

A common problem which arises in the process of manufacturing cement, lime and plaster as well as in the combustion of hazardous waste is the removal of ring-shaped incrustations which build up in rotary furnaces.

These ring-shaped incrustations build up along a length of anything up to 15 m along the furnace axis. Wherever these rings form, the interior diameter of the oven is reduced, leading to an increased velocity of the medium and higher temperatures, both of which can have a negative effect on the required retention period and the thermal impact of the material to be treated.

In extreme cases, the entire cross section of the furnace can be blocked.

Conventional methods of handling the problems are:

- The ring-shaped incrustations are destroyed by special "cannons". Using this method, there is a danger that the "projectile" not only destroys the incrustations but also damages the internal fireclay.
- The furnace has to be shut-down and allowed to cool. The sinter can then be removed by mechanical means. Of course, this entails high production loss and high energy costs (re-heating the furnace).

Our method:

As can be seen on the sketch on page (2), a special high pressure lance is inserted into the front face (combustion side) of the rotary furnace. By pressing and releasing the trigger of the high pressure gun, short bursts of high pressure water are blasted inside the furnace and the sinter incrustations are broken up. The method has a double effect :

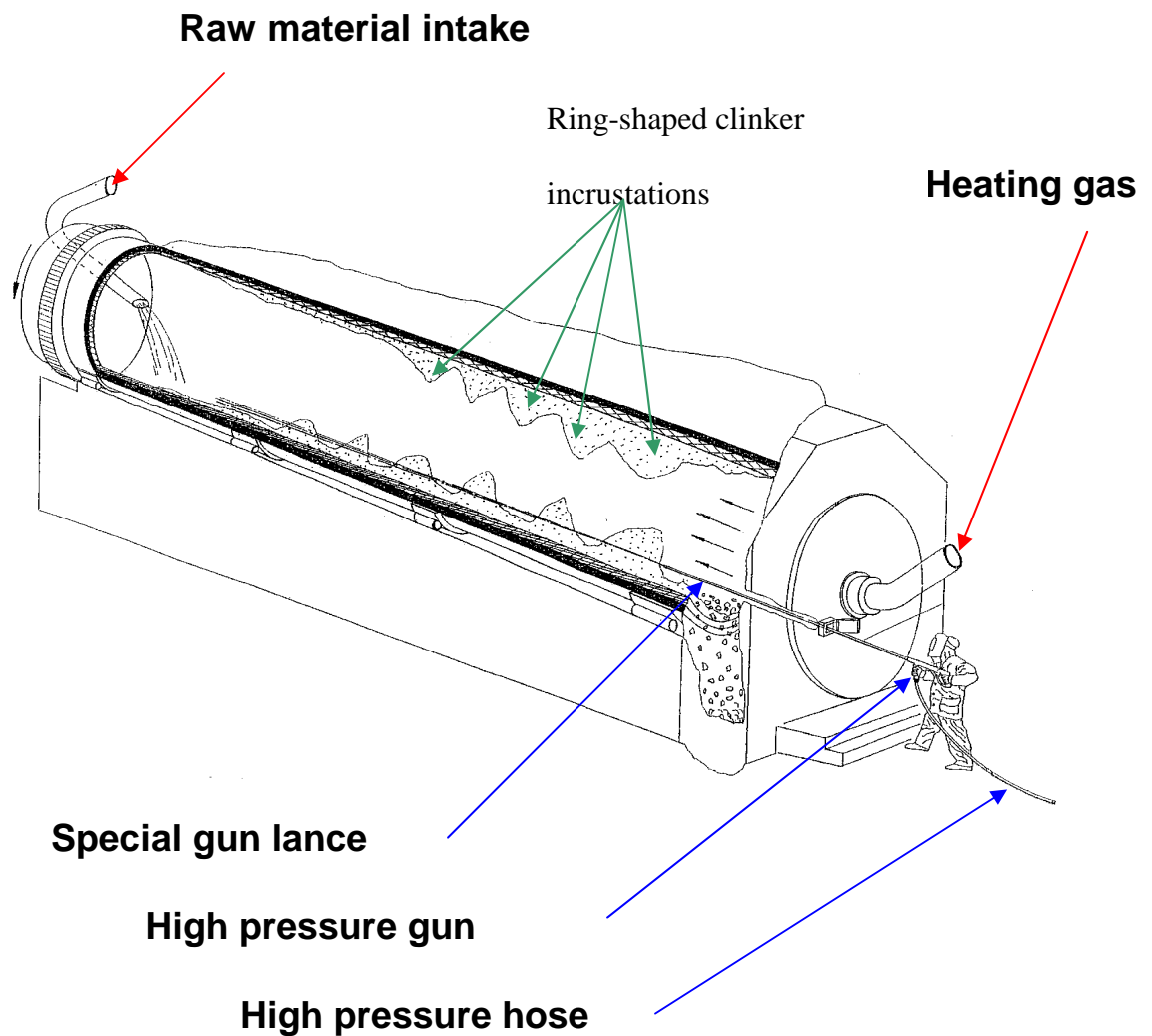
1. The high pressure water jet removes the material mechanically.
2. When the cold water jet hits the hot material, there is a thermal "shock" effect.

Advantages:

- Using this method there is practically no danger of damaging the fireclay (chamotte).
- The burner is actually switched off during the cleaning process but can immediately be reactivated after completion of the job, meaning that the furnace does not cool down during the repair.

The right type of equipment for the job is a high pressure pump with a 90 kW power rating, in combination with round jet nozzles (with special seals).

Pump performance : 600 – 800 bar at 55 - 70 l/min.



Ring-shaped clinker incrustations inside the furnace are cut and blasted by short high pressure bursts of water, without interruption of the production process.