

Commodity
Alumina

Technology
Gas Suspension Calciner (GSC)

Application
Alumina Calcination

Study type
Customer Story

Country
India

Reducing OPEX and emissions with the latest gas suspension calciner for alumina refining

An Indian alumina refinery has successfully reduced its fuel and power consumption with the latest generation of gas suspension calciner (GSC) from FLSmidth. The new system not only delivered a 5% reduction in operating costs; it also lowers CO₂e emissions and so helps improve the refinery's environmental performance.

To achieve these results, FLSmidth experts analysed every aspect of our existing GSC for opportunities to address key areas of customer concern, such as maximising throughput, improving cost efficiency, and ensuring alumina quality. The results of this development work include:

- A new dust transport mode to replace dense-phase conveying. This removes the need for compressed air, as well as reducing particle breakdown, wear, and power consumption.
- An improved cyclone design, leading to lower pressure drop, higher separation

efficiency, and lower particle break down and power consumption.

- A more efficient holding vessel design for more reliable fluidisation with less risk of dead zones and reduced risk of over-calcination; it also reduces thermal impact on the refractory.
- A smarter digital interface with optional ECS/ProcessExpert® advanced process control for improved control of critical process parameters, reduced specific fuel consumption, and increased productivity.
- Lower overall building height, reducing steel and fuel consumption – and thus the carbon footprint for construction.

These improvements combine to deliver a >10% reduction in power consumption and 4% reduction in specific heat consumption (kcal/kg) compared to the company's previous-generation GSC. As a result, total CO₂e emissions are reduced by 4%, with operating costs 5% lower, when operating the new system.



10%
Reduction in power consumption



4%
Reduction in fuel consumption



4%
Reduction in CO₂e



5%
Reduction in OPEX

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