INDUSTRY CASE STUDY

CONE CRUSHERS

The quarrying industry features applications with excellent potential for energy and maintenance cost savings using Powerboss.

Cone Crushers are commonly sized to handle maximum load many times denser than they may commonly crush throughout their daily duty cycle; hence even when "on-load" they may only be partially loaded. This offers a potential for energy savings using Powerboss.

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POWERBOSS IN ACTION

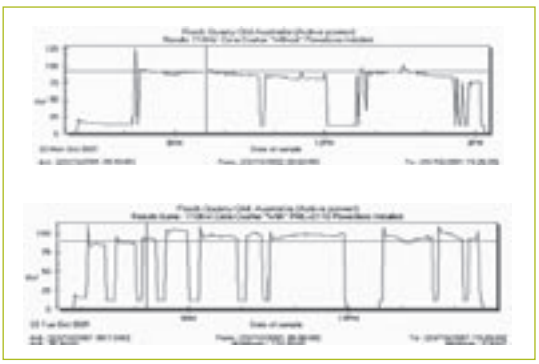
ROCK QUARRY IN QUEENSLAND, AUSTRALIA

The partial or variable load which characterises the duty cycle of a cone crusher makes it an ideal application for potential energy savings using Powerboss. Additionally, it is possible that a cone crusher may have periods off-load. The auto timed shut-off feature of Powerboss can be set to automatically shut-off the motor when the crusher is unloaded for a given amount of time. The soft start feature of Powerboss allows for the smooth re-starting of the crusher without incurring Peak Demand penalties, whilst also minimising maintenance problems commonly associated with a high in-rush current. A dual ramp facility is also available to facilitate the starting of a high inertia or uneven load such as in a crusher or conveyor in a quarry.

Powerboss also includes the ability to "Kick Start" a high friction load, such as a crusher which has been stopped whilst still containing uncrushed material.

Following a site evaluation, Powerboss was installed in a quarrying facility in Australia. Having fitted Powerboss to a 110kW Cone Crusher testing was undertaken to demonstrate the cost benefits. A true three phase analyser was installed on the crusher for two days of production at the Quarry; one day without Powerboss and one day with.

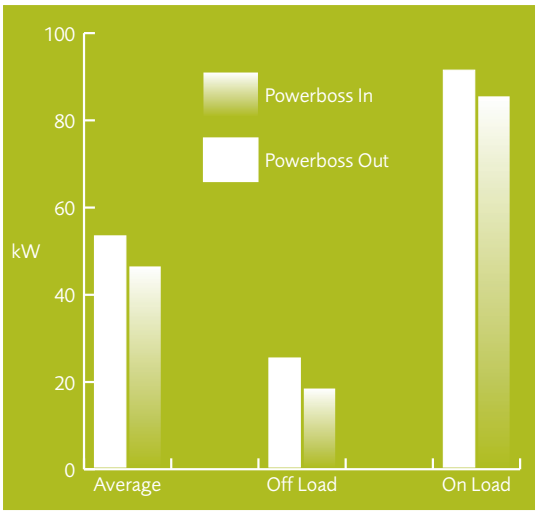
On day one it was recorded that 549kW of electricity were used by the crusher. The energy usage on day two was 540kW; a reduction of 9kW. Importantly, however, the production levels across the two days showed that 2700 tonnes of stone had been crushed on day one (without Powerboss), and 3002 tonnes crushed on day two (with Powerboss). It was clear therefore that with Powerboss, the crusher crushed 302 tonnes of extra product. At a wholesale price of $5.00/t this equates to $470,000 of stone crusher for free each year, in addition to a saving in energy of a further $500 during that period.



Graph taken from a Circuitor AR5 handheld unit, clearly illustrating the variable nature of the duty cycle.

- Soft Starter
- Peak Demand Savings
- Reduced Maintenance Costs
- Reduced Downtime
- Quieter Machinery
- No-Load Timed Shut-Off
- Kick-Start

Case Study Savings (Per PB unit)	
kWh Savings	11%
kVar Savings	18%
Additional Revenue Generated	$470,500
Cost of Powerboss	$7100



A simple illustration based on actual measurements of the effect of Powerboss in operation on a cone crusher.

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