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OVERVIEW

Optidrive delivers a crushing performance!

Global Solutions…

wireless control for hundreds of applications

with Invertek Drives the solutions start here!

- easy to use and incredible performance
- leading edge design and technology
- highly committed to innovation
- products you can rely on
- global support and suppliers

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COMPANY

COOLMORE QUARRY

Achieving reliable control with energy saving

Cork, Ireland

Using the Optidrive Plus 3^{GV} to control a single rotary crusher has delivered some substantial benefits for the Coolmore Quarry in Cork, operated by John A Wood.

The quarry uses a Sheepbridge single rotary crusher which was originally fitted with a 160kW slip ring motor and starter combination. The replacement equipment was required to provide extremely reliable control together with significant energy savings at start up.

Electricians at John A Woods had initially specified a 200kW AC motor but after detailed tests, the Reliance Bearing and Gear Company, working with Invertek Drives in Ireland, were able to recommend a 160kW squirrel cage motor controlled by an Optidrive Plus 3^{GV}.

The first challenge was reducing energy consumed on start up. Starting such a high inertia load direct-on-line with a standard squirrel cage motor typically takes up to 550% of rated current for 60 seconds. Starting the same machine with a slip ring motor requires only 200% increase in current for around 20 seconds. With the Optidrive Plus 3^{GV}, a squirrel cage motor, was able to start the system in only 40 seconds whilst taking only 27% of motor rated current, providing an extremely efficient solution.

As the stone feeds into the crusher a peak load is created, which could have led to the drive tripping on over current. In addition, the crushing drum can undergo very short periods of light load in between crushing one large stone and starting on the next one. This could cause the drum to speed up and the drive to trip on over voltage. Reliance Bearing and Gear were able to overcome these challenges by fitting a brake resistor and adjusting the performance of the Optidrive Plus 3^{GV} vector speed controller.

The next challenge was to guarantee that if the machine was not running at the rated operating speed for any reason it would not fill with material and cause a blockage. The Optidrive Plus 3^{GV} was programmed to provide control signals to the feeder line. The result was that if the drive tripped or was not at full speed the feeder would then also stop, the momentum of the rotor would crush the material in the crusher and the machine would be cleared.

Finally, the spin start feature on the drive was enabled to provide rapid and smooth re-start in the event of losing the incoming power supply. The spin start feature is able to detect the speed of the motor and then match the drive to that speed before accelerating to its final operating frequency.

Stephen Tighe of Invertek Drives in Ireland confirms: "The Optidrive Plus 3^{GV} has delivered excellent energy savings in this application whilst maintaining extremely high levels of performance and reliability. We would certainly expect this success to lead to increased demand for Optidrive Plus 3^{GV}.

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