

*Drying plants
for foundries*



HMB

*the right equilibrium
between radiation
and hot air*



**PLANTS WITH GAS-TIGHT TUBULAR
HEAT GENERATORS**

Combustion at low pressure = Maximum safety



**COMEX
GROUP**
TUTTO UN ALTRO CLIMA



HMB
(Heating Modulation Burner)

**THE NEW DRYING
SYSTEM FOR FOUNDRY**

DRYING AND HEATING PLANTS WITH GAS-TIGHT TUBULAR HEAT GENERATORS

COMEX GROUP proposes a wide range of plants:

- ✓ Drying of water-soluble coatings on foundry cores and moulds
- ✓ Sand heating
- ✓ High temperature heat generators “Industrial Driers”

...and equipped with:

- ✓ Suitable mechanical handling
- ✓ Special manipulation
- ✓ Computer management by a special software



THE COMPANY

Comex Group was established in 1987 as manufacturer of industrial ovens; then it has grown on the basis of a fundamental value: **reliability**, which, together with a great experience in the field of combustion technologies, has always characterized its activity.

Research and innovation have distinguished from the beginning its approach to this sector. Using at the best the existing technologies, combining them in the most efficient way and choosing the most reliable materials have made **Comex Group** drying systems a combination of the best solutions in the market.

A result which has brought great advantages for the customer, in terms of energy saving, safety and ease of using and which, thanks to the high technical and technological contents, gives to community the safeguard of environment observing the strictest rules in the field.

HMB THE CORE OF THE SYSTEM

✓ **HMB** produces heat by the right combination of **gas-tight tubular exchangers** equipped with forced intake burners and a suitable **air ventilation system**

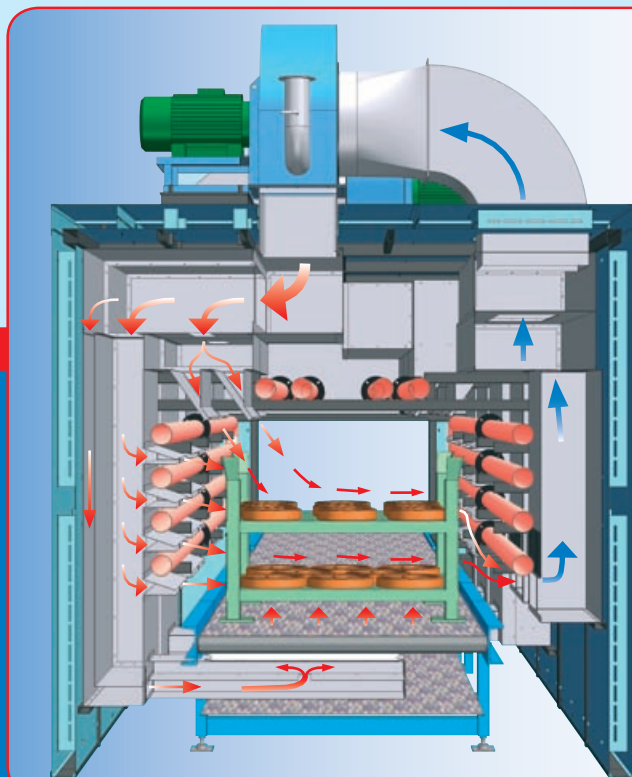
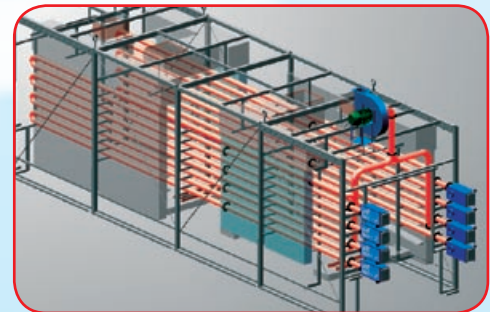
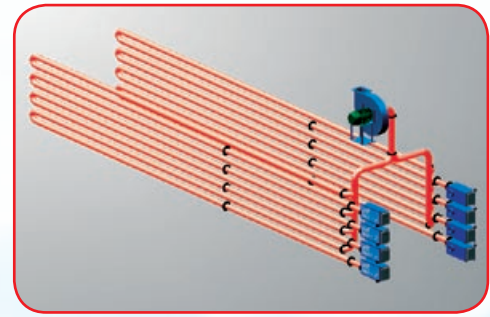
✓ **HMB**, represents the greatest safety warranty in the market, since there is no possibility that the combustion products invades the working environment

Combustion at low pressure = Maximum safety

✓ **HMB**, thanks to the complete independence of every single burner, will never go totally out of use: the possible breakdown of one or more burners does not jeopardize the working of the other ones, granting the constancy of the production process

✓ **HMB**, allows to carry out the maintenance operations of the single burners without the need to stop the entire production process

✓ **HMB** is the modular system par excellence: the thermal power is duly adjusted to suit the real thermal requirement, granting a fundamental energy saving



✓ **HMB** the right equilibrium between radiation and forced air convection, granting the **best drying** also for out of sight surfaces

✓ **HMB**, allows to dry at temperatures between 100 and 140 °C, sharply lowering the global thermal need

✓ **Low drying temperature** means:

- **Little heat losses**
- **Higher resistance** of cores during the casting
- **Less fumes** during the drying
- **Easier manipulation** at the end of the drying

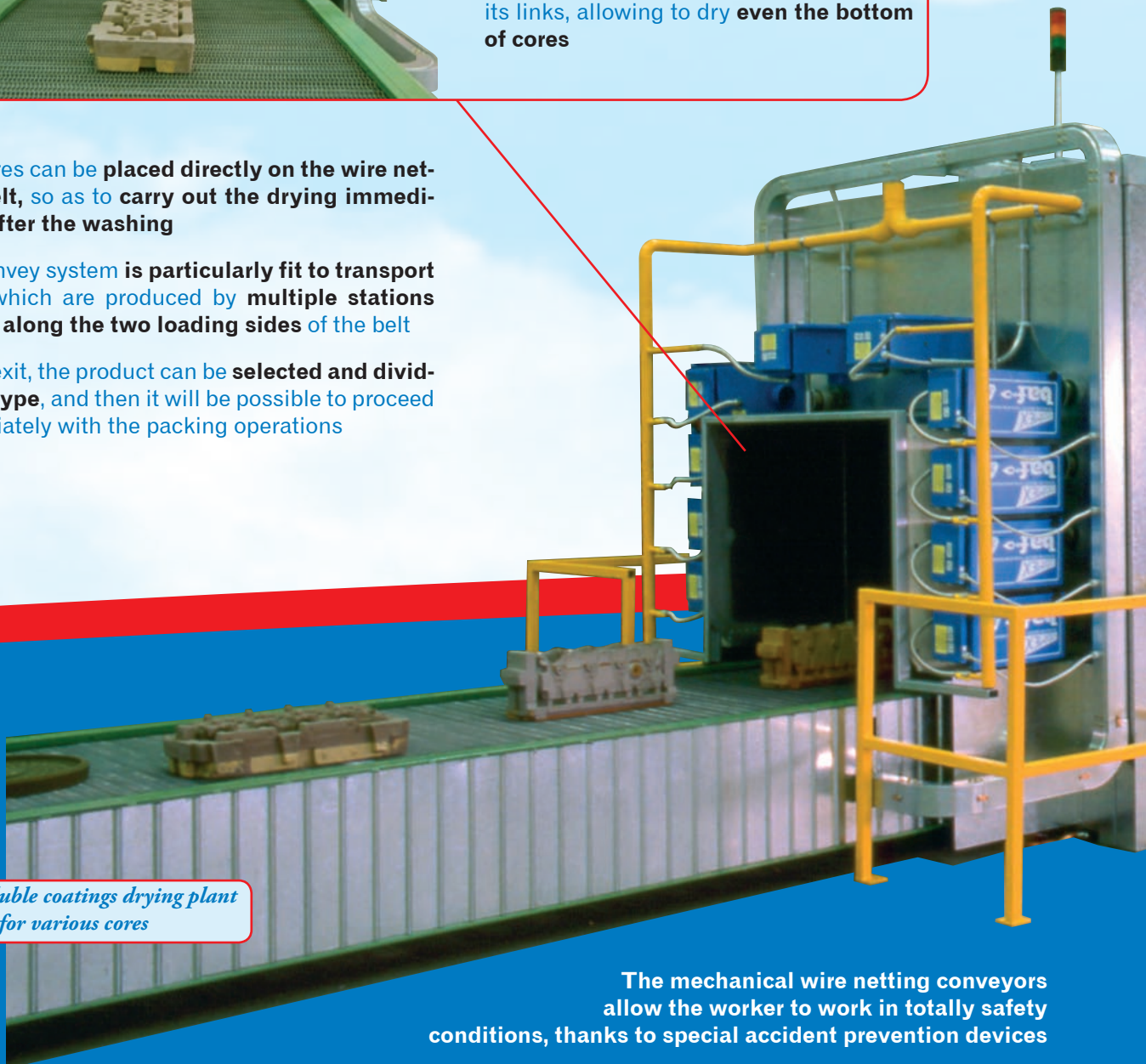


DRYING *TUNNEL* WITH WIRE NETTING MECHANICAL CONVEYOR FOR WATER-SOLUBLE COATINGS ON FOUNDRY CORES



- ✓ *HMB* wraps the cores to be dried for the entire length of the *tunnel*, exerting on their painted surface a **radiating and convective action with a high degree of efficiency**
- ✓ *HMB* **speeds up the drying** thanks to the great amount of generated hot air, which brushes the wet surfaces of the cores in interstices
- ✓ The wire netting belt conveyor allows to **work directly on the belt at the maximum safety**
- ✓ The wire netting makes air passing through its links, allowing to dry **even the bottom of cores**

- ✓ The cores can be placed directly on the wire netting belt, so as to carry out the drying immediately after the washing
- ✓ The convey system is particularly fit to transport cores which are produced by multiple stations placed along the two loading sides of the belt
- ✓ At the exit, the product can be selected and divided for type, and then it will be possible to proceed immediately with the packing operations



Water-soluble coatings drying plant for various cores

The mechanical wire netting conveyors allow the worker to work in totally safety conditions, thanks to special accident prevention devices

The wire netting mechanical conveyor can be used also for the handling of overlaid levels pallets, able to contain high quantities of cores to be dried.



Water-soluble coatings drying plant for various cores with overlaid levels pallets

- ✓ This technology, using overlaid support surfaces, allows to **reduce the length of the plants** utilizing the greatest specific load of cores.
- ✓ In this case **HMB** grants a **uniform spread of heat** for all the height of the pallets, allowing an **optimal drying** of all the cores placed in the various overlaid levels.



Drying plant for Brake-disk cores



DRYING *TUNNEL* WITH MECHANICAL CONVEYOR FOR OVERLAID LEVELS PALLETS

DRYING WATER-SOLUBLE COATINGS ON FOUNDRY CORES

Water-soluble coatings drying plant on foundry cores



- ✓ **HMB** wraps the cores to be dried, placed on the pallets levels, for the entire length of the *tunnel* exerting on their painted surface a **radiating and convective action with a high degree of efficiency**
- ✓ **HMB speeds up the drying** thanks to the great amount of generated hot air, which brushes the wet surfaces of the cores interstices
- ✓ This technology, using overlaid support surfaces, allows to **reduce the length of the plants** utilizing the greatest specific load of cores
- ✓ **HMB grants a uniform spread of heat** sfor all the height of the pallets, allowing an **optimal drying** various overlaid levels



Water-soluble coatings drying plant on foundry cores

The handling of pallets is "step by step", the mechanical conveyors and provided with all the safety devices for the loading and unloading, which have to be carried out by mechanical means.



Gas burners at forced intake

Water-soluble coatings drying plant on foundry cores

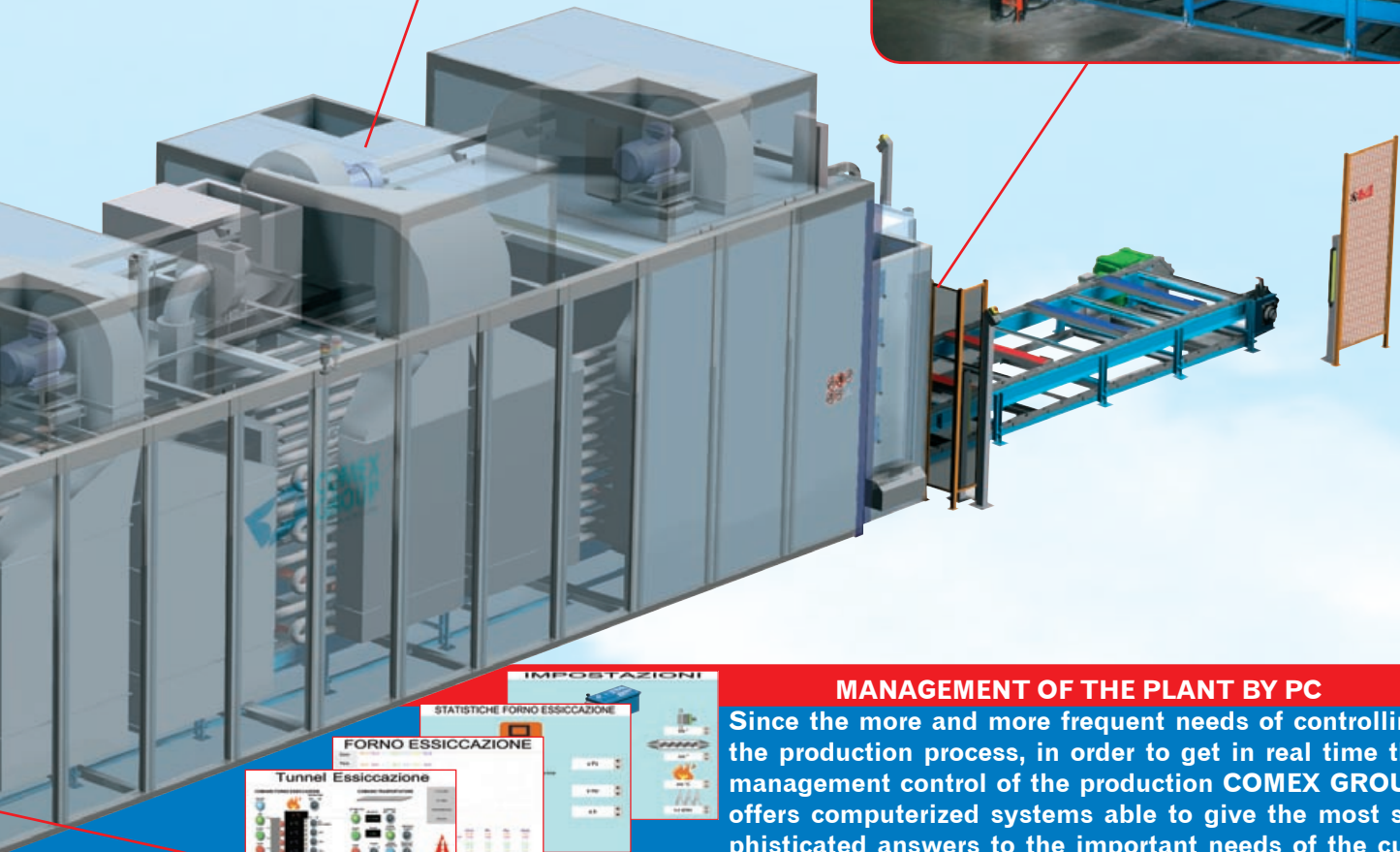


- ✓ The drying plants with pallets convey system are particularly fit for the **drying of great amounts of cores**, up to 12000 kg/h of production
- ✓ In order to further reduce heat wastes, it is possible to equip the plant with automatic systems of opening and closing of the pallets entry and exit mouths

Example of pallets unloading area at overlaid levels



Special systems for the reduction of sound pressure



MANAGEMENT OF THE PLANT BY PC

Since the more and more frequent needs of controlling the production process, in order to get in real time the management control of the production **COMEX GROUP** offers computerized systems able to give the most sophisticated answers to the important needs of the customers.



The possibility of monitoring and recording in real time the production events gives an important contribute to the worth of the finished good, greatly increasing its quality level.

- ✓ **Management and plant supervision** software which allows to manage all the electrical-mechanical parts
- ✓ **Real time visualization** of the various parts state
- ✓ **Graphic visualization and management** of the settled and real temperatures set-point
- ✓ **Saving and storage on database** of production sensitive data
- ✓ **Management and recording of events** in case of alarm
- ✓ **Graphic representation (layout) of the plant** for an easier and more immediate functionality



CONVEY, HANDLING, COATING AND MOULDS DRYING PLANTS

HMB

id particularly fit for the drying of water-soluble coatings on “No-Bake” moulds

The drying of coated moulds, with deep and narrow hollows, is not a problem anymore

- ✓ The radiation at low temperature and the targeted forced ventilation of hot air grant the **right drying of surfaces also in depth**
- ✓ **Dryings up to 130 °C** keep away the risk of splits, causes defects on the finished good
- ✓ **Strengthen convey systems**, “powered rollers”, reduce the losses of sand which normally occur using other systems
- ✓ **Special manipulators**, expressly planned, allow to carry out actions of **overturning, coating and transfer**, in a clean and safe way
- ✓ **Special management and supervision software** allow systematically to get **controlled quality and costs**



Convey, handling, coating and water-soluble coatings drying plant on No-Bake moulds

Shifting-Lifting fork machine



Moulds Manipulator-Tipper



Perfusion washing





ROTORDRY THE ROTATING OVEN FOR THE DRYING OF WATER-SOLUBLE COATINGS ON FOUNDRY CORES

High production capacity in a little space

- ✓ **ROTORDRY** is a very flexible oven which suits to both low levels of production, with **manual loading**, and to high levels of production, with **automatic loading**
- ✓ **ROTORDRY**, in its simplest version, **be coupled to a single moulding machine**, revolutionizing the traditional core shop layout
- ✓ **ROTORDRY** thanks to its constructive simplicity, allows to **get a high production/price ratio** and to have a great saving in the maintenance costs
- ✓ **ROTORDRY** thanks to a unique loading/unloading station, **requires the intervention of only a worker**
- ✓ **ROTORDRY** has been planned placing a special attention to energy consumptions; in fact, its particular closed structure allows to **limit the losses of caloric energy**



HMB

Detail of the group of ventilation and distribution of drying hot air

HMB heat generator exchanger with gas burners at forced intake with a high degree of efficiency

Combustion at low pressure = Maximum safety

Rotating truck to convey cores on several overlaid levels

- ✓ The coupling to an automatic convey system makes **ROTORDRY**, the optimum oven to dry high amounts of mass produced cores (es. brake-disks)
- ✓ The possibility of stowing the cores on several levels, allows to reach very high levels of production compared to the little occupied area



VERTICAL DRY VERTICAL OVEN FOR THE DRYING OF WATER-SOLUBLE COATINGS ON FOUNDRY CORES

System with chain mechanical conveyor with vertically moved trays to carry the cores

- ✓ **VERTICAL DRY** is an oven specially planned to **solve space problems**; it develops vertically and it is fit for the drying of water-soluble coatings on foundry cores
- ✓ **VERTICAL DRY** consists of trays, “suspended trays conveyors for cores”, connected to two parallel chains and pulled by toothed wheels. In this way it is possible to develop the drying vertically, saving precious space on the ground.



- ✓ The **HMB**, system generates the heat by the right combination of gas-tight tubular exchangers, provided with forced intake burners, and a suitable group of hot air ventilation
- ✓ **HMB** grants a uniform temperature on the entire height of **VERTICAL DRY**, exerting an adequate heat destratification
- ✓ By **VERTICAL DRY** the drying of the water-soluble coating can be carried out **also at the temperature of 100 °C**.
At so low temperatures:
 - the loss of tying resins is prevented;
 - the fumes are extremely reduced;
 - the finished good is of very high quality;
 - the environment is safeguarded.

Gas burners
at forced intake

Water-soluble coatings drying plant
on foundry cores with
VERTICAL DRY

VERTICALDRY

IS SUITABLE FOR AUTOMATION AND FLEXIBILITY

- ✓ **VERTICALDRY** is an **extremely flexible** oven which suits to both low levels of production, with **manual loading**, and to high levels of production, with **automatic loading**
- ✓ The suspended **tray conveyors** for cores of **VERTICALDRY** can be **customized on the basis of the typology of core** to be dried and of the kind of the expected loading/unloading
- ✓ **VERTICALDRY** offers also the possibility of loading and unloading the cores from a unique station, transforming the semi-automatic version (automatic loading, manual unloading) into a completely manual version, increasing the flexibility of use
- ✓ **VERTICALDRY** is provided with very reliable devices which grants the **worker's safety**, and is equipped with particular **sound proofing systems** che which make it suitable for any working environment
- ✓ **VERTICALDRY** has been planned placing a special attention to energy consumptions; the core of the **HMB** system contributes to speed up the drying, while the destratification reduces the heat wastes, increasing the overall degree of efficiency of the oven



Automatic cores loading station



Manual cores unloading station



HMB

Heating with gas-tight tubular exchangers system

Heating the sand means:

- ✓ Lower consumption of resins and catalysts
- ✓ No more losses of production during the winter period
- ✓ Quicker time for the hardening of moulds (constant all year round)
- ✓ Lower loss of ignition



Heating with GIBSON sands heater means

- ✓ Very low energy consumption
- ✓ Very little heater maintenance
- ✓ Having an immediate sand heating plant
- ✓ An optimum control of the temperature of the exit sand
- ✓ Very little encumbrances
- ✓ Very high adaptability to the existing storage and distribution plants
- ✓ Wide range of models, from 3 Ton/h up to 60 Ton/h with Δt of 20 °C
- ✓ No more possibility of ice presence during the winter period, which characterises the hot water plants

MANAGEMENT OF THE PLANT BY PC

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- ✓ **Management and plant supervision software** which allows to manage all the electrical-mechanical parts
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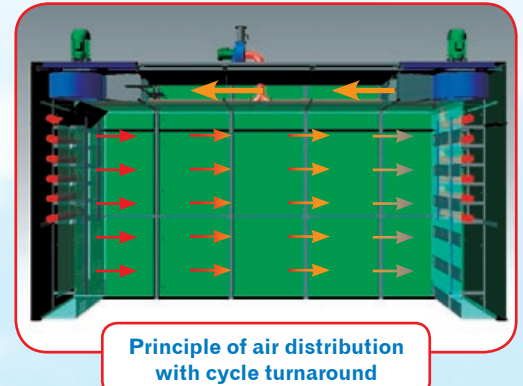
The possibility of monitoring and recording in real time the production events gives an important contribute to the worth of the finished good, greatly increasing its quality level.



DRYING *PLANTS* WITH STATIC OVENS

The most traditional way of drying water-soluble coatings on foundry cores

- ✓ **COMEX GROUP** has provided for the use of *HMB*; even in the most traditional drying systems; the caloric energy of the system comes from the right combination of **gas-tight tubular exchangers**, provided with **forced intake burners**, and a suitable **air ventilation system**
- ✓ The drying air, passing through the exchangers of the *HMB* system, heats up and then turns to the coated surfaces of cores to dry them
- ✓ A special air distribution system, exclusive of **COMEX GROUP**, grants a uniform flow for the entire internal height of the static oven, such as to ensure a uniform drying of cores
- ✓ Special turnaround systems of the air flow allow to work even by big size static
- ✓ Suitable systems for the control of the micro-climate inside the cabin allow to have an environment with a constant drying temperature
- ✓ Special management electrical boards allow to control not only the electrical-mechanical devices, but also the drying temperature



Principle of air distribution with cycle turnaround



Static oven for the drying of water-soluble coatings on foundry cores, two-chambers version



Static oven for the drying of water-soluble coatings on foundry cores, one-chamber version with double door

Static oven for the drying of water-soluble coatings on foundry cores, four-chambers version



OTHER PLANTS with **HMB**

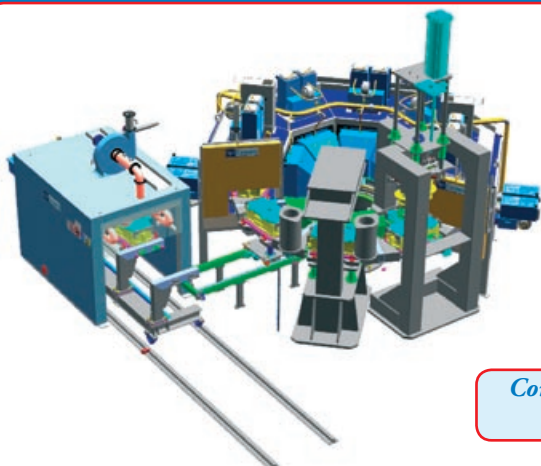
*AIROVER
The industrial drier
generator of overheated air*



*Shell moulds pre-heating oven
for aluminum castings*



*Cores hot moulding
turntable*



Our services:

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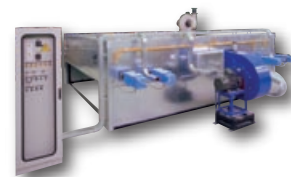
COATING TANK



MARBLE STRIPS DRYING



RESINS DRYING



AUBERGINES COOKING AND GRILLING



*The long experience and the high level of technology, together with the constant research of excellent and aimed at energy saving results, make **Comex Group** the leading company in the sector.*



The company



Training school



**COMEX
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TUTTO UN ALTRO CLIMA

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