

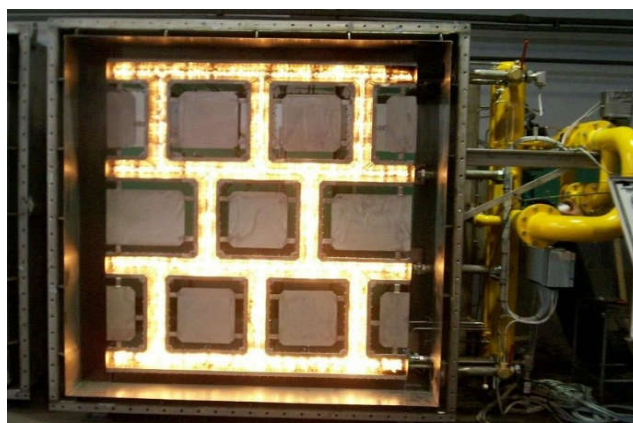
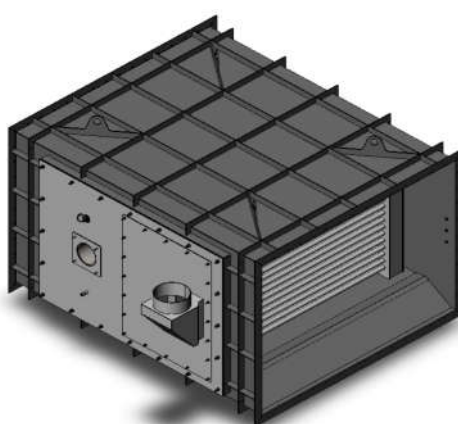


fives

Combustion

ITAS Spa

Combustion System Solutions



A wide range of products, solutions and services to optimize any combustion process and environmental performance

- Trusted performance and standards exceeding low emissions
- Pioneering plug & play technology
- Reduced commissioning time
- Wide range of products and custom-design solutions for many applications
- Flexible and knowledgeable team for technical support and services

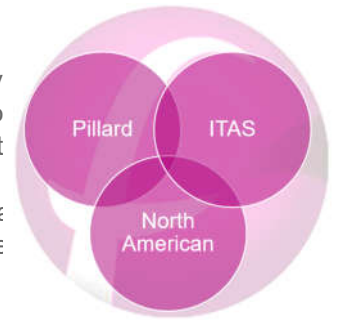
Fives

As an industrial engineering Group, Fives designs and supplies machines, process equipment and production lines for the world's largest industries including the aluminium, steel, glass, automotive, aerospace, logistics, cement and minerals,

Fives' Combustion division

The Combustion sector of Fives offers high performance combustion process solutions and services. From design, manufacture, installation, commissioning and customer technical support throughout the equipment lifecycle, Fives offers ultimate solutions to its customers and drives projects as a partner.

With a strong legacy based upon the most renowned names of the market - ITAS, North America and Pillard, Fives is a recognized provider of outstanding combustion solutions at the heart of the customers' performance.



Fives' Combustion dedicated teams – nearly 1 000 people in Europe, Asia, and North America, offer their expertise to supply tailor-made solutions for key markets/applications.

- Cement, gypsum & minerals: equipment for rotary kilns and drying applications
- Energy: Low NOx equipment for boilers
- Metals: Burners and systems for steel, aluminium, copper, forging and heat treatment furnaces
- Oil & Gas: petrochemical heaters, process equipment for refineries and oil & gas plants (flares, process burners)
- Food and feed: Burners and hot gas generators for drying and processing of food

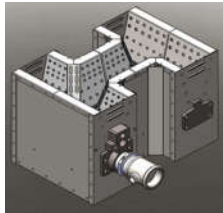
Fives' high-efficiency equipment, ultimate technologies and solutions help customers in exceeding their objectives in terms of energy consumption, polluting emission and improved production and quality.

Fives ITAS Spa

ITAS Ductflame HTC

Typical applications:

- Textile drying
- Food processing
- Ceramics industry
- Direct heating
- Hot gas generators



Line burner - Gas controlled

Capacity [kW lHV]	up to 30 000
Turndown	20:1
Fuels	NG, Propane, butane
Application temperature	up to 800°C
Combustion air temperature	200°C
Key Feature	Modular build Large air flows

ITAS Ductflame F

Typical applications:

- Ceramic Spray drying
- Incineration
- Gas turbines
- Grass drying
- High temperature air heating



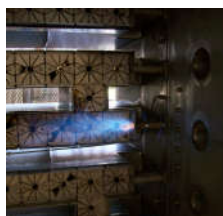
Line burner - Gas controlled

Capacity [kW lHV]	150 - 30 000
Turndown	10:1
Fuels	NG, Propane
Process inlet temperature	up to 750°C
Process outlet temperature	up to 1 200°C
Key Feature	Low Oxygen (>11%)

ITAS Ductflame R

Typical applications:

- Gypsum calcining
- Sludge drying
- Gypsum board drying
- Yankee hood dryer



Line burner - Ratio Controlled

Capacity [kW lHV]	60 - 15 000
Turndown	10:1
Fuels	NG, Propane
Application temperature	up to 1 200°C
Combustion air temperature	300 °C
Key Feature	On Ratio control

ITAS Ductflame L

Typical applications:

Air recovery
Gas engines



Line burner - Limited combustion air

Capacity [kW lhv]

150 - 30 000

Turndown

10:1

Fuels

NG, Propane

Process inlet temperature

up to 750°C

Process outlet temperature

up to 1 200°C

Key Feature

Low Oxygen (>11%)

Lambda 0,5

ITAS Dryflame

Typical applications:

Ceramic Drying
Paint booths
Textile stenters



Concentric burner - Ratio Controlled

Capacity [kW lhv]

150 - 800

Turndown

10:1

Fuels

NG, Propane, Biogas

Application temperature

up to 800°C

Combustion air temperature

100 °C

Key Feature

Plug and play package

ITAS Speedflame

Typical applications:

Ladle heaters
Heat-treatment
RTO's
Tunnel kilns



Medium velocity - High turndown

Capacity [kW lhv]

100 to 1 600

Turndown

20:1

Fuels

NG, Propane, mixtures

Application temperature

800°C

Combustion air temperature

260°C

Key Feature

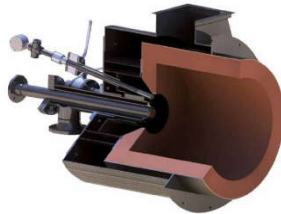
air / gas control

Excess gas and air

ITAS IntensityFlame

Typical applications:

Paper drying/ yankee hoods
Rotary drum food drying
Petrochemical process heaters
Gypsum calcining
Steam generators



Concertric burner - Ratio Controlled

Capacity [kW lhv]

1 000 - 55 000

Turndown

15:1

Fuels

Any gas

Application temperature

1 200°C

Combustion air temperature

260°C

Key Feature

Dual gas operation

Short intense flame

ITAS Indirect Air heater

Typical applications:

Paint curing
Cacao drying
Paint spray booth
Coating drying
Food spray drying
Drying Pharmaceuticals



Boxed style - Compact design - Customized flow

Thermal output [kW lhv]

up to 4 000

Temperature rise

up to 200°C per pass

Fuels

gas, oil

Air temperature

up to 400°C

Thermal efficiency

Up to 94%

Key Feature

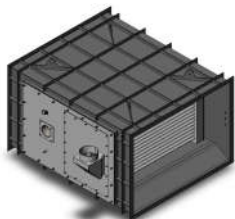
Custom design

Plug and play

ITAS HAG Indirect Air heater

Typical applications:

Coating drying
Aluminium aging
Paint curing
Indirect air- make up
Drying Pharmaceuticals



High efficiency - Plug in Style - horizontal flow

Thermal output [kW lhv]

100 to 800

Temperature rise

up to 92°C per pass

Fuels

gas

Air temperature

up to 200°C

Thermal efficiency

Up to 82%

Key Feature

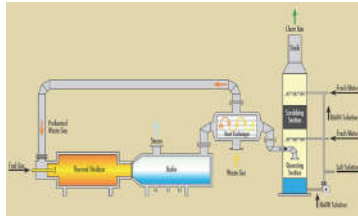
Custom design

Plug and play

Other Fives Combustion products

Environmental solutions

Typical applications:
 Coating lines
 Printing and converting
 Automotive paint booth
 Chemical plant
 Drying Pharmaceuticals

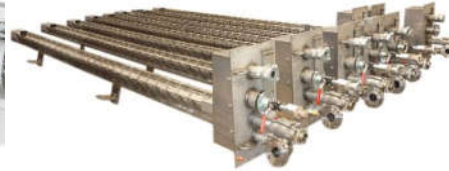
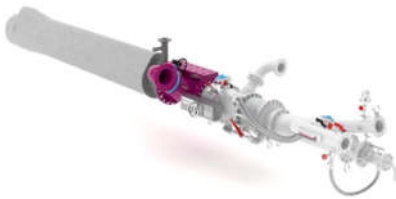


Thermal Oxidizer (TO)
Regenerative TO
Recuperative TO
Catalytic Oxidizer (CO)
Recuperative CO
Custom design

Process solutions for (Petro)-chem



Pillard solutions for cement, minerals and energy



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