



PROMECON

we focus on your process

Ciment Québec Optimizes Tertiary Air Performance

Ensuring controlled air split between tire combustion and kiln inlet for stable operation without gas overfeeding or process imbalance

THE TASK

Ciment Québec required a robust and reliable solution for measuring and balancing tertiary air flows within its pyro system. The application was characterized by harsh operating conditions, including high clinker concentrations, temperatures up to 1200°C (~2200 °F), and continuous 24/7 production. Reliable insight into air-fuel-distribution between AF combustion and kiln air inlet was essential to maintain balanced combustion conditions, optimize thermal substitution rate performance, and ensure efficient and consistent rotary kiln operation.

THE SOLUTION

PROMECON implemented a digital TA flow measurement system installed in a rising section of the TAD, specifically selected to ensure representative flow conditions. The system provides continuous real-time measurement of volumetric flow (m³/s) and gas velocity (m/s), enabling direct operator interaction and control via damper adjustments for optimized alternative fuel combustion air balancing and stable kiln operation.

The non-intrusive, infrared measurement principle is designed for harsh environments, delivering drift-free and zero maintenance performance throughout the entire campaign. Only a permanent purge air supply is required, protecting the sensor while maintaining measurement accuracy. This robust setup enables long-term operation without recalibration or mechanical intervention.

THE BENEFITS

- Real-time visibility of actual tertiary air flow
- Better process evaluation enables optimal control of HOTDISC® combustion conditions
- Improved air distribution between kiln and alternative fuel combustion reactor
- Improved operational flexibility under variable conditions, especially by multi-fuel operation
- Lesser calciner shutdowns and incomplete combustion



McON IR Compact installed in 2025, reliably operating in outdoor conditions even at sub-zero temperatures in Québec.

THE RESULT

- Increased Alternative Fuels Rate
- Up to 15% improved specific energy consumption (GJ/t clinker) in combination with a new generation of multi-fuel burner technology and smart expert system
- More stable kiln and HOTDISC® energy balance
- Clear identification of damper aging effects on flow behavior



CUSTOMER FEEDBACK

"The HOTDISC® reactor is in direct competition with the kiln for available oxygen and combustion air. The key challenge is to find a good balance: not too much to AF Combustion Reactor, but enough to the kiln, so the system remains stable under all operating conditions. PROMECON provides reliable, real process readings that allow our operators to judge and manage the pyro process. This enables smoother operation despite fluctuating conditions and supports a higher share of tertiary combustion, reducing the need for conventional fuels such as natural gas. Operators rely on the system for day-to-day process control and would not want to operate without it anymore."

JEAN-PHILIPPE GRAVEL
(P.ENG., M.SC.)

Ingénieur de procédé, Process Engineer
Ciment Québec Inc.

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