Sugar Starch & Yeast
Perspectives in Liquid Process Analytics

25 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**

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Efficient Beet Juice Extraction
Demands a Durable pH Sensor

High yield sugar production from beets starts with maximizing juice extraction, which requires tight control of pH. The InPro® 3250 i not only tolerates the tough conditions, it has a long lifetime and even tells you when it will need maintenance.

High productivity juice extraction

The process aim is successful extraction of raw juice (at 70 – 75 °C) with high sugar concentration and quality. Fresh water added to the process extraction tower is acidified with sulfuric acid to adjust the pH to 5.6 in order to increase cossette permeability and pulp pressing. pH in the tower is maintained between 5.5 – 6.5 at 70 °C to prevent both downstream filtration problems from degradation of cell walls, as well as yield losses that result from acid inversion of saccharose. Microbacterial infection may also cause a drop in pH inside the extraction tower and is controlled by the dosage of disinfectants.

Achieving accurate pH measurements in the process is problematic as particulate matter in the medium coats sensors and clogs their diaphragms. Also, the rate of production is not constant. When the feeding of cossettes is increased, the ratio of water to cossettes is altered and the liquid can become very viscous, which makes pH measurement more difficult. During periods of high viscosity the dosed sulfuric acid does not mix well. The acid may come into direct contact with the pH sensors without being diluted, leading to severely reduced sensor lifetime.

A pH sensor that more than tolerates the process

The membrane glass of METTLER TOLEDO's InPro 3250 i pH sensor is designed to withstand pH as low as zero and temperatures as high as 100 °C. It also endures oxidizing media, solvents and abrasive sugar crystals. The sensor's liquid electrolyte is pre-pressurized and by passing through the diaphragm it helps keep the diaphragm clean, minimizing the effects of clogging. These features ensure a long sensor lifetime in beet juice extraction.

Extract the sensor and keep the process running

An InTrac® 777 retractable housing allows sensor maintenance or replacement without process interruption. The housing's Tri-Lock™ safety system prevents escape of juice while the sensor is retracted.

An intelligent choice

Intelligent Sensor Management (ISM®) technology in the InPro 3250 i brings a number of other useful benefits including Plug and Measure for fast, error-free sensor exchange, and online diagnostic tools that allow operators to schedule sensor maintenance or replacement.

► **www.mt.com/InPro3250**

ISM®

Triple the pH Sensor Lifetime
in Carbonatation

Cane sugar carbonatation is a harsh environment for pH sensors. A major European sugar refinery has found that METTLER TOLEDO sensors with Intelligent Sensor Management (ISM®) survive three times longer in carbonatation than their previous sensors. Not only that, thanks to ISM, productivity has increased.

UK cane sugar refiner

Due to its colonial past, the UK is the largest producer in Europe of sugar from cane. At an English cane sugar refinery, as well as producing white sugar for household and industrial use, soft dark sugars, treacles and syrups are also manufactured. The refinery's high output puts a strain on production, so all equipment is expected to operate with a high degree of reliability.

High pH sensor consumption

During the carbonatation process pH sensors have to endure an extremely hostile environment, with temperatures over 90 °C and an elevated concentration of very abrasive solids. At the UK refinery these conditions were causing unstable readings and a high turnover of probes. Displeased with the situation, production engineers at the company asked METTLER TOLEDO if we could supply a more dependable solution.

Robust sensor

METTLER TOLEDO's recommendation was to use the InPro 2000 i pH sensor with Friscolyt™-B electrolyte, and M700 transmitters. The liquid-filled InPro® 2000 i was selected due to its excellent tolerance of harsh operating conditions and for allowing the user to change overpressure to maintain a steady outflow of electrolyte, ensuring reliable measurements.

InPro 2000 i
pH sensor

The M700 transmitter, with its excellent communication features, was suggested in order to provide an output signal to a Distributed Control System (DCS). Additionally, the M700 offers a wide range of diagnostic features, providing technicians with valuable information on sensors relative to lifetime and maintenance requirements.

Intelligent Sensor Management

The InPro 2000 i is one of METTLER TOLEDO's Intelligent Sensor Management (ISM®) probes. ISM reduces the maintenance costs of measurement points, while increasing the safety of the production process. Among its benefits are:

Pre-calibration – ISM technology allows sensors to be pre-calibrated in a convenient location away from the process and stored for future use.

Plug and Measure – Once a calibrated sensor is connected to an ISM-compatible transmitter, calibration data is instantly uploaded, making measurement point start-up fast and reliable.

Digital signal – Measurements are calculated within the head of the sensor and sent digitally to the transmitter. The digital signal is unaffected by moisture or electri-

cal interference, therefore measurements are reliable and robust.

Predictive diagnostics – Sophisticated algorithms use current and historical process conditions to calculate when a sensor will require calibration, cleaning and eventual replacement. These tools mean the chance of sensor failure during the process is almost eliminated, so process stability is greatly enhanced.

Carbonatation control

The METTLER TOLEDO solution is mainly being used at the carbonatation step in the process where milk of lime is added to the sugar juice to promote precipitation of impurities. This step is controlled via monitoring of the pH value, the 4 – 20mA signal from the transmitter is fed into the DCS system to control lime dosing.

Significantly longer sensor life

In contrast to the one week lifetime of the previously used sensors, refinery engineers report that the InPro 2000 i lasts three to four weeks. The sensor also provides a more stable pH reading and consequently improves the reliability of this important control parameter.

Improved productivity at a reduced cost

The sensor diagnostic capabilities of ISM are being used by the engineers to plan sensor maintenance, and greater efficiencies in maintenance have led to improvements in productivity. In addition, the reduced maintenance requirement of each measuring point and the lower consumption of sensors are together substantial cost saving factors.

▶ **www.mt.com/InPro2000**

"User-Friendly and Simple to Operate"
Silica Analyzer Impresses Thai Company

Silica in feedwater has to be minimized to protect boilers. When a Thai bio-power company was planning expansion, they turned to METTLER TOLEDO Thornton for a silica monitoring solution. Now the 2800 Si analyzer is providing dependable and hassle-free assurance of silica levels.

Sugar producer is a leading bio-power company

Khon Kaen Sugar is a sugar-manufacturing company based in Thailand. After many successful years of solely refining sugar, they upgraded one of their mills to also produce electricity from bagasse. Some of the generated electricity is used at the mill with the remainder being sold to the Electricity Generating Authority of Thailand. The Khon Kaen Sugar Power Plant Co. Ltd. is now one of the country's leading bio-power companies.

Reliable on-line analytics required for expansion

The mill is a long-term user of METTLER TOLEDO Thornton products for conductivity measurement in boilers. When co-generation became their focus, plant managers turned to METTLER TOLEDO to provide analytical measurement systems for their bio-power expansion.

We supplied on-line analysis solutions for measuring conductivity, pH, and dissolved oxygen. In addition the power plant laboratory manager, Ms. Witchayanee Puengking, was very interested in the benefits of silica measurement in boiler feedwater after membrane separation and ion exchange. Allowing water with a high silica level into the turbine leads to expensive and time-consuming maintenance needed for removing scaling from turbine blades.

Minimizing silica is vital

Ultrapure water monitoring at ppb silica levels can ensure the highest quality water is being delivered to boilers. Silica breakthrough of polisher anion resin is detected at very low ppb levels and contaminated water can be diverted before it reaches critical areas.

Pure water treatment anion exchange monitoring detects the first breakthrough of silica to trigger regeneration before contamination reaches subsequent treatment stages.

Power steam quality monitoring protects turbines from silica deposition and resulting imbalance, and loss of capacity and efficiency. Silica measurement and con-

trol may also be needed to meet turbine manufacturer warranty requirements.

Condensate polisher monitoring can detect the need for regeneration at low ppb levels before feedwater is significantly contaminated.

Easy to maintain silica analyzer

The 2800 Si is a highly reliable silica analyzer designed for boiler feedwater treatment. It detects trace silica contamination with minimal operator supervision and allows unattended automatic calibration at a user-configured interval. Large-volume reagent containers enable long-term operation before refilling becomes necessary.

A demonstration of the 2800 Si analyzer's performance, low maintenance and simple operation impressed Ms. Puengking and two units were installed at the plant. One is used for monitoring boiler feedwater and condensate, and the other is installed after the mixed bed ion-exchange columns in the makeup water system.

Khon Kaen Sugar's supplier of choice

Ms. Puengking explains why METTLER TOLEDO is her supplier of choice for analytical measurement systems: "The equipment is user-friendly, simple to operate, and easy to maintain. METTLER TOLEDO offers a high level of support and is a reliable partner for technical consultation."

The success of the 2800 Si units at the power plant has led to a further analyzer being used at another Khon Kaen Sugar facility, also for measurement after ion-exchange.

▶ **www.mt.com/Thornton-silica**

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

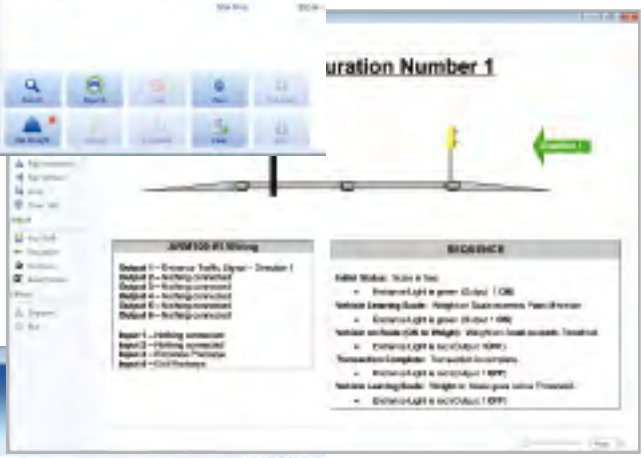
DataBridge™ software can be tailored to fit any application from simple inbound/outbound weighing to complex operations with multiple scales.

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



Preconfigured Settings

Transaction Data Analysis

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

Greater Yield, Higher Product Quality
with In-line Conductivity Sensor

The extremely fast response, precise measurement, and instant availability of the InPro® 7100 i will enable you to improve your process control – leading to higher product yield and quality.

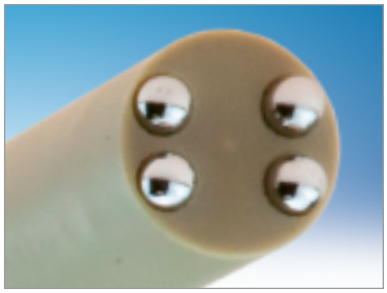
The quicker and more accurately you can measure conductivity, the faster you can respond to process changes. The InPro 7100 i conductivity sensor has been designed to provide outstanding performance in the sugar industry.

The InPro 7100 i features METTLER TOLEDO's Intelligent Sensor Management (ISM®) technology, developed to reduce sensor configuration and maintenance, while increasing process uptime and safety.

Installation is easy: ISM's Plug and Measure feature means that no configuration at the transmitter is required. Simply install the sensor in the process, connect it to the transmitter, and begin measuring.

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

Your benefits



Versatile
Extensive measuring range and choice of pin material for suitability in a wide variety of applications.

Convenient
Compact design is compatible with many housings.

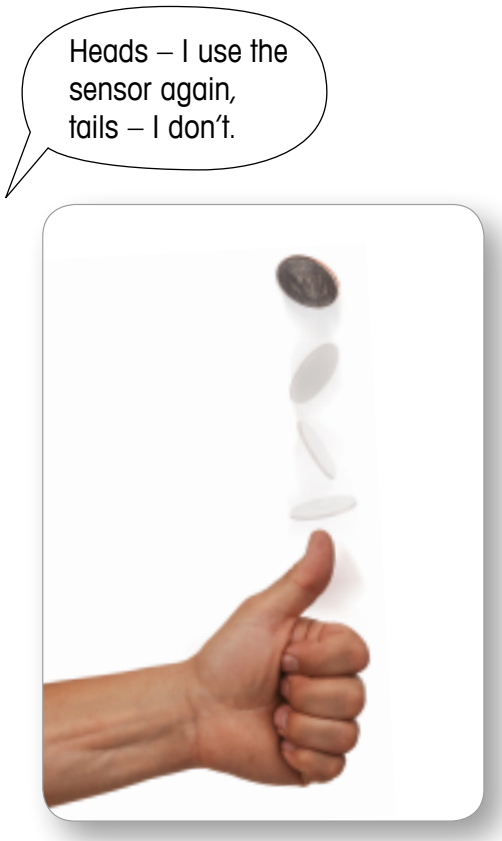
Resilient
PEEK shaft material resists aggressive solutions.

ISM®

InPro 7100 i
conductivity sensor

Get in-line with METTLER TOLEDO

Don’t leave it to chance!



ISM – True Predictive Diagnostics

No more guessing if a sensor will survive through the next production run. Intelligent Sensor Management’s predictive diagnostics analyze process conditions and sensor health to provide you with accurate information on when sensor replacement will be needed.

ISM® Intelligent Sensor Management from METTLER TOLEDO

► **www.mt.com/ISM**

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