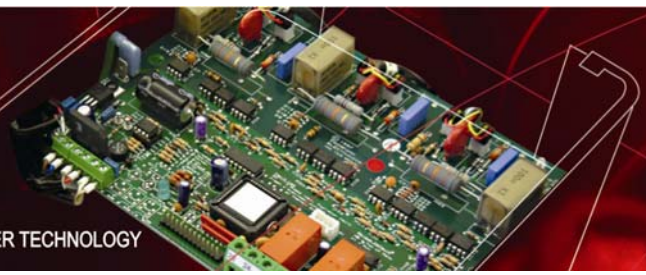
UNIQUE APPLICATION OF SOFT STARTER REDUCES RESIN IMPREGNATION PROCESS FROM ½ HOUR TO AS LITTLE AS 10 MINS.

In one of the most original uses for a soft starter, Newage AVK SEG is employing the unique inductive load control feature of a Fairford QFE unit in a system that cuts the time for resin impregnation of alternator windings from an average of half an hour to as little as 10 minutes. In addition, the greater efficiency of the new impregnation system also reduces wastage of resin by providing a better slot fill.

The resin impregnation control system has been designed and developed by Stuart Griffiths, Electrical Project Engineer at Newage AVK SEG, which is a world leader in electrical power generation and distribution equipment. It controls the temperature of stator windings during a resin impregnation process. This involves heating up the stator, dipping it in the varnish, then heating it up again to between 140°C to 180°C to achieve final hardening.



Previously, the stator heating process was undertaken exclusively in ovens, a procedure that could take up to 20 hours. However, in view of its demanding 24 hours a day, 5 days a week production schedule, Newage AVK SEG was keen to reduce this cycle time and commissioned its in-house Electrical Projects team to come up with an improved system. This has been achieved with a totally new and innovative design that employs a PLC, Fairford QFE soft starter, a transformer and 0-10V temperatures sensors in a closed loop PID control scheme.

Central to the operation of the new system is the unique inductive load feature provided by Fairford's QFE soft starter. The QFE unit is being used as a voltage control device feeding the heating transformer. Its function is to ensure that the transformer remains within its current limits during the stator heating cycle, a necessary condition for controlling the quality of the impregnation process.

The OFE unit stops the transformer drawing the heavy inrush currents, which in many applications can create severe effects on power distribution networks. A de-energised transformer can draw an extremely heavy inrush current (up to 20 times the full-load current) if it is switched directly to a power network.

The effects of this current can be voltage dips and the disruption of sensitive equipment. However, by regulating the energising process with a Fairford controller, these effects are eliminated and the transformer is brought on line within its full load current.

"The new system is much smoother in operation than the one it replaces and is also much quicker, which is good for our production," says Stuart Griffiths. "The Fairford soft starter also gives us the facility for voltage limits, so the process is also generally more controllable than before. The fact that we're using a Fairford soft starter, rather than an inverter, also means that the panel size of the new system is much reduced, and less complex which is always good from a reliability and maintenance point of view."

"This application turns the idea on its head that soft starters can only be used for starting motors," commented Mark Shepherd, MD of Fairford Electronics. "The definition of one of our soft starters today is totally different to that provided a decade ago, due, in the main, to continuing developments in power and control electronics technologies. These are enabling soft starters to do much more than just start and stop motors softly and efficiently. They are providing the means for users to achieve energy saving, greater safeguarding of employees and equipment and also control of non-motor loads. What all this means for industry is that soft starters can be applied across a wider range of industries and applications, their traditional fit and forget reliability ensuring security of operation even in the most critical of tasks."

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