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Process of Lime Calcination in A Rotary Kiln

Passing the limestone through a kiln could be divided into 3 different stages or the heat transfer zones which consist of pre-heating zone, calcination zone, and cooling zone.

Pre-heating zone – Limestones are heated from the ambient temperature at the **rotary kiln** to about 800-degree Celsius via direct contact with gases that are leaving the calcination zone which is composed mostly of combustion products as well as excess air and carbon dioxide calcination.

Calcination zone – Fuels are burned in pre-heated air from cooling zone and in additional combustion air that is added to the fuel. In calcination zone, temperatures more than 900-degree calcium are produced. Ranging from 800 degree Celsius to 900 degree Celsius, the limestone surface starts decomposing. At the temperatures more than that of decomposition temperature of the limestone, i.e. 900 degree Celsius, the decomposition takes place below the surfaces of limestones. At temperatures below 900 degree Celsius, these limestones leave the calcination zone and it is sometimes found as the residual limestone that is trapped still inside. And if those limestone-pieces that are fully decomposed, and it still resides in the calcination zone of the **rotary kiln calcination plant**, then sintering process occurs.

Cooling zone – Limestone that leaves the calcination zone at the temperatures of 900-degree census, is further cooled via direct contact with the ‘cooling’ air, part/all of combustion air, that is preheated in turn. Limestone leaves this zone at the temperatures of lower than a 100 degree Celsius.

Residence time of the lime in rotary kiln will vary depending on the kiln type and the type of the final product that is required.