

## Energy Saving Case Study - Prelude Engineering Ltd & GlaxoSmithKline

3 Micronics Ultraflow 2000 meters used to provide flow measurement for variable speed control of 3 pumps to maintain constant flow rate with varying demand plus data for the local water quality inspectorate. The UF2000 4-20mA outputs provide control signals for the pump inverter drives on the ultra pure water supply. The result was more efficient operation and control of these vital facilities. department or delegated to a competent engineer or officer within the authority.

**Estimated Figures for the Total Installation-**  
**Ongoing Energy Saving Per Annum = 83,000kWhrs**  
**Ongoing Cost of Energy Saving Per Annum = £6640**

**Meter installation cost saving over alternative in-line flow metering = £6750**

**1st Year Saving excluding additional savings from reduced cooling load = £6640**  
**Payback Period = 20 months**

Micronics UF2000 Clamp-on, Ultrasonic Heat meters were chosen because they are non-invasive i.e. they can be installed without the need to cut into existing pipe-work.

Potential for Replication – 1000's in Industrial Process and Building Services applications where pumps are frequently oversized, offering significant benefits from variable speed control for variable volume processes without the costs and disruption associated with alternative in-line meters!



### Company overviews

Micronics Ltd is a UK based company established for 20 years with customers in over 40 countries. They can help solve most flow and energy metering and monitoring requirements with their range of non-invasive "Ultrasonic Clamp on" flow and energy meters, offering significantly lower cost installation and operating costs than alternative in-line meters.

Prelude Engineering Ltd was established in 1997 and is based in Maidenhead, Berkshire. The company specialises in the design and construction of water treatment plants for the pharmaceutical industry. Its largest customer is GlaxoSmithKline for whom Prelude have designed and constructed many purification plants throughout the world.

GlaxoSmithKline is the world's second largest research based pharmaceutical company with a powerful combination of skills and resources that provide a platform for strong growth in this dynamic industry. With headquarters in the UK and manufacturing facilities around the world, particularly in the US, it is estimated to control seven per cent of the world's pharmaceutical market.

## Purified Water Supply Applications

Prelude Engineering Ltd undertakes design and build contract work in manufacturing facilities around the world for GlaxoSmithKline. Their specialisation is in the design of water purification plant to convert the potable water supply to a manufacturing facility into ultra pure water with an organic carbon content of less than 400 parts per billion. The potable water normally contains contaminants approximately equal to 500 parts per million, but when purified to the levels required for drug production it becomes susceptible to bacteriological contamination. Ultra pure water is the lifeblood of every pharmaceutical company and they require vast quantities on a daily basis. Eliminating bacterial growth depends largely upon the system being free from crevices that can provide a breeding ground for the bacteria to grow. They must also use the highest quality stainless steel construction materials. For this reason ultrasonic clamp-on flow meters are ideal, as they do not need to enter through the pipe wall or protrude in any way into the ultra pure water environment. This reduces the cost of installing flow meters and eliminates entirely the potential breeding ground for bacteria that in-line meters present!

### Micronics Ultraflo 2000

The Ultraflo 2000 measures the flow of liquid within a pipeline through two sound transmitter/receivers clamped to the outside of the pipe wall. The sound is directed through the pipe wall into the flowing liquid where the speed of the sound wave is modulated by the flowing liquid. This modulation is converted into volume flow rate by the electronics in the flow meter. There are no mechanical moving parts required either inside or outside the pipe to make the measurement. After seeing a demonstration of the Ultraflo 2000, Prelude realised that the Clamp-on flow meter technology exactly met their requirements. A major advantage of using the clamp-on ultrasonic meter in purified water applications is that they do not penetrate into the liquid and as a consequence they are not as expensive to manufacture as alternative in-line aseptic meters.

Prelude Engineering Ltd has applied the Ultraflo 2000 clamp-on flow meter to many applications in pharmaceutical plants around the world. They find that they solve the flow metering problems they have experienced in the past by eliminating any possibility of contamination and at the same time saving a great deal of expense. To summarise the Ultraflo 2000 offers the following benefits for any type of aseptic operation:

- Totally non-invasive and cannot cause contamination of the fluid
- Low installation and operational costs
- Do not require system downtime for installation or maintenance
- Do not cause any pressure drop and are therefore very efficient
- Are not pipe size dependent and can therefore be easily moved to a different site should the need arise, without stopping the process.

# Ultraflow 2000

- Simple set-up menu.
- High temp. Transducers-option.
- Current, pulse or set point outputs.
- Energy meter version.

**Electronics:-** ABS housing with clear polycarbonate front panel waterproof and dustproof to IP66.

**Temperature Range:-** +5°C to + 60°C.

**Keypad:-** 16 key panel for set up, Diagnostics. Access password protected

**Display:** 2 x 16 LCD. Backlit.

**Power Input:-** 110/240VAC +/-10% 50/60Hz @ 50watts 24VDC +/- 10%, 6 watts.

**Outputs:-** Flow proportional 0/4 – 20mA Active opto isolated into 1000ohms. Bi-directional; 5v Pulse or set point relay. 5A- SPDT. Selectable rate and totaliser to 12 digits.

**Transducers:-** A, B, C or D sensors factory selected based on flow rate.

**Range:-** 0.5m/sec to 10m/sec.

**Operating Temp.** -20°C to +125°C  
Optional hi-temp to 175°C

**Accuracy:-** < +/- 3% of reading or +/- 0.02/sec whichever is the greater

**Repeatability:-** < +/- 1% with unchanged Transducer positions.

