERCAT CERTIFICATIONS:

ATEX CERTIFICATION
CE marking in conformity with the Directive 2014/34/UE for use in potentially explosive atmospheres, Group II, Category 2/G Explosion-proof.

EAC CERTIFICATION
for EurAsian Economic Union.

UKR-SEPRO CERTIFICATION
for Ukraine.

MODEL	SIZES mm/inches			VOLTAGE (FOR PRE-HEATING PHASE)		ELECTRICAL POWER ABSORBED IN PRE-HEATING PHASE	PRE-HEATING TIME (minutes)	GAS ENTRY NPT	POWER kW		POWER Btu / hr		GAS CONSUMPTION			
	height	length	thickness	120V	240V				max	min	max	min	LPG g/hr max	LPG g/hr min	NG m³/hr max	NG m³/hr min
5K	489/19"	522/21"	311/13"	x	x	560W	10′	1/2"	6	4	20500	12000	450	263	0,60	0,35
10K	644/25"	630/25"	311/13"	x	x	760W	10′	1/2"	10	6	34000	205000	750	450	1,00	0,60
12K	442/17"	1033/41"	311/13"	x	x	760W	10′	1/2"	12	7	41000	24000	900	525	1,20	0,70
15K	492/19"	1231/49"	311/13"	x	x	825W	10′	1/2"	15	9	51000	30500	1125	675	1,50	0,90
20K	492/19"	1541/61"	311/13"	x	x	1015W	10′	1/2"	20	12	68000	41000	1500	900	2,00	1,20
25K	492/19"	1841/73"	311/13"	x	x	1210W	10′	1/2"	25	15	85500	51000	1875	1125	2,50	1,50

TECHNOLOGY

CATALYTIC OXIDATION

INFRAGAS manufactures IR radiant panels that operate on the basis of a GAS CATALYTIC OXIDATION and emit heat through INFRARED ENERGY.

The catalytic oxidation is a chemical reaction activated by means of a catalyst whose characteristics are not altered in time.
The gas (fuel) flows inside the heater and reacts with the oxygen of the surrounding atmosphere (supporter of combustion): the contact of the feeding combustible (Natural Gas or LPG) with the oxygen, through the catalyst duly pre-heated, generates a gas oxidation with production of THERMAL ENERGY.

The reaction is exothermic and develops heat thorough INFRARED RADIATION (IR).

The catalytic technology enables a complete gas oxidation in total ABSENCE OF FLAME, as the temperature at which the catalytic reaction takes place is lower than the spark starting temperature of the feeding combustible. As a consequence, the TOTAL SAFETY of the catalytic systems leads to applications in potentially explosive atmospheres (ATEX and Factory Mutual certifications - explosion proof appliances).

The catalytic gas oxidation generates carbon dioxide (CO_2) and water vapour (H_2O) without emission of carbon monoxide (CO), NOx (NO or NO_2) and unburnt hydrocarbons (HC). It follows that the Catalytic Technology can also be used to reduce VOC emissions to atmosphere in ENVIRONMENT RESPECT (VOCs abatement).

INFRAGAS INFRARED ENERGY

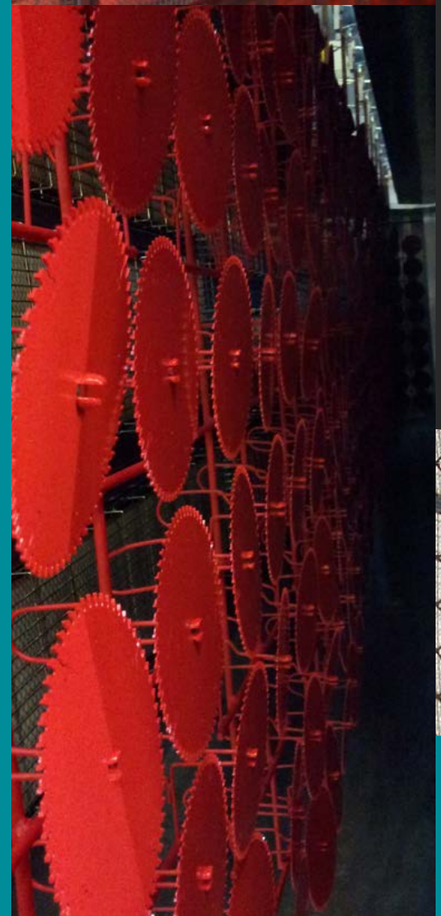
INFRAGAS infrared catalytic heaters emit thermal energy through infrared rays (IR). INFRARED RADIATION is a form of energy transmission with electromagnetic waves (infrared rays). Electromagnetic waves travel in straight lines and are not absorbed by the air, therefore they do not heat the volumes and they transform themselves in heat only when they are absorbed by an object exposed to them. This working principle enables to obtain notable energy savings and high quality treatments in a short time.
The temperature of a heat source determines the wavelength of that source: if the temperature increases, the wavelength shortens.

Infrared energy is divided in three wavelengths categories, measured in micron (μm):

SHORT WAVES:	from 0,8μm to 2μm
MEDIUM WAVES:	from 2μm to 4μm
LONG WAVES:	from 4μm to 10μm

The radiation of INFRAGAS systems has different wavelengths obtained by modulating the catalytic surface temperature. Therefore, infrared catalytic heaters are suitable for different applications considering that they have medium-long wavelengths, between 2 and 10 μm.

The electromagnetic waves emitted by the Infragas panels are greatly absorbed from the most part of organic products. In powder coating sector, for example, infrared energy is perfectly absorbed in polymerization phase, while in treatments with traditional paints, Infragas wavelength enables the rapid evaporation of water and solvents and a homogeneous finishing of high quality without generating thermal stress in the treated substrate.



CUSTOMER SUPPORT

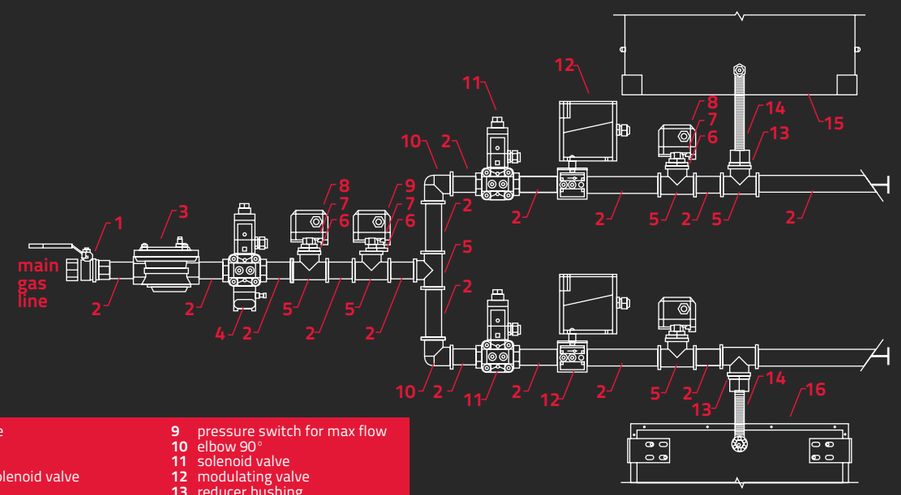
Customer satisfaction is for Infragas the primary goal and impulse to improvement.

CUSTOMIZED SOLUTIONS
Infragas Research Department enables the development of innovative solutions with the infrared panels in order to satisfy customers both standards and special requirements.

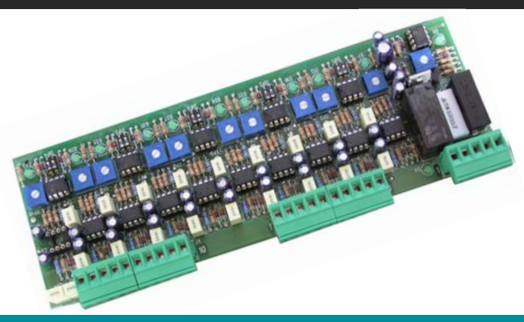
TEST CENTRE
Infragas has a laboratory and a Test Centre in its plant both to perform tests in collaboration with customers and to acquaint those who do not have previous experience or knowledge of Catalytic Technology.

SERVICE
Our commitment is to give availability and technical support all over the world. Customers can always rely on a high performance and safe Infragas thermal process.

PROJECTS
We develop, in cooperation with the customer, complete projects that include also gas connections.



1	ball valve	9	pressure switch for max flow
2	pipe	10	elbow 90°
3	gas filter	11	solenoid valve
4	safety solenoid valve	12	modulating valve
5	tee	13	reducer bushing
6	reducer bushing	14	1/2" flexible gas line
7	union	15	boostercat
8	pressure switch for min flow	16	infracat



SAFETY AND QUALITY ARE VERY IMPORTANT FACTORS THAT INVOLVE ALL INFRAGAS ACTIVITIES. THE DEVELOPMENT OF A NEW PRODUCT FOLLOWS THE INTERNATIONAL QUALITY STANDARD ISO 9001 PROCEDURES, FROM FIRST DESIGN PHASES TO FINAL MANUFACTURE.

Innovation with Infragas catalytic technology:

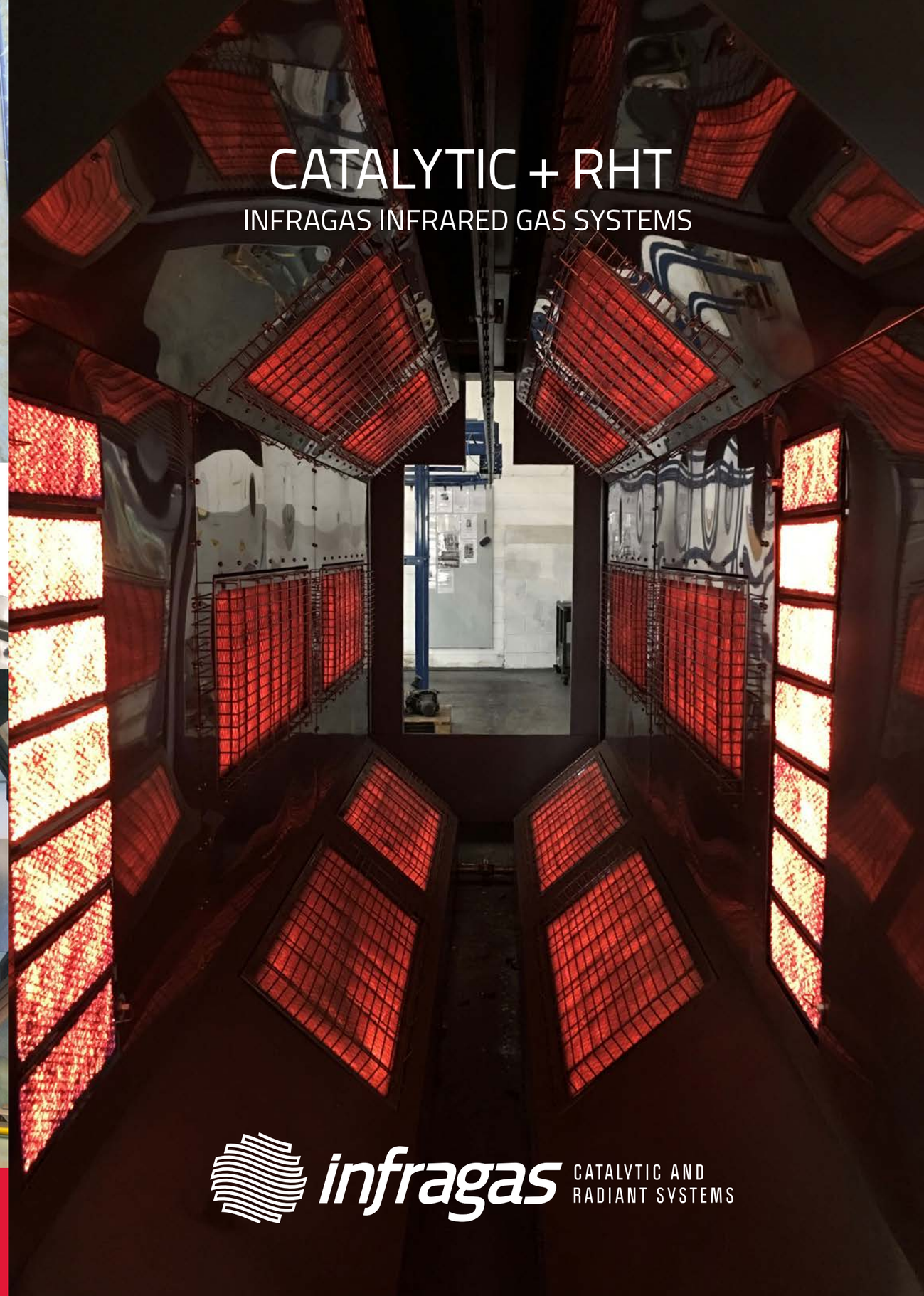
- QUICK START-UP
- LOW CONSUMPTION OF FEED GAS
- TEMPERATURE MODULATION
- RAPID CURING TIMES
- FAST COOLING
- SPACE SAVING (compact ovens)
- VOCs ABATEMENT
- ENVIRONMENT RESPECT
- HIGH QUALITY RESULTS
- SAFETY
- USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES (Explosion-Proof)
- ENERGY SAVINGS
- WORKING WITH NATURAL GAS OR PROPANE
- DESIGNED, MADE AND TESTED ACCORDING TO ISO9001 INTERNATIONAL QUALITY STANDARD

infragas CATALYTIC AND RADIANT SYSTEMS

INFRAGAS WELCOMES YOU IN THE INFRAGAS TEST CENTRE FOR TRIALS WITH INFRARED CATALYTIC TECHNOLOGY

CATALYTIC + RHT

INFRAGAS INFRARED GAS SYSTEMS



infragas CATALYTIC AND RADIANT SYSTEMS

RHT

RADIANT HIGH TEMPERATURE

RHT burners are a safe and reliable source of heat generated by a gas combustion (Natural Gas or Propane) and transmitted through infrared rays in short wavelength. The infrared energy emitted by the RHT radiant surface is absorbed by the exposed materials fast and uniformly. They are specific for thermal processes that require high temperatures or rapid curing time (for example thermal increase on metal parts, moulds, powder melting, etc.).

Frame and body of the RHT are totally made with specific stainless steel for high temperature working conditions. Each burner is equipped with a control and pre-mix system with a calibrated mixture of air/gas.

The RHT operate in a range of power from 100% to 50% and are ready to be installed

RHT are made by Infragas in conformity with the requirements of the International Standard ISO 9001 and are checked individually before any dispatch.

infragas CATALYTIC AND RADIANT SYSTEMS

RHT burners are available in different sizes and configurations for specific thermal treatments:

MODEL	SIZE mm	POWER max-min	CONSUMPTION Natural Gas max-min	CONSUMPTION Propane max-min
RHT-2c	136x765	20-10 kW	2,0 – 1,0 m³/h	1,5 – 0,7 kg/h
RHT-3c	136x1129	30-15 kW	3,0 – 1,5 m³/h	2,2– 1,1 kg/h
RHT-4c	136x1506	40-20 kW	4,0 – 2,0 m³/h	3,0 – 1,5 kg/h
RHT-5c	136x1883	50-25 kW	5,0 – 2,5 m³/h	3,7 – 1,8 kg/h
RHT-6c	136x2260	60-30 kW	6,0 – 3,0 m³/h	4,5 – 2,2 kg/h
RHT-7c	136x2637	70-35 kW	7,0 – 3,5 m³/h	5,3 – 2,6 kg/h
RHT-8c	136x3014	80-40 kW	8,0 – 4,0 m³/h	6,0 – 3,0 kg/h
RHT-2l	375x274	20-10 kW	2,0 – 1,0 m³/h	1,5 – 0,7 kg/h
RHT-3l	375x412	30-15 kW	3,0 – 1,5 m³/h	2,2– 1,1 kg/h
RHT-4l	375x550	40-20 kW	4,0 – 2,0 m³/h	3,0 – 1,5 kg/h
RHT-5l	375x688	50-25 kW	5,0 – 2,5 m³/h	3,7 – 1,8 kg/h
RHT-6l	375x826	60-30 kW	6,0 – 3,0 m³/h	4,5 – 2,2 kg/h
RHT-7l	375x964	70-35 kW	7,0 – 3,5 m³/h	5,3 – 2,6 kg/h
RHT-8l	375x1102	80-40 kW	8,0 – 4,0 m³/h	6,0 – 3,0 kg/h

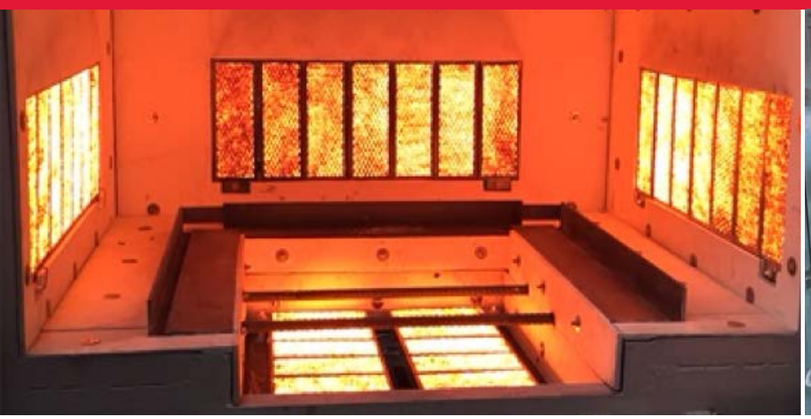
Infragas manufactures two RHT versions:
STANDING-ALONE for each independent unit;
REMOTIZED for connection to a main PLC (Programmable Logic Controller).

With reference to the environment respect, it is important to take into consideration that the surface microflame combustion with the metal fibre burner emits extremely low levels of NOx, CO and unburned.

RHT

- RADIANT HIGH TEMPERATURE
- INFRARED RADIATION
- SHORT WAVELENGTH
- PRE-MIX AIR AND GAS
- EASY TO INSTALL
- QUICK START-UP
- POWER MODULATION
- UNIFORM THERMAL TREATMENTS
- FLEXIBILITY
- ENVIRONMENT RESPECT
- SAFETY
- STANDING-ALONE OR REMOTIZED CONTROL BY PLC
- COMPLETE EQUIPMENT, READY TO BE INSTALLED

FEED GAS	Natural Gas or Propane
GAS PRESSURE	20 mbar (2 kPa; 200 mm H_2O)
VOLTAGE	230V 50-60 Hz (24V – 12V upon request)
PRE-MIX SYSTEM	Control system for each RHT burner equipped with the following components: ▪ PRE-MIX AIR/GAS ▪ ELECTRONIC CARD ▪ STABILIZER ▪ FLAME CONTROL AND IGNITION ▪ POWER MODULATION ▪ CONTROL SIGNALS ▪ AIR FILTER ▪ CABLES between control cabinet and burner ▪ INLET GAS CONNECTION ¾". Each system is equipped with connection hose to the radiant burner, length 700 mm 



The Infragas RHT heaters are CE certified

infragas CATALYTIC AND RADIANT SYSTEMS

RHT: INFRAGAS TECHNOLOGY FOR HIGH TEMPERATURES

INFRAGAS: INFRARED THERMAL SOLUTIONS

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