

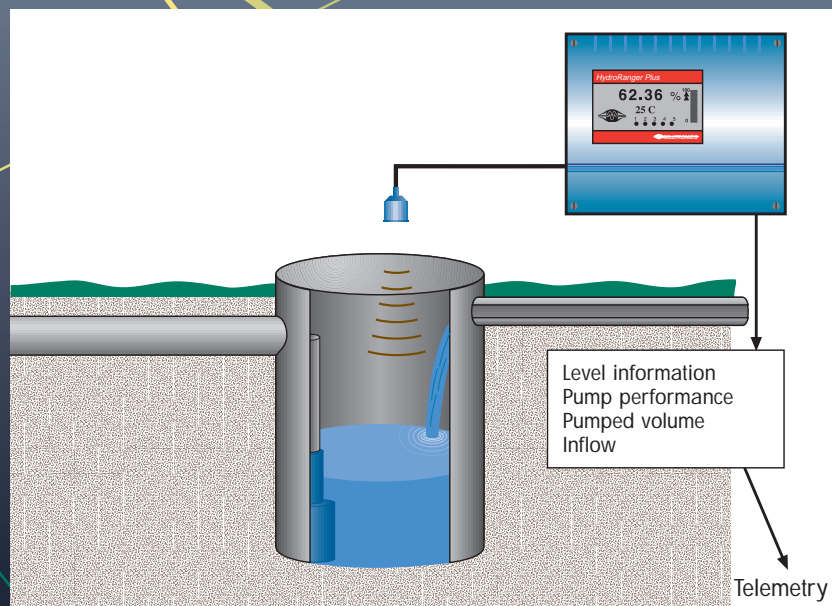
# HydroRanger Plus

## The 3-in-1 Solution

**PUMP PERFORMANCE MONITORING**

**ENERGY MANAGEMENT**

**SYSTEM MONITORING & NETWORK ANALYSIS**



# Three New Control Functions From The HydroRanger Plus

Innovative software enhancements now enable the HydroRanger Plus to provide even more control functions than before, at just a fraction of the expense of other systems. It provides a **highly attractive low cost alternative** to magnetic inductance flowmeters which are comparatively expensive to purchase, install and maintain. The new software lets you use the HydroRanger Plus for:

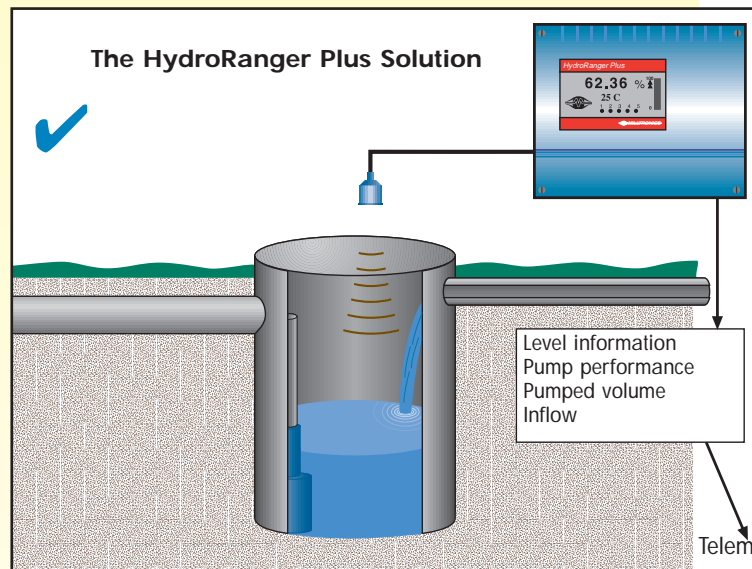
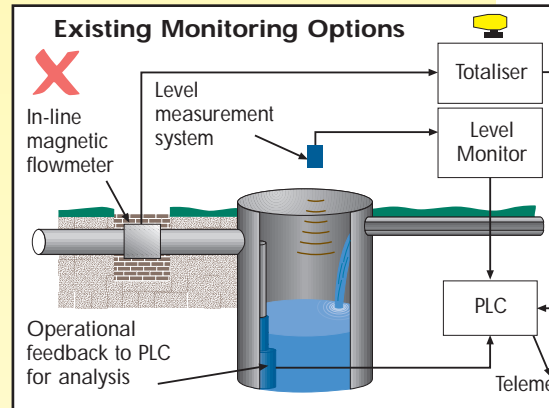
- **Pump performance monitoring**
- **Energy management**
- **System monitoring & network analysis**

With most sewage treatment stations already having some kind of ultrasonic pump control system similar to the HydroRanger Plus, it is now possible - with this small upgrade - to provide these extra features at a minimal cost. You also get all the advantages of our non-contacting ultrasonic technology.

- **Cost savings through low maintenance operation**
- **Simple installation reduces cost and time**
- **Proven reliability**

## High Accuracy Results

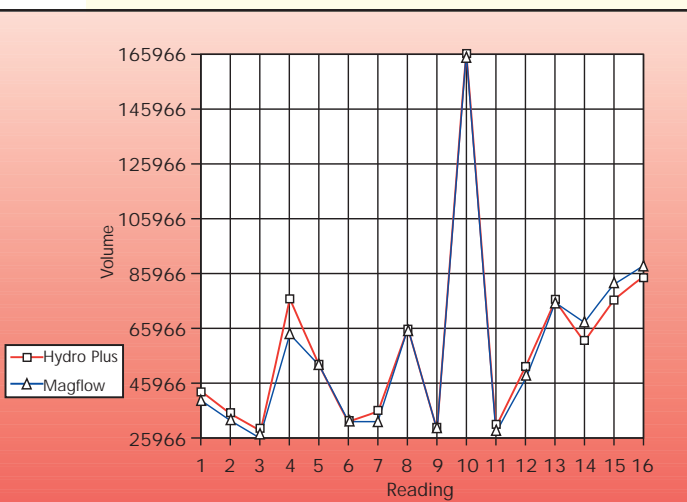
Comprehensive field tests have shown the HydroRanger Plus to be within 5% accuracy of pumped volume when compared to an in-line magnetic inductance flowmeter installation. Accurate results can be achieved even if inflow is not constant. All for a fraction of the cost of a magnetic inductance flowmeter.



With the HydroRanger Plus all key process requirements are achieved making it the most cost effective solution.

The new software routines were developed in conjunction with UK water companies to meet their market needs. Comparative tests between the HydroRanger Plus and magnetic inductance flowmeters illustrate the highly accurate results achievable by the HydroRanger Plus. (See graph)

These results were obtained over an 8 month period on a 5 pump, 256 m<sup>3</sup> capacity wet well with variable inflow. The average percentage difference between the readings is +2.7%. The difference between the two total volumes over the period is +1.8%.



Graph showing performance of HydroRanger Plus against magnetic inductance flowmeter.

# The 3-in-1 Solution

## 1. Pump performance monitoring

The new software accurately determines the volume of fluid pumped by monitoring the inflow and calculating pump capacities with each successive pump cycle. The data obtained by the HydroRanger Plus enables it to compare pump capacity reference values with actual performance. This allows pump failure to be alarmed upon and efficiency monitored in simple pump installations.

Pump performance during storm conditions no longer requires physical monitoring as failure can be flagged and communicated to a central control system via telemetry.

## 2. Energy management

Real time clock control allows pump set points to alter according to the time of day. In a typical wet well installation this could mean pumping out the well before peak rate and then deferring pumping during the expensive period. Penalties imposed by 'triads' and similar electric company incentives can be avoided automatically in most instances.

In a reservoir installation, pumping can be deferred to make use of economy energy rates. There are 10 individually adjustable time periods available, enabling the use of detailed pumping templates typically controlled by PLCs.

The cost savings of this feature alone means that the HydroRanger Plus will pay for itself over a very short time period.

## 3. System monitoring & network analysis

The HydroRanger Plus brings system monitoring and network analysis within your budget. Now you are able to obtain the complete picture from a treatment works; previously the cost of installing magnetic inductance meters meant choosing a restricted snap shot from a few selected sites.

Inflow can be output as a flowrate proportional to mA and total volume pumped via a relay totaliser allowing full, remote access to the flow data.

Comprehensive flow and site performance data can realistically become a minimum provision for all sites. Accurate trending analysis data would be present for the entire network, making planning for upgrades and new installations significantly more efficient.



Panel mounted version.  
Rack mounted version also available.

### How It Works

Using a patent pending system design, the HydroRanger Plus continuously monitors inflow prior to a pump starting, thus calculating an accurate and timely inflow rate.

When each pump starts, its current capacity is calculated and stored, giving accurate calculation of pumped volume throughput, unaffected by variable inflow.

The HydroRanger Plus does not require any discrete inputs from the pumps, or any form of in-line flow monitoring.

Because the unit calculates the pump capacities every time the pumps are operated it enables reference pump capacities to be entered for comparison. If the monitored pump capacity falls below the entered reference value then an alarm can indicate operational error, providing detection of complete pump failure.



Infra-red hand held programmer  
used with wall mount version.

# Don't forget, you get all this as well...

## The economical answer to pump/lift station automation

The HydroRanger Plus combines more innovative, multiple choice pumping control programs with superior reliability compared to any other system, virtually eliminating the need for PLC's.

## Pumping when it's cheaper to pump

Save on power with the built-in real time clock that can alter pumping set points to take advantage of low electricity rates. The unit can pump down the system to a low level when power is cheapest and maintain higher levels when power rates are at a premium. This innovation makes the use of central control (SCADA) on PLC's unnecessary, and takes advantage of time-of-day dependent electrical power rates.

## Combined storm water and sewage overflow control

An open channel flow monitoring feature works in tandem with pumping controls to measure the amount of storm water over a weir that may be bypassing the sewage treatment system, a serious regulatory concern.

## Rate of pump down control

The unit can be programmed to work on level rate of change operating only enough pumps to ensure the level is dropping at the required rate.

This maximises the storage capability of the well and minimises pump starts, reducing energy and maintenance costs.

## More Control Features

- Total volume pumped
- Rate of level change control
- Record of pump hours run and number of starts for each pump
- Variable duty pump control by percentage of running time
- Customised sequencing of up to five working pumps

## Tide Mark/Grease Ring Reduction

Pump start and stop points randomly change within a selectable range to minimise build up of grease and other material.

## Storm Control

When inflow exceeds pumping capacity, the HydroRanger Plus can be programmed to automatically start pumping storm water to a reservoir and temporarily shut off normal pumps if required.

## Pump Exercise Prolongs life

Pumps may be programmed to start when they have been idle for too long preventing blockage and drying out of seals.

## Aeration Control

Start up of an aeration compressor can be preset to prevent build-up of explosive gases and odour.

## Flush Valve Control

A flush valve can be operated on selected pumps to stir up sediment and ensure efficient pumping of solid waste.

## Power Surge Control

An independent time delay programmed for each pump prevents them from starting simultaneously, minimising surges and spikes on power lines.

## Differential Control

Self-regulating differential screen and rake control is a simple matter of positioning a transducer above each of the two different levels.

This configuration provides remote level readings, operates all control relays and alarms automatically without operator intervention.

## Full Linearisation Control

Eight pre-programmed tank options and two customised tank shapes make set up easier. Thirty-two point piece wise linear approximation or cubic spline curve fitting choices give you the most precise height to volume conversion possible in any shaped vessel or non-standard flume or weir.



Representative

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