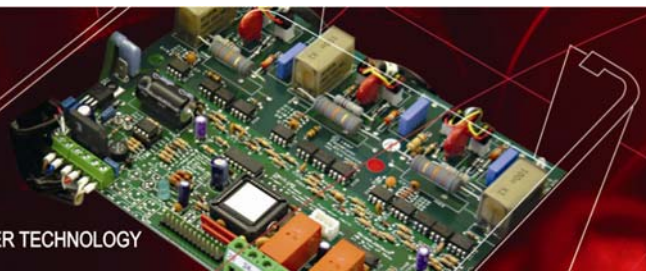
SOFT STARTERS PROVIDE COST SAVINGS, & PREVENT FAILURES OF POWER TRANSMISSION COMPONENTS IN QUARRYING APPLICATIONS.

Why use soft starters for starting electric motors in quarries when variable speed drives (VSD) appear so cheap? The simple answer to this question is that the majority of motor control applications in quarries are fixed speed and do not demand the complexity and, hence, the cost of VSD. As a result, quarrying operators can save a lot of money through a combination of reduced equipment, set-up and installation costs.

Soft starters are ideally suited to most equipment used in the quarrying process: conveyors, vibrating screens, crushers, stone saws and pumps. They control high kW ratings (15kW to 250KW), so the savings against using AC drives are considerable. To illustrate this, the cost of a Fairford XFE soft starter is approximately 33% of that of an equivalent variable speed drive at 22kW, and just 20% at 100kW.

Whilst cost is a major factor in any decision to use soft starters, quarry operators and owners are also looking for more reliability from their plant. This can be achieved with soft starters providing optimal soft starting and stopping. The result is less stress on motors, mechanical components and also on the electrical supply.



The electrical benefits are twofold. Firstly, by using soft starters the dips in mains voltages that occur due to current peaks inherent in direct-on-line (DOL) starting are avoided. Secondly, by avoiding the considerable stresses on the motor windings, and the iron cores of the stator and rotor, which result in reduced motor life. Whilst these benefits are considerable, the mechanical benefits can be greater still. This is because the sudden impact at start- up of uncontrolled motor starting, followed by the rapid acceleration to full speed, causes problems across a wider range of equipment types

Sudden torque stresses can displace loads from conveyors, and cause excessive wear on belts, pulleys, gears, chains, couplings and bearings. Experience shows that the reduced downtime from not having to replace these components so frequently ensures fast payback on any soft starter unit.

Complementing the savings that can be made on component costs is the additional benefit that energy costs can be controlled more effectively using soft starters. Peak demand charges can often be reduced especially when a number of motors are started at the same time. Also motors can be switched off and started repeatedly – if necessary, whereas, previously, they would have been left running due to concerns about the negative stress effects on mechanical components of frequent restarting.

In addition to protecting motors and the power transmission chains, Fairford soft starters have also helped one major quarry operator overcome a problem of mechanical shear pin breakage on his asphalt mixing plant. The shear pin is required to protect mixer motors in the event of a process jam. The previous mechanical shear pin arrangement provided this protection well enough, but the time taken to replace it, once it had sheared, often meant that the asphalt had solidified, resulting in an unpleasant and time consuming task to remove the material from the mixing vessel.

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