

Pulp & Paper

Perspectives in Liquid Process Analytics

20 News

INGOLD

Leading Process Analytics

A Small Footprint in Your Plant A Leap Forward in Analytical Measurement

Compact, head mount, temperature transmitters have been a common sight in production plants for decades. Calibration of analytical sensors requires a transmitter with keys and a display, which has prevented the head mount concept being used for pH/ORP, conductivity, and oxygen sensors – until now!

A world first

The average production facility contains hundreds or even thousands of field instruments, of which most are of the “fit and forget” type. They go unnoticed due to their inconspicuous design and absence of local human machine interface.

Analytical sensors, on the other hand, have not followed this trend and continue to require a transmitter large enough to include keys and a display due to their frequent need for calibration. METTLER TOLEDO has defied this convention. With the new M100, METTLER TOLEDO offers the world's first transmitter for analytical measurement based on a compact, head mount design.

Intelligence is the key

Thanks to METTLER TOLEDO's powerful Intelligent Sensor Management (ISM®) technology, the combined head mount transmitter/sensor concept has been applied to analytical parameters. This new approach enables METTLER TOLEDO to provide a solution for pH/ORP, conductivity, and oxygen measurement which has a very small footprint and is extremely easy to handle.

Plug and Measure means no local interface is required

This leap forward in field instrumentation is possible because ISM enables sensors to be calibrated away from the process in a convenient location such as a workshop. Calibrated sensors can then be swapped quickly in the field. This feature, called



METTLER TOLEDO



Plug and Measure, means measurement point start up is fast and error-free, and can be accomplished without complicated routines. Because of Plug and Measure, the M100 does not require a local operator interface.

Intrinsically safe

The new, 2-wire transmitter series is designed for use throughout the process industries and is certified intrinsically safe for installation in hazardous areas.

Online sensor diagnostics

The M100 can be easily configured over the HART® protocol. In addition, HART allows integration of ISM's advanced sensor diagnostics, such as the Dynamic Lifetime Indicator and Adaptive Calibration Timer, providing real-time data on sensor "health". These tools allow predictive maintenance, helping to ensure

maximum plant uptime, measurement point reliability, and process efficiency and safety.

The support of all major asset management tools such as AMS (Emerson), PDM (Siemens) and the open standard FDT/DTM ensures the widest compatibility, and remote access to sensor diagnostics.

Find out more about the M100 transmitter:

► www.mt.com/M100



Available October 2013

ISM

M100 transmitter mounted to InFit 761 e sensor housing

Key features

- Small footprint
- Aluminum head and stainless steel body
- Intrinsically safe
- Plug and Measure start up
- Predictive sensor diagnostics
- No display
- HART® communication

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50 % Reduction in Measurement Systems

At a telephone book recycling plant, a pulp brightener is produced on site. pH and ORP measurement is essential throughout the production process. A combined, durable, pH/ORP sensor with Intelligent Sensor Management (ISM®) technology has cut the number of measurement systems by half.

Telephone book recycling plant

Recycling post-consumer waste paper is a growing worldwide enterprise. In the US, approximately 55% of paper products are now recovered for recycling. A significant portion of recycled paper comprises old telephone books; however, due to the short fibers used to make their lightweight pages, telephone books cannot be mixed with other waste paper to be reformulated into new paper products. So they are usually recycled at specialized plants where the resulting pulp is mixed with a quantity of virgin pulp before being used to produce products such as animal bedding and egg cartons.

Our customer operates a telephone book recycling plant in the Western United States. After the books are pulped, strained, and cleaned, the mixture is deinked then brightened using sodium hydrosulfite that is manufactured on site. The production process uses a solution of sodium borohydride and sodium hydroxide to reduce sulfur dioxide and produce a sodium hydrosulfite solution.

pH is critical to sodium hydrosulfite quality and yield

pH is monitored and controlled throughout the sodium hydrosulfite production process as it has a significant bearing on quality and yield. Mill technicians had been using non-glass ISFET pH sensors in this application because they were concerned about glass sensors breaking and

fragments being carried through the process, but were disappointed in the short sensor lifetime.

As production involves a reduction reaction, ORP is also measured. The technicians were looking for durable, long life sensors that could give them both parameters. pH and ORP measurement from the same sensor would result in fewer measurement points and hence significantly reduce costs.

Resilient pH/ORP sensor

We put forward our InPro 3250i SG sensor and M400 transmitter. The InPro 3250i SG

is a pre-pressurized, liquid-electrolyte pH/ORP sensor. The purpose of the internal over-pressure is to ensure gradual electrolyte outflow, which keeps the sensor's diaphragm clean and prevents ingress of process medium into the sensor's reference electrode. This makes the InPro 3250i SG highly suited to harsh processes and ensures a long service life.

For ORP measurement, the sensor has an inert metal (platinum) spot on its body. This gives up electrons to or accepts electrons from the measurement solution until a potential charge on the spot is reached which is equal to the ORP of the





InPro 3250 i pH sensor



solution. The platinum spot also improves grounding and eliminates electrostatic interference.

ISM technology saves valuable time

Throughout testing of the system, mill technicians were impressed with the sensor's combined pH and ORP measurements, service life, and reliability in their process. They also appreciated the benefits of the sensor's Intelligent Sensor Management (ISM®) technology.

ISM sensors retain their own calibration data, and can be calibrated via a standard computer or laptop running METTLER TOLEDO's iSense software. This allows calibration to be performed away from the process in any convenient location. Once calibrated, a sensor can be stored until required. ISM's Plug and Measure feature means sensor exchange at the process

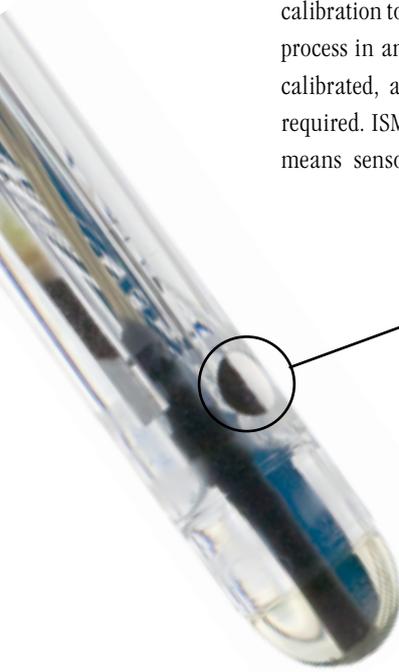
using an already calibrated probe, is simple and fast.

Worry-free pH/ORP measurement

Six pH/ORP measurement solutions have been installed. The continuous, real-time data they provide are helping the mill produce sodium hydrosulfite in the quantity and quality they require. The systems have halved the number of measurement points, thereby reducing operating costs. In addition, in the nine months since they were first used, initial concerns of using glass sensors have been alleviated as there have been no sensor breakages.

If you need dependable pH or ORP measurement systems go to:

► www.mt.com/InPro3250



The solution ground (SG) feature, as an entire electrode body coating or as a measuring point, on a pH sensor improves grounding and effectively eliminates the risk of electrostatic interference. SG also allows the use of our advanced sensor diagnostic functions, and makes parallel ORP measurement possible.



Best Practice

In-line measurement means optimized production and lower operating costs

The continuous stream of data that in-line measurement provides lets you know that your processes are working as they should, and informs you the instant they are not – helping you to maximize production and reduce operating costs.

Discover more at:

► www.mt.com/PRO

Remote Access to Sensor Diagnostics New FF Transmitter

The M400FF transmitter with Intelligent Sensor Management (ISM®) technology provides the highest reliability and easiest handling in hazardous and non-hazardous area applications. Advanced sensor diagnostics data available over FOUNDATION fieldbus™ leads to reduced operating costs and helps improve productivity.

Outstanding reliability

With its rugged design and approvals for hazardous area use, the M400FF 2-wire transmitter provides operating assurance even in the most challenging conditions. In combination with METTLER TOLEDO's advanced Intelligent Sensor Management (ISM) technology, the M400FF offers greater process reliability in applications in the pulp and paper industry.

Flexible and future-oriented

The M400FF transmitter is a multi-parameter, single-channel unit for pH/ORP, amperometric and optical oxygen, conductivity, and dissolved carbon dioxide sensors. Thanks to the mixed-mode input, which accepts traditional analog or ISM sensors, the M400FF offers a unique and

smooth technology transition from analog to digital sensors and provides a future-oriented investment in your plant.

Compatible with your asset management system

Because of the implemented standardized FOUNDATION fieldbus (FF) interface, the M400FF supports corresponding asset management tools, such as AMS (Emerson) and PRM (Yokogawa), and field communication tools, including HH475. This ensures maximum compatibility with your asset management system.

Quick set-up and simplified sensor handling

Thanks to the M400FF's advanced ISM functionality, the transmitter offers ad-

ditional, valuable benefits:

- Using our iSense software for ISM sensors, probes can be accurately calibrated in any convenient location and stored for later use.
- When a calibrated sensor is connected to the M400FF, the calibration data is automatically uploaded and the system is ready to measure in a few moments.
- This Plug and Measure feature minimizes the risk of installation troubles and simplifies sensor commissioning and replacement.

Improved process control thanks to sensor diagnostics

Measurement data and ISM sensor diagnostics tools, such as the Dynamic Lifetime Indicator (DLI), Adaptive Calibration Timer (ACT) and Time to Maintenance (TTM), can be integrated into the process control system. Due to the M400FF's communication capability, system integration is easily achieved, enabling more efficient maintenance of the measurement system. Unplanned shutdowns due to unforeseen sensor failure no longer occur, and the resulting increase in process availability and reduced maintenance lead to improved productivity and lower operating costs.

Find out more at:

► www.mt.com/M400-2wire



Reliable, Simple, Convenient Measurement with a Temporary Data Logger

Temporary data logging in many applications is needed for process optimization, quality assurance or troubleshooting purposes. The temporary data logger, iRO, from METTLER TOLEDO offers a unique solution providing easy installation and commissioning thanks to ISM technology.

Easy to install, simple to use

The iRO data logger is the ideal tool, in combination with METTLER TOLEDO Intelligent Sensor Management (ISM®) systems, for temporary in-line analytical measurement. iRO (which stands for

“intelligent remote operation”) records real-time in-line measurements without the need for time-consuming installation, as no wiring for power supply or data acquisition is required. Plug and Measure functionality, a feature of our ISM technology, ensures error-free commissioning. While Bluetooth communication for data read out and system configuration sets a new standard in ease of use.

Here, we look at three uses for iRO that will save you both time and money.

1. Process optimization

During process development and optimization of production processes, in-line measurement of analytical parameters, such as pH, oxygen concentration or conductivity, is often vital. Finding the most suitable installation points for analytical instruments can be a long and complex process if complete measuring systems have to be installed temporarily.

The iRO data logger is easy to commission, as it needs no wiring and thus simplifies short-term data acquisition. Measurements from up to two sensors can be logged for several months, and data read out with a computer over a Bluetooth connection can be performed

within a minute. The data can be stored in a format that can be easily imported into Excel for processing and analysis. Each data set contains the measurement value, date and time, and important sensor details such as serial number and diagnostics information.

2. Quality assurance

Quality managers need data. The traceability of process parameters at different measurement positions is required for guaranteeing the reproducibility of a production process and compliance with validation requirements. The iRO temporary data logger is able to provide additional information to the existing measurement points, without the need for complicated installation.

3. Troubleshooting

In processes such as filtration and filling, oxygen contamination can significantly reduce the quality and shelf life of the final product. To find the source of the contamination, oxygen measurement at various positions is necessary. Installation of a complete measurement system needs wiring and connection to the control system. iRO is the perfect tool for these situations. No wiring is needed and the data can be read out at any time. Data acquisition over weeks or months is simply achieved.

Discover more reasons to use iRO, at:

► www.mt.com/iRO



iRO with sensor

Help Is at Hand Get More Online



If you need help choosing pH sensors for your processes, want to know how pH sensors work, or are looking for more insight into production control, visit us online.

pH Sensor Selector – Find the Best pH Sensor for Your Process

Selecting the right pH sensor for a pulp and paper application has not always been easy – but it is now. Go to our online pH Sensor Selector, enter the details of your process conditions, and the Selector will show you the best sensor for the job.

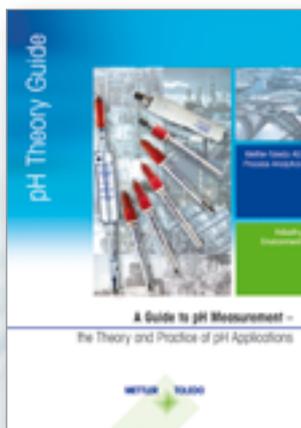
► www.mt.com/pro-pHsensor



A Guide to pH Measurement – The Theory and Practice of pH Applications

pH measurement and control is vital in the pulp and paper industry. But what exactly is pH, why is it so important, and how do pH sensors work? Our Guide to pH Measurement has all the answers.

► www.mt.com/pro-pH-guide



Improved Process Efficiency in Tall Oil Production – Greater Yield with Less Chemicals

Tall oil is attracting growing attention as a renewable fuel and biodiesel additive. Consequent increased demand is encouraging pine tree pulp mills to examine how tall oil production can be increased. pH measurement and control plays a significant role in its manufacture, but process conditions are extremely challenging for pH sensors.

This white paper explains how robust pH sensor design combined with recent developments in analytical technology can lead to increased tall oil yield, and reduced chemicals use.

► www.mt.com/pro-tall-oil



Predictive Diagnostics Solve Your Weighing Problems

There is more to your vehicle scale than meets the eye. Hidden from view beneath the scale platform are key components such as load cells and cables. With conventional vehicle scales, many potential problems are hidden too.



POWERCELL® PDX® Load Cell

A vehicle scale that seems fine on the surface can be hurting your business by weighing inaccurately. With conventional weighing technologies, you have no way of knowing when load cells are failing or have failed completely. The weighing errors that faulty load cells produce can go undetected for long periods, causing you to lose money and customers.

POWERCELL® PDX® load cells provide the ultimate in weighing accuracy and reliability. Their unique predictive diagnostics system goes the extra mile to keep your weighing operation up and running:

- It monitors load cell performance to verify weighing accuracy.
- It adjusts weight signals to compensate for environmental conditions.
- It alerts you to potential problems.
- It identifies the source of a problem to speed up repairs.

Constant monitoring

POWERCELL PDX load cells use a unique predictive diagnostics system to monitor the performance of the entire load cell network. It is like having a service technician checking out your scale every minute of every day. The system verifies network health and identifies any components that might need attention.

All diagnostic information is at your fingertips 24 hours a day. By opening the

scale terminal's diagnostic screens, you can view up-to-date data for each load cell. The system monitors supply voltage, COM voltage, temperature, calibration data, enclosure integrity, and other operating parameters.

Automatic adjustments

The diagnostics system uses the information it collects to maintain the highest weighing accuracy. It tracks environmental conditions such as temperature, hysteresis, linearity, creep, and vibration. As conditions change, the system adjusts the load cell output to compensate for those changes.

A microprocessor in each load cell uses a series of algorithms to cancel out the effects of internal and external influences.



An IND560 or IND780 scale terminal provides easy access to diagnostic data for the POWERCELL PDX load cell network.



While conventional load cells lose accuracy in extreme conditions, POWERCELL PDX load cells deliver the same accurate weighing in all environments.

Instant alerts

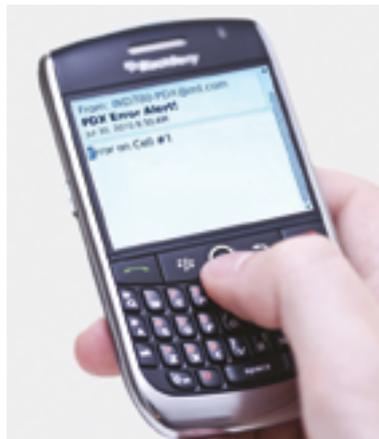
In a conventional load cell system, load cells, cables, and junction boxes can fail. When a problem occurs, it is often hidden from view. Weighing errors are passed on to the scale terminal and can go undetected for months. Meanwhile, the lost revenue adds up.

POWERCELL PDX load cells change all that. If there is a potential problem, the predictive diagnostics system detects it instantly and alerts you before weighing errors and downtime affect your profits. Your scale can be set up to send alerts by e-mail to the scale operator, maintenance department, or local service technician so that proactive service can be performed immediately.

Identifying problems

Predictive diagnostics tools eliminate the guesswork that makes other scales hard to

service. They do more than tell you when service is needed. They identify the source of the problem, providing the precise information your service technician needs to make repairs quickly.



The diagnostics system alerts you to potential problems so that you can perform proactive service.

With POWERCELL PDX load cells, there are fewer problems to solve. The load cells connect to one another in a simple network that does not require junction boxes to sum the weight signals. By eliminating hard-to-seal junction boxes, the network eliminates the most common cause of vehicle scale failure.

Stop paying the hidden costs of conventional load cells and the weighing errors they produce. Let POWERCELL PDX load cells give you the peace of mind that comes with knowing your vehicle scale is weighing accurately.

► www.mt.com/powercell-bul13



By identifying the source of a problem, the diagnostics system enables service technicians to make repairs quickly.

Automated Sensor Cleaning and Calibration for More Dependable Process Control

Regular pH sensor maintenance leads to increased measurement reliability, ensuring more reliable control of your processes. An automatic sensor cleaning and calibration unit maintains sensors at peak condition, and frees maintenance staff for more important tasks.

Keeping sensors in prime condition provides greater process integrity and can extend sensor lifetime by up to 30 %. Conditions in the pulp and paper industry mean the time spent on measurement point maintenance can be extensive. With the EasyClean 400, thorough sensor cleaning and accurate calibration are completely automated.

The EasyClean 400 leaves your maintenance staff free to concentrate on more important and skill-intensive tasks.

Find out how EasyClean systems can help your operations – go to:

► www.mt.com/EasyClean

Your benefits



Completely unattended maintenance
Automatic cleaning and calibration of pH measurement points.



Greater production efficiency
Eliminates downtimes caused by insufficiently maintained sensors.



Configurable to your requirements
Time of calibration, and time and duration of cleaning are fully programmable.



EasyClean 400 automatic sensor cleaning and calibration unit

Get in-line with METTLER TOLEDO

Intelligent Sensor Management for the Process Industries

Ensuring your production can cope with today's competitive challenges includes the use of highly dependable process analytical instruments. With ISM[®], METTLER TOLEDO's digital sensor technology, maintenance becomes predictable, sensor handling is simple, and production becomes more efficient.

Find out more in the brochure

Request information on ISM

Choose your industry	Greater process reliability	Easy sensor handling	Reduced maintenance	Simplified compliance
<ul style="list-style-type: none"> Pharmaceutical Chemical and Petrochemical Brewing Power Water System Fabrication 	<p>Increased operational uptime</p> <ul style="list-style-type: none"> ISM provides real-time information on sensor condition, helping you take production at peak efficiency. Continuous assessment of sensor "health" Higher signal stability due to digital communication between sensor and transmitter 	<p>Convenient Recycle management</p> <ul style="list-style-type: none"> ISM (Clone software) you can pre-configure sensors for same-line exchange at the process. Calibration in a convenient location suit-as-a-lab Plug-and-Measure start-up 	<p>Low cost of ownership</p> <ul style="list-style-type: none"> ISM reduces sensor lifecycle costs and enables higher sensor use. Maintenance only when it's needed thanks to predictive diagnostics Sensor prediction mechanisms increase sensor life 	<p>Full compliance made easy</p> <ul style="list-style-type: none"> User-friendly Clone software increases transparency related to sensor data. Easy generation of documentation and reports Sensor data stored in electronic logbook
<p>Key System Solutions</p> <ul style="list-style-type: none"> ISM transmitters (Clone software) Calibration solution (PC) for ISM sensors ISD data logger 	<ul style="list-style-type: none"> Clone paper ISM 	<ul style="list-style-type: none"> Watch Clone Video 	<ul style="list-style-type: none"> Watch activation ISM Workflow Comparison 	<ul style="list-style-type: none"> Download Clone Light Software

Request more information

Intelligent Sensor Management for the Pulp and Paper Industry

ISM[®] is METTLER TOLEDO's digital technology platform for process analytical measurement systems. With ISM solutions, maintenance becomes predictable, sensor handling is simple, and process uptime is increased.

Visit our website and discover how ISM delivers:

Greater process reliability

Easy sensor handling

Reduced maintenance

► www.mt.com/ISM



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