KÜTTNER
no-bake solutions

equipment catalog

WHAT **KNBS** CAN SUPPLY FOR FOUNDRIES

Complete no bake moulding line

- High-speed continuos mixer from 3 up to 100 t/h
- Fast Loop Moulding systems for flask and
- flaskless moulds with automatic or manual operation
- Rollover stripping machines
- Manual and automatic handlers for closing, painting
- and stripping
- Manipulator for mould painting
- Pouring and cooling lines
- Mold movement system through automatic cars
- Shake-out units and pre-reclamation plants
- from 1000 X 1000 mm up to 6000 X 4000 mm
- Sand Reclamations, Mechanical and Thermal Reclamation
- Thermal Reclamation for Green Sand
- Pneumatic sand transport systems

HIGH-SPEED CONTINUOS MIXERS

The mixer is the most important machine of the whole installation for the No-Bake process (Chemically bonded sand), because all the process depends on its correct working.
Every good moulding recipe comes from the good quality of the ingredients, precise additions, and correct execution.
All the control equipment (see following drawing) can be electronically managed through an interface operator's panel with PLC. The signals coming from the instruments are processed and generate a feed back to the regulation system until the values selected by the operator are shown. Different processing degrees of the managing system are available. It is possible to reach the top of the managing range with the complete control regulation of all flows introduced into the mixer, in order to obtain a more and more precise moulding with immediate consequences for the production quality.

Mixers with capacity of 3 to 100t/hr. with:

- Manual or motorized arm turning
- Models with single arm or articulated arms for molding on the floor or in the Fastloop
- Mobile models with single arm or articulated arm
- Mobile Mixers mounted on a carriage or monorail, they enable mould production to be carried out on the floor or in a pit, over a wide coverage area

MIXER WITH A SINGLE ARM

MIXER WITH A ARTICULATED ARMS

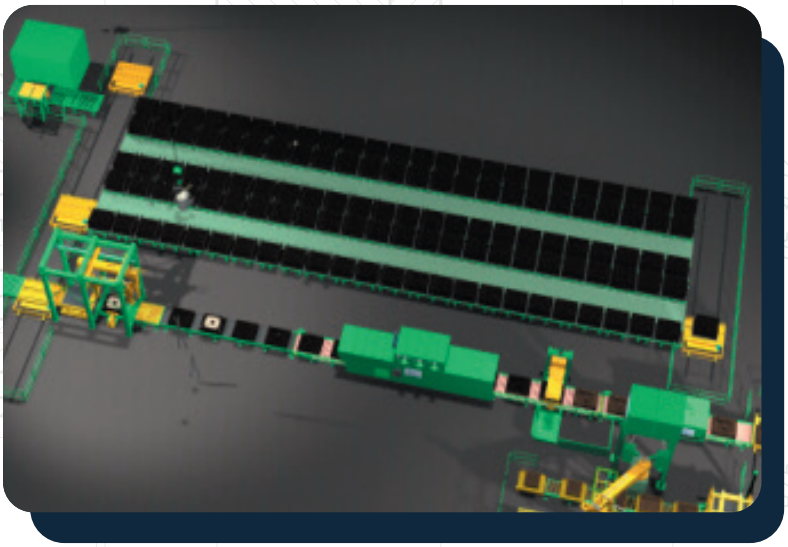
MIXER WITH DOUBLE ARM

MOBILE MIXER

FAST LOOP SYSTEM

The fast loop is a moulding system composed of independent powered sections, is a system where the moulds are produced by gravity filling, where the single patterns move automatically to the next empty station.
In this way the cycle time is determined by the hardening time and not by the biggest or slowest pattern. In fact the filling time used for the biggest pattern can be recovered by the smallest patterns so that the system is not blocked if one single operation requires more time than normal.

- For flasks and mould of sand with smart adjust of sand and resins
- For diferent dimensions of flasks or moulds
- With system of manual operation, with hydraulic or pneumatic Manipulator or Rollover
- With diferents levels of automation and totally control of production since the sand preparation of sand until the demoulding system (Shake-out).

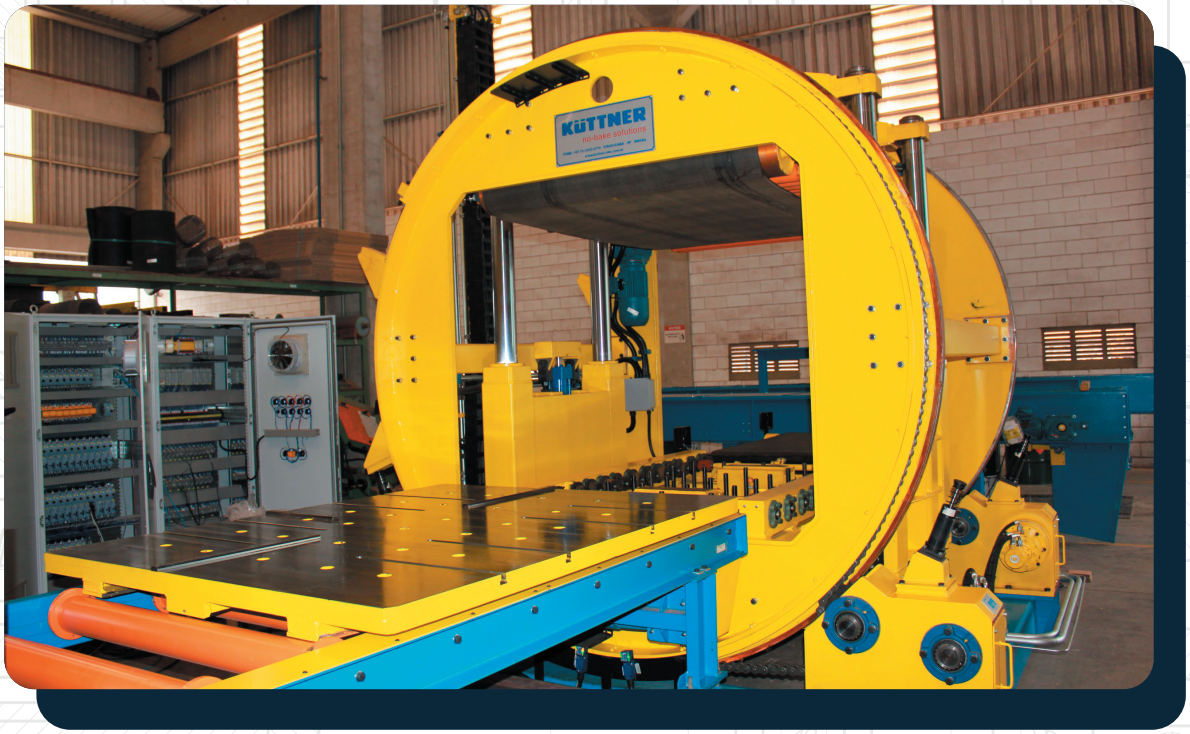


Main parts of fast loop

- The cut-off of excess sand
- Vibrating table
- The painting stations
- Drying system
- Coresetting and assembly preparation
- Manual or automatic closing
- Automatic pouring and cooling lines

FAST LOOP

ROLLOVER



POURING AND COOLING LINES

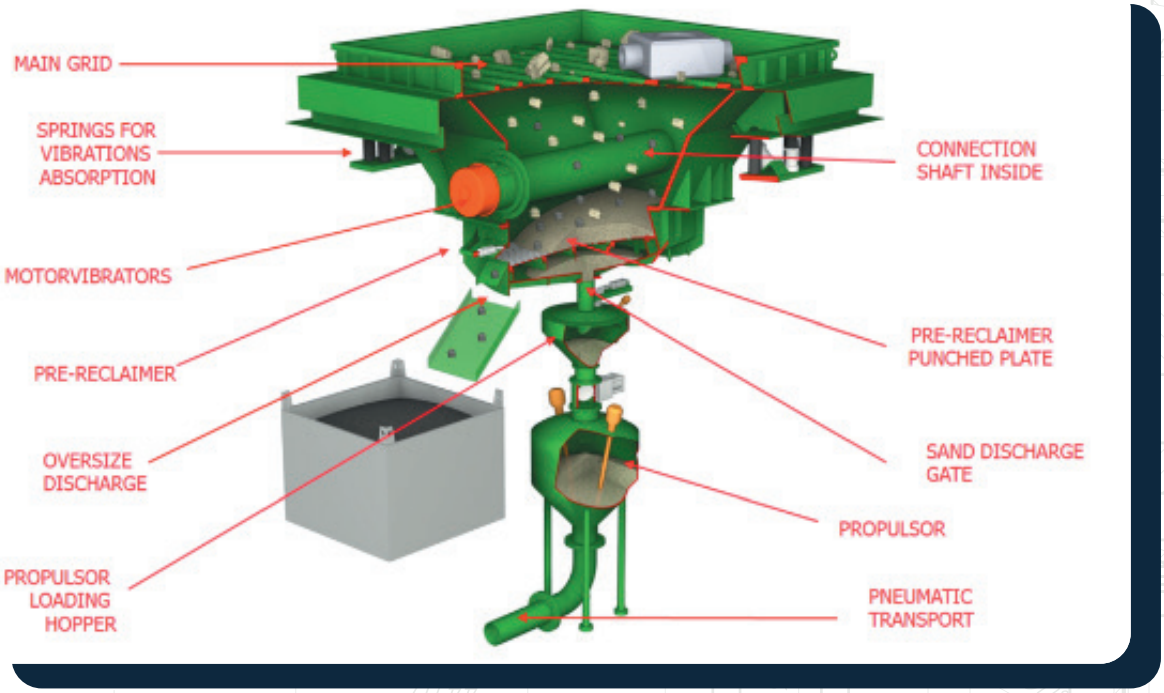
PAITING SYSTEMS

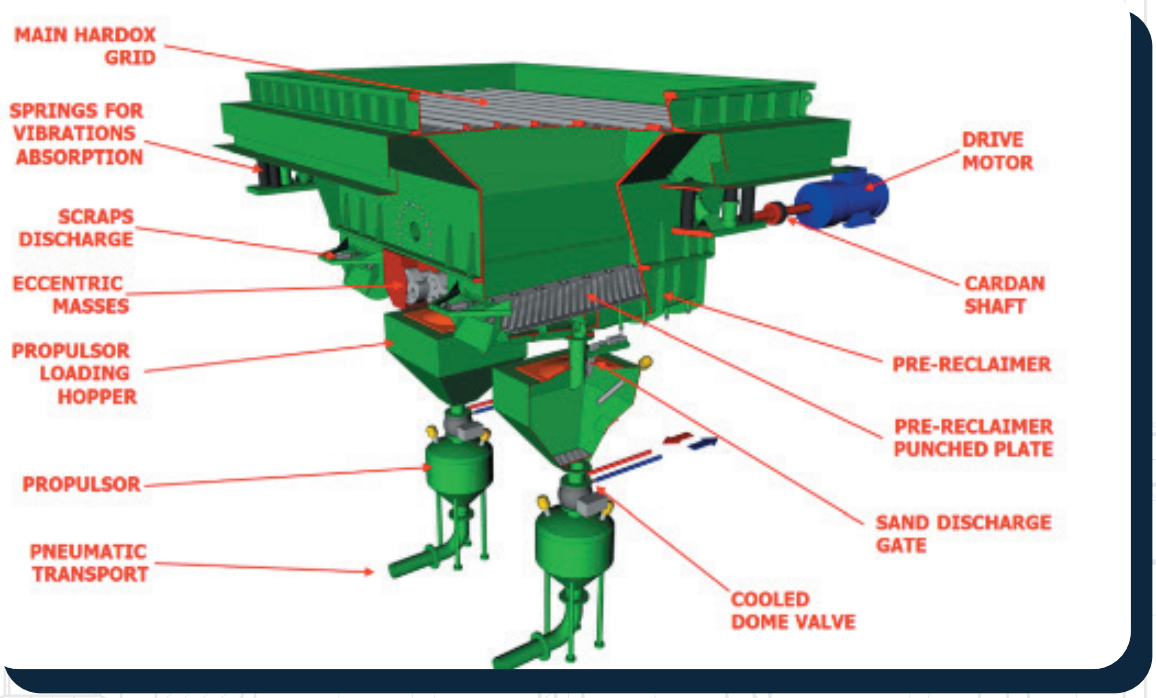
CLOSING SYSTEMS

SHAKE-OUT AND PRE-RECLAMATION PLANTS

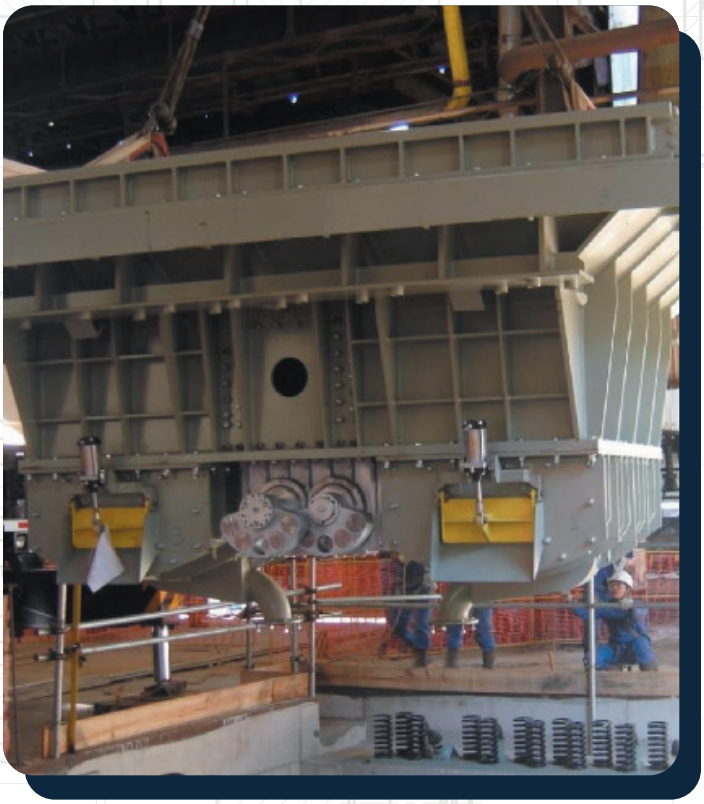
In addition to breaking down the moulds and extracting the castings, these also reduce the mould material to its original grain size. This means that the mould material can be moved by pneumatic conveyor and does away with mechanical handling equipment which tends to produce fines.

Dimensions from 1000 x 1000mm to 6000 x 4000mm



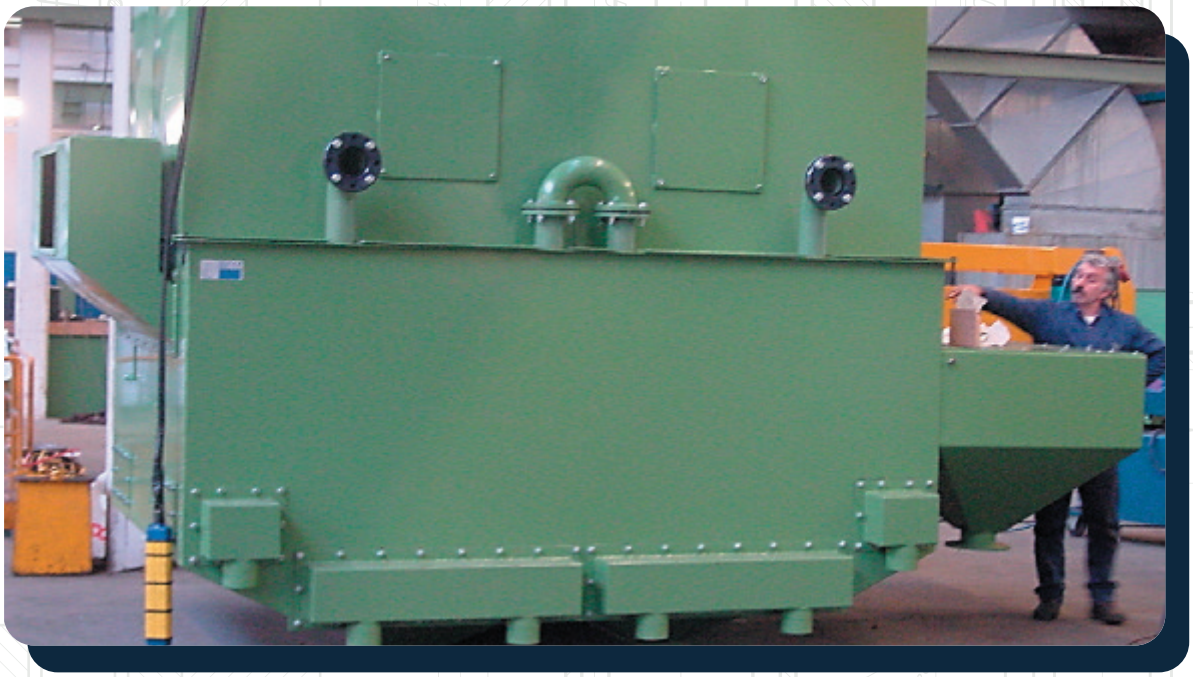

MAIN HARDOX GRID
SPRINGS FOR VIBRATIONS ABSORPTION
SCRAPS DISCHARGE
ECCENTRIC MASSES
PROPULSOR LOADING HOPPER
PROPULSOR
PNEUMATIC TRANSPORT
DRIVE MOTOR
CARDAN SHAFT
PRE-RECLAIMER
PRE-RECLAIMER PUNCHED PLATE
SAND DISCHARGE GATE
COOLED DOME VALVE

SHAKE-OUT



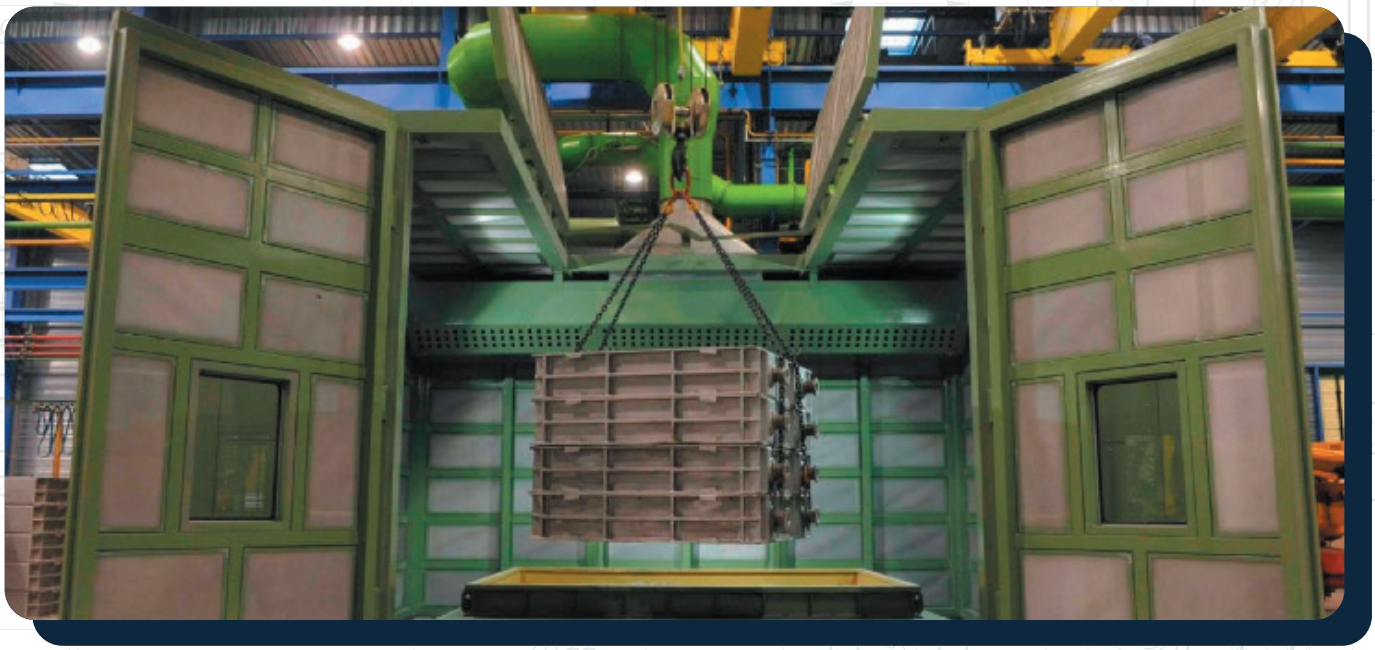
SAND COOLING

When the sand is very hot, a fluid bed sand cooler with a water cooled heat exchanger, is mounted under the shake-out machine. The heat exchanger water circulates to its own evaporative cooling tower. The cooled sand is conveyed pneumatically to the reclamation plant.



SOUNDPROOF CABINETS

The current Health and Safety at Work Regulations require our shake-out machines to be enclosed in soundproof cabinets; and to be fitted with dust extractors. Cabinet access is through hydraulically driven access and roof doors.



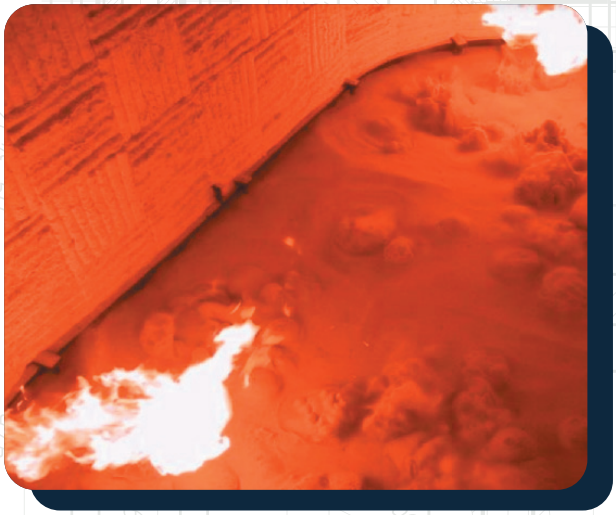
MECHANICAL SAND RECLAMATION

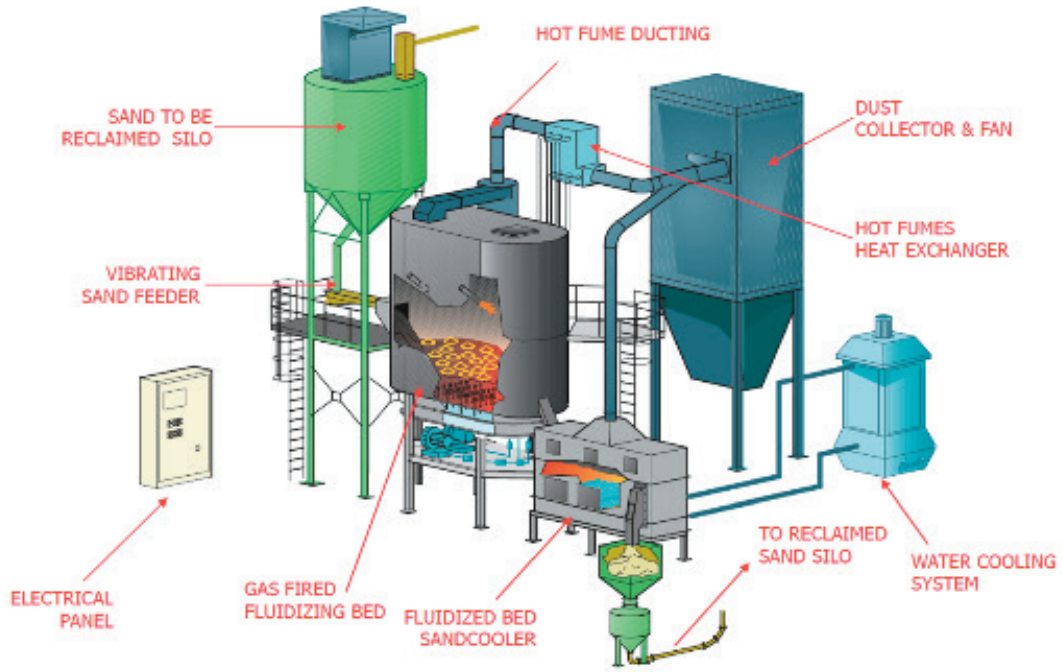
This mechanical foundry sand reclamation plant uses the grinding action between the sand grains to remove/reduce the resin film covering them. These are simple operations, namely: A) cleaning the sand grains; B) dust removal; C) final screening; D) cooling. These four operations start at the shake-out and are completed in a vertical tower operating under suction through a sleeve filter. IMF sand reclamation plants can be used in any foundry for the reclamation of sands with any of the main chemical binders. Sand reclamation plants are available in the following sizes: 4 - 6 tonnes/h, 10 - 12 tonnes/h, 15 - 20 tonnes/h, and 25 -30 tonnes/h.

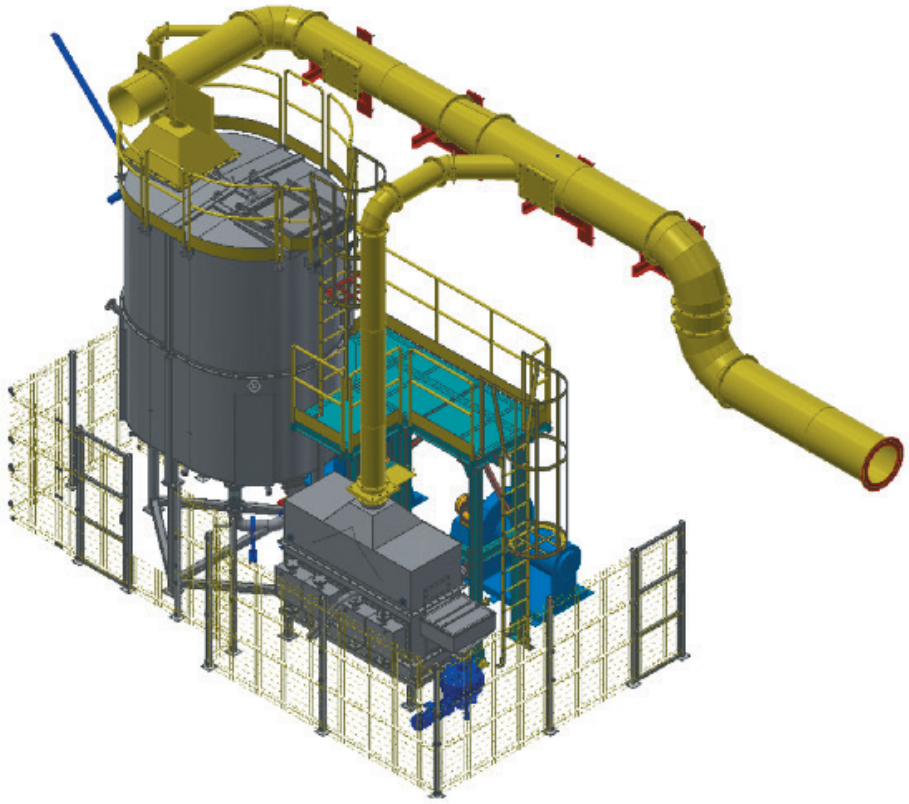
GAS FIRE SAND RECLAMATION

- Simple and extremely efficient
- Little maintenance & low operating costs
- Process always under control
- High quality reclaimed sand
- No noxious emissions

The plant is designed to conform with the current safety standards and consists of magnetic valves, manual valves, pressure reducers and flow meters. The modulating gas supply valve, ensures that the gas supply varies as a function of the sand temperature.
The gas / air mixture in the fluid bed is regulated to achieve complete gas combustion and close temperature control. The destruction of the organic materials released from the sand, is completed in the upper combustion chamber. The gases are retained here long enough for this to be achieved.
The reclaimed sand has a temperature of around 600° to 700°C. following firing. It is therefore passed through a fluid bed cooler fitted with a water cooling coil. This removes the excess heat and the sand leaves the cooler at the right temperature for immediate use in making new moulds and cores.
The combustion fumes and the dust pass through a sleeve filter which retains the solids. Before reaching the filter, the mixture passes through a cyclone separator to remove the larger particles. The extraction plant is sized so that the fume/dust stream is cool enough for filtration, when it reaches the filter elements.
The temperature signals from the fluid bed, provide feed-back to a PID "controller". This causes the gas supply valve to be modulated accordingly. Other thermocouples give feedback to control the sand supply rate and others to control the combustion fumes temperature. The whole process is PLC operated.

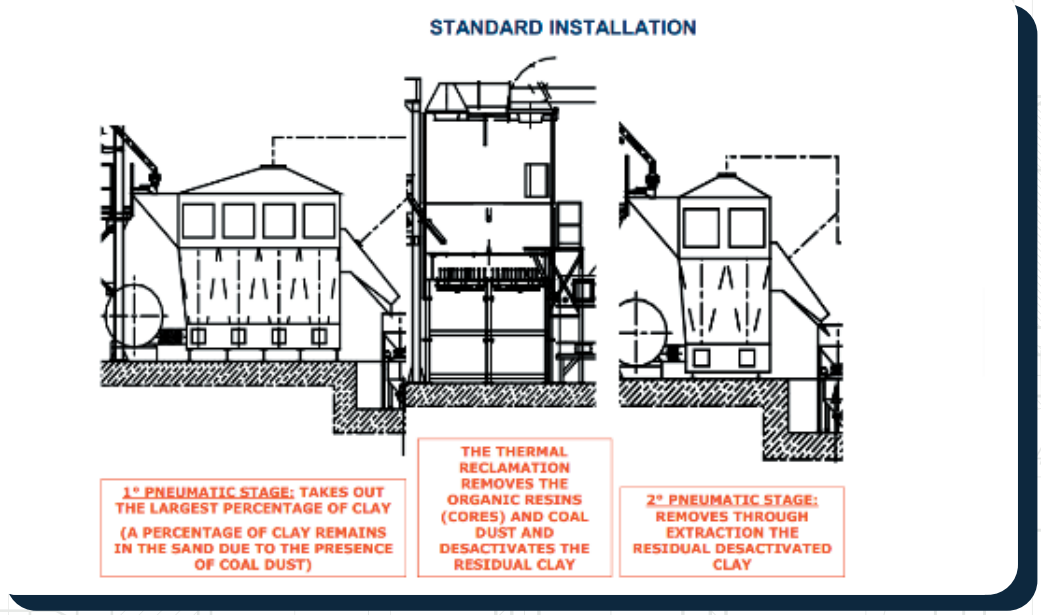



HOT FUME DUCTING
SAND TO BE RECLAIMED SILO
DUST COLLECTOR & FAN
HOT FUMES HEAT EXCHANGER
VIBRATING SAND FEEDER
ELECTRICAL PANEL
GAS FIRED FLUIDIZING BED
FLUIDIZED BED SANDCOOLER
TO RECLAIMED SAND SILO
WATER COOLING SYSTEM



GAS FIRE RECLAMATION FOR GREEN SAND

A strong dry mechanical treatment together with an efficient dust extraction can remove an important percentage of spent bentonite, while the gas fired thermal reclamation can guarantee a complete removal of organic resins and coal dust.



This new sand reclamation system is engineered to treat the sand mixture made of green sand and core sand. The treated sand is suitable to be used in the core shop as new sand. The complete cycle is made of four treatments: - reduction of lumps and sieving of the sand to eliminate impurities; - first pneumatic scrubbing to eliminate the big part of the spent bentonite; - thermal reclamation to burn/ eliminate organic products, like resin of the core sand, and coal dust and to de-activate the residual mb bentonite; - second pneumatic scrubbing to eliminate the deactivated bentonite. All the dust and fumes from the thermal reclamation are extracted by properly engineered dust collectors.

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