



## **FAIRFORD CONTINUES GREEN ENERGY SUCCESS WITH DFE SOFT STARTER ON WATER TURBINE SYSTEM AT MILL HOUSE IN GUILDFORD.**



**Fairford is underlining the benefits of its soft starters for use in green energy systems with the application of an DFE soft starter to an innovative hydro power system installed by Derwent Hydroelectric Power at the Mill House, adjacent to 'Yvonne Arnault' theatre in Guildford, Surrey.**

The installation of the hydroelectric turbine is part of a green energy initiative by Guildford Borough Council. Historically the Mill site was used to drive water pumps, but this fell into disuse in the 1960's. The installation of the Derwent water turbine continues the tradition of water power, but now the power generated - up to 45kW from a 1.8m head - is fed back into the local electricity supply network, generating energy cost savings for the local council

"One of the problems we encountered when installing the electrics to the water turbine power system was to find a device that would feed the generated power into the mains, smoothly and without large inrush current," said Jonathan Needle of Derwent Hydroelectric Power. "Our electrical contractor, GP Electronics, suggested Fairford. We contacted the company and found out that they were already applying their products to do something very similar on wind turbines. They knew exactly what was required, which was reassuring, so we purchased one of their new low cost DFE<sup>†</sup> soft starters for the Mill House system."

The DFE soft starter comes into operation when a generator, which is connected to the water turbine, reaches a point just below synchronous speed. Working in reverse mode, the DFE unit is used to put the generator on line. It ramps the generator voltage up to the system voltage, and as the generator accelerates further to synchronous speed, the DFE is internally bypassed and a contactor is closed to share the load enabling power to flow continuously into the mains supply. The system accelerates the generator up to a greater than synchronous speed, allowing generation to begin.

The turbine system at the Mill House will pay for itself within the next few years. However, it is confidently expected that the system will provide basically free electricity for between 3 and 4 decades, representing a considerable return on its green investment by Guildford Borough Council.

### **Fairford DFE Soft Starter**

Although now proving its worth in alternative energy systems, Fairford's DFE soft starter was originally developed to provide a quick, easy and cost effective solution for companies to overcome the problem of transients associated with Star/Delta starting. The DFE units have simplified wiring that fits in the same space as a conventional Star/Delta Starter, and provide motor protection by offering the key benefits of both Soft Starting and Soft Stopping.

†The function of the DFE Soft Starter in this application is to bring the water turbine generator on-line smoothly, achieving synchronisation with the National Grid without massive in-rush currents on the supply and without the harsh shocks that can damage and break mechanical equipment such as bearings, couplings and gears.