



INDUSTRIAL AIR HEATERS



■ START UP HEATER

Start-up heaters maintain catalyst beds above their self-ignition temperature and provide flexibility to a facility, allowing it not only to operate with different variations of SO_2 concentrations, but also perform much quicker starts.

The preheating system consists of a furnace or combustion chamber, a heat exchanger (tube basket or tubular heat exchanger), combustion air, a fan and a chimney.

SOLUTIONS

- Design and manufacture of new equipment according to each client requirements.
- Damaged preheaters components repairs or old equipments renewals to enhance their performance.
- Assessment and advice to provide an integral solution which best suits each client requirements.

KEY POINTS

Design, manufacture and inspections carried out at our facilities in Zaragoza.

Possible modular designs of casing, refractory and piping system.

Pressure recuperators in accordance with AD-2000-Merkblatt code.

Flanges and counter-flanges in accordance with ASME code.

Full availability for on-site monitoring.

Remote control predictive maintenance.

24 hour remote assistance.



AIR HEATERS

Air heaters are equipment produced by Kalfrisa for different heating, drying and industrial processes. Depending on each process and operating conditions, we offer tailored, reliable and efficient solutions which best meet the requirements of our clients.

We classify our equipment according to the thermal jump (ΔT) or exchange power that needs to be reached. Therefore, from higher to lower heating power, we offer Modular heaters, Start-up heaters & Compact heaters: VT, VK and VQ series.

APPLICATIONS

Sulphuric acid production: Start-up heaters and special modular heaters.

Food dryers for fish, cacao, coffee, powdered milk, salt, pistachios, fruit, etc.: Compact heaters and Modular heaters

Automobile sector: Compact heaters (VTs).

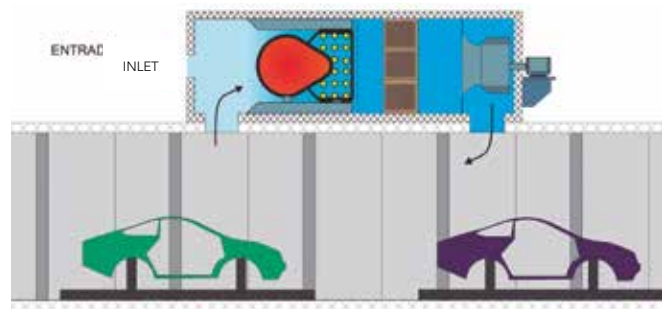
Textile sector: Compact heaters (VTs, VQs).

■ COMPACT HEATER

VT serie

VT air heaters are characterized by their high versatility in terms of sizes and models, which allows them to be adapted to a large number of industrial installations.

VT compact heater



VT air heating module installed in a paint booth in the automotive industry

APPLICATIONS

Air heating for drying facilities in food, textile, mineral, ceramic, wood, automotive and auxiliary industries as well as metal and plastic surface treatment plants.

ADVANTAGES

Good value for money, very compact equipment, with high durability and reliability. Suitable for a wide range of air flows and relatively low consumption.

VK & VQ series

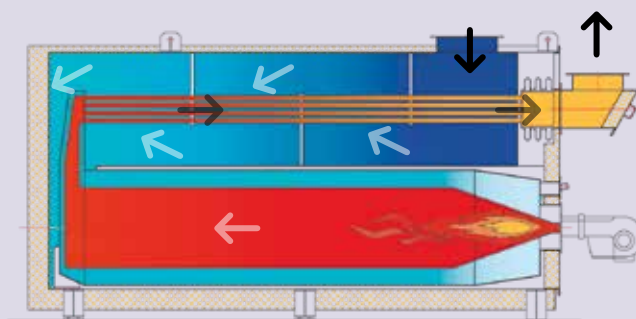
VKs are the most powerful indirect air heater for industrial processes in our range . They offer the largest delta T (thermal jump), up to 450°C.

VK serie is manufactured as a single piece to facilitate their installation at the plant, transport and handling. These heaters are used to indirectly heat air for different processes such as flash drying for food, drying of minerals and other materials, obtaining hot air for different uses, etc.

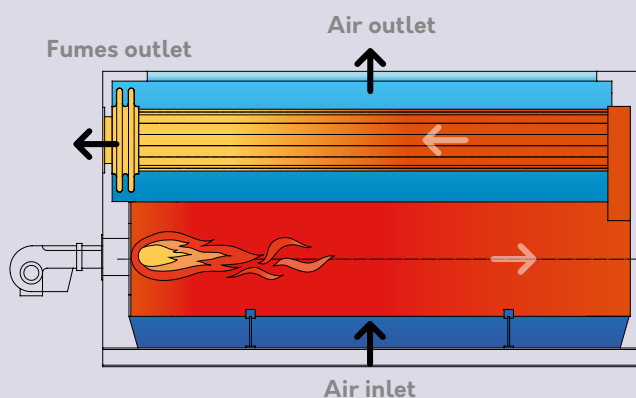
They can be fully made of stainless steel to guarantee fulfilment of food sector requirements. They are robust devices which tolerate thermal dilations due to use of compensators well and can operate with different types of fuels. They are supplied in different positions and the position of their inlets and outlets is conveniently adapted according to the clients requirements

VQ heaters have a similar power range than VKs, their main difference is that the heat exchange is done in just one step.

VK heater



VQ Heater



APPLICATIONS

They are generally used to heat air with high power for drying processes (milk, cocoa, salt, atomization towers, mining industry...)

	$\Delta^{\circ}\text{C}$	Useful power (kW)	Working pressure (mmWG)	Work flows (Nm ³ /h)	Temperature Air output ($^{\circ}\text{C}$)
VT's	70	30-1400	200	2500-96000	300
VQ's	250	30-1400	1000	1000-30000	400
VK's	450	<1500	<2000	5000-40000	450

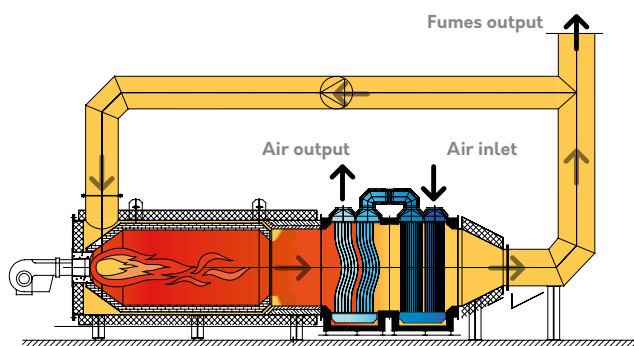
■ MODULAR/SPECIAL HEATERS

These equipment are especially indicated when the working conditions (heating power, temperature increase, working pressure, etc.) exceed the limits established for standard or semi-standard compact equipments.

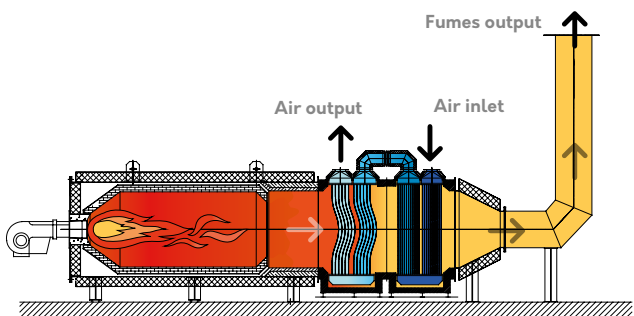
They are large installations which may include gas recirculation, and take up a lot of space. They are tailor designed to best meet the requirements of our clients and can be installed in different layouts such as: linear, elbow or U-shaped.

FEATURES

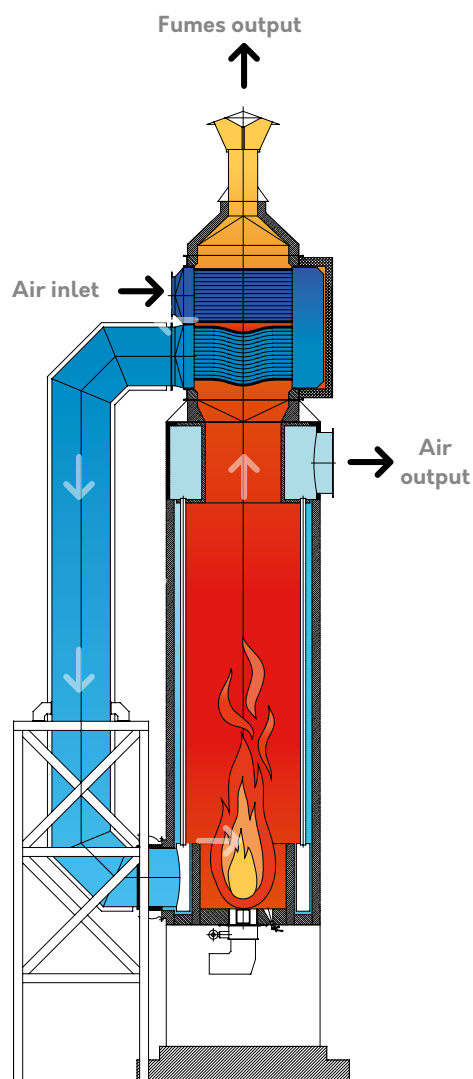
- Heating temperatures: 700°C.
- Accepted flow rates: Wide range to be specified with end customer.
- Transportation in individual pieces for easy assembly.
- Process efficiencies greater than 85%.
- Great Heating Power.
- System with very low emissions, with the possibility of flue gas recirculation to attain levels of 25 ppm.



Modular system consisting of mixer + flue gas recirculation + process gas heat exchanger.



Modular system consisting of combustion chamber + process gas heat exchanger.



Modular system consisting of radiation chamber + air pre-heating in the heat exchanger.



EXPERIENCE
KNOWLEDGE
IMPLICATION



The knowledge and experience gained over more than 50 years working with energy and environment techniques at industrial plants has enabled us to offer reliable and cost-effective solutions to our customers.

Our equipment is approved, certified and authorised by the EC. In addition, Kalfrisa, with its commitment to innovation, has been recognized as an INNOVATIVE SME by the Spanish Government's Ministry of Science and Innovation.

Competing for European leadership is only possible through 360° of service. KALFRISA has proprietary technologies, designing, developing, manufacturing, commissioning and providing technical support once the equipment has been sold.

Kalfrisa guarantees the optimum adaptation of its installations to the client's requirements, adapting its design to the different technical specifications of each project. Obtaining ISO 9001:2015 quality certification signifies Kalfrisa's commitment to excellence, implementing a work philosophy regulated by both external and internal quality standards.

KALFRISA SERVICE

■ TECHNICAL ASSISTANCE SERVICE

Performed by a team of qualified, experienced professionals, in accordance with certified procedures.

Guaranteeing the use of only original spare parts.

Fault diagnosis and 365-day telephone on-call service.

■ PREVENTIVE MAINTENANCE CONTRACTS AND OPERATIONS

Coordination of scheduled visits with clients to evaluate and guarantee the proper function of the equipment.

■ WE ARE CONNECTED

All our equipment incorporates remote connection systems that allow its operation monitoring in real time. A key factor in preventing breakdowns or repairing them quickly.

360° SOLUTIONS

Our engineering and technical team analyses each project to offer the proper technological solution, sized exclusively to best meet the needs of our clients.

We take responsibility for comprehensive management of the project, from conception and general design to the assembly and commissioning at the client's facilities.

Kalfrisa Service can manage preventive maintenance and periodic review of our equipment to obtain maximum performance.

All our equipment is manufactured in our own facilities, guaranteeing the quality and performance of our projects.

