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COMBUSTION CHAMBER

 ENGLISH



Combustion chamber for dry biomass “Autofuoco system”



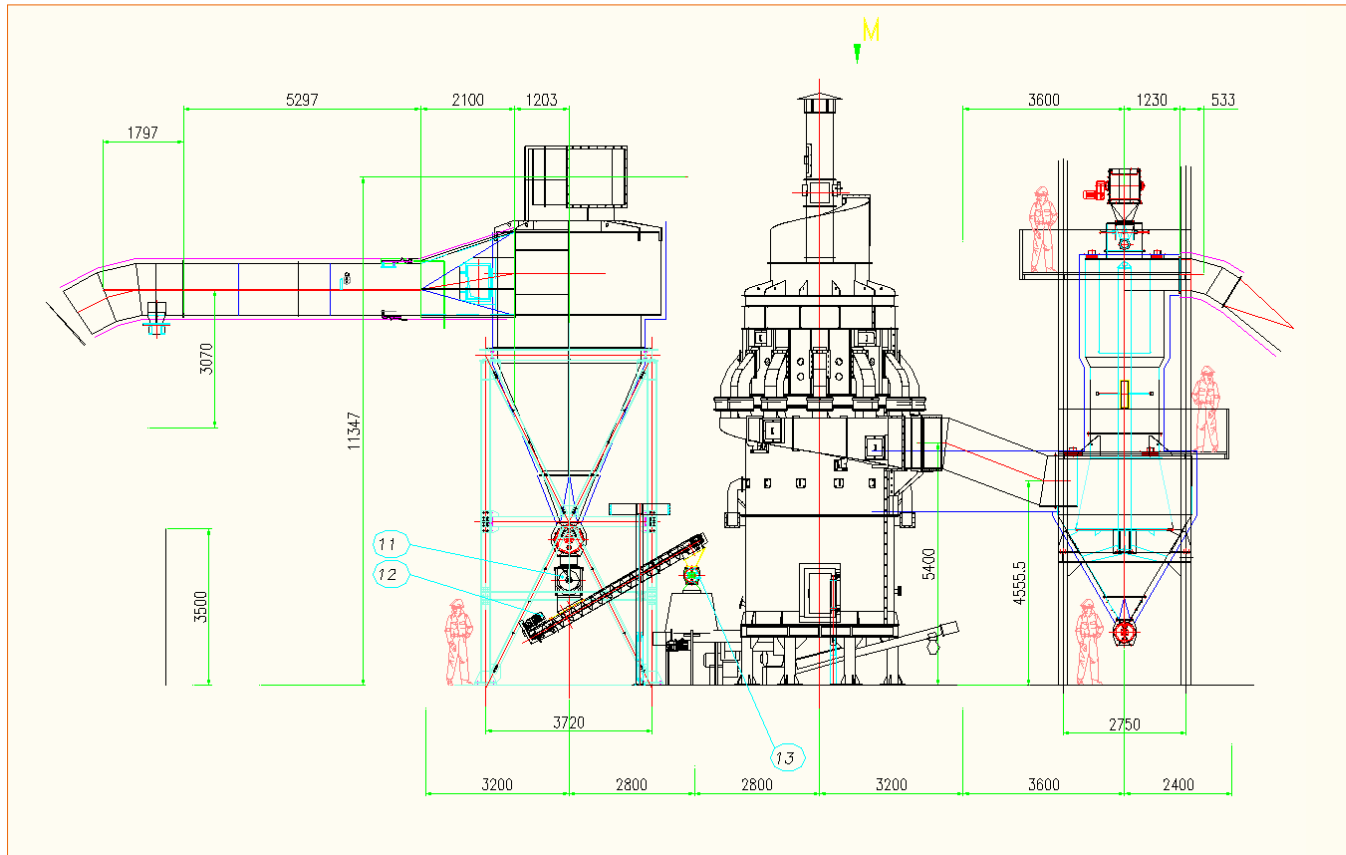
Wood dust, as main fuel used in the combustion chamber and in the thermal energy plants, due to its high silica content, causes a series of disadvantages:

- High deposits and consequently reduced performances in the combustion chamber;
- Wear and dirtiness of the refractory materials, eventual heat exchangers and other mechanical parts installed after the thermal plants;
- Numerous and very long plant stop.

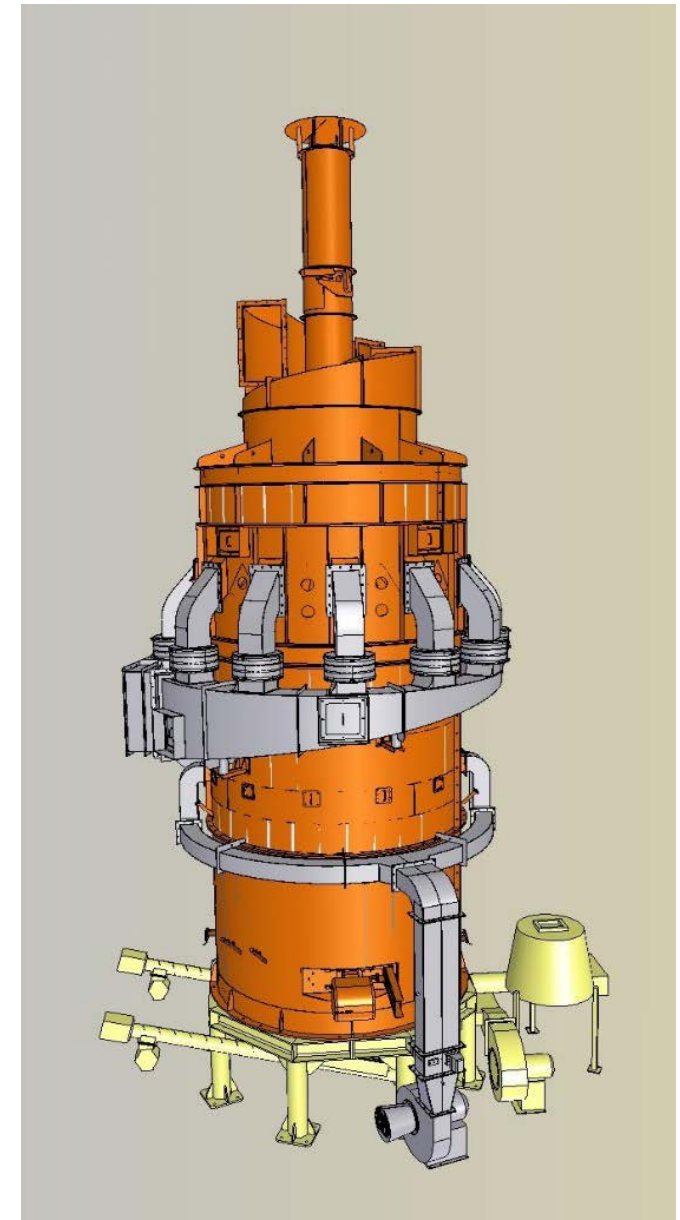
Advantages

- **Low time of maintenance and plant stop;**
- **Long-lasting of the components;**
- **Perfect combustion.**

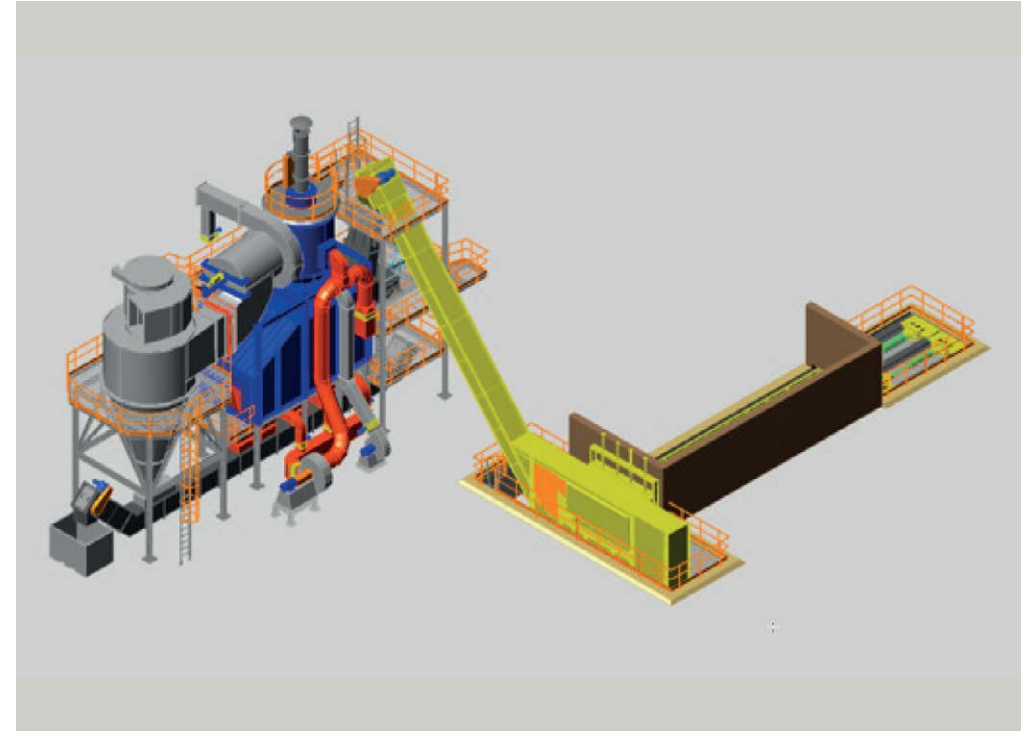
In many cases the automatic extraction system can be installed on existing combustion chambers, as well.



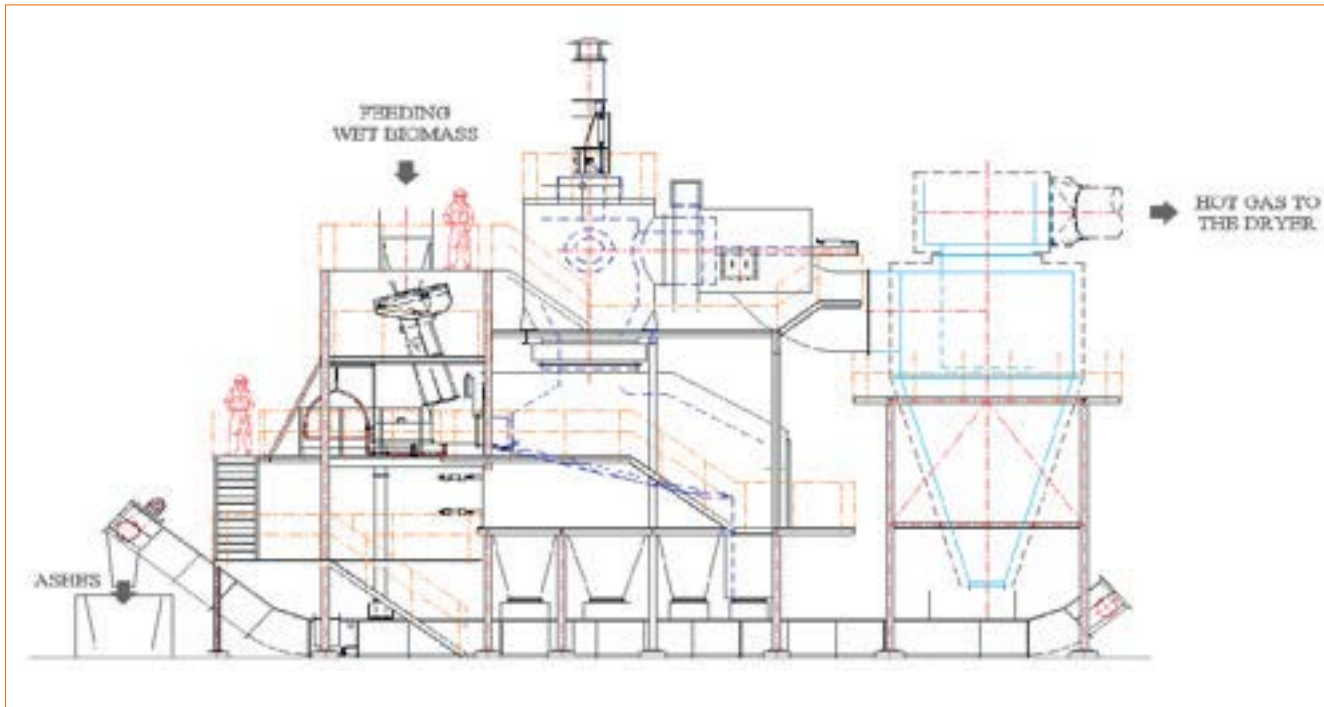
INSTALMEC has designed, manufactured and installed a new combustion chamber that allows to settle a high percentage of silica and to remove it with an automatic system. The design allows an easy settling of silica. A dosing system of the cooling air by regulating dampers, keeps the temperatures in such a range to guarantee a perfect combustion and to avoid the melting of silica; further the automatic extraction system of the deposits guarantees a continuous operation of the system and constant performances.



Combustion chamber for wet biomass “Grate furnace”



A bunker is foreseen for the storage and loading of the fuel to the combustion chamber. Such bunker continuously feeds a chain conveyor. The combustion chamber is fed by the chain conveyor, and an automatic hydraulic system pushes the fuel to the upper part of the moving grate. A Fan (primary fan) balances the pressures to dry the fuel and to start /control its combustion by means of the mixture of fresh ambient air and warm air from recycled gases. An additional fan (secondary fan) is used to control the proper combustion process. The real combustion takes place in the second part of the combustion chamber where the hot gases are generated. At the end of the moving grate, the combustion residues (ashes) fall down and are collected by appropriate hoppers and discharged onto a chain conveyor. On the upper part of the combustion chamber a collector conveys the combustion gases into the mixing chamber where they mix with fresh air and reach the correct temperature for drying. A cyclone is installed between mixing chamber and dryer to separate ashes and other heavy contaminants from the combustion gases. A special discharging valve dumps the residues to the chain conveyor for removal.





The combustion chamber uses wood dust containing sand as fuel. The burner is designed to achieve the highest efficiency and the lowest substitution of spare parts due to wear. The burner regulates automatically the fuel to keep temperature at outlet of the tumble dryer and moisture of the wood constant. The combustion chamber facilitates the deposit of sand contained in the wood dust and is provided with an automatic system to remove unburnt material from the bottom of the chamber. The chamber has a number of inlets for external air. A software regulates automatically external air flows maintaining temperature in the combustion chamber constant and within the limits prescribed, avoiding thus that sand contained in the wood dust vitrifies creating solid blocks that could damage the automatic cleaning system.

Advantages

- **High velocity combustion system with natural gas and/or wood dust**
- **Automatic ignition with pilot gas**
- **U.V. flame protection for natural gas and IR ray protection for wood dust**
- **Fully automatic functioning**
- **Modulating control**
- **Degree of protection: IP 55**



Ashes from the combustion chamber



Ashes from the separation chamber



Delivering innovation respecting the environment



Instaltec S.r.l. a socio unico

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