HYCONTROL
LEVEL MEASUREMENT SOLUTIONS

Exceeding your expectations

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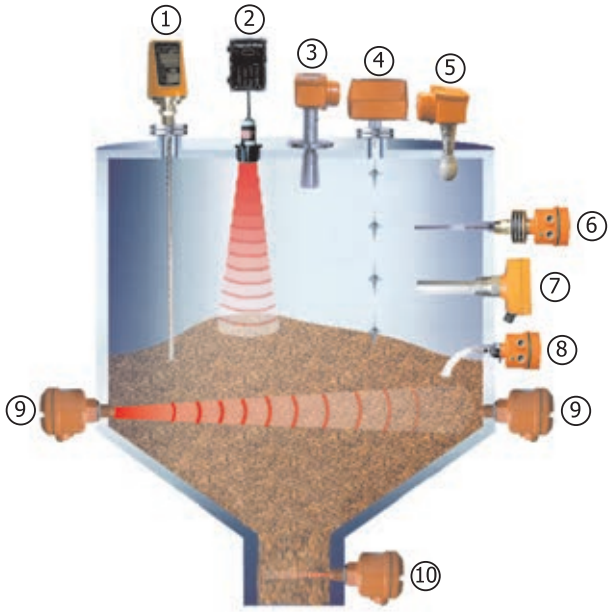
HYCONTROL - Level Measurement Solutions

Hycontrol have over thirty years experience in applying level measurement solutions over a diverse range of industries. We understand the consequences of inaccurate and unreliable level systems. Therefore each Hycontrol installation is tailored precisely to your application, to provide the best engineered solution - *without compromise.*

With our distribution network and regional offices we can supply and support a wide range of instrumentation all around the world. Our varied customer base includes water and waste, food and beverage, chemical, petrochemical, environmental & utilities, quarrying, mining and oil & gas. We are happy to just supply a single level sensor or project manage a complete installation from site survey through to supply, install and commission. We also provide ongoing support through service and maintenance contracts.

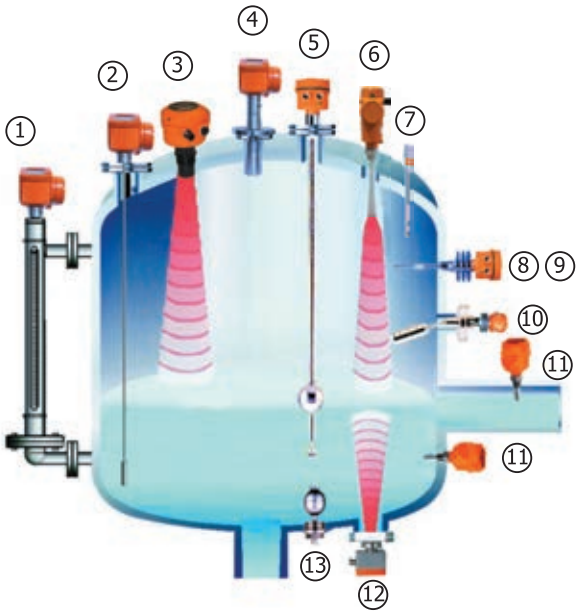
Product Range For Solids :-

(1) TDR Radar For Solids
(2) Ultrasonic, 'Through Air'
(2) 2 Wire Ultrasonic Transmitter
(3) FMCW 2 Wire Radar 'Horn'
(4) Continuous 'Servo' Level Indicator
(5) FMCW 2 Wire Radar 'Drop'
(6) Capacitance Level Switch
(7) Vibrating Probe Level Switch
(8) Rotating Paddle Level switch
(9) Microwave Level Switch
(10) Doppler Flow Switch



Product Range For Liquids :-

(1) By-Pass Level Indicator With Radar
(2) TDR Radar For Liquids
(3) 2 Wire Ultrasonic Transmitter
(4) FMCW 2 Wire Radar 'Horn'
(5) Magnetic Float Switches
(6) FMCW 2 Wire Radar
(7) Foam Detection Sensor
(8) Capacitance Level Switch
(9) RF Admittance Level Switch
(10) Side Mounting 316 SS Float Switch
(11) Tuning Fork Level Switch
(12) Pressure Transducer
(13) Mini Magnetic Float Level Switch



DESIGN and MANUFACTURING

Redditch Facility

Design - The flexibility to adapt to market changes and quickly identify new areas for product innovation are key reasons why Hycontrol's primary products are all designed in house in Redditch. Whether it is an ultrasonic level control system or a special display and alarm panel, with over 100 years collective experience, Hycontrol's engineers have the expertise to meet your requirements.

Manufacture - Hycontrol's Redditch facility has recently been extended to provide additional production space to accommodate the increase in production requirements. The addition of a mezzanine floor over existing production space has added another 2500 sq ft for production in an existing 20,500 sq ft manufacturing facility.

Large stocks - Hycontrol carries in stock one of the most extensive level instrumentation ranges available in the UK. Various length probes coupled with our quick manufacturing lead times ensure we can supply many standard products from stock and have the capability to build many items within a short lead time.

Single point of supply - Many customers require a package of instrumentation which may include level transmitters, pressure transmitters, alarm panels, display recorders or indicators. Hycontrol have been supplying complete solutions for many years and our capability extends beyond merely supplying equipment within the UK, we can supply, install, commission and service a complete range of instrumentation. One company then has total responsibility for the complete level measurement solution.

Alarm and Display Panels

Hycontrol's ability to solve level measurement problems extends way beyond the actual level gauge or probe itself. To reduce or eliminate simple errors such as product shortage, overspills and production loss requires not only a reliable level gauge but a clear visual indication of what is actually happening in the tank or vessel.

Many errors can be avoided if a simple installation is carried out to increase the visual display of contents or alarm conditions and raise awareness of impending problems.

For many years Hycontrol has been advising customers on what to install and how best to do it. However it is very apparent that trying to involve third party companies in the level measurement equation who do not totally understand the application can be a recipe for disaster. Hycontrol engineers understand what needs to be built to meet the objective of clear displays of both tank contents and alarm conditions. Although many panel solutions from Hycontrol are of a 'standard nature', many require custom build and unique logic programming to ensure valves or heaters are turned 'on' or 'off' at the correct time in the right sequence. This knowledge is then passed on to our on-site installation and service team who can then fault-find, diagnose problems and understand the internal logic, which are all important parameters if you are to provide long term service and support.

SERVICE, INSTALLATION and SUPPORT

Survey

Hycontrol understand the problems associated with level measurement and using our 30 years' experience we will impart this knowledge to our customers, free of charge.

For many customers we advise a free site survey to help us understand exactly what is required to achieve a 'best engineered' solution. We will discuss all the facets of the application including accuracy required, problems in the tank such as stirrers, agitators, aeration, temperature, fill/empty points and what media is being measured. It is only when we have all the information that we can make an informed decision on what is the best way to meet the customers' needs.

Hycontrol understand level - please use our expertise to help solve your problem.

Supply and Install

Our experience shows that many companies do not have the expertise or resources to install the complete level measurement system. This is often overlooked when making the purchasing decision resulting in unnecessary mistakes. Problems such as incorrect process connections, mounting in the wrong position, or use of incorrect cable can be avoided simply by letting Hycontrol take care of your complete project.

Hycontrol will survey, supply, install, commission and service our complete range of equipment. All Hycontrol engineers, both sales and service, are Safety Passport approved and carry all the relevant qualifications to provide a professional solution from start to finish.

Service and Technical Support

After Sales service and support is a key reason why many customers choose Hycontrol. Our team of UK service engineers are able to respond quickly to urgent service requests and our dedicated internal technical support engineers are always on hand to offer free telephone advice.

When working on sites, it is essential that all personnel are familiar with the potential dangers. This is why all Hycontrol engineers are Safety Passport trained.

Service contracts for checking calibration and confirming safety systems are fully operational are all part of Hycontrol's day to day activities.

Training

This is often overlooked by many companies and is essential if you want to get the best out of your new level measurement system and maximise the life of the product.

For example when installing an over-spill safety system it is essential customers are correctly trained in its operation to ensure the long term integrity of the system.

Hycontrol supply training free of charge for any UK installation project carried out. This can be office or site-based depending on your requirements.

SILO PROTECTION

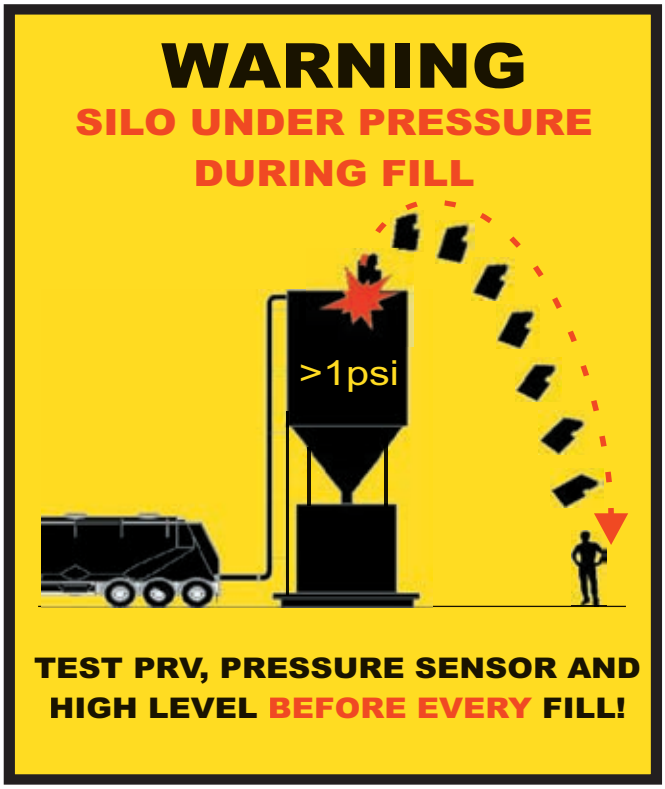
Where products are pneumatically discharged from a road tanker then silo-protection is necessary as there are inherent risks when delivering products in this way:

1. Over-pressurisation - If the air is not vented the silo will become pressurised and most silos are not tested as pressure vessels. Indeed, only a small increase (as little as 1 psi) may be sufficient to either rupture the silo or blow the filter element off the silo roof.

2. Over-filling - Over-filling the silo as a result of a level probe failure can cause filter blinding, which will cause over-pressurisation.

Hycontrol instrumentation provides the ability to test the installed equipment and guarantee its functionality before every delivery takes place with the simple push of a button.

Testing PRV eliminates above problems



TEST ALL SAFETY DEVICES FROM GROUND LEVEL

The advantages of using Hycontrol Ground Level Test (GLT) silo protection systems are numerous.

1. Testing is an essential part of maintenance and is often ignored by site as it is time consuming or has not been practical in the past. With the new Hycontrol system a silo cannot be filled without a full ground level test. The testing of the safety equipment is recommended in the latest MPA guidelines to prevent over-pressurisation of silos during the delivery of powders.

2. GLT ensures the air supply is on to the filters before every delivery. The GLT will not pass its OK to fill tests if the filter air is not switched on. If the air compressors have not been turned on this can cause an over-pressurisation condition.

3. The pressure sensor, level sensor and pressure relief valve all have to pass a function test before every delivery and this has not been reasonably practicable until recent innovation in silo protection technology.

4. With the combination of tests described above this will help eliminate filter damage by protecting and monitoring the pressure within the silo. It will reduce product loss through overfills, wastage and avoid the expensive clean up costs, but more importantly it will reduce maintenance levels significantly and provide a safer working environment for site operators.

PRESSURE RELIEF VALVE WITH TEST FACILITY

The pressure relief valve is the silo's last form of defence against over-pressurisation. This unit is normally fitted to the roof of the silo and prevents either over-pressurisation or negative pressure in the silo since both of these may cause severe damage.
This valve is available in a number of different materials and has a wide range of upstand adaptors to simplify retrofitting to existing silos. These units can be fitted with the ground level test module, to test if the valve is operational before each delivery.

Typical PRV with GLT test module

HIGH LEVEL PROBE WITH TEST FACILITY

Diamond Point vibrating probes are the most effective high level probe to use on solids and powders for many reasons. This technology is unaffected by changes in temperature, pressure, humidity and material changes such as dielectric. They require no calibration and the design has a self cleaning effect.
Many vibrating twin fork designs suffer from bridging where product gets jammed in between the forks, causing false alarms. The unique single Diamond blade is immune to this.
The Diamond Point range has one vibrating knife blade with another inside. This provides excellent sensitivity for light materials but also an extremely strong blade for vertical loading.

Typical diamond point Probe with GLT

PRESSURE SENSOR WITH TEST FACILITY

This sensor monitors the pressure in the silo and transmits it to the control panel where control actions and alarm signals can be initiated. Typically a pressure increase signal would be used to close the discharge valve in the fill pipe to stop the tanker over-pressurising the silo.
The FLEX-500 is an advance on other sensors currently in use. It is the only one that can carry out the following test functions which are essential for a silo protection system:-

1. Detect if the sensor is damaged or blocked.
2. Self-clean the sensor before and after every delivery.
3. Test the sensor integrity and operation.
4. Confirm the air supply to the filter compressor is on.
5. Records number of high level / pressure events.
6. Records number of PRV activations.

Typical pressure sensor with GLT

AUTO SHUT OFF PANEL WITH TEST FACILITY

This system will control the inlet valve to prevent over-pressurisation and overfilling of the silo and provides a clear warning via a siren and beacon. It is operated by one yellow button and if any problem arises during the test, it will display this via a status message on the front screen.
This system will also time and date stamp the last high pressure event, last high level, the last PRV lift and count the number of times each alarm event is reached. **This is important for preventative maintenance purposes. A high number of events indicates possible filter blockages, filter problems or that tanker discharges are uncontrolled, all problems that need to be urgently addressed!**

Silo protection control panel for auto shut off

OVER-FILL PROTECTION

Hycontrol have received industry safety awards for designing and manufacturing level monitoring systems to prevent overspill from tanks or silos. The systems will significantly improve health and safety on site, reduce product wastage and avoid expensive damage to storage vessels.

Typical systems include a level gauge displaying contents and ullage with an early high level warning, and an additional and totally separate independent ultimate high level probe. When coupled with clear level information in the form of ultra-bright multi-LED traffic lights the displays provide the ultimate solution for preventing overspills.

These systems are individually tailored to meet the requirements of the application and provide the 'best engineered solution'. Application successes by Hycontrol include oil companies such as Total, Shell, Nynas and BP, and have been designed in collaboration with associations such as the Refined Bitumen Association (RBA).

The systems are available in a wide array of configurations. Hycontrol are one of the only level measurement companies to design, build, supply, install and service the complete system.

Safety Highlights

- Designed in-house by Hycontrol engineers
- ATEX designs available
- Full installation service avaliable
- Hycontrol engineers are cherry picker licenced
- Technical support for the life of equipment
- Service engineers trained in panels and components
- Spares held by service engineers in case of emergency
- All panel spares held at main office in Redditch
- Innovative designs coupled with level gauge benefits
- Very competitive product range
- No third parties involved for maintenance
- Over 30 years of engineering expertise

RP SERIES - SOLIDS

This range of switches is used for solid materials such as powders, granules and pellets.

The operating principle for the Hycontrol range of paddle switches is very simple. A unit consists of a motor assembly and a shaft with a paddle attached to the end of it. The paddle is mounted through the bin wall at the top, middle or low level depending on the application.

During normal operation with no material present a synchronous motor rotates the paddle at one revolution per minute. When the rotation is impeded by material surrounding the paddle blade the motor will stall and cause a microswitch to change state to indicate an alarm or provide a control function.

This switch has a torque adjusting mechanism based on a spring setting. This provides adjustment for light powders or denser materials. The RP range isl supplied with a triple shaft seal to prevent ingress of dust into the housing.

This low-cost technology is excellent for solid products such as cement, sand and plastic pellets. The Hycontrol range is available with various extension lengths and paddle shape options.

Product Highlights

- High temperature options to 200°C
- Stainless steel construction
- Triple shaft seal for long motor life
- Rugged aluminium housing
- Adjustable sensitivity
- Simple installation via 1" BSP PC
- Adjustable insertion length
- Very price competitive
- Multiple paddle designs and materials
- Two year warranty on motor

Specification

Function:	Level switch
Measuring Range:	0-1.5 m
Environmental Protection:	IP65
Process Connection:	1" BSP std (flange options)
Power Supply:	110/230 VAC 24 VAC
Analogue Output:	No
Communication:	None
Relay Outputs:	5A/240 VAC, SPDT
Max. Process Temperature:	200ºC

Measurement

Powders - Pellets - Granules - Flakes

Range

0 - 1.5 m

Application

Stone - Cement - Filler
Plastic Pellets - Grain

Industries

Chemical
Quarry & Aggregate
Process
Animal Feed

VIBRATING PROBE
Level Switch

SOLIDS - DP RANGE

The Diamond Point Level Switch is designed specifically for use with dry products ranging from heavy materials such as stone, aggregates and cement, to very low density materials like cornflakes and flour. Its unique principle of operation and shape ensure that it is self-cleaning. Because it is only sensitive near the tip it is not influenced by build-up on the silo walls.

The operating principle is the same for all vibrating probe level switches. A piezo-electric crystal is used to force a blade to oscillate at its fundamental frequency (natural resonance). When the blades come into contact with the process medium the natural frequency of oscillation is dampened, the electronics sense the change in frequency which causes the unit to switch.

The single reinforced diamond shaped vibrating blade prevents material build-up or bridging, which are typical problems associated with the dual blade "tuning fork" design. Being very sensitive in the lateral mode the level switch can be used for extremely light materials with densities as low as 10 grams per litre.

The strong stainless steel construction gives the Diamond Point level switch strength in the vertical direction for use with heavy materials such as cement or aggregates. These ranges of probes also have a ground level test option for testing the switch integrity whilst installed in an application.

Measurement

Solids - Powders - Pellets
Granules - Flakes

Range

0 - 20 m

Application

Grain - Cement - Sawdust - Chalk
Flour - Cornflakes - Lime - Plastics

Industries

Chemical
Food
Process
Quarry
Animal feed

Product Highlights

- No moving parts to wear
- Very strong and robust
- ATEX options
- Pressure up to 10 bar
- Measures products from 10grm/litre
- No maintenance required
- Unaffected by environmental changes
- Operating temperature up to 250°C
- Simple to install
- Only sensitive near the probe tip

Specification

Function:	Level Switch
Measuring Range:	0-20 m
Environmental Protection:	IP66 / IP67
Process Connection:	1" & 1.5" BSP / NPT (other flange options)
Power Supply:	20 - 250 VAC or DC
Analogue Output:	No
Communication:	None
Relay Outputs:	5A/250V SPDT/ DPDT
Display:	LED indication for on/off
Accuracy:	Product dependent

LIQUIDS - TF RANGE

The operating principle is the same for all vibrating probe level switches. A piezo-electric crystal is used to force a blade to oscillate at its fundamental frequency (natural resonance). When the blades come into contact with the process medium the natural frequency of oscillation is damped, the electronics sense the change in frequency, which causes the unit to switch.

The choice of different electronic outputs allow the user to switch a load on/off or to interface directly with a computer. The units can be programmed to sense high or low level and failsafe high or low, with adjustable sensitivity to eliminate false switching.

This ruggedly designed switch is used throughout the process industries. It is available with a wide range of flange or screwed process connections and can have extensions, enabling the probe to reach 3 metres into a tank if required.

The wetted parts of standard switches are 316 stainless steel, but special Halar coated and Hastelloy switches are available for extremely corrosive applications. Hygienic probes are available for the food industry. The switch has visual indication of its on/off status and a test point on the side of the housing to allow an operator to check the function of the switch.

Intrinsically safe and flame proof versions are available for hazardous areas.

Product Highlights

- No moving parts to wear
- No maintenance required
- Operating temperature to 260°C
- Simple to install
- Unaffected by environmental changes
- Pressure up to 100 bar
- ATEX & SIL options
- Hygienic options
- Small insertion length
- Specific frequency avoids false switching

Specification

Function:	Level switch
Measuring Range:	0-3 m
Environmental Protection:	IP66 / IP67
Process Connection:	3/4", 1"BSP (flange options)
Power Supply:	24-240 VAC 50/60 Hz 24-60 VDC
Analogue output	N/A
Communication:	N/A
Relay Outputs:	5A/240 VAC/30 VDC, SPDT,DLS,PNP
Display:	LED indication for on/off failure mode
Max. Process Temperature:	260°C
Accuracy:	Hysteresis. 1mm/switch point 13mm from tip

Measurement

Liquids

Range

0 - 3 m

Application

Oils - Acids - Water - Solvents
Chemicals - Paints

Industries

Chemical - Pharmaceutical
Process
Oil & Gas
Petrochemical
Food & Beverage

MD SERIES

The Hycontrol range of admittance switches provides a solution for many products which have a tendency to coat the level probe such as bitumen, paint or adhesives. Admittance is suitable for use on liquids, solids, slurries, pastes, granules, powders and pellets in high temperature, high pressure and corrosive environments.

The main advantage offered by using this admittance range of switches is their ability to totally ignore product build up on the sensing probe.

This unique design utilises a protective insulation electrode between the conventional main electrode and the grounding sleeve which enables the electronics to distinguish between coatings and actual product level. This probe can then differentiate between a thick coating and rising or falling product level without false switching.

This technology also provides an ideal solution for interface detection applications such as oil on water and liquid detection underneath a layer of foam. The MD series also incorporates the ground level test facility for checking probe operation.

Measurement

Slurries - Liquids - Pastes - Solids

Range

0 - 5 m

Application

Adhesives - Glues - Bitumen
Tar - Paints

Industries

Chemical
Quarry
Process
Water & Waste

Product Highlights

- Universal switch for liquids / solids
- Immune to coating & false switching
- Ideal for hot sticky product
- Corrosion and chemical resistant
- Ground level test option
- Simple installation via 1" BSP
- Remote electronics option
- High temperature options to 550°C
- Interface level detection
- Adjustable sensitivity & time delay

Specification

Function:	Level switch
Measuring Range:	0-5 m
Environmental Protection:	IP65
Process Connection:	1" BSP (flange options)
Power Supply:	24 VDC/110/230 VAC
Analogue Output:	N/A
Communication:	N/A
Relay Outputs:	5A/240/V AC, 5A/30VDC SPDT NPN
Display:	LED indication for on/off only
Max Process Temperature:	550ºC
Accuracy:	Adjustable from 1 mm

ME SERIES

Hycontrol capacitive level switches provide accurate and reliable level control for a wide range of applications.

They are suitable for use on liquids, solids, slurries, pastes, granules, powders and pellets in high temperature, high pressure and corrosive environments.

Unlike many other capacitive switches, the Hycontrol unit works independently of the tank walls using an integral grounding sleeve without the need for a reference probe. This enables it to be used in concrete, plastic or other non-metallic tanks.

The Hycontrol solid-state level switch consists of a sensing element and an integral grounding sleeve that is separated by an insulator. There is a fixed capacitance between these two elements and this will change when product comes into contact with the sensing probe. The switch will then detect this change and activate the output relay. This method of detection relies on the dielectric properties of the product and therefore the higher its dielectric the easier it is to detect.

This technology also provides an ideal solution for interface detection applications such as oil on water and liquid detection underneath a layer of foam.

Product Highlights

- Universal switch for solids and liquids
- High temperature options to 800°C
- Corrosion and chemical resistant
- Competitive price
- Adjustable sensitivity
- Ground level test option
- Simple installation via 1" BSP
- Interface level detection
- Remote electronics option
- Adjustable time delay

Specification

Function:	Level switch
Measuring Range:	0-5 m
Environmental Protection:	IP65
Process Connection:	1" BSP std (flange options)
Power Supply:	24 VDC /110/230 VAC
Analogue Output:	None
Communication:	None
Relay Outputs:	5A/240 VAC, 5A/30 VDC, SPDT, NPN
Display:	LED indication for on/off only
Max. Process Temperature:	800ºC
Accuracy:	Adjustable from 1 mm

Measurement

Solids - Liquids - Pastes

Range

0 - 5 m

Application

Oils - Water - Acids - Cement
Chemicals - Stone - Bitumen

Industries

Chemical
Water & Waste
Quarry
Process

BLOCKED CHUTE DETECTION

The Hycontrol range of microwave level switches provides a simple non-contact, non-intrusive option suitable for many applications on dry powder or granular product.

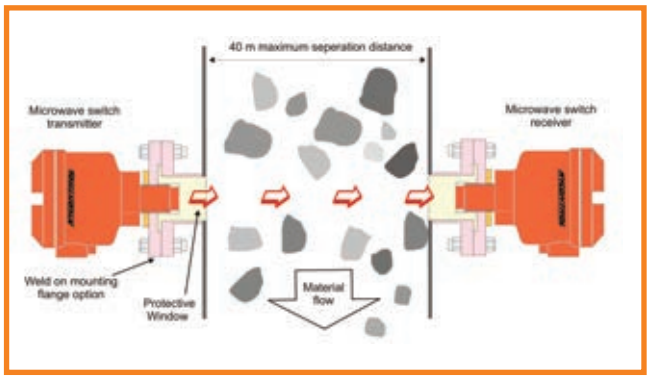
An installation comprises of a transmitter and a receiver which are mounted facing one another at distances up to a maximum of 40m apart. During operation the transmitter emits a continuous low power microwave beam to the receiver and an output relay is energised or de-energised when this beam is obstructed by the material being monitored.

The switch trigger point is determined by the amount of microwave energy received and can therefore be adjusted to cater for different products and different sensitivity settings depending upon the application.

Typical applications for detecting presence and non-presence of materials include flow and no-flow conditions, point level detection and blocked chute detection. Another popular use is as a proximity switch detection for reversing vehicles including trucks and rail cars.

The advantage of this technology is that it is able to monitor through product build up on tank or chute walls and can be non-intrusive by utilising protective windows, *shown above right.*

This technology is ideal for replacing costly nucleonic devices.



Measurement

Solid - Powders - Granules - Flakes

Range

0 - 40 m

Application

Crushers - Chutes - Conveyors - Tanks

Industries

Chemical - Animal Feed
Water & Waste
Process - Recycling
Food
Quarry & Mining

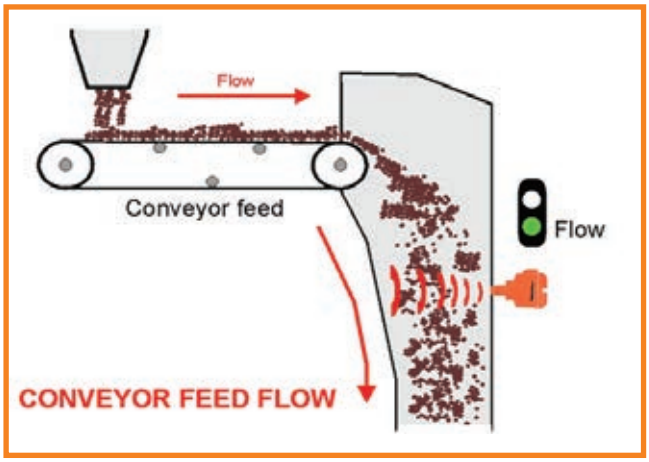
Product Highlights

- High penetration of dust build up
- Non-contact measurement
- Measurement range up to 40 m
- Simple to install and commission
- Blocked chute detection
- Replace expensive nucleonics
- Total safety for operators
- No maintenance required
- High temperature options
- Retrofit to existing tanks/silos/chutes
- Can detect through windows

Specification

Function:	Level switch
Measuring Range:	0-40 m
Environmental Protection:	IP65
Process Connection:	1" BSP (other flange options)
Power Supply:	24 VDC (110 VAC option)
Analogue Output:	No
Communication:	None
Relay Outputs:	30 VDC, 2 A SPDT
Display:	15 LEDs for power indication & on/off mode
Max. Process Temperature:	180ºC
Frequency:	24 Ghz

SOLIDS FLOW SWITCH



The Microwave switch provides an effective way of detecting the flow or no-flow of a wide range of particulate materials.

The flow switch uses a microwave doppler effect and is non-invasive. During operation the sensing head transmits a continuous low power microwave beam towards the flowing product. Some of these microwaves are reflected back to the sensing head and are then analysed as to whether the product particles are moving or stationary objects.

The highly penetrating microwave beam passes through any build-up on the transmitter face and will even detect through pipes of non-conducting materials such as plastic and ceramics.

The switch is best suited for the detection of materials such as dry solids, granules, flakes and powders.

Typical applications include grain, flour, cement, ore, stone coal and animal feed. Flow can be detected in pipelines, chutes, transfer bins or free air.

This technology can be combined with the blocked chute detector to provide a flow or no-flow output and blocked or clear chute indication for maximum plant protection.

Product Highlights

- High penetration of dust build up
- Improves plant efficiency
- Flow detection from outside the chute/ pipe
- Can detect through plastic 'windows'
- 4-20 mA flow output
- Reduces plant wastage
- Non contact measurement
- Simple to install and commission
- No maintenance required
- High temperature options

Specification

Function:	Flow switch
Measuring Range:	0-1.5 m
Environmental Protection:	IP65
Process Connection:	1" BSP (other flange options)
Power Supply:	24 VDC
Analogue Output:	4-20 mA option
Communication:	N/A
Relay Outputs:	1 A 30 VDC, SPDT
Display:	15 LEDs for power indication & on/off mode
Max. Process Temperature:	180ºC
Frequency:	24Ghz

Measurement

Solids - Powders - Granules - Flakes

Range

0 - 1.5 m

Application

Wood Pellets - Plastics
Sand - Cement - Lime

Industries

Chemical - Process
Water & Waste
Recycling - Food
Quarry
Paper & Pulp

MICROFLEX C

Microflex C is a low cost unit in the Hycontrol range of non-contact ultrasonic level transmitters, which is designed for liquids only.

The principle of operation is often referred to as 'time of flight'. An ultrasonic pulse is emitted from the integral transducer down towards the target and is reflected back from the surface. The time it takes to travel from and to the transducer is directly proportional to the distance travelled. This range is capable of measuring distances up to 11m and can be configured for level, flow, distance and volume output.

The Microflex is available in three configurations all with two wire loop powered technology. The basic version, Microflex C, is an 8 m range low cost unit with an accuracy of 1%. The accuracy increases for the next model (Microflex CER), to 0.25% plus it has two additional built in relays for pump or alarm control. The lastest version (Microflex CIS), has ATEX certification and also an 11 m range.

All units are programmed via an integral keypad or alternatively the extended range models CER and CIS can be programmed via HART.

This range provides a low cost level measurement solution for simple liquid applications.

Measurement

Slurries - Liquids - Pastes

Range

0 - 11 m

Application

Oil - Water - Paints - Chemicals - Sludge
Chocolate - Effluent

Industries

Chemical
Water & Waste
Process
Food
Quarry
Petrochemical

Product Highlights

- Range up to 11 m
- Very competitive price
- Two wire advanced technology
- Non-contact measurement principle
- Chemical resistant transducers
- Advanced echo extraction
- ATEX approval
- Simple to install and commission
- 2" BSP/NPT process connection
- Suitable for wide range of liquids

Specification

Function:	Level/Distance/Volume/Flow
Measuring Range:	0-11 m
Environmental Protection:	IP66 / IP67
Process Connection:	2" (other flange options available)
Power Supply:	12 - 30 VDC
Analogue Output:	4-20 mA 2 wire loop
Communication:	HART
Relay Outputs:	1A 24 VDC, SPST
Display:	Integral LCD option
Max. Process Temperature:	70ºC
Accuracy:	0.25 - 1% of measured distance

MICROFLEX LR

Microflex LR pushes the boundaries of non-contact ultrasonic level measurement. This new range of Smart Level Transmitters can measure distances up to 60 metres and is suitable for solids and liquids. Using new technology developed with low frequencies these transmitters can operate in extreme applications, including very dusty and dirty environments where most traditional ultrasonic units will fail.

Utilising frequencies down to 5kHz enables level measurement on difficult solids applications up to 60 metres as this frequency can penetrate the dust on filling cycles and has an ability to self clean the transducer face.

Microflex LR is available in two configurations with 2/3/4 wire technology; an integral display (MI) four-button programmable instrument and a SMART blind (MS) version *(both shown opposite)*.

This range can be programmed from a PC using Hycontrol's Vision System software. If necessary, by adding the Hycontrol Link, any system adjustments can be made from anywhere in the world using the internet. Hycontrol Service Engineers can remotely analyse and overcome any commissioning issues which may be experienced in the field without having to actually visit site, thereby reducing time and costs for the customer.

Product Highlights

- Long range up to 60 m
- Multi-drop and BUS capability
- Two wire advanced technology
- Non-contact measurement principle
- ATEX Hazardous area approvals
- Low power options down to 12 VDC
- Low frequency for dust penetration
- Suitable for liquid and solid products
- Chemical resistant transducers
- Remote connectivity for commissioning

Specification

Function:	Level/Flow/Distance/Switch
Measuring Range:	0-60 m
Environmental Protection:	IP66 / IP67
Process Connection:	2" BSP (flange options)
Power Supply:	12-30v DC/90-256 VAC
Analogue Output:	4-20 mA 2/3/4 wire option
Communication:	HART / MODBUS / PROFIBUS / GPRS / GSM
Relay Outputs:	1A 30VDC, SPDT
Display:	Integral LCD option
Max. Process Temperature:	150ºC
Accuracy:	0.25% of measured distance

Measurement

Liquids - Powders - Granules - Slurries

Range

0 - 60 m

Application

Water & Waste - Cement - Sand
Coke & Ore - Coal - Plastics - Chemical

Industries

Chemical - Process
Water & Waste
Petrochemical - Iron & Steel
Power Generation - Quarry
Food

MINIFLEX LR

Non-contact ultrasonic is one of the most versatile level measuring technologies available today, but the introduction of the new Miniflex LR moves these boundaries even further into the next generation.

Miniflex LR, with its wide range of transducers and advanced PULSE window echo tracking technology, is capable of measuring virtually any liquid or solid and can be used in a wide range of industries including water and waste, chemical and process, quarry and aggregate.

The programming is via a simple button keypad situated behind an IP65 protection front cover. The two-line 16 digit display enables programming without the use of a manual by simply using a flow programming chart, and following an application-specific guidance routine therefore reducing set-up times to a minimum.

Miniflex LR utilises automatic gain control to cater for changing vessel characteristics such as foam or agitation and to ensure the instrument always receives stable true echoes.

Stirrers and agitators rotating in front of a conventional ultrasonic transducer will produce a signal indicating a higher product level within the tank. However the Miniflex LR has advanced echo extraction routines which will effectively blank out the stirrers so the correct level is always monitored, providing reliable and stable output.

Measurement

Liquids - Slurries - Pastes - Solids

Range

0 - 10 m

Application

Water - Chemicals - Sewage
Acids - Paints - Inks - Oils

Industries

Chemical
Water & Waste
Process
Food
Quarry
Petrochemical

Product Highlights

- Multi programmable
- Advanced echo extraction
- 5 button intuitive programming
- ATEX hazardous area approvals
- Non-contact measurement principle
- Level/Flow/Volume/Pump control
- Chemical resistant transducers
- Distance / Differential control
- 16 digit two line LCD backlit display
- Displays level and ullage

Specification

Function:	Level/Flow/Distance/Differential/Pump Control/Volume
Measuring Range:	0 -10 m
Environmental Protection:	IP65
Process Connection:	M20 or flange options
Power Supply:	24 VDC /95/110/230 VAC
Analogue Output:	4-20 mA
Communication:	RS232
Relay Outputs:	3 x 8A 250 VAC, SPDT
Display:	LCD 2 line 16 digit
Max. Process Temperature:	-40 to +90ºC
Accuracy:	0.25% of measured distance

REFLEX LR

Reflex LR expands the capabilities of non-contact ultrasonic level measurement. This range of Smart Level Transmitters are capable of measuring distances in excess of 60 metres and is suitable for solids and liquids. Using new technology developed with low frequencies, these new transmitters are capable of measuring in extremely difficult applications including very dusty and dirty environments where most traditional ultrasonics will fail.

Level measurement on difficult solids applications in excess of 60 metres is now possible with two wire technology. This new range can be programmed remotely using Hycontrol's Vision System II software.

Using this option, instruments can be connected via the GSM LINK to a Hycontrol Service Engineer in our UK office who can analyse and overcome any commissioning issues which may be experienced in the field, without having to actually visit (and incur any additional call-out charges).

The Reflex LR is designed to be used with the new range RVT transducers which have a wide range of process connections available to suit most applications.

Product Highlights

- Long range up to 60m
- Multi-drop capability
- Local display and alarm control
- Low frequency for dust penetration
- Non-contact measurement principle
- Hazardous area approvals
- Chemical resistant transducers
- Remote connectivity for fault finding
- Suitable for liquid and solid products
- spurious signal rejection

Specification

Function:	Level/Distance/Flow/Differential/Level switch
Measuring Range:	0-60 m
Environmental Protection:	IP65
Process Connection:	2" BSP (flange options)
Power Supply:	12-30 VDC / 90-256 VAC
Analogue Output:	4-20 mA 2/3/4 wire option
Communication:	HART/MODBUS/PROFIBUS/GPRS/GSM
Relay Outputs:	5 X 0.5A 240 VDC, SPDT
Display:	Integral LCD
Max. Process Temperature:	150ºC
Accuracy:	0.25% of measured distance

Measurement

Solids - Powders - Granules
Slurries - Liquids

Range

0 - 60 m

Application

Water - Cement - Sand
Chemicals - Grain - Woodchip
Acid - Lime Stone

Industries

Chemical
Water & Waste
Process
Food
Quarry
Petrochemical

SURESENSE / MULTISENSE / DIFOAM

Hycontrol offer the most extensive range of aqueous and non-aqueous foam detection systems in the world. These sensors and systems are purpose designed and manufactured to detect, analyse and process virtually any foam.

They provide key benefits to industries including: Huge reductions in anti-foam products, increased batch sizes, reduced environmental pollution and significantly improved production efficiency.

Hycontrol's foam detection range uses patented 'Intelligent Multi-Action' (IMA) sensor technology to detect the foam. This technology originated from Shell Oil's Research & Development team purely for the purpose of foam detection within their own business. IMA sensing leaps ahead of all other foam detecting technologies, as it will operate efficiently and repeatedly even when the probe becomes fouled with residual product.

The development of this new technology has put Hycontrol in the position of global leaders in foam detection.

- Reduce anti-foam costs
- Improve plant efficiency
- Increase production

Measurement

Liquids - Foam

Range

0 - 6 m

Application

Foam detection in:-
Oils - Chemicals - Water - Solvents - Paint - Glues - Waste Water - Resins - Drugs

Industries

Pharmaceutical
Petrochemical
Water and Waste
Food
Chemical
Antibiotic

Product Highlights

- Reduce anti-foam costs up to 40%
- Reduce process downtime
- Reduce waste and product loss
- Increase production capacity
- Improve plant efficiency
- Avoid enviromental pollution
- Hygienic FDA approved materials

Specification

Function:	Level switch, Continuous
Measuring Range:	0-6 m
Environmental Protection:	IP65
Process Connection:	Wide range available
Power Supply:	24 VDC 110/240 VAC/50hz
Analogue Output:	4-20 mA optional
Communication:	N/A
Relay Outputs:	SPDT
Display:	N/A
Max. Process Temperature:	200ºC optional
Accuracy:	N/A

FOAM TENDENCY ANALYSER

Foam can occur in many applications but can also manifest further downstream of the process. For example at vehicle washing stations or outlets of treatment works into river courses or coastlines. Here the foam may not develop until it is agitated by the flow downstream or constant churning of the surf. This means a liquid may look okay when it leaves a works but later it can produce an unsightly pollution incident.

The FTA100 is a unique foam control system that provides a pre-emptive (rather than reactive) approach to foam control. Operating fully automatically, it measures the tendency of a liquid to create foam and can take action before foaming occurs. This is achieved by taking a sample from the process and analysing the foam tendency in a small test cell.

The FTA includes a series of pumps for sample handling. A fill pump is used to draw a sample from a process into a test cell. The sample in the test cell is analysed by purging air through it to create foam. The foam is then measured using a foam sensor. Once the measurement is complete the sample is removed by means of the drain pump and returned to the process or discarded.

The FTA100 has an option to be supplied without an integral dosing pump in applications where the customer wishes to provide their own dosing pump. This is called the FTA101.

Product Highlights

- Corrosion resistant
- Small process connections
- Reduces anit-foam costs
- Improves production efficiency
- Minimal Maintenance
- Early Warning of Foam
- Avoid exceeding Consent Limits
- Avoid costly fines

Specification

Function:	Level switch foam
Measuring Range:	N/A
Environmental Protection:	IP65
Process Connection:	N/A
Power Supply:	110/240 VAC/50hz
Analogue Output:	4-20 mA optional
Communication:	N/A
Relay Outputs:	SPDT
Display:	N/A
Max. Process Temperature:	70ºC
Accuracy:	N/A

Measurement

Foam

Range

N/A

Application

Foam detection in:-
Chemicals - Water - Solvents
Waste Water

Industries

Water and Waste
Food
Beverages
Pharmaceutical
Paper Mill
Bio-fuel

SLUDGE BLANKET DETECTION

The Hycontrol Sonarflex sludge blanket and interface controller is a microprocessor-based transmitter combined with the appropriate RVS sonar transducer and its associated cleaning mechanism. It is programmed via an easy menu-driven keypad or remotely via a PC. It is used to measure the blanket level in primary sedimentation tanks or the RAS Blanket and FLOC/FLUFF layers in secondary and final clarifiers.

The Sonarflex transmitter emits a sound pulse from the transducer that propogates through the water towards the blanket interface and continues to the bottom of the tank. The pulse is reflected off the blanket back to the Sonarflex, where the signal is processed. This provides either a distance reading to the blanket/interface level or a height of blanket/interface from the bottom of the tank.

This unit is capable of tracking multiple bed layers and providing information on temperature, clarity and FLOC level simultaneously.

This system allows automation and control of underflow pumps and significantly improves plant efficiency. Using the COMMS output option can also provide advanced warning of biological upsets. This important additional information allows operators to reduce chemical dosing and control aeration far more efficiently, which reduces energy consumption.

Measurement

Sludge Blanket Layers

Range

0 - 60 m

Application

Clarifiers - Thickeners
DAF Tanks - SBRs
Mining Settlement

Industries

Chemical
Process
Water & Waste
Food
Paper - Wood
Quarry & Mining

Product Highlights

- Advanced warning of biological upsets
- Automate existing installations
- Self cleaning mechanisms
- Outputs for RAS/FLOC/TEMP/CLARITY
- Remote radio link options for setup
- Improved control of process
- Multiple transducer frequencies
- Reduced energy costs
- ATEX options for sludge blanket
- Measures a range of sludge densities

Specification

Function:	Sludge blanket layer measurement
Measuring Range:	0-60 m
Environmental Protection:	IP68 (Sensor)
Process Connection:	Bridge mounting options
Power Supply:	24 VDC 110/230 VAC
Analogue Output:	Dual 4-20 mA
Communication:	HART/RS485/PROFIBUS/MODBUS
Relay Outputs:	3 SPDT
Display:	Multi-line integral option
Max. Process Temperature:	90ºC
Accuracy:	0.25% measured distance

SONAR APPLICATIONS

Primary / Secondary

In the water and waste process industry, conditions will vary greatly between a primary sedimentation tank, secondary/final clarifier and a gravity thickener.

Thickener bed levels, secondary RAS blankets and flocculent blankets can all have different densities and the water above these levels is subject to different process conditions that can change. To optimize performance in each application under all process environments we choose a particular sonar frequency and power level from the 15 different transducer models.

To optimize performance under all process environments in each interface application, we choose the transducer with a frequency and power level that is applicable to the density of the interface and process conditions in the tank. By selecting the correct sonar transducer, we can guarantee performance for controlling pumps and the process, rather than just for monitoring purposes only.

Each Hycontrol transducer is capable of measuring two independent densities simultaneously.

Thickener Tanks

As thickeners are generally used after primary or secondary settlement, the product density measured is in the range of 6000-8000 mg/ltr.

Hycontrol multi-array transducers allow penetration through a high concentration of suspended solids and can therefore be used to optimise the density of sludge which is pumped back to the presses or digesters.

The second output from the Sonarflex can also be used for an indication of water clarity (suspended solids) or to track the hindered layer to provide either a pre-warning of process problems or build-up of scums and debris on the transducer face to maintain optimum performance.

Sequential Batch Reactors (SBR)

SBRs are typically installed where site space is at a premium and combine the primary sedimentation tank, aeration process and the final (secondary) settlement all in the same tank. By the nature of their operation the physical levels in the tank change and a traditional 'fixed' device cannot cater for all level variations.

Hycontrol offer a unique solution for this type of application with a sonar transducer that actually floats on the surface, enabling it to track the settling blanket as decant levels change. This enables the process to work far more efficiently as the settling times can be monitored with greater accuracy and improved batch sequence times can be achieved. The subsequent improved batch sequence times can result in improving the SBR capacity by as much as 10-20%.

REFLEX TDR VF03

The Reflex VF range of TDR (Time Domain Reflectometry) products is ideal for the measurement of liquids, powders and granules up to a range of 24m. They are unaffected by pressure, temperature, viscosity, vacuum, foam, dust, changes in dielectric constant or coating of the probe. The VF Series can measure virtually any product utilising any one of its seven probe types.

Pulses of low power microwaves are sent along the suspended stainless steel wire or rod. Where the waves meet the product surface they are reflected back. The intensity of the reflection depends on the dielectric constant of the product. The higher the dielectric constant, the stronger the reflection will be, e.g. up to 80% for water. The instrument measures the time between emission and reception which is proportional to the distance.

TDR guided radar can be used in two different modes for level measurement or interface measurement of two different liquids.

This technology is very flexible providing excellent results not only for industrial silos during fill conditions but also on liquid applications such as bitumen where the instrument continues to operate even with significant coating around the cable or probe.

These units can be supplied fully calibrated and literally require only fitting into the tank, connecting up and switching on!

Measurement

Slurries - Liquids - Pastes - Solids

Range

0 - 24 m

Application

Oil - Solvents
Acids - Bitumen
Cement - Lime - Paint
Water

Industries

Chemical
Water & Waste
Quarry
Process
Oil & Gas

Product Highlights

- Universal technology for liquids/solids
- 2 wire loop powered 24 VDC
- High temperature option 600ºC
- Unaffected by dust during fill
- Corrosion & chemical resistant
- Installation by 1" BSP
- ATEX options
- Immune to pressure, foam & dust
- High accuracy ±5 mm

Specification

Function:	Level/Distance/Volume/Interface
Measuring Range:	0-24 m
Environmental Protection:	IP65
Process Connection:	1" BSP (flange options)
Power Supply:	24 VDC
Analogue Output:	4-20 mA
Communication:	HART
Relay Outputs:	N/A
Display:	Optional plug in module
Max. Process Temperature:	600ºC
Accuracy:	±5 mm

REFLEX TDR VF2

The Reflex VF2 Series range of TDR products is ideal for the measurement of liquids, powders and granules to a range of 40m.

Unaffected by pressure, temperature, viscosity, vacuum, foam, dust, changes in dielectric constant or coating of the probe, the VF Series can measure virtually any product in either Direct, Automatic or TBF mode utilising any one of its seven probe types.

The VF2 TDR transmits low-intensity electromagnetic pulses of approximately one nano second width along a rigid or flexible conductor. These pulses move at the speed of light and when the pulses reach the surface of the product to be measured, the pulses are reflected back to the signal convertor.

The device then measures the time from when the pulse was transmitted to when it is received. This is then divided by two as this is the time equivalent to the distance from the reference point of the device to the surface of the product. The time value is then converted into an output current of 4 - 20mA.

The VF2 is fitted with advanced DPR software for dynamic parasite rejection which automatically removes false signals and improves stability and accuracy of the measured signal.

Product Highlights

- Universal technology
- Remote display
- Integral dispplay and programmer
- Parasite rejection software
- Small process connections
- Multiple housing
- SIL 2 safety level
- 2 wire loop powered
- Corrosion resistant
- ATEX options

Specification

Function:	Level/Distance/Volume
Measuring Range:	0 - 40 m
Environmental Protection:	IP66 / IP67
Process Connection:	Thread and Flange
Power Supply:	24 VDC
Analogue Output:	4-20 mA
Communication:	HART / PROFIBU0S PA
Relay Outputs:	N/A
Display:	Option for integral or remote
Max. Process Temperature:	300ºC
Accuracy:	±10mm or 3mm optional

Measurement

Liquids - Solids - Pastes

Range

0 - 40 m

Application

Oils - Chemicals - Water - Solvents
Sand - Cement - Lime - Paint - Glues
Pellets - Powders

Industries

Offshore
Oil
Power
Pharmaceutical
Water and Waste
Process
Quarry
Mining

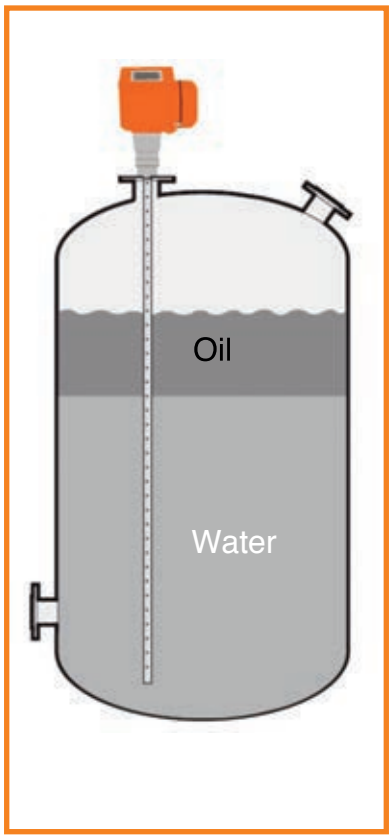
REFLEX VF7 SERIES

The Reflex VF range of TDR products are ideal for the measurement of liquids, powders and granules up to a range of 35m. Unaffected by pressure, temperature, viscosity, vacuum, foam, dust, changes in dielectric constant or coating of the probe. The VF Series can measure virtually any product in either Direct or TBF mode, utilising any one of its seven probe types.

Pulses of low power microwaves are sent along a conductor, at the point where the waves meet the product surface, they are reflected back. The intensity of the reflection depends on the dielectric constant of the product. The higher the dielectric constant, the stronger the reflection will be, e.g. up to 80% for water.

The instrument measures the time between emission and reception of the microwave signal which is proportional to the distance. TDR guided wave radar can be used in two different modes for level measurement or interface measurement of two different liquids.

This model can measure very low dielectric product (as low as 1.1) and can provide an accuracy of ±3 mm on liquids as standard. It is suitable for high pressure applications up to 300 bar and can measure the interface bewteen liquids such as oil and water.



Measurement

Solids - Liquids - Pastes

Range

0 - 35 m

Application

Chemicals - Oil - Acids - Solvents
Water - Cement - Bitumen

Industries

Pharmaceutical - Chemical
Food - Process
Oil & Gas
Water & Waste
Quarry & Mining
Animal Feed

Product Highlights

- Universal technology for liquids/solids
- Unaffected by dust during fill
- Corrosion & chemical resistant
- Capable of measuring 1.1 interface
- Safety integrity level SIL1
- 1/2" BSP process connections
- Immune to pressure, foam & dust
- High accuracy ±2 mm
- High pressure options to 300 bar
- High temperature options to 300ºC

Specification

Function:	Level/Distance/Volume/Interface
Measuring Range:	0-35 m
Environmental Protection:	IP66 / IP67
Process Connection:	0.5" BSP (flange options)
Power Supply:	24 VDC
Analogue Output:	Dual 4-20 mA
Communication:	HART / FF / PROFIBUS PA
Relay Outputs:	N/A
Display:	Integral LCD option
Max. Process Temperature:	300ºC
Accuracy:	±3 mm (2mm option)

REFLEX VG7 FOR LIQUIDS

The Reflex VG7 Series of two wire FMCW (Frequency Modulated Continuous Wave) Radar Products are the most advanced in the Hycontrol range of radar technology products. They are unaffected by pressure, temperature, viscosity, vacuum, foam dust or changes in dielectric constant and can measure virtually any liquid or solid product utilising either Horn or Drop Antenna. This radar gauge can measure distance, level or volume.

The FMCW radar uses a high frequency (26 GHz) signal which increases in frequency during the measurement. The emitted signal is reflected back from the product surface.The difference between the transmitted and received frequencies is analysed. The difference is directly proportional to the level being measured.

For process vessels with complex internal structures such as pipes, heating coils or agitators/stirrers, then the ETS (Empty Tank Spectrum) is required. ETS effectively maps out all unwanted signals by viewing the tank empty and memorising all the return signals from internal structures such as pipes, heating coils and agitators.

The VG7 Radar will then only monitor the moving liquid levels and ignore the static objects from the empty tank spectrum providing reliable level measurements.

Product Highlights

- Suitable for aggressive liquids
- 2 wire loop powered 24 VDC
- High temperature option 250ºC
- Suitable for liquid & solid applications
- Corrosion & chemical resistant
- High accuracy radar ±2 mm
- FMCW advanced radar with SIL1
- TBF mode for low dielectric media
- Immune to pressure, foam & dust
- Volume linearization for irregular tanks

Specification

Function:	Level/Distance/Volume
Measuring Range:	0-80 m
Environmental Protection:	IP66 / IP67
Process Connection:	Various flange/screw options
Power Supply:	24 VDC
Analogue Output:	4-20 mA
Communication:	HART / FF / PROFIBUS PA
Relay Outputs:	N/A
Display:	Multi-line integral module
Max. Flange Temperature:	250ºC
Accuracy:	±3mm (2mm option)

Measurement

Solids - Liquids

Range

0 - 80 m

Application

Oils - Acids - Solvents Chemicals
Cement - Ore - Coal - Coke

Industries

Chemical - Process
Oil & Gas
Pharmaceutical
Water & Waste
Quarry & Mining
Food & Beverage
Power Generation

REFLEX VG6 FOR SOLIDS

The VG6 FMCW radar uses a high frequency (26 GHz) signal which increases in frequency during the measurement. The emitted signal is reflected back from the product surface. The difference between the transmitted and received frequencies is analysed. The difference is directly proportional to the level being measured.

The VG6 FMCW Radar has been designed specifically for applications on solid product including powders, granules, flakes and pellets. This design has two unique features which differentiate it from many other radar designs. Firstly it has a patented 'drop' shape antenna, design, available in either Polyproylene or PTFE. This new antenna shape makes it difficult for product to build up on the antenna front-face and still continues to work even when heavily coated with product. VG6 is especially suited for long range, dusty solids applications such as powdered cement. The picture *opposite* shows the antenna heavily coated in cement, but VG6 still performs well.

The additional benefit of the design on dusty solids is that you do not require a constant air purge for cleaning the antenna. This provides significant cost savings over the life of the instrument especially compared to many competitive radar products which require this. An additional feature of the drop antenna is that it also reduces the measuring beam angle for smaller diameter silos.

The VG6 radar also incorporates newly updated software which has been designed to be more user friendly when programming for solids applications. It now caters for all the different fill dynamics of a silo containing solids.

VG6 coated antenna

Measurement

Solids

Range

0 - 80 m

Application

Cement - Ore - Coal - Coke
Flour - Plastics - Aggregates - Sand

Industries

Chemical - Process
Oil & Gas
Pharmaceutical
Water & Waste
Quarry & Mining
Food & Beverage
Power Generation

Product Highlights

- Suitable for dusty long range solids
- FMCW advanced radar with SIL1
- Profibus/Foundation Fieldbus options
- Corrosion & chemical resistant
- Immune to pressure, foam, temperature variations
- High temperature option 250°C
- Vessel mapping for difficult shaped bins
- No air purge cleaning required
- 2 wire loop powered 24 VDC

Specification

Function:	Level/Distance/Volume
Measuring Range:	0 - 80 m
Environmental Protection:	IP66 / IP67
Process Connection:	Various flange & screw options
Power Supply:	24 VDC
Analogue Output:	4-20 mA
Communication:	HART / FF
Relay Outputs:	N/A
Display:	Multi-line integral module
Max. Process Temperature:	250ºC
Accuracy:	±10mm

REFLEX VG5 SERIES

The VG5 FMCW radar uses a high frequency signal (nominal 10Ghz), which increases linearly during the measurement (frequency sweep). The signal is emitted, reflected from the target surface and received at a time-delayed frequency. The difference is calculated between the actual transmit frequency and the received frequency and this difference is directly proportional to the distance measured.

The advantages of the FMCW principle compared to other radar technologies are: better reflection separation, reliable noise reduction, smaller beam angle, high signal reflection and small antenna diameter for the same measuring range.

Operators can now read the tank level measurements from ground level with the new remote display option. The device can be configured without having to climb to the top of the tank. This saves time, reduces maintenance and reduces the risk of slips, trips and falls from height.

The remote convertor can be installed up to 100m/328ft away from the process connection on the tank. The remote housing can be attached to a wall, pipe or rigid surface with the supplied wall support mounting bracket.

Product Highlights

- 2 wire loop powered 24 VDC
- Very competitive price
- Profibus/Foundation Fieldbus options
- Corrosion & chemical resistant
- Immune to pressure, foam, temperature variations
- Volume linearisation for irregular tanks
- FMCW advanced radar
- Unique wave horn design
- SIL2 safety integrity level
- Remote display options

Specification

Function:	Level/Distance/Volume
Measuring Range:	0 - 30 m
Environmental Protection:	IP66 / IP67
Process Connection:	Various flange & screw options
Power Supply:	24 VDC
Analogue Output:	4-20 mA
Communication:	HART
Relay Outputs:	N/A
Display:	Multi-line integral module
Max. Flange Temperature:	250ºC
Accuracy:	±10mm (±5mm option)

Measurement

Liquids - Slurries - Pastes

Range

0 - 30 m

Application

Oils - Acids - Solvents - Chemicals - Food
Water and Waste - Paints - Adhesives

Industries

Chemical - Process
Oil & Gas
Pharmaceutical
Water & Waste
Quarry & Mining
Food & Beverage
Shipping

PLUMB BOB SERIES

The Hycontrol plumb bob level sensor is an electromechanical level measuring instrument for continuous measurement of the level or contents in tanks and silos.

The device is mounted on the top of the silo. A sensor weight is mounted at the end of a rope or tape which is wound around a motor driven roller. The weight is then driven down into the silo until it makes contact with the bulk material. When it detects the product the motor changes the winding direction and the sensor weight is driven back to the upper stop position. During this downwards movement of the sensor weight the distance is electronically measured by the rotations of the internal rope/tape roller. The microcontroller then converts the measured distance into an output signal which can be converted into a volumetric signal based on the dimensions and geometry of the silo. The output signal is updated when the sensor weight touches the bulk material.

This technology has been available for many years and has proved a practical solution to problems which other, higher technology products such as radar or TDR cannot solve. An example of this is on low dielectric plastic products or salt saturators for detecting the granular salt levels beneath the water. In this application the water and salt levels change independently of each other but the plumb bob will measure through the water every time to reach solid product - simple but effective!

Measurement

Solids - Powders - Granules - Flakes

Range

0 - 40 m

Application

Grain - Cement - Plastics - Salt - Sand

Industries

Chemical
Process
Quarry
Plastics

Product Highlights

- Suitable for interface detection
- Independent of material properties
- Operates in dusty atmosphere
- Simple automatic operation
- Long life motors for extended life
- No mechanical load on the silo roof
- High temperature options
- ATEX options for hazardous area
- Accurate level measurement
- Service interval alarm indication

Specification

Function:	Level/Distance/Volume/Interface
Measuring Range:	0-40 m
Environmental Protection:	IP66
Process Connection:	Numerous flange/screw options
Power Supply:	98-250 VAC 50/60 Hz 20-28 VDC
Analogue Output:	4-20 mA
Communication:	HART, PROFIBUS, RS485
Max. Process Temperature :	250ºC
Relay Outputs:	4 SPDT 2 A 250 VAC
Display:	Remote option
Accuracy:	1% measured range

HP SERIES

The Hycontrol range of Hydrostatic Level sensors are mounted in two different ways, either submerged in the tank or externally on the outside bottom of the tank. These pressure sensors are suitable for measuring a range of liquids, from the level of corrosive liquids in deep tanks through to simple water in reservoirs or bore holes. These sensors operate by detecting an increase in pressure as the depth in the tank increases. A calibration parameter is then input to compensate for the varying specific gravities of the different liquids being monitored.

This pressure transmitter range has been developed for the highest requirements in the process industry. The basic element is a piezo-resistive pressure sensor characterised by high signal stability. Linearisation of the sensor signal and compensation of the thermal error is carried out by intelligent digital electronics.

A wide range of process connections and chemical seals for food, chemical and pharmaceutical industries are available with all media wetted parts manufactured in stainless steel (316L).

This range can be delivered optionally with a stainless steel ball housing for chemical or food applications.

Product Highlights

- Integral display and programming module
- Corrosion resistant materials
- ATEX hazardous area options
- Hygienic options for food applications
- Flush welded diaphragm
- High accuracy of 0.05% FSO
- Wide pressure range options
- Multiple housing types

Specification

Function:	Level/Contents Measurement
Measuring Range:	0-100 bar
Environmental Protection:	IP67
Process Connection:	BSP / Hygienic
Power Supply:	24v VDC
Analogue Output:	4-20 mA
Communication:	HART/PROFIBUS
Relay Outputs:	N/A
Display:	Integral LCD option
Max. Process Temperature:	250ºC
Accuracy:	0.05%

Measurement

Liquids only

Range

0 - 100 bar

Application

Water - Chemicals - Oils - Milk

Industries

Chemical
Water & Waste
Process
Food & Beverage
Pharmaceutical
Oil & Gas

HYC3420 / HYC3600

Designed without compromise, the Hycontol HYC 3000 display range uses leading-edge technology to accept all commonly-used process inputs. Engineering units are displayed on a high-efficiency red LED display that provides daylight readability.

The 4 or 6 digit display can be set to show a fixed number of decimal places or to auto-scale to show the maximum resolution. The innovative case design enables option 'Pods' to be installed without need for dismantling or re-calibration. 'Plug and Play' Pods are available for relay outputs and isolated re-transmission (0-10, 0-20, 4-20 mA). MODBUS RS485 is also available.

The flexibility of plug-in option pods, combined with the switch mode power supply results in reduced stock holdings and low cost of ownership. The front is sealed to IP65 and the case has a moulded-in rubber gasket to seal to the panel maintaining the IP65 rating, ideal for dusty areas or where low pressure jets of water are used to clean down equipment.

Tension clamp two part connectors are standard and provide for fast wiring, enabling installation to be completed in typically half the time it would take using conventional screw terminals. Programming is via the front panel keys following a logical menu.

Optional enclosures for wall mounting are available.

4-Digit

6-Digit

Functionality

Display indicator

Input

Current - Voltage - RTD

Applications

Display of level - flow - volume

Industries

Chemical
Process
Quarry
Water & Waste
Petrochemical
Food
Plastics

Product Highlights

- Plug and Play option pods
- 2 year warranty
- IP65 protection to front panel
- 4 or 6 digit display option
- Wide range power supply
- Front panel programming
- Simple set-up menu
- High intensity LED
- 24 VDC excitation transmitter power
- Current and voltage input signals

Specification

Function:	Universal display indicator
Input Range:	Voltage/Current/Thermocouple/RTD
Sealing to Panel:	IP65
Accuracy:	0.05% FS
Display Digit:	4 to 6 digit options
Digit Size:	14.2mm high intensity LED
Temperature Range:	-30 to +60°C
Relay Pod Rating:	5A / 250 VAC
Output:	24`VDC/4-20 mA/MODBUS/RS485

BAR GRAPH - PB SERIES

The Hycontrol Bar Graph provides an economical, high-visibility 101 segment bar graph display for most of the popular signals such as 4-20 mA, 0-20 mA, 1-5 V, and 0-10 V. The meter provides a full 144 mm display with exceptional visibility over long distances.

The bar graph housing is made of extruded plastic and is designed to be panel mounted; it can also be wall mounted with the addition of another enclosure. Installation is such that the bar graph is vertical and when panel mounted, the front of the display is sealed to IP54.

These Hycontrol LED bar graph meters are an ideal means to display relative values without having to calculate tank capacities etc. Bar graph displays are ideal for tank contents monitoring as they provide direct visual indication of the level within the vessel.

The PB2471 also has the added benefit of being able to display two bar graphs simultaneously at the same time in two different colours - red and green. Both bar graphs accept multiple inputs and provide multiple relay and analogue outputs.

This display indicator provides a very simple visual display that is easy to read at a glance without having to calculate either tank capacities or minimum and maximum values.

Product Highlights

- 24 VDC excitation transmitter power
- Volume conversion menu
- 4 digit numeric display plus bar graph
- 20 point linearisation
- Current and voltage input signals
- Simple set-up menu
- Front panel programming
- High intensity LED
- Wide range power supply
- Clear visual display

Specification

Function:	Universal bar graph / Numeric display indicator
Input Range:	Voltage/Current/Thermocouple/RTD
Sealing to Panel:	IP54
Accuracy:	0.1% FS
Display PB1471:	4 Digit Numeric /101 Bar Graph
Display PB2471:	2 x 4 Digit Numeric /2 x 101 Bar Graph
Temperature Range:	0 to +50°C
Relay Pod Rating:	3A/250 VAC
Output:	Analogue and Relay options
Programming:	Via Keypad or Software RS485

Functionality

Display Indicator

Range

Current - Voltage - RTD

Applications

Level - Flow - Volume
Distance - Temperature

Industries

Chemical
Process
Quarry & Mining
Water & Waste
Plastics
Food & Beverage
Pharmaceutical

WIRELESS SYSTEMS

Hycontrol supply a wide range of technologies for many extreme applications in difficult and hostile environments, but Hycontrol's capability does not end with the measuring instrument itself. Instruments that are installed in areas where data communication cables are either not present, not suitable or just too costly to install can now be easily accessed.

Wireless technology has been available for many years (albeit at a price), but now Hycontrol have introduced a new generation of low cost systems to satisfy both fixed and mobile applications.

The system consists of a transmitter that can be connected to a maximum of 12 sensors (will accept any 4-20mA input) and one or more receiver stations. The transmitters are mains powered and permanently installed, but the receivers can be either battery operated portable devices or fixed point mains powered versions.

The portable unit can display up to 12 different inputs in either bar graph format or numeric display values.

Functionality

Wireless transfer of level information

Range

500 m

Application

Stone - Chemicals - Grain

Industries

Chemical
Quarry
Process
Animal feed

Product Highlights

- Reduce installation time and site costs
- Simplified installation with reduced cabling
- Maximum flexibility with portable information
- Portable and fixed receiver stations
- Industry standard process input
- Licence free data transfer
- Easy to operate and understand
- Clear Bar Graph / Numeric display
- Long range between transmitter & receiver station

Specification

Function:	Wireless data transfer
Measuring Range:	500 m
Environmental Protection:	IP65
Power Supply:	110/230 VAC
Analogue Output:	6/12 station
Analogue Input:	6/12 station
Frequency:	434 MHz

PAPERLESS RECORDERS

Hycontrol's range of paperless recorders provides flexible electronic data acquisition and recording in a highly functional, small or large display format recorder.

The recorders have the capability of monitoring up to 48 analogue inputs with at least 70MB of available on-board memory, plus additional removable storage media.

The Hycontrol display uses a digital colour TFT LCD screen to provide easy-to-read displays with wide viewing angles for the best all round data viewing. The touch-screen operator interface provides fast, easy access to recorder menus making setup and data analysis quick and efficient. Navigation through the menus and text entry is direct and intuitive.

These units are utilised in many applications for providing clear indication of multiple tank contents on typical applications in tank farms, ranging from solvents and chemicals to sands and oils.

These systems can display the information at source or link easily into a network via the Internet Ethernet port which enables multiple users to view the data from multiple locations around the factory or site.

Product Highlights

- Multiple display options
- Multiple screen sizes
- Clear intuitive programming
- Inbuilt USB ports
- Alarm outputs options
- Heavy duty touch screen option
- 10/100 Ethernet/RS485/MODBUS comms
- Password protection
- Rapid review of data
- MATH/totaliser functions

Specification

Function:	Universal display indicator/recorder
Number of Inputs:	4,6,8,12,16,24,40 or 48 input channels
Input Types:	mV, V, mA Thermocouple, RTD, ohms
Minimum Input Span:	Range is fully configurable
Burnout:	(T/C) Active (High/Low), Passive & Health Watch /Maintenance option
Cold Junction Compensation:	Internal Compensation with ability to manually adjust valves
Input Resolution:	0.0015% (16 Bit ADC)
Input Impedance:	Current loop resistance 10 ohm, use±0.1% external resistor
Source Impedance:	T/C and RTD: 10 ohm per lead maximum
Square Root Extraction:	Available as standard on every input type
Sensor Compensation:	Single point and dual point input range: Voltage/Current/Thermocouple/RTD
Voltage:	100-250 VDC
Communications:	TCP/IP, FTP, RS485 MODBUS (slave) 10/100 Ethernet Email and Web

Functionality

Display Indicator - Recorder

Input

mV, mA, Thermocouple, RTD & ohm

Application

Display of Level - Flow- Temperature - Volume - Pressure

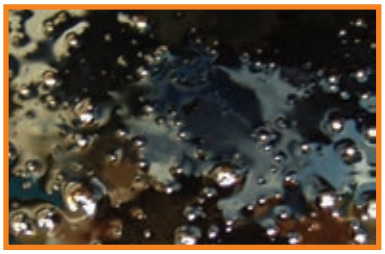
Industries

Chemical
Process
Oil & Gas
Petrochemical
Water & Waste
Quarry & Mining
Food & Beverage

VENDOR MANAGED INVENTORY

Whether you are a bulk supplier or a bulk user of product, Vendor Managed Inventory (often refered to as VMI) can produce huge efficiency savings for your organisation. It offers advantages to both parties by enabling complete transparency between supplier and user without any security risk to either organisation.

The implementation and running costs are extremely low but the cost savings can be extremely high, with typical savings on haulage costs alone estimated to be between 5 and 20% - and that's without the added advantages of improved production planning, reduced inventory and production lost time from product stock shortages.



User Benefits

- Improved response times for deliveries leading to more effective JIT deliveries.
- Minimise product shortage and expensive run out situation.
- Automatic product replenishment.
- Reduction in plant stoppages and down time from stock shortage.
- Reduced cost of bulk product when working with suppliers who can utilise VMI.
- Reduced cost of panic purchase orders incurring additional haulage costs.
- Decrease product stock holding and excess buffer stocks.
- Improve supplier relationships and reliability of supply to provide stable purchase costs.
- Reduce the cost of monitoring stocks, placing orders and checking deliveries.
- Remove possible human error issues in the stock re-order process.

Supplier Benefits

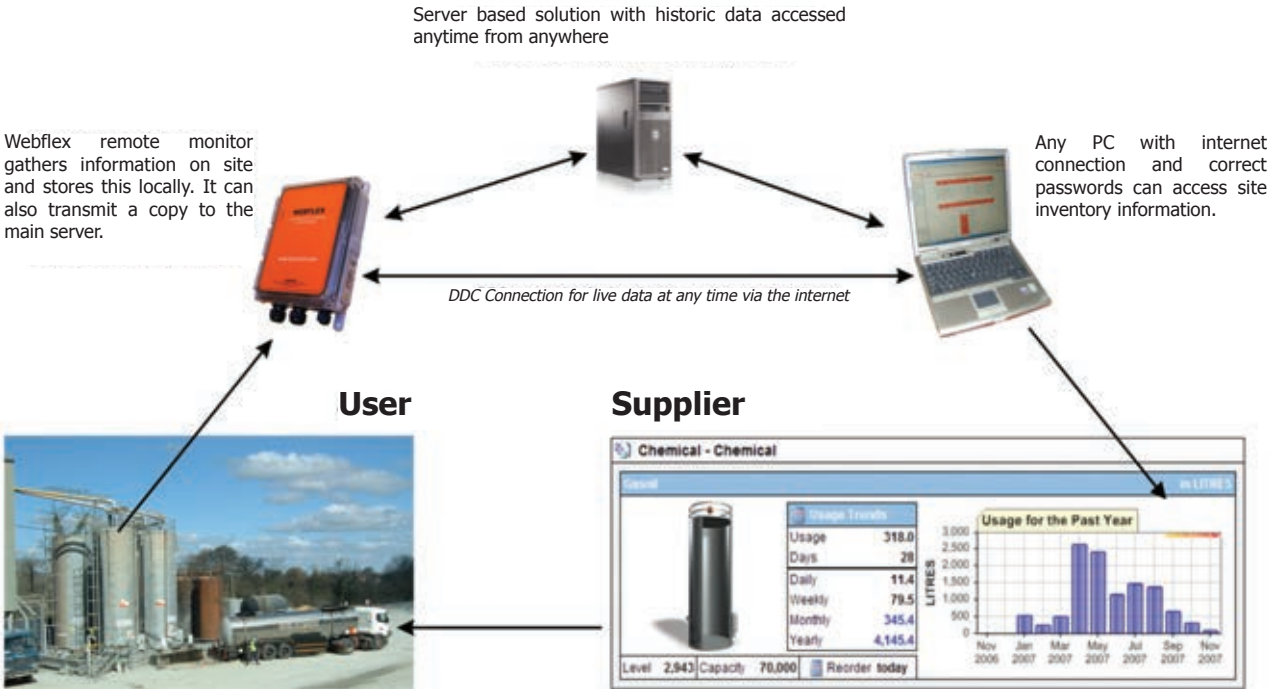
- Improved response times for deliveries.
- Improved delivery logistics with reduced haulage costs.
- Automatic product replenishment.
- Reduction in park delivery times enabling better road tanker utilisation.
- Reduction in peak manufacturing times and higher labour costs.
- Decrease bulk product purchase orders incurring additional haulage costs or outside hire.
- Improve customer / supplier relationships will produce higher customer retention.
- Decrease the number of partial load deliveries over shipments.
- Improved production planning with forward notice on delivery requirements.
- Reduced people and vehicle idle times on your site and customers'.
- Reduce the additional amount of third party vehicle hire when your fleet is busy.
- Reduction in direct vehicle costs, tyres, engine wear and expensive fuel.
- Reduce the number of deliveries to site.
- Improve customer relations by improving the quality and efficiency of supply.

REMOTE STOCK MANAGEMENT

Vendor managed inventory has been around for over two decades, but many of these systems rely on traditional technology such as direct PSTN or GSM phone lines being poled for data at set periods and downloading this to dedicated machines to interpret the data. The latest breakthrough is to use the internet and state-of-theart GPRS data communications which offer fast rates of data transfer with very low usage costs.

The relevant inventory data is collected and stored at each site with a Hycontrol Webflex module and periodically sent over the internet to a dedicated secure server which can then be accessed by anybody, anywhere in the world, at any time! This data is classed as historic data and the upload interval is set by the user depending on the critical usage.

The unique feature of the Hycontrol system is the way in which the Webflex operates. It is capable of dual data connection (DDC), which offers the advantage that it not only uploads historic data to the internet server to be analysed and displayed, it can also allow users to view real-time inventory levels at any stage. This feature is not possible with many existing VMI systems today.



Auto Reporting, Alarming, Datalogging and Reports

Two automatic reports are available. The first is a System Summary report which includes information about the site, the variables being monitored and any alarm conditions present at the time of sending. The second is a data log file in a .csv format for loading into a spreadsheet. Both reports can be sent to four different email addresses on a scheduled basis or by request.

Graphing and Trending Analysis

Data stored for more than one year may be viewed in a graphic format on-line, without downloading it into a computer first and without having to open a dedicated spreadsheet program. There is also the option to save the graph as a picture file. Analysis of trends and deliveries will help to improve efficiency and identify peak delivery times. The graphs clearly show usage of any particular product and help determine the optimum delivery time. This data is essential for evaluating certain benefits with VMI.

WEBFLEX VMI

Webflex is a stand-alone remote monitoring device that will seamlessly web-enable your installed equipment without having to replace or upgrade it.

Webflex can monitor tank or process information on site over a company network. This data can be viewed anywhere in the world over the internet.

Webflex has an embedded web server allowing it to effectively function as a website, thereby eliminating the need for proprietary software. All you need is a standard web browser and the Webflex is on-line when you need it, making it the world's first practical and secure industrial monitoring internet solution.

Any or all of the measuring points being monitored can be data-logged and these files can be downloaded manually or automatically on a scheduled time basis. Stored data from 1 hour to 32 days may be viewed in a graphic format on-line without downloading it to a computer first and without having to open a dedicated spreadsheet program.

Monitoring

Pressure - Temperature - Level - Flow

Range

Any Analogue or Digital Input

Application

Pressure - Temperature - Level - Flow

Industries

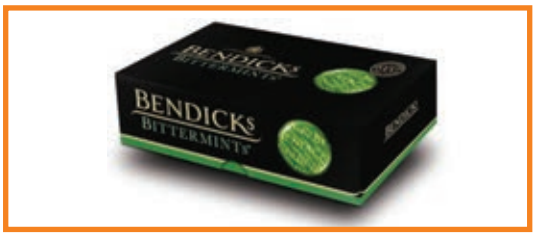
Chemical
Water & Waste
Process
Oil & Gas
Food
Pharmaceutical
Quarry

Product Highlights

- Up to 96 analogue and 96 digital inputs monitored via internet connection
- No expensive software licences or monthly subscriptions necessary
- Low cost per point with 6 analogue and 6 digital inputs
- 24 VDC integral power supply for transmitter excitation
- Web-enable virtually any 4-20 mA transmitter or switch
- integral PSTN, GSM and GPRS modem options
- Connect directly into new or existing networks
- Simple retrofit to existing instrumentation
- Easy to install and commission
- Multi-level security access

Specification

Function:	Remote process monitoring	
Input Power:	100-240 VAC +10%, 1.0A, 50/60Hz	
Analogue Inputs (6):	4-20mA, 2 wire or 3 wire,internally powered by 24 VDC	
Digital Inputs (6):	Flow Meter:	Isolated dry contact (relay, reed switch or Hall effect)
	(DI 1-4 only):	0-400 Hz, 1.5 msec minimum width
Outputs:	Solid State Relay:	Dry Contact, 0-40 VDC, No AC Voltage, 150 mA max load
Communication:	1 x USB-A port (Host)	
	1 x USB-B port (Slave)	
	1 x RJ11 Modem connection (PSTN)	
	1 x RJ45 Ethernet connection (100 metres max)	



Bendicks — Client

Food — Industry

Application

Accurate level measurement was required to improve the production process and provide better inventory control on nine stainless steel chocolate tanks. The chocolate tanks all contain stirrers to continuously mix the products and are also heated to maintain fluidity of the chocolate in the process.

The level information for the 9 tanks needed to be available in two areas. Firstly adjacent to the fill point in production and secondly, at various departments in the plant via the company LAN. The system needed to be simple to install with no special software.

Hycontrol provided a simple yet highly effective solution of nine two wire Microflex CER ultrasonic transmitters.

These units were connected to two Hycontrol Webflex controllers which enabled the tank contents to be put into the company LAN for users to view at ant time.

Hycontrol scope of supply:

- 9pcs Microflex CER
- 2pcs Webflex

NUKEM

UKAEA/NUKEM — Client

Nuclear — Industry

Application

Hycontrol was asked to provide level measurement for multiple tanks in a radioactive area.

The access to the tanks was in a confined restricted workplace and would require the electronics to be mounted away from the top of the tank process connection. The process entry was a narrow small 1" flange through a large lead and concrete protection lining.

The level measurement solution had to be compatible with high radiation and a toxic chemical environment and most importantly, provide a reliable level readout of the tanks contents.

The project was further complicated by the short lead time required. Hycontrol provided 6 purpose built TDR level gauges with a remote head umbilical option to take the electronics away from the confined space. The level probe was designed in self-assembly sections which were assembled on top of the tank to avoid the restricted head room problem and the project was completed in an agreed timescale.

Hycontrol scope of supply:

- 6 special Nuclear TDR VF7 Series

APPLICATIONS

Client	**Gilbertson and Page**
Industry	**Animal Feed/Petfood**

Application

To improve production processes by providing accurate level measurement and control of various tanks and silos on site containing powders, liquids, pellets and grains.

Applications included high and low alarms, level measurement, blocked chute detection and overspill protection with display panels. The criteria used for choosing a level measurement company was the capability to provide a wide range of different technologies for the varied applications.

Tanks contained bulk materials of wheat, maize, fines, hypo, soya flakes, fats, acids and various oils.

Hycontrol scope of supply:

- 63 pcs Capacitive Level Switches
- 34 pcs Ultrasonic Level Gauges
- 28 pcs Paddle Switches
- 5 pcs VF7 TDR Level Gauges
- 2 pcs Alarm Panels

GILBERTSON & PAGE LTD.
Established in 1873.

Client	**Tarmac**
Industry	**Quarry & Aggregate**

Application

In order to reduce the number of overspill incidents on asphalt coating plants when a delivery of bitumen takes place, Tarmac wanted to fit the latest technology approved by the RBA (Refined Bitumen Association) to eliminate this health and safety issue.

The product was hot bitumen, usually stored around 180ºC, which is very sticky and coats any level probes in the tank. A belt and braces approach with an independent high level alarm is essential for the safety system. This information then has to be displayed clearly with a traffic light 'OK to fill' display at the fill point.

Hycontrol's experience in this industry is second to none having completed the majority of the asphalt plants in the UK, including many Tarmac sites.

Hycontrol scope of supply (multiple sites) :

- +40 pcs VF03 Series Level Gauges
- +40 pcs MD20 Series Admittance Probes
- +40 pcs Alarm Panels and Traffic Light Systems

Tarmac

Caldic — Client

Chemical — Industry

Application

To provide accurate inventory measurement of 19 bulk chemical tanks located in a hazardous area. Product such as toluene, ethyl acetate and trichloroethylene are stored in 55,000 litre storage tanks. Accuracy required was 3 mm or better over a 9.5m range.

Realtime data was required to be displayed on the company LAN to enable production and sales to view simultaneously the control of consignment stocks. An ATEX panel was required at the fill point to alert of potential tank overfills and a display panel inside the production office was also required. No tank modifications could be made so Hycontrol engineers had to utilise existing process connections.

Hycontrol provided TDR level gauges which were all pre-configured and calibrated for the tank capacity at the Hycontrol factory. This aided installation and kept the commissioning time to a minimum. A display recorder panel was built to display all 19 tanks in bargraph and numerical format, containing all barriers for the ATEX level gauges and the output to the alarm beacon and siren at the fill point.

Hycontrol scope of supply:

- 19 pcs VF07 Series TDR
- 2 pcs Display Alarm Panels

Bostik — Client

Adhesives & Chemicals — Industry

Application

Many of the on-site tanks contained potentially hot or dangerous products and it was identified that a safety overspill alarm system was required. Some of the tanks contained a latex and bitumen product while others contained solvents in an ATEX hazardous area. The bitumen products would also coat any probe it came into contact with.

The project was to supply, install and commission a reliable system with all appropriate alarm panels located at the fill points for each of the tanks.

Hycontrol have provided a range of technologies to Bostik, including Admittance probes for the bitumen, ATEX tuning forks for the solvents, TDR for level in tanks and a range of special purpose alarm panels with appropriate barriers etc.

Hycontrol scope of supply:

- 8 pcs Admittance level switches
- 3 pcs TDR level gauges
- 2 pcs ATEX tuning fork level gauges
- 3 pcs Alarm panels for different configurations

APPLICATIONS

Client **Morris Lubricants**

Industry **Oils & Lubricants**

Application

A key requirement for increasing the production within the factory was accurate inventory control of all production, process and storage vessels. These vessels consisted of variously shaped and sized tanks including horizontal, cylindrical, vertical, square and irregular tanks with sloping bottoms.

Accurate linearization was essential for the vessel volume conversion, along with high instrument accuracy. 29 of the tanks also had complex internal heater coils fitted, which produced the potential for fumes and vapours. Multiple displays of tank contents were required at fill points and alarms for overfill protection were also included along with a network configuration so all tanks could be viewed on the company LAN.

Hycontrol provided a complete service, from site survey through to the supply, install and commissioning of over 80 instruments.

Hycontrol scope of supply:

- 22 pcs VF03 TDR (guided wave radar)
- 58 pcs Microflex CER (ultrasonic transmitter)
- 4 pcs Hycontrol special display panels.

Client **Beijing Subway BCECCL**

Industry **Water & Waste**

Application

To reduce the risk of flooding in the new subway network with the anticipated increase in capacity ready for the Beijing Olympics in 2008.

Throughout the subway network are over 350 pumping stations which need to reliably pump water and waste material from the stations to process plants. In the event of these pumping stations failing, the subway could flood with water and sewage.

The units chosen for this key operation were evaluated at great length with trials spanning nearly three years. The level control units had to work in applications which could potentially become flooded and so therefore had to operate even if submerged in water, whilst controlling multiple pumps to control the outflow from stations.

Hycontrol provided a complete integrated level and pump controller with an IP68 rated transducer in case of submergence. The Miniflex LR multi-pump controller, used extensively in the water industry, was chosen for this application.

Hycontrol scope of supply:

- 350 pcs Miniflex LR
- 350 pcs RYT15 Transducers

Dŵr Cymru
Welsh Water

Welsh Water — Client

Water & Waste — Industry

Application

Welsh Water is the sixth largest water and waste company in the UK, servicing over three million people with quality water. One of their waste water treatment sites was having issues monitoring and controlling the sludge levels in their primary settling tanks. The existing sludge detection units were unreliable and gave erratic readings which meant the plant could never be run in automatic mode.

A Hycontrol sonar unit was fitted for evaluation to see if it could provide reliable interface bed levels and additional information on FLOC/RAS levels. This unit, with its multiple outputs, also provides an indication of when a biological upset occurs. The unit with its special self-cleaning mechanism has proved to be extremely reliable and a further seven systems have now been fitted.

Hycontrol scope of supply:

- 8 pcs Sonar Controller
- 8 pcs RVS Transducers
- 8 pcs Cleaning Mechanism

Hanson
HEIDELBERGCEMENT Group

Hanson Aggregates — Client

Quarry & Aggregates — Industry

Application

Hycontrol have solved multiple applications on one of the largest quarries in the UK including five complete overspill protection systems for the bitumen tanks at the coating plant. These systems provide accurate level measurement with additional safety overspill alarms, all connected to dedicated Hycontrol display panels.

Conforming to environmental regulations is also important for the site and the four oil storage tanks have been fitted with Hycontrol ultrasonic level gauges along with high level overfill switches with test functions. Five dusty filler silos have been fitted with TDR level gauges for accurate contents measurement and the wash plant has three Miniflex LR two-part systems installed on liquid sludge tanks.

Hycontrol scope of supply:

- 5 pcs RBA Display Panels
- 5 pcs Bitumen TDR Level Gauges
- 5 pcs Admittance Bitumen Probes
- 4 pcs Microflex CER Ultrasonic Transducers
- 8 pcs Capacitive High Level Probes
- 4 pcs Oil Contents and Ullage Panels
- 3 pcs Miniflex LR Ultrasonic Gauges

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HYCONTROL
LEVEL MEASUREMENT SOLUTIONS