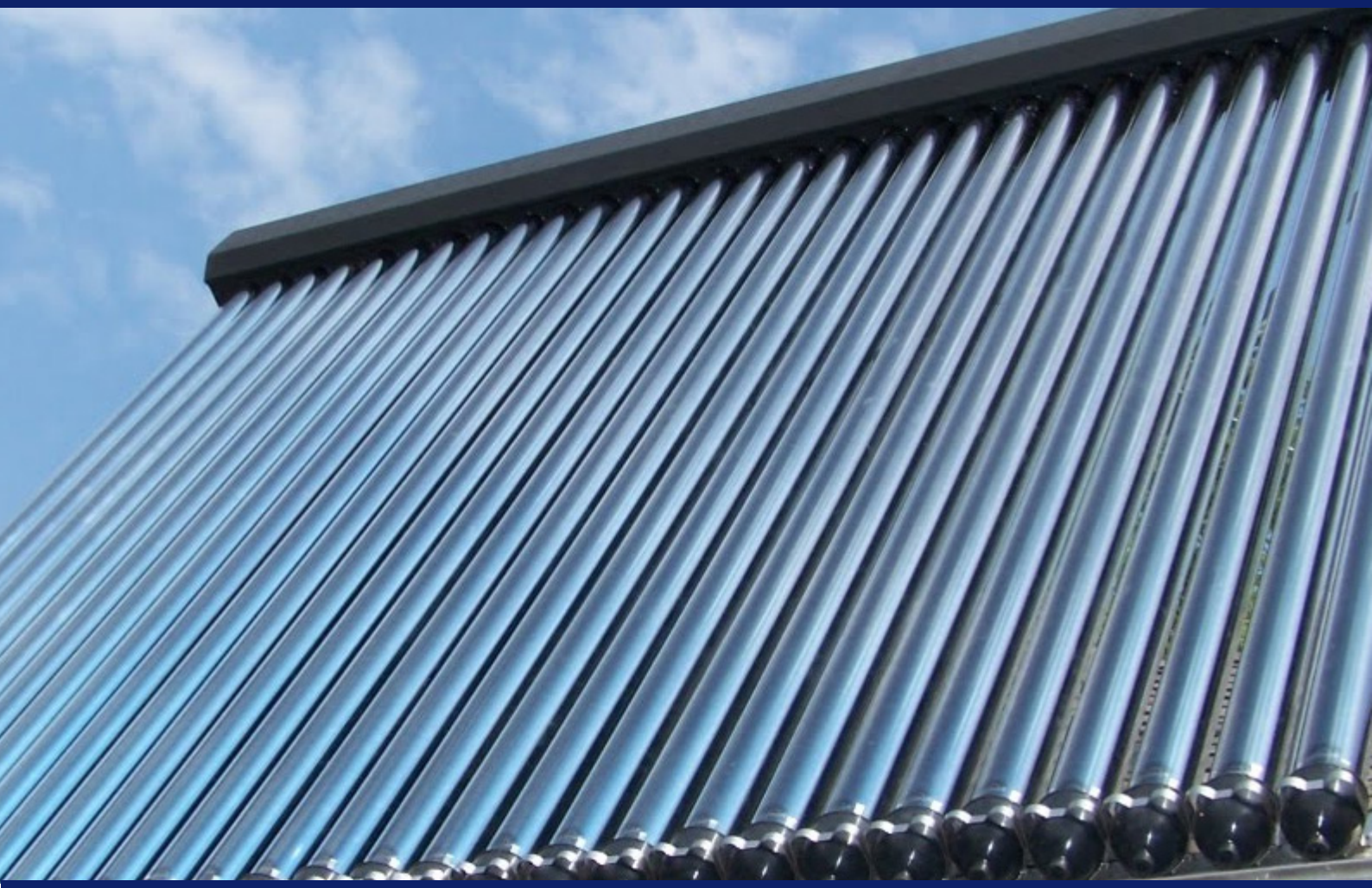
IMO

Case Study



i^3 Intelligent Controller

Solar Thermal Solution

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Application:	Monitor large Solar Thermal system	**Requirement:**	Ensure system stability and monitoring
Equipment:	IMO i^3E + i^3X	**Location:**	United Kingdom

System:

88 Analogue inputs with 4-20ma temperature sensors, pressure sensors

128 Digital inputs monitoring valve positions

128 Digital outputs to drive 2 port valves to control the loading of pre-heat vessels and buffer tanks

2 Heat meters to provide management data as to the carbon savings being enjoyed by the building

2 Water meters to provide a history of the total Cu metres of water used

10 IMO i3A combined HMI and PLCs were used to control PAW solar pumping units. The PAW units were originally supplied with their own controllers. These were found to be rather complex to setup and did not meet the requirement of the control required.

The customer is a competent and successful designer and installer of solar thermal systems. On receiving an out of the ordinary large system enquiry he contacted IMO to discuss their range of combined HMI and PLC controllers. IYS Control Systems have been using the i3 range of controllers for 7 years, and as an IMO preferred integrator IMO introduced IYS to their client.

The system was a large solar thermal system. There are two linked systems, One of 100Kw and one of 50Kw. Both systems provide enough hot water during the summer months (also early and late in the year). Some initial tests show that the 100Kw system is producing closer to 200Kw of energy. The two systems are controlled by an i3X and an i3E. The i3X is a PC based HMI providing a 15” screen with a full graphic of the complete system over two screens. The screens provide the user and engineering staff with a complete system overview and a clear view of the system status at any time. There is data logging within the system to record various system operations so that historical data can be viewed to compare how the system has been operating.

The i3As have 4 high speed counters which were configured as PWM inputs and outputs. The two outputs controlled the primary and secondary pump speeds while the two inputs monitored the pump status by a clever use of a 75Hz PWM feedback signal showing the pump running and any faults such as jammed rotor or out of specification control voltage.

The system is currently undergoing installation testing and final commissioning with a view to being fully operational by the summer of 2017 when the building will be fully occupied.

It is planned for a remote diagnostic link to be installed in 2016 to allow full remote control of the system. This will also include full alarm monitoring with SMS and Email being used to export alarm data during out of office hours.

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