



Limestone
Calcined
Clay
Cement

LC³



The unit under analysis, with a production from 1 ton/hour up to 120 ton/hour, is composed of two areas: Clay Preparation and Clay Calcination. The preparation of clays, consist of a set of equipment as we now indicate:

Box Feeder, Roller Crusher, Stone Separator and Roller Mill, all of this equipment connected by belt conveyors. Following the calcination, the clays enter the rotary dryer with a length of 50 meters, which is connected to the kiln, with a length of 30 meters. Kiln, that whenever calcinating will reach between 800/900 ° C, temperature created by a burner that can use as fuel: Fuel Oil, Pet Coke or Biomass. The Calcined Clay goes through a cooler, proceeding to the junction phase with the remaining elements destined to the formation of the final product designated as Pozzolanic Cement.

Geographic Coordinates

39° 28' 21.67" North
8° 32' 20.33" West

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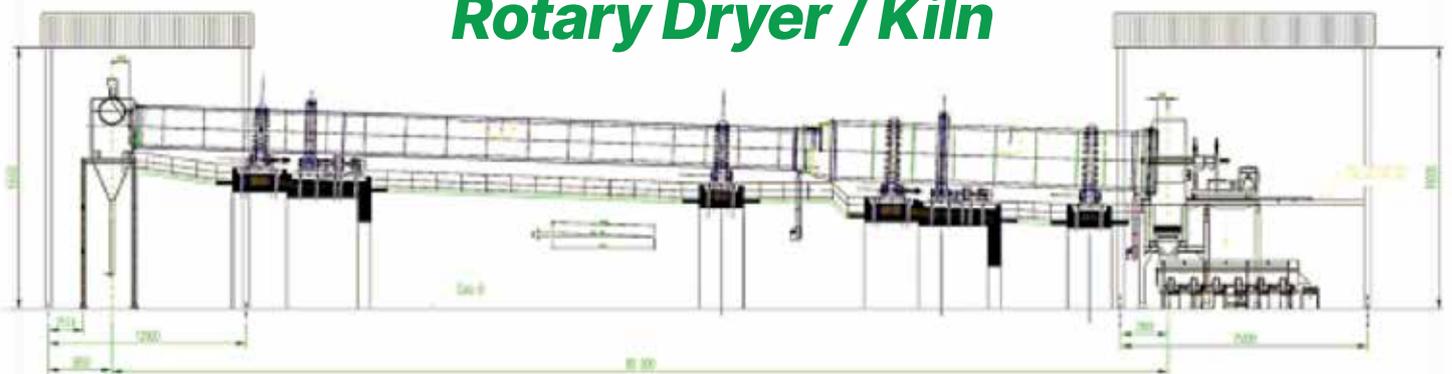
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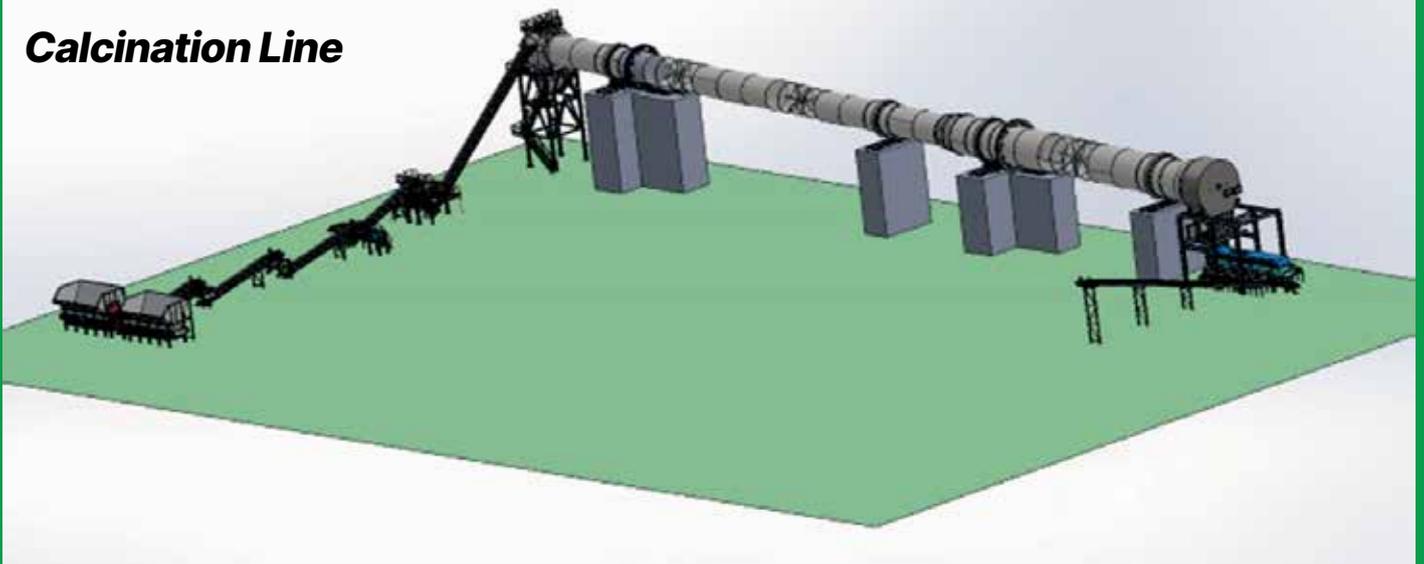
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PROCESS OF CALCINED CLAY

Rotary Dryer / Kiln



Calcination Line



The main element in this manufacturing process is the rotary kiln. Our rotary kiln is composed of metallic body lined inside with refractory material. In the kiln has a pre-heater and then calcination of clay between 600 - 800 °C. The rotary kiln is mounted with a little inclination in relation to the ground, thus allowing, with the help of rotation, the motion of the material from the high extreme point to the low extreme point. The running of the rotary kiln is based on the principle of reflux: the raw material move against the flow of hot gases, are heated by the burner, and then, after having entered in the burner flame zone, they calcined.



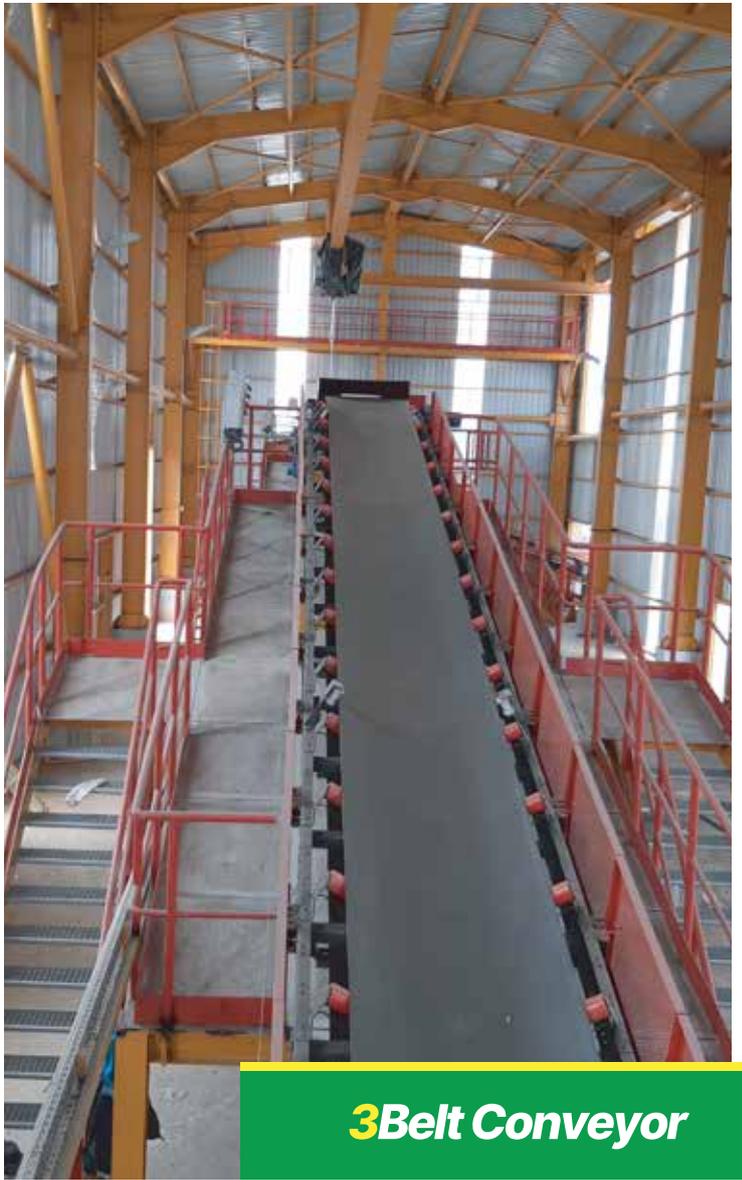
1 Stock Pile Raw Material



1A Preparation Calcined Clay Line



2Box Feeder



3Belt Conveyor



4Roller Crusher



5 Stone Separator



6 Roller Mill



7 Inlet Chamber



8 Inlet Chamber



9 Double Body Kiln



10 Dryer - Kiln



11Kiln



12Multi Combustible Burner



12A Multi Combustible Burner



13 Burner



14 Outlet Chamber



15 Outlet Chamber



16 Chimney



17 Bag Filter



18 Cooler

Color Control Calcined Clay Trials



19 Calcined Clay



20 Calcined Clay

Color Control Calcined Clay Trials



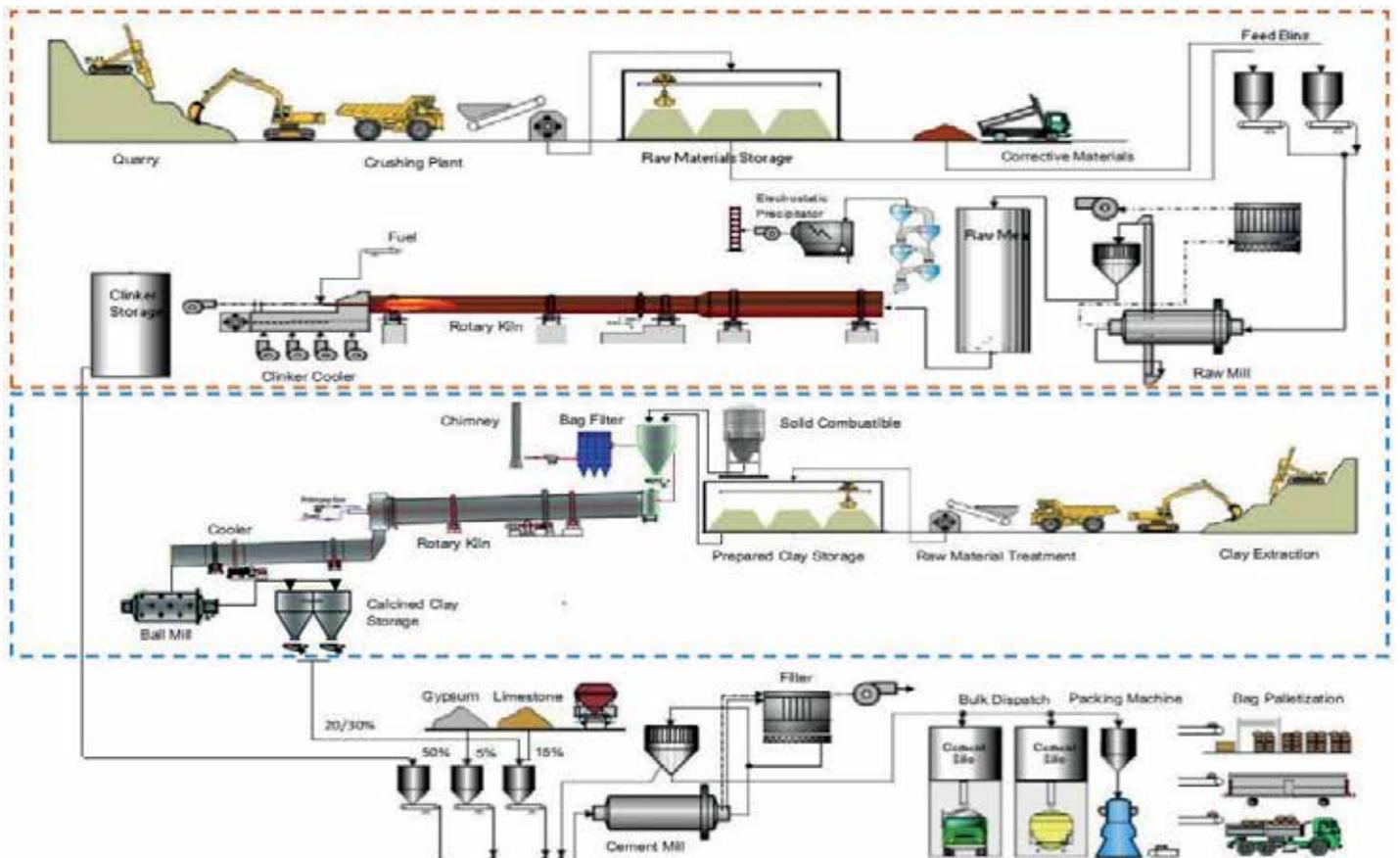
Calcined Clay Cement Production



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CALCINED CLAY PROCESS
FOR ADDITION IN PORTLAND
CEMENT MANUFACTURING

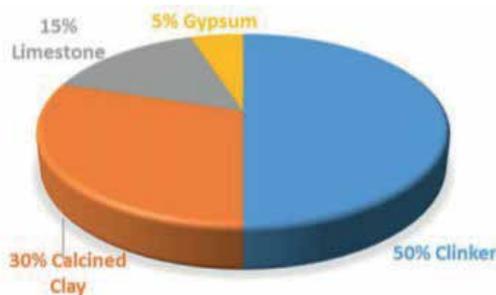
The process of calcination of clayey materials is intended for production of cementitious materials type. The process of calcination of clay occurs inside a rotary kiln. Here the clay mixed with solid fuel is fired in a reducing atmosphere. This process is continuous (clay + solid fuel). After passing through the burner, the calcined clay is cooled. The calcined clay produced normally require mechanical grinding until sufficient fineness to develop more satisfactorily pozzolanic activity.



Calcined Clay Cement Production



The Portland cement that is resulting of mixing the calcined kaolinite produced under controlled conditions by thermal activation, with conventional products (clinker, limestone, gypsum), allows obtain a final product without no decrease in mechanical performance.



Clinker
50%



Gypsum
5%



Limestone
15%



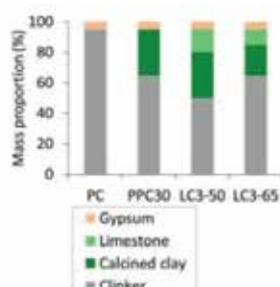
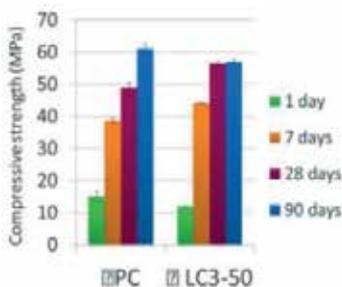
Calcined Clay
Up to 30%

WHAT IS LC3?

LC3 (Limestone Calcined Clay Cement) is a new kind of cement, capable to reduce a 30% of CO₂ emission to the atmosphere using a blend of: 50% clinker, 30% calcined clay, 15% limestone and 5% gypsum. Calcined clay and limestone are already commonly used as supplementary cementitious materials in the industrial production.

The major innovation in LC3 is to combine the use of abundantly available low-grade kaolinite clay with a

further 15% of limestone, with no reduction in mechanical performance. Reduced clinker content, decreased fuel consumption for calcination compared to clinker plus the fact that limestone does not need to be heated should contribute to lower production costs. That is one of the main drivers for technology uptake. As well, LC3 can be produced with existing manufacturing equipment, leading to only marginally increased investments for calcining equipment.



DISCOVER LC3 FEATURES

LOW CARBON

LC3 can reduce CO₂ emissions per tonne of cement by up to 30%.

LOW COST

LC3 requires less energy and can be made using fairly low-grade and low-cost raw materials.

LOW CAPITAL

LC3 does not require substantial capital investments and can be produced at existing plants.



IPIAC

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Cement

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