Softstart units bring fast savings at Damhead Creek Power Station

Damhead Creek is an 800MW combined cycle gas-fired power station with two gas turbines and one steam turbine and is owned by Scottish Power. A number of 30kW cooling fans regulate the temperature of the main power station cooling water circuit and are switched in one at a time, as required, usually as a result of changes in the ambient air temperature. In colder weather half of the fans or fewer might be required and in hot summer weather all will probably be running. The shift in temperature from night to daytime temperatures also varies the demand for cooling air so the reliability of the fans is a critical issue.

20 Fan cooling bank at Damhead Creek Power Station

With a total of 20 of these 30kW belt-driven fans, Plant Engineer Ian Carter was suffering costly and time consuming maintenance problems caused by the torque and current surges when starting the fan motors direct-on-line. Vee-belts were experiencing excessive wear, would jump along the pulleys and have to be repositioned and the motor contactors suffered shortened life due to the high starting currents. This problem was exacerbated by off-line fans 'windmilling', which further increased the starting torque and motor current. All-in-all, maintenance costs of over £25,000 per year were being incurred due to the absence of any control when starting-up the cooling fans.

As Ian Carter put it, "we needed to exercise some form of control over the starting of these fans but didn't need a variable speed system as the fans simply run up to full speed so soft-starters seemed the ideal answer. We consulted with Softstart UK Ltd and it soon became clear that this was the ideal answer. Softstart recommended their LV-AS Series of starters with integrated bypass control, installed in IP65 stainless steel enclosure that we could mount outdoors next to the fan units. Installation was pretty much a 3 wire in / out exercise so the retrofit costs were pretty modest."

APPLICATION BENEFITS

- IP 65 PANELS FOR OUTDOOR APPLICATION
- REDUCED BELT AND PULLEY MAINTENANCE
- ENHANCED CONTACTOR LIFE
- CATCH WINDMILLING MOTORS
- SIMPLE RETROFIT INSTALLATION
- INTEGRATED BYPASS TO MAINS WHEN UP TO SPEED

The units interfaced easily with the existing distributed control system and each soft starter provides an 'up-to speed' signal that confirms that its motor is up and running. If this signal isn't received within 20 seconds, an alarm is flagged up. Once the motor is up to speed the soft-starter automatically bypasses the motor to direct-on-line and switches itself out of circuit. This not only saves energy but lengthens the life of the soft-start units.

"Softstart UK gave us great service from start to finish" said Mr Carter " Despite the fact we needed IP65 stainless steel enclosures, delivery was very prompt. I had been concerned about the windmilling fans but Softstart reassured us and indeed the LV-AS units catch the contra-rotating motors very well. The bypass feature gives us additional efficiency and with all 20 units installed and fully functional, the maintenance costs associated with these fans have been slashed. Overall, we estimate our total investment was recovered in under 12 months."

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