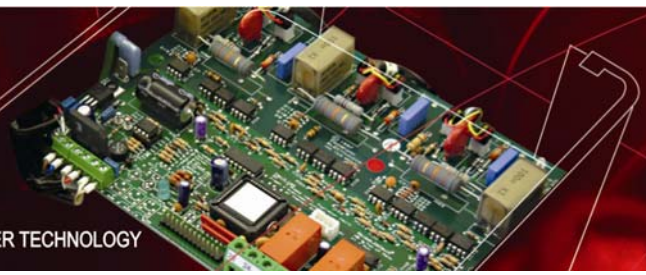
Fairford Soft Starters connect directly into the Delta, saving users the cost & time of rewiring motors

The ability of Fairford's QFE and XFE soft starters to connect directly into the six wire delta connection of AC motor starters can improve system reliability and relieves users of the considerable cost and the time of rewiring complete motor starting systems.

Star Delta starter arrangements for AC induction motors are widely used across all UK industry. They were one of the first attempts at reducing the damaging effects of starting AC motors directly on-line. The advantage of Star Delta is that only 58% of the line voltage is applied to the motor at start-up. Because of the Square-Law relationship (see below), starting torque is reduced to just a third of locked rotor torque (LRT) with a consequent reduction in starting currents and acceleration forces.

There are several drawbacks with the Star Delta method, however. The arrangement is more complicated and costly using three contactors and a timing mechanism to switch between them. In addition, installation costs are greater because of the need for 6 connections between the motor and starter. Finally, if the transfer from Star to Delta occurs at less than 80% of normal speed, large current and torque surges can arise.



These drawbacks have led many companies to consider moving away from Star Delta systems, but have been deterred due to the costs and lost production time involved in complete rewiring of the motor starting system. Today these costs can be avoided by employing Fairford's latest generation QFE soft starter. This unit connects directly into the Delta section of the motor starter using the existing cabling. In addition, with the QFE unit in place the starter can be connected to a larger kW motor and the user benefits from all the traditional advantages provided by soft starters:

- Reduction of high starting currents.
- Elimination of inrush currents.
- Smooth step less acceleration to full speed.
- Snatch free starting, removing mechanical stress.
- Extended contactor life.
- Reduced wear on mechanical components.

The Square Law

The Square Law applies to all AC induction motors. It states that torque is proportional to the motor terminal voltage squared (V^2). So, for example, half the voltage produces a quarter of the torque with commensurate reductions in starting currents and acceleration forces.

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