Lime Kiln ID Fan Upgrade Project

The Problem

AirStream reached out to an Alberta mill outlining a customized solution to the problem of dust build-up on their Kiln ID Fan in early 2017. The hardened dust deposit required sandblast cleaning every 3-4 months because it caused excessive vibration.

The Upgrade Process

Later that year following the onsite collection of data, AirStream identified aerodynamic issues that were resulting in dust build-up and offered a solution in the form of a fan rotor upgrade. The proposal included a new high-efficiency fan rotor with an increased capacity of 55,000 cfm with 38.31 "WG static pressure rise.

Furthermore, the existing motor, bearings, coupling, and fan housing were found to be suitable for reuse without any modifications. AirStream proposed new carbon ring shaft seals to minimize dust leakage onto the bearings.



Fig.1 Existing fan housing and original rotor subject to vibration caused by hard build up



Fig.2 AirStream fan after 8 months of continuous operation

The Results

In September 2017, the turnkey project was ordered, and AirStream fabricated and installed an upgrade rotor tailored to the specific mill conditions.

After 8 months of continuous operation, site personnel confirmed acceptable low levels of vibration without the need for unscheduled cleaning maintenance shutdowns. Following the first scheduled outage, AirStream projections of uninterrupted fan operation, for 12 months, were verified by mill operators.

Operating Parameter	Original Rotor	AirStream Rotor
Design Condition Power	285 kW (based on 50 000 cfm)	326 kW (based on 55 000 cfm flow)
Operating Condition Power	301 kW	289 kW
Cleaning Frequency	Every 3-4 months	Annually
Build-up Description	Hard, scaly, cleaning required sand blasting	Soft, easily washed off