

Commodity
Iron Ore

Technology
Blowers and Roller Deck System

Application
Horizontal Belt Filters

Study type
Customer Story

Country
Australia

How we reduced energy, water, and maintenance requirements at a large Australian iron ore mine

A large iron ore mine in Australia's Pilbara region has successfully run its horizontal belt filters using blowers and belt support rollers for over a decade. The result has seen a 29% reduction in energy consumption and carbon emissions compared to traditional vacuum pumps and air deck belt systems. Fresh water consumption is also significantly lower.

The mine switched from vacuum pumps to blowers in 2012. This change reduced the installed power need from 840 kW to 600 kW. At the same time, the belt filters were converted from an airbox and water slide-type belt support system to our roller deck system. This further reduced installed power capacity by 66 kW. Roller deck systems also benefit from lower maintenance demand, delivering higher availability and reliability.

Based on 24/7 operation, with a 36.5-day maintenance shutdown allowance, this works out at an annual power saving of just over

1.6 million kWh. Assuming power supplied from a natural gas-fired power plant at 0.414 kgCO₂/kWh, this equates to a CO₂e saving of 672 tCO₂/year.

The use of blowers also eliminates consumption of water for sealing, as is needed to operate vacuum pumps. This saves 383,162 m³/year of water (the equivalent of 153 Olympic-sized swimming pools). Over the lifetime of a belt filter, this is a significant benefit, particularly in areas of high water stress, such as the Pilbara. Water use was further cut because roller deck systems do not require lubricating water, unlike air deck systems, saving 1–4 m³/hour of water.

Over the ten years since making the change, the mine has therefore not only improved its environmental sustainability; it has also cut operating costs associated with energy, water, and maintenance, while benefitting from higher uptime to increase production.



29%
Reduction in energy



383,160 m³
Reduction in water per year



29%
Reduction in CO₂e

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