EUROTECNO

Specification

Infrared and All-Electric Spray Booth/Ovens

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General Specification - Infrared Booths

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The full range of Eurotecno automotive spray booths is available with infrared curing. The Piper and Stealth models are traditional spray booths with Oil or Gas burners and can be upgraded with our IR-KIT infrared option for hybrid operation with fully electric infrared curing.

The Raptor spray booths are fully electric with infrared curing and electric heat exchanger and a cutting edge control system for the most energy efficient spray booths available.

Infrared booths save time and money compared to a traditional Oil or Gas fired spray booth for every job, cutting curing time and energy consumption significantly, all whilst providing top of the range airflows and significantly reducing your carbon footprint.

The “Setting System” option (Standard on the Raptor) splits the booth into discrete zones which can be independently utilised, reducing the airflow proportionately and diverting all the air to one part of the cabin, further reducing running costs for smaller jobs such as when you are painting just a wing.

The Raptor Evolution includes 38 x 1.45 kW IR Lamps installed around the booth and in the ceiling. The lamps are protected by stainless steel covers that open and close automatically.

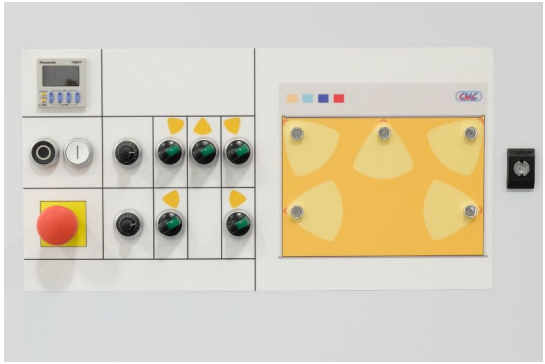
Hybrid infrared Spray Booths

The IR-KIT upgrades any of our automotive booths (including existing equipment) to a hybrid booth with fully electric infrared curing.

The spray booths have a traditional input power group with gas or oil burner attached to a high grade stainless steel heat exchanger which provides heating for the spray cycle. A touch screen PLC controlled inverter system keeps running costs as low as possible by reducing the air flows when there is no spraying taking place, automatically ramping up the fan speeds as soon as the operator starts spraying.

For the curing phase, the operator has the option of a traditional hot-air cure utilising the burner or can use the infrared system.

Infrared curing saves a significant amount of time and energy; The time to reach panel temperature takes 85% less time than with hot air ovens, and the cure time is halved. The operator can also choose which lamps are required so when just one side of a car is being worked on, only the lamps adjacent to that side need to be switched on, saving a further 80% running costs.



All of our automative spray booths are available with a “Setting System” option which further zones the booth by directing all the airflow to whichever part of the booth it is required, proportionally slowing the fans (and thus saving significant energy in both the spraying and curing cycles). For example, if the front left wing of a car is being worked on, the setting system shuts down the air in the ceiling and floor in the rest of the booth, directing all of the air to that corner of the booth.

The lower infrared lamps have protective glass covers that remain closed during spraying, preventing overspray contamination onto the lamps. The system won’t allow the lamps to operate with the cover closed and conversely prevent the operator from spraying when the covers are open.

Raptor

Raptor is our top of the rang spray booth and is a no-compromise all-electric booth. It is the most energy efficient spray booth available and has the following features as standard:

Electric Heat Exchanger
Heat for the spray cycle is provided by a fully-electric heat exchanger. Raptor does not have an oil or gas burner. The electric heating battery provides a full no-compromise +Δ25°C spray temperature.

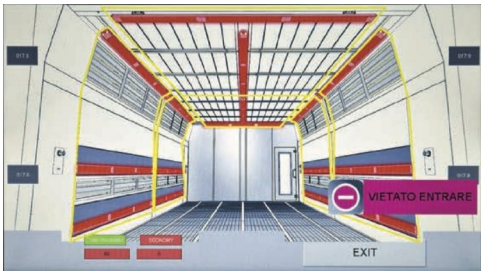
Heat recuperating ducting
During the spray cycle, all the air must be expelled directly to atmosphere and can't be recycled due to safety requirements. The heat recuperating ductwork puts a heat exchanger into the input ducting to recuperate the energy being expelled, cutting running costs during the spray cycle by approximately 50% and enabling a smaller electric heat exchanger to be used.

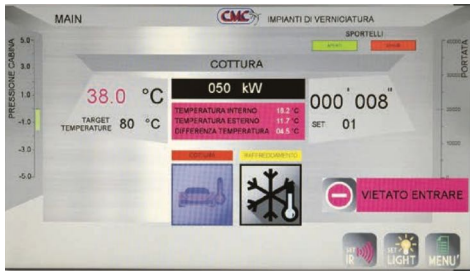
Flush fitting Inset infrared lamps
The lamps are built in to the spray booth walls and protected by automatic stainless steel shutters.

Setting System

The “Setting System” (Optional for the Raptor Plus) splits the infrared spray booth into discrete zones which can be independently used, diverting all the air to one part of the cabin, further reducing running costs for smaller jobs such as when you are painting a wing.

Touch Screen PLC Inverter system





The touch screen PLC system is sophisticated and easy to use. A web server allows usage to be monitored from anywhere. The system constantly monitors energy usage in real time allowing you to know the actual energy cost for each job.

The system controls the fan speed to optimally maintain the optimum cabin pressure, even as the various banks of filters gradually soil, and ensures the maximum energy efficiency at all times.

The air flows are reduced when the booth is in standby or the operator isn’t spraying and automatically ramp up when the trigger on the spray gun is pulled.

Running Costs

Infrared curing saves a significant amount of time and energy compared to a traditional gas|oil fired hot air bake.

We have compared a top of the range traditional Stealth spray booth with inverter system to a Raptor fully electric booth. The Stealth has much lower running costs and uses much less gas than a booth without an inverter system, but is the fairest comparison as it matches the most efficient traditional booth with the most efficient all-electric booth with equivalent air capacities:

These are also for full car resprays; Significant savings can be made with infrared booths when only a portion of the car is sprayed as only the lamps required need to be utilised.

Traditional Booth

Test cycle for a Stealth 32,000 m³/h with Gas Burner and no infrared, winter and summer cycles averages.

PREPARATION	Winter	Summer
Air Capacity	8,000 m³/h	8,000 m³/h
Temperature	20°C	20°C
Time	20 min	20 min
Gas Consumption	4.91 m³	0 m³
Electrical Consumption	5.04 kW	5.04 kW

SPRAY PHASE	Winter	Summer
Air Capacity	32,000 m³/h	32,000 m³/h
Temperature	20°C	20°C
Time	40 min	40 min
Gas Consumption	9.82 m³	0 m³
Electrical Consumption	10.04 kW	10.04 kW

FLASH OFF	Winter	Summer
Air Capacity	24,000 m³/h	24,000 m³/h
Temperature	30°C	30°C
Time	10 min	10 min
Gas Consumption	2.45 m³	2.15 m³
Electrical Consumption	2.19 kW	2.19 kW

BAKE PHASE	Winter	Summer
Air Capacity	16,000 m³/h	16,000 m³/h
Temperature	80°C	80°C
Time	40 min	40 min
Gas Consumption	7.36 m³	6.14 m³
Electrical Consumption	8.68 kW	8.68 kW

COOLING PHASE	Winter	Summer
Air Capacity	24,000 m³/h	24,000 m³/h
Temperature	—	—
Time	10 min	10 min
Gas Consumption	0 m³	0 m³
Electrical Consumption	2.16 kW	2.16 kW

Total gas used per job | Winter 24.54 m³; Summer 8.29 m³
Average over calendar year : 19.12 m³
Total electricity used per job: 28.11 kW

Fully-electric infrared spray booth

Test cycle for a RAPTOR 32,000 m³/h with fully electric heat exchanger and infrared curing, winter and summer cycles averages.

PREPARATION	Winter	Summer
Air Capacity	8,000 m³/h	8,000 m³/h
Temperature	20°C	20°C
Time	20 min	20 min
Gas Consumption	NA	NA
Electrical Consumption	19.66 kW	3.66 kW
SPRAY PHASE	**Winter**	**Summer**
Air Capacity	32,000 m³/h	32,000 m³/h
Temperature	20°C	20°C
Time	40 min	40 min
Gas Consumption	NA	NA
Electrical Consumption	35.66 kW	16 kW
FLASH OFF	**Winter**	**Summer**
Air Capacity	24,000 m³/h	24,000 m³/h
Temperature	30°C	40°C
Time	5 min	5 min
Gas Consumption	NA	NA
Electrical Consumption	7.16 kW	7.16 kW
BAKE PHASE	**Winter**	**Summer**
Air Capacity	16,000 m³/h	16,000 m³/h
Temperature	80°C	80°C
Time	20 min	20 min
Gas Consumption	NA	NA
Electrical Consumption	24.66 kW	24.66 kW

COOLING PHASE	Winter	Summer
Air Capacity	24,000 m³/h	24,000 m³/h
Temperature	—	—
Time	5 min	5 min
Gas Consumption	NA	NA
Electrical Consumption	1.49 kW	1.49 kW

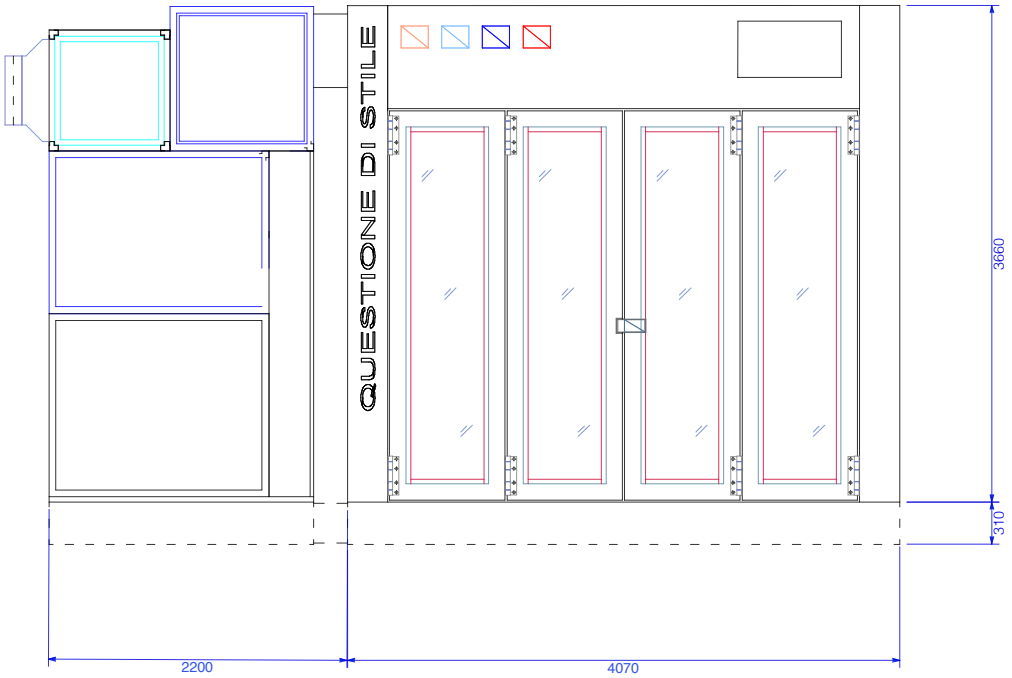
Total electricity used per job | Winter 93.10 kW; Summer 48.94 kW
Averaged over one calendar year : 63.66 kW

A RAPTOR saves time and allows 6 full jobs per day compared to 4 for a Stealth, a 50% improvement.

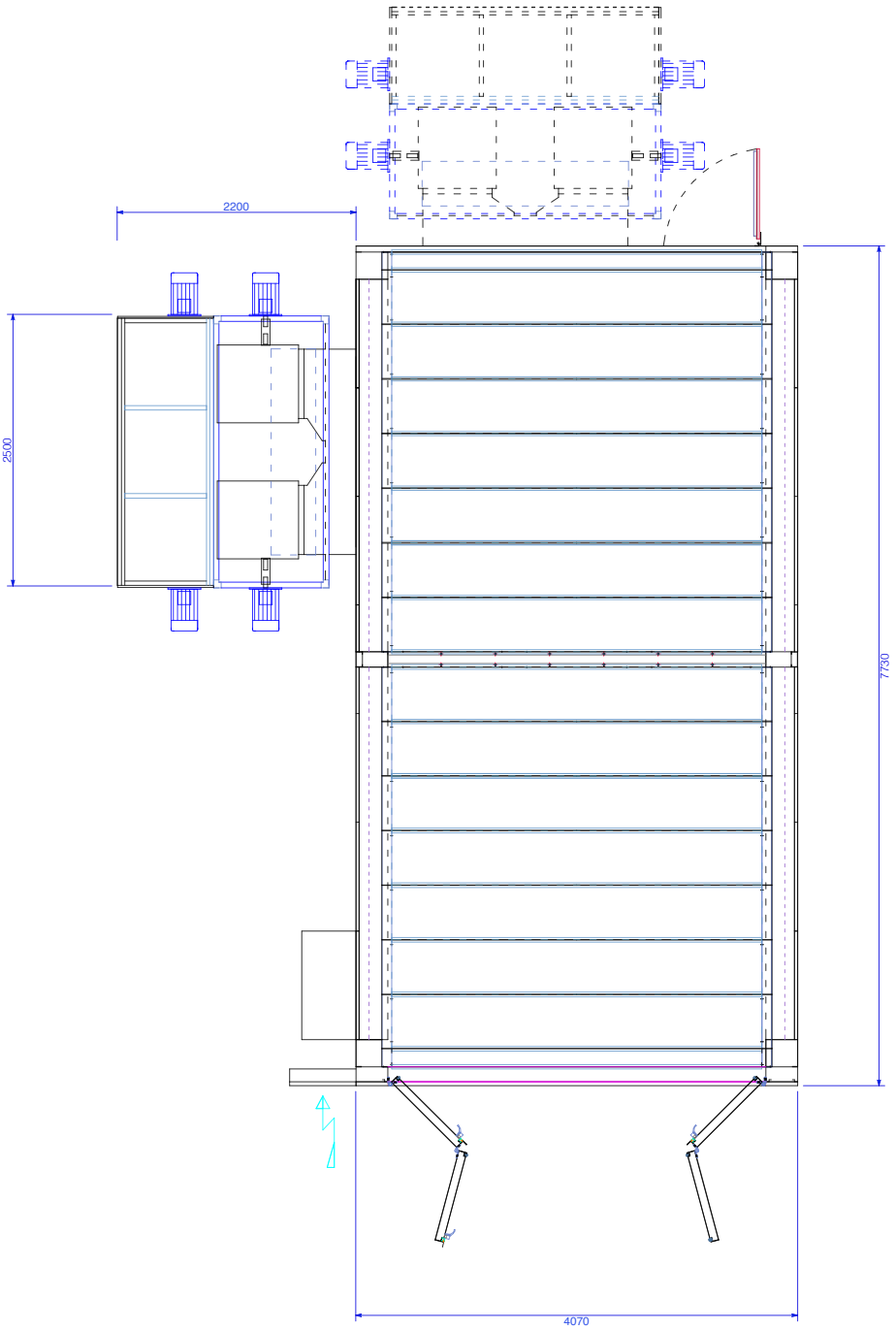
If one full side of a car is sprayed, energy consumption is effectively halved, saving 50% energy costs. This can be further reduced with the RAPTOR when just one zone is required.

When spraying and curing one side of a car, the cost is about ⅓ compared to a gas fired booths a saving of 66% in real terms.

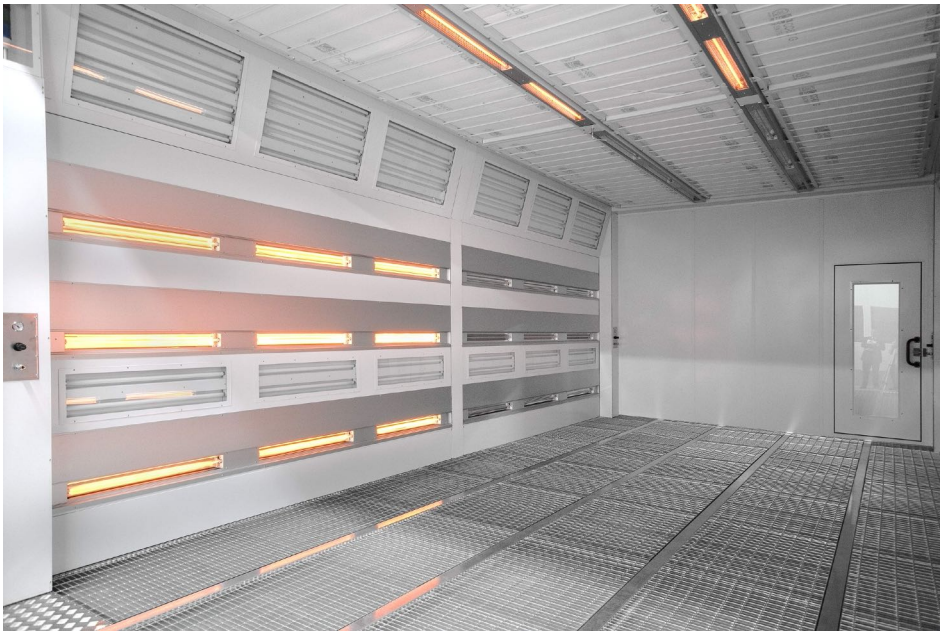
Raptor Front Elevation

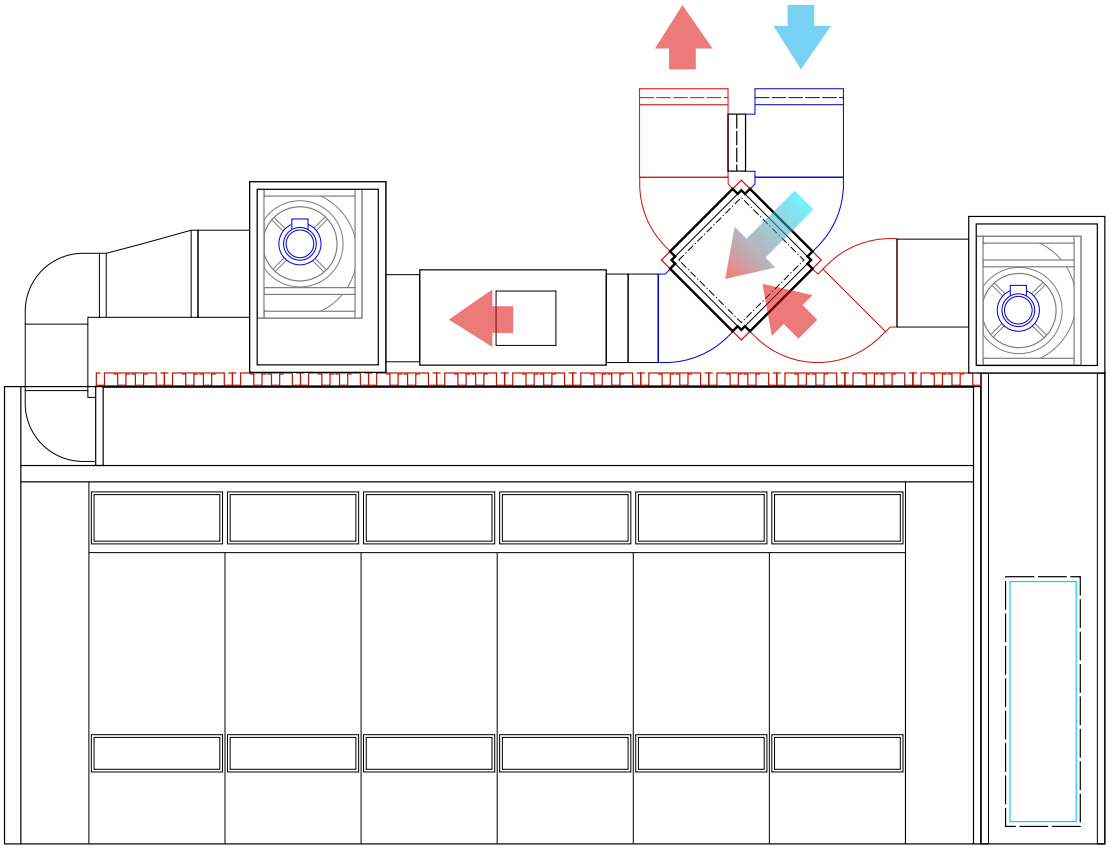


Raptor Plan View



Raptor Photos





Booth with electric heat exchanger, plant on roof and heat recuperating ducting

EUROTECNO

Technical Specification |Raptor

SPECIFICATIONS

	RAPTOR PLUS	RAPTOR EVOLUTION
AVAILABLE INT. WIDTHS	4.0m	4.22m	4.0m	4.22m
LENGTH	7.0m – 9.0m	7.0m – 9.0m
AIR CAPACITY	30,000 – 36,000 m3/h	30,000 – 36,000 m3/h
CENTRIFUGAL FANS	√	√
HEATING	Electric 48 kW	Electric 48 kW (Optional 72 kW)
HEAT EXCHANGER	Electric	360,000 Kcal/h Heat Exchanger with Oil or Gas Burner Optional	Electric
INFRARED LAMPS	42 x 1,450 W IR Tubes	54 x 1,450 W IR Tubes
AUTOMATED PROTECTIVE COVERS FOR INFRA-RED LAMPS	√	√
WALL PANELS	Double Skinned, Rockwool insulation, finished in white	Double Skinned, Rockwool insulation, finished in white
DOORS	3-Leaf, Double Skinned, Rockwool insulation, finished in white.	4-leaf with full length glass, Double Skinned, Rockwool insulation, finished in Stainless Steel
CONTROL PANEL	15″ Touch Screen PLC	15″ Touch Screen PLC with remote assistance
INVERTER SYSTEM	√	√
HEAT RECUPERATING DUCTING	√	√
PRESSURE CONTROL	Fully Automatic PLC Controlled	Fully Automatic PLC Controlled
LIGHTING	4 x Tubes per light unit top row 2 x Tubes per light unit bottom row	6 x Tubes per light unit top row 4 x Tubes per light unit bottom row
EXTRACTION	Downdraught (Excavated floor | Optional Base)	Downdraught (Excavated floor | Optional Base)
SETTING SYSTEM	Optional	√
STAINLESS STEEL FINISH	Optional	Stainless Steel Front Panels and Doors
ELECTRICAL POWER REQUIREMENT FOR INSTALLATION	70 – 78.5 kW	70 – 78.5 kW