Pulp & Paper
Perspectives in Liquid Process Analytics

24 News

INGOLD
Leading Process Analytics

Sensors That Learn
Give You the Most Reliable Diagnostics

To maximize product quality and yield, you need to know if your sensors are performing correctly. That is why we have always made diagnostics the main focus of Intelligent Sensor Management (ISM®). And with our new version of ISM we offer a world's first – sensors that actually learn from your processes to give you unequalled diagnostics performance.

Breakthrough innovation

Since its launch in 2006, ISM technology has gone on to help hundreds of companies across the world increase process reliability, reduce maintenance costs and simplify sensor handling. One of the central features of ISM is its diagnostic algorithms that predict when sensor maintenance, cleaning or replacement will be required.

With our new, advanced algorithms we provide a breakthrough innovation – sensors that actually learn from and adapt to processes. This gives you exceptionally reliable diagnostics that are specific for every single process.

No more guesswork

ISM sensor diagnostics do not give you raw data that has to be interpreted: they provide easy-to-read tools that tell operators what needs to be done and when, to keep sensors and your processes running reliably.

Sensor diagnostics mean you can confidently plan maintenance for when it is actually needed – neither late which can damage production, nor early when it is not required.

Keep your processes in the lead

There is a huge variation in processes found across manufacturing, so the latest ISM sensors actually adapt to the conditions they operate in. As a consequence, ISM diagnostics represent each and every process more accurately than ever before. This enables you to further optimize

METTLER TOLEDO

"I can transfer the knowledge of one sensor to another with just a click."

ISM®

Request a free demo:
► **www.mt.com/ISM-onsite**

maintenance and calibration procedures to get the most out of your resources.

Diagnostics speed saves time

Exchanging sensors can lead to risk exposure as a measurement point is taken off-line, so a fast ramp-up and getting back to reliable operation is key. To always ensure your sensors are up and running quickly, the new algorithms provide accurate diagnostics in only 24 hours.

They not only learn – they teach

In some applications the process conditions mean that it can take some time for algorithms to stabilize and give you precise diagnostics data.

We have solved this by giving ISM sensors the ability to learn from other sensors that have already been used in an application. For example, when a pH probe is removed from a process and is connected to our iSense™ software, information on the conditions of that particular process can be stored as an application profile. This profile can then be transferred into a different pH sensor.

When this second sensor is installed in the same process, because it carries the knowledge of its predecessor, it does not need time to acclimatize. And if conditions in the process alter, the sensor diagnostics adjust themselves appropriately.

Sensor maintenance exactly when it is needed

Now diagnostics are accurate as soon as a sensor is installed and you can be sure you are conducting maintenance when it is necessary. Which means that you can be certain your sensors are always performing at their best.

Beyond Plug and Measure

With the application profile database on iSense and the ability to calibrate ISM sensors away from the process, you can build a stock of ready-to-go application specific sensors. Now you can replace a sensor at the measurement point in seconds, without having to adjust the transmitter.

For today's processes and tomorrow's

The new advanced diagnostics and other ISM developments, such as a mobile app that provides a quick sensor check on the go, mean that ISM will remain the leading technology in analytical measurement.
► **www.mt.com/sensors-that-learn**

Publisher / Production
Mettler-Toledo AG
Process Analytics
Im Hackacker 15
CH-8902 Urdorf
Switzerland

Illustrations
Mettler-Toledo AG

Stronger, Higher Quality Sheet
Robust pH Sensor in Headbox Pulp

If pulp pH in the headbox is too high or too low it can lead to poor binding of paper fibers and hence reduced sheet strength and quality. Accurate pH measurement in the process is difficult for ordinary sensors, but the InPro® 4801 i is no ordinary sensor. Its durability and accuracy help ensure a consistently strong sheet.

pH control in the headbox is vital

Pulp pH measurement and control at the headbox is critical to the consistency of strength and quality of the final paper. The incoming pulp typically has a higher pH than desired, so a neutralizing agent such as aluminum sulfate is fed in order to reduce the pH value. The ability to accurately monitor the pH level and control neutralizing agent injection is central to the overall efficiency of headbox operations.

High solids content is challenging environment

The extremely fibrous nature of paper pulp means it has a tendency to quickly coat surfaces. Standard pH probes require a significant tip exposure within the pulp in order to complete the connection between the reference electrolyte and pH-sensitive glass membrane. This extended sensor tip exposure provides a large surface area for the fibrous media to quickly coat and clog. With standard pH probes, measurement quality rapidly degrades, and frequent cleaning and calibration is required in order to maintain acceptable performance.

Rugged pH sensor

The InPro 4801 i pH sensor has a number of features that make it highly suited to headbox use:

- Flat, glass membrane resists coating and limits clogging from pulp fibers
- PTFE annular junction repels dirt
- Very long diffusion path using two electrolyte chambers
- Integral solution ground prevents ground loop problems
- Plug and Measure for fast, error-free exchange

Less maintenance, greater reliability

The design of the InPro 4801 i means sensor maintenance is required less frequently than for other pH probes. It also means measurement reliability remains high so that accurate pH control at the headbox can be easily achieved, resulting in consistently strong paper.

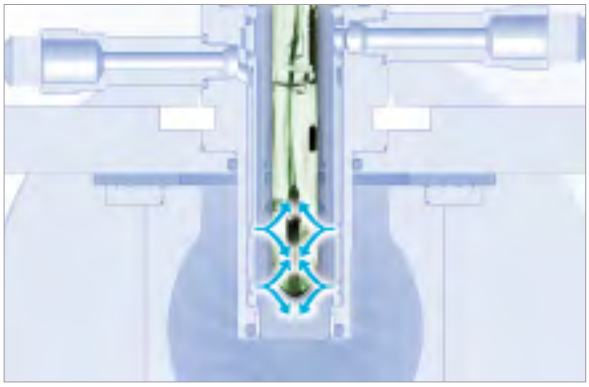
▶ **www.mt.com/InPro4800**

NEW Retractable Housings for the Harshest Processes

To give you more production uptime, sensor housings must not only be process tolerant, they must also provide ease of use and ensure trouble-free operation. All these elements were considered when designing our new InTrac housings. The result is our most advanced housings yet.

The InTrac 781 / 784 series of retractable sensor housings combine rugged design with installation versatility to meet the demands of the toughest conditions in pulp and paper applications.

High reliability combined with low maintenance and ease of operation help keep production running. While advanced safety features protect operators and the plant environment at all times.



Sensor Cleaning out of Your Hands

Reliable measurements demand that sensors are kept free from build-up from fibers or particles. The new InTrac housings contain four integrated spray nozzles and a large bore cleaning chamber to ensure fibers and particles are efficiently flushed away.

Depending on the operating system, backwash flushing of the sensor is possible as soon as the sensor is retracted from the process.

Operation with EasyClean systems enables fully automatic sensor cleaning, flushing and calibration (for pH sensors) – giving engineers more time for other tasks!

Keep Processes Running

The housing design allows sensor inspection, cleaning, calibration or exchange at any time without the need for stopping the process. And the advanced drive train allows insertion or retraction of the sensor in process pressures of up to 16 bar!

An intelligent sensor locking system prevents deployment of the insertion rod if no sensor is present in the housing.

For all 12 mm Ingold sensors

InTrac 781 R
(pneumatic / with inductive check-back)

InTrac 781 M
(manual)

For InPro 2000 (i) pH sensor

InTrac 784 R
(pneumatic / with inductive check-back)

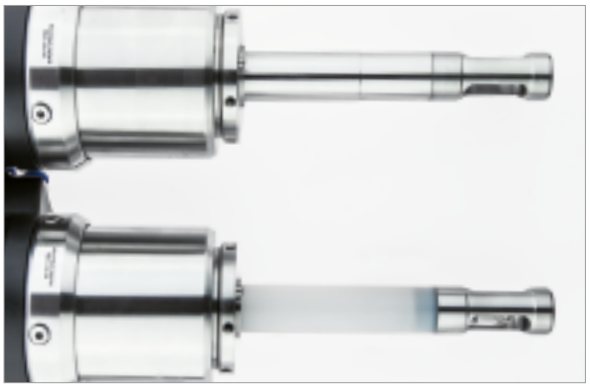
InTrac 784 M
(manual)

No Compromise on Safety

InTrac 781 / 784 housings meet the strict requirements of major international guidelines including ATEX, so the housings can be safely operated in Ex-classified environments.

The intelligent sensor locking system and visualized sensor position rod provide additional information on sensor status, enhancing operational safety. In addition, it is not possible to remove the sensor when the housing is in the measurement position.

An inspection window allows operators to visually check the status of seals.



Flexible to Your Needs

To suit the range of conditions in pulp and paper production, wetted parts are available in different materials, i.e., stainless steel 1.4404 / SS 316 L; Alloy C-22; PP, PVDF or PEEK. Various immersion lengths (80 mm or 280 mm) and types of process connection (flanges- DIN, AISI, or NPT) are available, providing excellent installation flexibility at the measurement point.

▶ **www.mt.com/InTrac781**
▶ **www.mt.com/InTrac784**

No More Sensor Breakages
Thanks to Durable pH System

Consistently producing superior high-end papers demands rigid pH control. For a major manufacturer of paper products, robust pH solutions with Intelligent Sensor Management are helping to ensure sheet quality meets customer requirements, reel after reel.

Critical pH control in paper production

Based in Sweden is a leading producer of papers and boards with facilities in a number of European countries. The company specializes in creative papers where tight pH control is essential during production in order that final products meet strict quality criteria.

At one of the company's mills instrumentation engineers were having difficulty with in-line pH measurements in a pulper. Here, paper bales are loaded into a vessel and broken down with water and the addition of chemicals, which is monitored through pH determination. When bales are added to the vessel the pH sensor is susceptible to damage and replacement was a regular occurrence. Engineers wanted a robust solution with a sensor that would also measure reliably in the high solids content of the vessel.

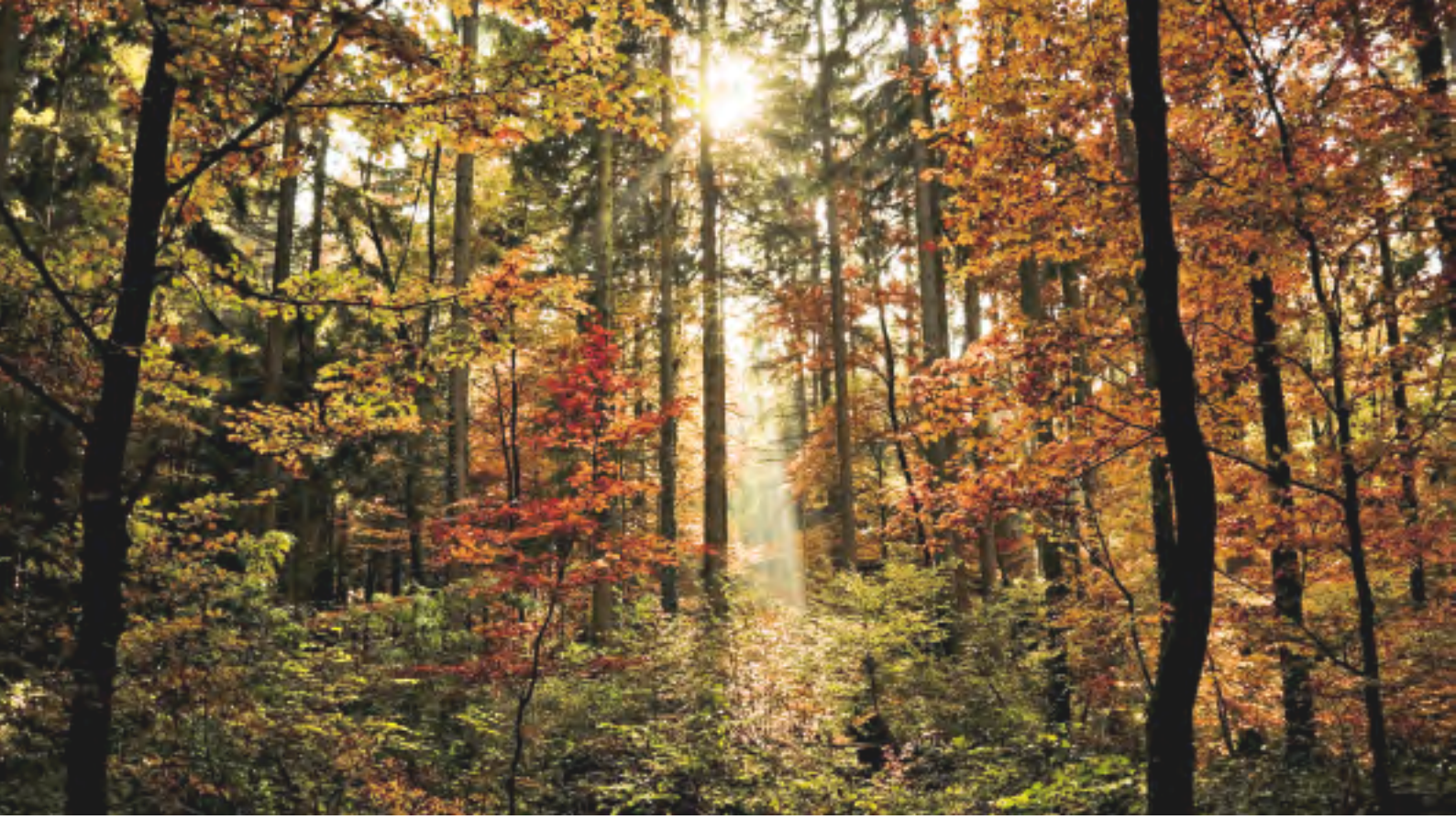
Advanced METTLER TOLEDO solution

After discussing the issue with METTLER TOLEDO, a system comprising the InPro® 4260 i pH sensor, InTrac® 777 pneumatic housing and M400 transmitter was determined to be the best solution for the company's requirements and was installed at the mill.

The key to the success of the system is the housing: the InTrac 777 is a retractable design which allows the pH sensor to be withdrawn automatically from the pulper vessel. The housing is linked to the conveyor that loads the bales into the pulper.

When the conveyor starts the sensor is retracted. Once the bale has broken up the probe is reinserted into the process, providing an in-line reading without risking damage to the sensor.

The same system is being used in two other process steps. In the wet end of the paper machine it is used in control of the dosing of acid and base to provide the correct pH value to the stock. The system is also employed in the size press where pH control is used to improve sizing efficiency and produce acid-free paper.



Intelligent pH sensor

The InPro 4260 i is a combined pH sensor and temperature sensor designed for demanding chemical applications. Unlike most sensors, instead of containing a liquid reference electrolyte the InPro 4260 i has a solid polymer electrolyte, Xerolyt® Extra, which is in direct contact with the measuring solution. This eliminates the potential of junction clogging from pulp fibers, fillers and sizing pigments. Xerolyt Extra is resistant to organic resins, strong acids and alkalis – meeting the requirements specified by the applications and the maintenance expectations of our customer.

The sensor's Intelligent Sensor Management (ISM®) technology allows a number of valuable operational and maintenance benefits.

- The pH measurement is calculated in the sensor rather than by the transmitter, and is output by the sensor digitally. Calculating pH in the sensor itself gives a more accurate measurement, and because the signal is digital it is immune to electrical interference, cable effects and moisture in the environment.
- ISM sensors can be pre-calibrated and stored until required. The Plug and Measure feature means measurement point start-up using a pre-calibrated probe is fast and error-free.
- Advanced predictive diagnostics are calculated within the sensor and displayed on and distributed by ISM-equipped transmitters. These tools allow time-saving predictive rather than reactive maintenance, meaning sensors can easily be kept operating at their best.

Sensor housing for greater process safety

In addition to being able to retract the connected sensor from the process, the InTrac 777 housing features a flushing chamber where the sensor can be cleaned and calibrated without interrupting the process.

High-performance transmitter

The M400 is a robust, 4-wire, multiparameter transmitter line that offers superior performance and leading-edge functionality. The unit offers full support of ISM Plug and Measure and predictive diagnostics features.

No more sensor breakages

Since installation, our customer's instrumentation engineers have noticed significant improvements. The retractable housing has eliminated pH sensor breakage at the pulper vessel and simplified sensor cleaning and calibration. ISM has reduced the time spent on sensor maintenance and increased process reliability. Confidence in sustaining final product quality is now much higher.

▶ **www.mt.com/InPro4260**

Tailored for Your Business

Weighing Software Meets Changing Needs

Why settle for anything less than a perfect fit? When a software solution is right for your business, it can make the difference between an efficient operation and a wasteful one. No matter what size business you have, DataBridge™ software has a solution.

DataBridge™ scale-management software gives your weighing operation exactly the capabilities you need. For businesses with basic weighing needs, DataBridge™ SS software is an ideal solution. It provides complete control of inbound/outbound weighing on one or two truck scales.

DataBridge™ software simplifies the scale operator's job. Unlike other vehicle-scale software, it is designed for use with either a touchscreen or a standard computer screen.

Scale operators are not the only ones who benefit from the software. Business owners can save time and money by automating operations in the scale house and the back office. By speeding up weighing transactions, DataBridge™ software enables your business to weigh more trucks per day. It stores a complete record of each transaction to reduce paperwork and billing errors.

Expand your capabilities

As your business grows, a DataBridge™ solution can grow with it. Upgrading to DataBridge™ MS software provides the capabilities needed to control larger and more complex weighing operations. An individual license lets you control as many as six truck scales. A multiple-client license gives you the ability to control a larger number of scales and connect them to a shared database.

Customize the database to collect the exact information you need for each weighing transaction. You have the option of limiting recordkeeping to basic billing information or collecting detailed information for inventory control and regulatory compliance. Import/export tools enable you to share all data with your other business systems.

DataBridge™ MS software handles a range of weighing procedures. In addition to basic inbound/outbound transactions, it processes split-weighing transactions that involve several materials or attachments. If you have multiple-platform scales, you can process transactions while checking individual axle weights.

Unattended weighing

Optional modules let you add the capabilities that your operation needs. The unattended module makes it possible for truck drivers to process their own weighing transactions. This feature eliminates the need to have a scale operator on duty around the clock or in remote locations.

DataBridge™ MS software provides the security features you need to protect your business. It allows you to give easy access

DataBridge™ software can be tailored to fit any application from simple inbound/outbound weighing to complex operations with multiple scales.

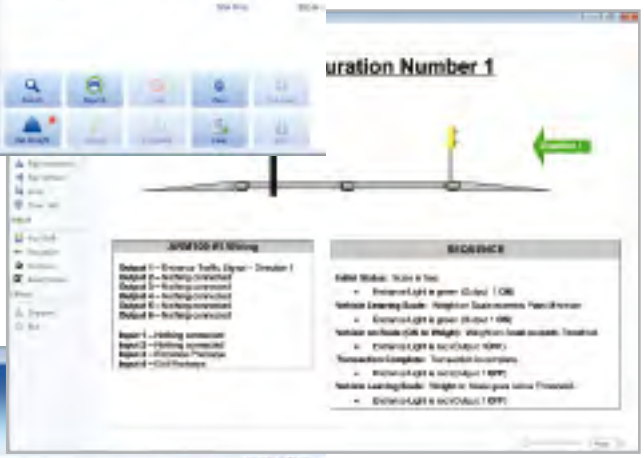
to all employees or specify a different role for each person in the organization. By assigning passwords and roles, you can control the level of access that each employee has.

Find the DataBridge™ solution that fits your business. Visit the METTLER TOLEDO web site to learn more about DataBridge™ scale-management software and how it can make your weighing operation more efficient and profitable.

► **www.mt.com/ind-veh13**

Main Weighing Screen

DataBridge™ software simplifies vehicle weighing with screens designed for touch-screen operation, easy setup and detailed data reporting and analysis.



Preconfigured Settings

Transaction Data Analysis

No Clogging, no Maintenance
Just Accurate Conductivity Measurement

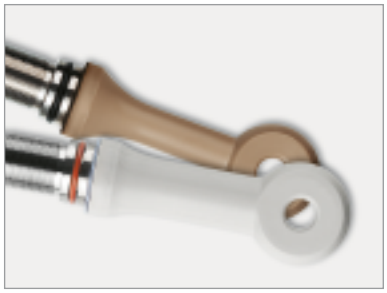
METTLER TOLEDO's inductive conductivity sensors combine high performance with low maintenance. The electrodeless design provides very accurate measurement in medium to highly conducting process fluids – no matter how harsh the conditions.

Conductivity sensors are invaluable in chemical dosing applications for pulp and paper production, and wastewater monitoring. However, standard designs can easily become clogged, necessitating regular cleaning.

METTLER TOLEDO's InPro® 7250 inductive conductivity sensors never clog and are highly resistant to coating. Their robust design ensures maintenance- and trouble-free operation.

Find out more at:
▶ **www.mt.com/InPro7250**

Your benefits



Choice of body materials for flexibility
Available in PEEK for very aggressive chemical environments or in PFA where strong acids are present.

Easy installation
A variety of available process adapters allows simple installation into almost every type of process.

Wide range of applications
High linearity from 0 to 2000 mS/cm allows process control across a large variety of applications.

InPro 7250 inductive conductivity sensors

Get in-line with METTLER TOLEDO

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**

Mettler-Toledo AG
Process Analytics
Im Hackacker 15
CH-8902 Urdorf
Switzerland

www.mt.com/pro
Visit for more information