ENSURING THE RIGHT ECONOMICS FOR MOTOR CONTROL IN THE WATER INDUSTRY IS CRITICAL FOR COST REDUCTION & COMPETITIVENESS.

While variable speed drives (VSD) are indispensable for motor control in many water treatment applications, there are an equal – if not greater – number of applications that do not demand the complexity and, hence, the cost of VSD's. These are fixed speed applications, and here the soft starter offers benefits that ensure it still remains the equipment of choice.

In a highly competitive market such as the UK's, the primary reason for using a soft starter has to be cost. True, at the lower end of the control range, from 1kW to 5kW, there is little to choose between the cost of a soft starter and that of a VSD. However, this area is not really representative in terms of soft starter usage; the majority of applications being on much larger kW motors. And this is where soft starters come into their own, in cost terms. Above 5kW, the price differential becomes exponential in favour of soft starters; the cost of a Fairford QFE unit being approximately 33% of that of an equivalent variable speed drive at 22kW and just 20% at 100kW.

The cost benefits of using soft starters as opposed to VSDs are ably demonstrated by a recent application of Fairford QFE soft starters at the Pynes Pumping Station operated by South West Water.

The QFE soft starters are installed on the 200kW and 250kW motors of pumps that drive treated water to storage reservoirs. The average diameter of the pipes used in this operation is 18” and the distances pumped can be up to 15 miles. When water in this volume is pumped over such long distances considerable care has to be taken with starting - and particularly stopping- cycles, due to the possible effects of water hammer.

The QFE units provide an effective answer to this problem, helping SWW to safeguard its operations effectively, and benefit from an equipment cost which is less than 20% of that for a variable speed drive of equivalent kilowatt rating.

Also in the area of pumping, the Environmental Agency is using Fairford’s QFE soft starters as part of telemetry-equipped retrofit packages on existing slip ring motors at Huish Episcopi, Middleney and Westover pumping stations in Somerset.

Built over 30 years ago, the stations employ 130HP slip ring pump motors, which, as part of the retrofit package, had their obsolescent slip ring starter systems replaced with Fairford’s QFE soft starters. The benefits of replacement are many: improved motor control and reliability; considerable space saving and reduced complexity and wiring. In addition, and importantly for the pumping station applications, the QFE soft starter is equipped with Modbus interface, which allows integration into the telemetry and control systems required by the Environmental Agency.

The benefits of using soft starters in the water industry are also appreciated beyond the UK’s shores. The SC-OR (Sewerage Commission Oroville Region) in Oroville, California, has installed Sixteen Fairford QFE soft starters on the drive mechanisms of aeration paddles, as part of a $4.7 million solar power project to reduce escalating energy costs at a wastewater treatment plant.

The solar powered system is an highly effective response to offset a 41% rise in electricity rates that SC-OR suffered at the wastewater treatment plant (rated capacity 6.5 Million gallons per day); an increase that would otherwise have had to be passed on to the company’s ratepayers.

“SC-OR is a pay-as-you go agency, we do not receive any tax or other funding,” explains Bill Lampkin, SC-OR’s Environmental Compliance Manager. “We serve about 16,500 homes and businesses in an economically depressed area, so passing on increased costs to our customers was not an option. Instead, we decided to reduce our costs through the use of solar power. We commissioned contractor, Sun Power and Geothermal Energy to install a 520 Kilowatt photovoltaic (PV) power system at the cost of $4.7 million. This has reduced our energy costs by about 50%.”

“As a means of increasing the efficiency of the PV system, Sun Power wanted to reduce our total plant load using "Demand Side Management.” One part of this initiative involved fitting sixteen, 18.5kW Fairford QFE, energy optimising soft starters to our paddle type surface aerators. The aerators are our most critical operating unit, running 24 hrs/day, 7 days a week, yet since start-up, in March 2003, the Fairford soft starters have been trouble-free.”

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