

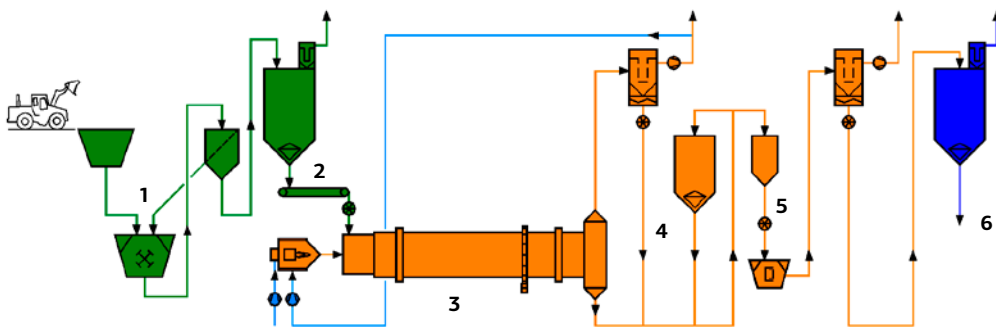
# STUCCO PRODUCTION WITH ROTARY KILNS

The rotary kiln process is used to produce stucco plaster both economically and without difficulty. Large outputs and continuous automatic operation are achieved with limited maintenance and precise control of the product. There are no special requirements for pre-crushing the raw material. The feed size grading can be 0 to 30 mm or even fine powder of 0 to 6 mm.

The crushed raw material is fed into the rotary kiln via a metering belt. The kiln is fed continuously at a preset rate. The metering belt is equipped with a variable-speed gear motor for control of the belt speed. The feed rate can thus be controlled from the control station according to the production requirements.

The hot gases required for heating are produced in the hot gas generator located in the inlet to the kiln. Any liquid and gaseous fuel can be used for this purpose. The fuel supply is automatically controlled in accordance with the heat consumption.

The hot gas exhaust is ducted to the dust collector and filtered. The dust collected in the filter is returned to the process downstream from the grinding plant. The cleaned gas is in part discharged into the atmosphere. The other part is returned to the hot gas generator as preheated dilution air. The energy recuperated in this way substantially reduces the plant's fuel requirement.



- 1 Raw material crushing
- 2 Material feed system
- 3 Rotary kiln
- 4 Start up silo
- 5 Grinding system
- 6 Finished product storage

Rotary kilns used for stucco plaster calcining are not brick-lined but are fitted with special durable steel inserts. They distribute the feed of gypsum rock uniformly over the cross-section of the kiln. The rock is thus rearranged several times during each rotation of the kiln. At the same time it moves along the kiln in the same direction as the heating gas flow, the velocity of which sorts the rock pneumatically into particle sizes. This regulates the different calcining times required for the various size grades.

Initially, the surface zones of the gypsum rock particles give off their water of crystallization so that the bonding forces to the rock cores are lost and the material is conveyed to the outlet at accelerated speed in the form of a pulverulent abraded material which is entrained in the hot gas stream.

Smaller, medium-sized and larger pieces of gypsum rock are exposed to the hot gas stream for a longer time and therefore require increasingly longer calcining times to achieve a thorough calcination to hemihydrate (compared with the smallest grain sizes).

A particular feature of stucco plaster produced in the rotary kiln is its high productive capacity. A smaller gauging quantity is required with rotary kiln plaster in order to obtain the same consistency, as compared with stucco plaster calcined in the gypsum kettle. The stucco plaster slurry can thus have a lower weight per litre so that less gypsum is required in the manufacture of prefabricated building elements.



**Particular features of rotary kilns:**

- Direct, continuous calcining process
- Low waste gas temperature, providing good thermal efficiency
- Size grading of the raw feed material 0 to 30 mm, thus no particular requirement for pre-crushing
- No pre-drying necessary
- The calcined material is already reduced in size, so that little energy has to be used for fine grinding
- Automatic control of the rotary kiln operation
- Standardised sizes up to an output of 1000 tonnes per day in one unit
- Simple design made of proven and reliable components
- No refractory bricklining in the rotating part

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