

xylem



Quality Control Instrumentation

FOR THE FOOD AND BEVERAGE INDUSTRY





For over a century, Xylem's well known global brands have served the food & beverage market.

We offer deep application expertise from decades of leading innovation with products, systems and services that address the full cycle of food and beverage production.

Our products are sold into more than 150 countries.

Working in true partnership with our customers and end users, we listen, learn and adapt to local environments, delivering solutions with more impact than ever before.

Welcome

Increased concerns over safety, quality, and sustainability are just three of the many issues impacting the food & beverage industry.

Xylem's focus is to help solve these challenges by providing innovative, cost-effective product solutions and services that makes the job of delivering safe, high quality, consistent food products an efficient process.

Thank you for your interest in Xylem and for reviewing our Food & Beverage Analytics brochure highlighting just a small part of our product offering. We encourage you to contact us with any questions, concerns and comments.

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What can Xylem do for you?

Xylem's analytical involvement spans right across the food and beverage cycle; monitoring the water used to irrigate the crops we grow in the field, within the production and cold chain distribution processes right through to the consumer.

Quality control, food safety and efficient processing is paramount at every stage; Xylem helps satisfy this need.

Optical Analysis

Refractometers

Polarimeters

Spectrophotometers

Photometers

Dissolved Oxygen

Turbidity

Chemical Analysis

Titrators

Karl Fischer Titrators

pH Electrodes

Conductivity Electrodes

Biochemistry Analyser

GC Detectors

Purge & Trap

TOC Analyser

VOC Analyser

Physical Measurement

Precision Thermometers

Temperature Data Logger

Humidity Data Logger

Pressure Data Logger

Oil Quality

Viscometers

Density Meters



Water



Livestock & Aquaculture



Fruit & Vegetables



Flavours & Essences



Sugar



Edible Oils



Bottled Water



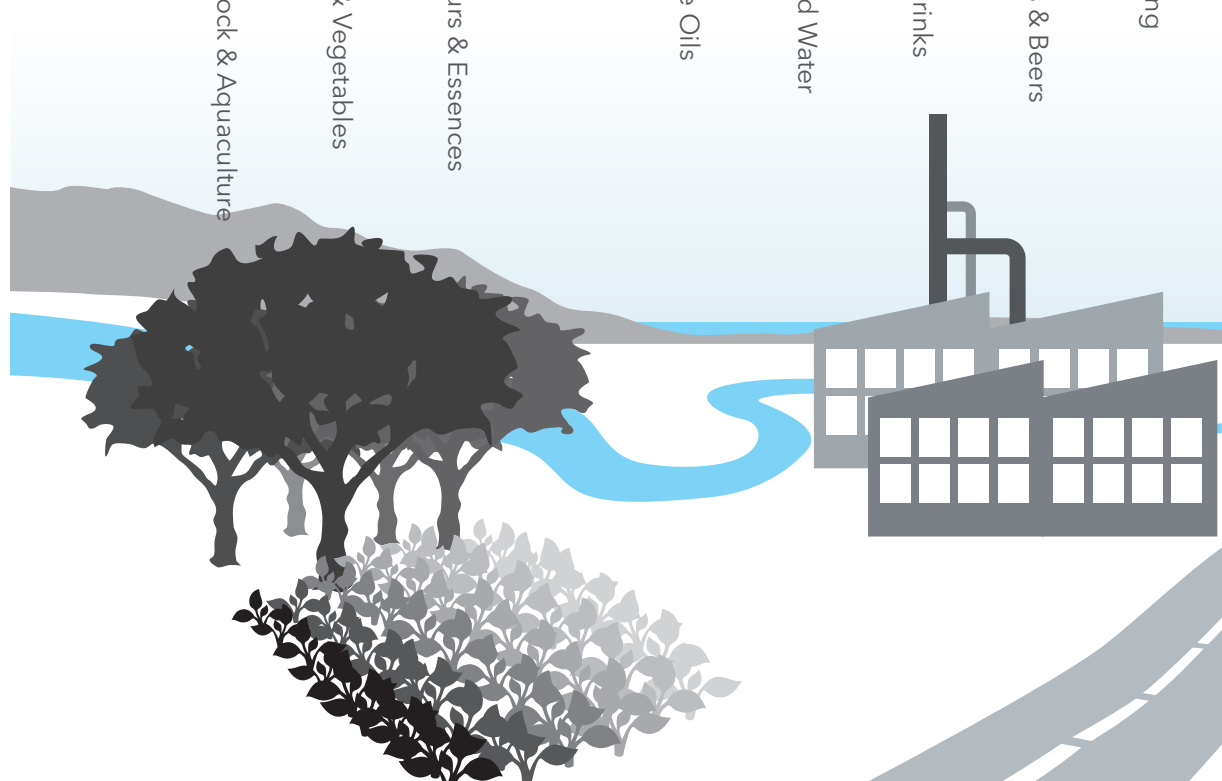
Soft Drinks



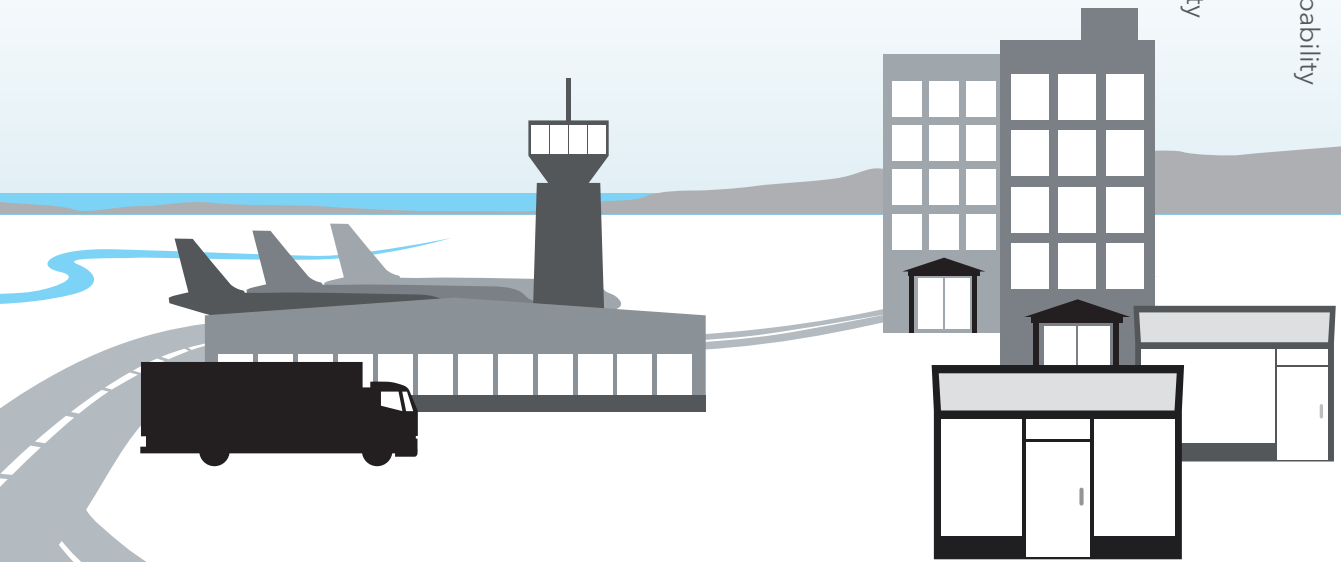
Wines & Beers



Canning



Raw Materials						Processing and Packing									Cold Chain and Fleet Management		Retail and Catering											
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Water

Water is the lifeblood of the food and beverage industry. In fact, up to 70% of fresh water usage around the World is in agriculture, much of which is for food crops. The quality of any key ingredient is critical, and Xylem has a full suite of water quality, flow and level testing and monitoring products from the WTW, YSI, SI Analytics, Sontek, and OI Analytical brands.

Xylem's WTW and YSI brands are leaders in water quality measurement instruments. Hand held instruments used to measure a wide range of parameters, including pH, conductivity, temperature, TDS, and DO are used to test irrigation channels, wash-down water, retention ponds, and in hydroponics.

In addition, the IQ SensorNet system is used to ensure waste water treatment facilities at food and beverage processing plants meets discharge requirements. The SonTek-IQ series instruments are ideal for monitoring flow in canals, culverts, pipes and natural streams used for irrigation, while the MJK MAGFLUX flow meters are ideal for in-process flow measurement.



Turbidimeters

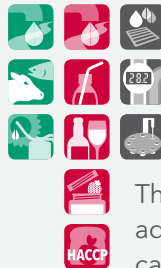
Turbidity is an important indicator parameter for quality assurance of drinking water: Since particles offer a potential surface to bacterial growth, turbidity can indicate bacterial contamination.

The Turb® 750 Series offers an IR and a tungsten white light instrument from 0 - 1100 FNU/NTU, conforming to standards in drinking water.



TOC Analysers Aurora 1030 Series

Applications:



The Aurora 1030 line of TOC Analysers process aqueous and solid samples for total organic carbon (TOC), total inorganic carbon (TIC), and non-purgeable organic carbon (NPOC) content of the samples. The Aurora 1030 series supports a variety of standard methods including USEPA, ASTM, DIN/ISO/CEN, USP, and EU methods.

- Heated persulphate & combustion oxidation technology
- 2 ppb C to 30000 ppm C (heated persulphate)
- 0.05 mg C to 50 mg C (solids)
- 100 ppb C to 30000 ppm C (combustion)
- Simple touch-screen display
- Optional autosampler (aqueous samples)



Livestock and Aquaculture

Rapid population growth and an increased awareness of health benefits associated with seafood is projected to increase the global demand for seafood. It is predicted that the aquaculture industry will be required to fill the supply gap with an additional 20-30 million tons of seafood. Our focus is to provide innovative, cost-effective products that make running a sustainable and efficient aquaculture operation as easy as possible.

Our instrument set for aquaculture includes pHotoFlex pH and TURB colorimeters with integral pH correction and over 135 pre-programmed methods including CO₂ and Nh₃, refractometers for rapid salt content measurement and a number of submersible sensors for temperature, pH, conductivity, dissolved oxygen amongst other parameters, the latter capable of being interconnected to form a control system.

Meanwhile, on the farm, refractometers are commonly used to determine the quality of colostrum fed to new born calves, foals and lambs so that they have a better chance of surviving the critical first days of their lives and of course, portable pH and conductivity meters monitor effluent levels and the quality of pond water down stream of any large scale farm.



Wireless Sensors

Go cable free with our wireless adaptors for use with pH/cond./ORP/oxygen sensors featuring IDS Technology, making measurement in the laboratory or field far more convenient. Depending on the meter, up to three parameters can be measured and stored simultaneously. With power saving technology for long operation times and a transmission range of up to 10 metres.

Dissolved Oxygen

ProSOLO

Applications:



The most important measurement in aquaculture is dissolved oxygen, and YSI's ProSOLO digital handheld meter is perfect for the job. Its combination of versatility, field-worthy durability, and data management is second to none.

- Rechargeable lithium-ion battery
- Colour display & backlit keypad
- Rugged, waterproof (IP67) case





Fruit and Vegetables

The manufacturing process starts with raw materials, whether grown in the fields or imported as dry or liquid ingredients from suppliers around the world.

As well as providing premium quality, German made pH, conductivity, temperature and turbidity meters that are used right throughout the production process, OI Analytical GC detectors commonly analyse a number of raw materials for authenticity and pesticide residue, and YSI 2900 Series Biochemistry Analysers featuring highly accurate biosensors play an important role too.

However, one of the most used instruments is undoubtedly a refractometer which determines the °Brix of sugar containing foodstuffs. A refractometer's use to monitor fruit ripeness at source is paramount, as farmers are later judged by sugar content at point of sale to supermarkets and cooperatives; with °Brix being an important payment factor alongside quantity, colour and microbiological factors.



OPTi Digital Handheld Refractometer

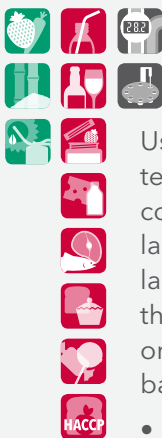
OPTi refractometers are used commonly to test fruit and vegetable ripeness.

With 50 onboard scales, easy switching between 3 usable scales, and full 0-95 Brix range (and 1.33-1.53 RI) the OPTi is a highly reliable, premium quality refractometer packed full of useful features.

- Quick 2 second read time
- High Ambient Light sensor
- Digital display
- IP 65 rated
- Programmable read delay

Biochemistry Analyser 2900

Applications:



Using YSI's highly accurate biosensor technology, the 2900 measures up to 2 compatible chemistries such as glucose, lactate, glutamine, ethanol, sucrose, galactose, lactose or choline. Typical applications include the measurement of sugars in stored potatoes or tomatoes as well as potato and tomato based products such as fries & ketchup.

- Accurate results in 60 seconds
- Flexible sampling options including 96 well-plate
- Widely accepted quality check
- Anti-clogging fluidics





Flavours and Essences

Notwithstanding the water quality being of primary importance in the food we choose to eat, flavour is undoubtedly the most important contributor to our food choice. Flavour is decided at the start of food production with sources being selected for quality and price.

Flavours may be animal, vegetable, mineral or even synthetic derivatives and can be processed as fresh, organic, dried, water and emulsion or oil based product and supplied to food manufacturers further down the chain.

Accurate and reproducible quality control plays an important role. Refractive index by RFM900 wide range refractometers, optical rotation by ADP600 polarimeters and water content using the most accurate TitroLine KF7500 titrator are vital to the process, with special titrations for ketones, aldehydes, esters, lactones, halogenides, amines and peroxide value being made by the latest technology TitroLine titrators.



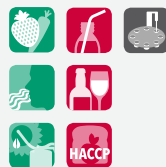
Refractometer RFM900-T Series

For precise measurement of concentration. Bellingham + Stanley's expertise in optical engineering, electronics and software design has enabled them to create instruments that are used extensively throughout the world's food and beverage industry.

RFM900-T refractometers are ideal for high yield beverage control, finished product quality control, edible oils and fats, and the control of flavours & essences.

5383 PFPD GC Detector

Applications:



OI Analytical's patented 5383 Pulsed Flame Photometric Detector (PFPD) excels at selective, high sensitivity detection of sulphur, phosphorus, and other elements. The 5383 PFPD provides a 10-100x increase in signal-to-noise and a 10x increase in selectivity over traditional Flame Photometric Detectors and requires significantly less maintenance and gas to operate.

- Superior sensitivity and selectivity for sulphur and phosphorus vs. conventional FPDs
- Inherent self-cleaning design completely eliminates soot formation
- Quick & easy calibrations
- Long-term stability and minimal maintenance



Sugar and Edible Oil

Juice and oil extracted from vegetables and root tubers in the form of sugar liquids and oils is an essential component of the food industry and many of the processes and analytical methods used within are common.

High accuracy Peltier temperature controlled RFM340-T refractometers running at elevated temperatures are used to establish blend ratios of oils for food use including palm, corn and sunflower etc. and also for the control of biodiesel. When fitted with flow cells RFM700-M refractometers and ADS400 saccharimeters form part of a high accuracy sugar purity system used for processing and payment of sugar beet and cane, forming one of the lowest cost purity systems on the market.

TitroLine titrators offer some unique analyses. The KF7750 Karl Fischer model is used to establish water content of oils, whilst other chemical titrations are achieved using TitroLine models. pHotoFlex and pHotoLab photometers also play an important role in chemical analysis.

OPTi handheld refractometers measure sugar cane in the field and when fitted with an ethanol scale, are used as a simple control tool alongside the YSI 2900 biochemistry analyser that is capable of accurately measuring ethanol content during fermentation of corn mash in less than a minute. RFM300 Series refractometers can also be programmed to directly display °Brix, Refractive Index, HFCS and even Iodine Value in oil processing plants.

pH is critical to sugar production as too is the ash content, calculated from a conductivity measurement. Measurements may be taken in-line or with SI Analytics' handheld or laboratory meters, with IoLine electrodes offering robustness for longevity.

Capillary Viscometry

Although mainly used in the petroleum and polymer sectors, SI Analytics' capillary viscometers are commonly found within the food and beverage industry; especially in the edible oils and gelatin processing sectors.



Saccharimeter

ADS Series

Applications:



ADS Saccharimeters are application specific polarimeters designed primarily for use the sugar industry. The ADS400 Series offer simplistic, cost effect temperature compensated measurement whilst the latest ADS600 Series instruments combine sodium and NIR wavelength measurement in a single instrument with touch-screen and Peltier options.

- High accuracy °Z results in accordance with ICUMSA
- Simple ADS400 Series models with onboard purity
- Dual wavelength, high accuracy ADS600 NIR models
- ICUMSA temperature correction and optional Peltier control with flow accessories

Bottled Water

Whether it be the result of the perceived health benefits associated with drinking bottled water, through fear of contaminated ground supplies in certain parts of the World or simply for convenience, consumption of bottled water is at an all-time high. Bottled water comes in many guises; however, no matter if marketed as purified, natural spring, mineral enhanced or finely flavoured water; they must all comply with strict regulations pertaining to naturally occurring trace compounds such as salt, mineral and heavy metal content.

Although the TitroLine 7000 titrators measure titration of ions, alkalinity (carbonate and bicarbonate hardness), chloride, total hardness (calcium & magnesium); many analyses are best served using a pHotoFlex TURB as its on-board library of over 135 water methods combined with integral pH and turbidity functions enables convenient analysis from a single instrument. Analyses include free & total chlorine, alkalinity, hardness, calcium, chloride, fluoride, iodine, iron, magnesium, manganese, nitrate, phosphate, potassium, sodium, sulfate, TOC, TN, and more. pH, conductivity and dissolved oxygen measurement is serviced by a number of brands including the WTW IDS range.

For production environments, OPTi handheld or RFM700 Series laboratory refractometers are used to control fine flavours added to mineral waters and the simple, compact YSI 900 free and total chlorine colorimeter is ideal for checking cleaning fluid cross-over after CIP.



pH Electrodes ScienceLine

ScienceLine electrodes provide the highly stable accurate results demanded by food scientists today. ScienceLine electrodes vary by shape, length, diaphragm & glass types and include standard pH, ion-selective indicator, single and combination versions; all individually certified against a unique serial number for traceability.



IDS Lab Meters

Single, dual and three-channel laboratory meters that combine high precision pH, ORP, ISE, conductivity or dissolved oxygen measurement with Intelligent Digital Sensor technology (IDS) and Quality Sensor Control (QSC) for efficient operation, calibration and documentation in accordance with GLP.





Carbonated soft drinks (sodas) and mixed juice drinks form one of the largest single sectors of the food and beverage industry. They are made up from a blend of expensive flavours, natural and synthetic sweeteners and unique ingredients including caffeine and preservatives. Xylem's recognised products offer significant food safety and quality control auditing as well as providing the tools to ensure production yields are maintained so that costs and profits are kept in check.



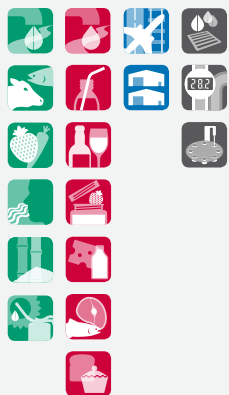
RFM300 Series refractometers are used throughout beverage production from development, to syrup blending, interface detection, dilution control to final quality checking; the latter often automated alongside a TitroLine 7000 titrator that provides both diet dilution control as well as acid content monitoring.

With over 80% of a soft drink being water, controlling it is essential. Although simple photometers like the YSI 900 provide an indication of foul tasting chlorine, the pHotoFlex offers additional analyses including chloride, ammonium, calcium, fluoride, iron, magnesium, hardness and more; whilst other more complex analyses such as TOC, VOC, cyanide and nitrate content are determined using instruments from the OI Analytical product range. Titration facilitates additional analysis of final beverage product such as ascorbic, malic, phosphoric and citric acids as well as sulphite, potassium and general acidity or alkalinity including ascorbic acid content (vitamin C).

Refractometer

RFM300 Series

Applications:



Since launching the first commercially successful digital refractometer back in 1980 and having constantly evolved, the RFM series of refractometers made by Bellingham + Stanley have become the most favoured means of controlling the blend ratio or concentration of many of the world's most respected food and beverage brands. Latest models provide extremely accurate results whilst maintaining the need for robustness and simplicity for factory use.

- Highest accuracy (± 0.01 °Brix)
- Latest HD display with USB/LAN interfaces
- Rapid Peltier temperature control
- Flattest sapphire prism and dish





Fruit Juice

A fruit juice is defined as a pure mixture of fruit and water and as such regulation protects its authenticity and fruit content; for example in Europe the concentration of orange juice must be no less than 11.2% and in the USA not less than 12% with no added sugars, sweeteners or artificial flavourings allowed. Fruit juice may be supplied locally as freshly squeezed or ready to drink (RTD) formats but in many cases the original juice is concentrated at source, transported and then reconstituted with water in the final country of need. Fruit juice concentration is controlled throughout the process using an RFM refractometer with acid content being made by TitroLine titrator.

Similarly apple, tomato, pomegranate, cranberry and other fruit juices as well as vegetable juices including carrot, coconut and latest "green juice" or SUPA (Supernatural Unleashing of a Plant Assault) are processed, transported and concentrated in the same way.

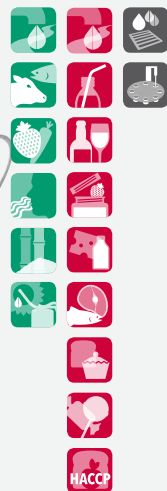
Fruit juice is a healthy source of key nutrients including sugars, fibres, vitamins, calcium and potassium; especially for children in developing countries. Xylem offers key analyses for many of the requirements of fruit juice processors ranging from authenticity and toxicology testing to high performance °Brix and acid analysis.



Titrator

TitroLine Series

Applications:



Thanks to the highly resolute and precise pH/mV and deadstop measuring interface, accurate determination of diet beverage dilution ratio is reliably achieved by the TitroLine auto-titrator. Pre-determined methods for common titrations and interchangeable burettes make for simple and rapid operation within the beverage laboratory. For busy audit laboratories, the premium TitroLine 7000 model is available and can be used with an autosampler. The TitroLine 5000 offers viability for simple applications.

- Clear display ideal for factory environments
- Interchangeable head for multiple titrations
- 15 user methods incl. total acid, ascorbic acid, alkalinity and sulphur dioxide etc.
- Data storage and secure PDF printout





Wine

Over the past few decades, growth in demand for wine has dictated the need for a scientific approach to viticulture. Farmers continually monitor the sugar content of growing fruit using an OPTi refractometer so that they harvest only when most ripe for delivery to the co-operatives. They in turn make payment against quantity (weight) and quality (Brix, Oechsle, Baume, Probable Alcohol) of the must, often using an RFM712 refractometer.

Monitoring key parameters during fermentation is also critical in creating a quality vintage wine. WTW MultiLine FDO meters monitor oxygen content and pHOtoLab spectrophotometers analyse a number of parameters including total phenols (IPT), hydroxycinnamic compounds (TH), colour intensity (CI), tint (T), yellow, red & blue pigment content as well as determination of iron in white wines. Tartaric acid, acetic acid (VA volatile acidity), colour, copper, iron and L-malic acid (LMA) 0,05...3,25 gr/l spectrophotometric methods are also available.

TitroLine 7000 titrators perform multiple analyses within viticulture including free & total SO₂ analysis, total titratable acidity (TA), free sulphurous acid (sulphite), total sulphurous acid (sulphite), volatile acidity VA 0,012 ...0,12gr/100ml as acetic acid, ascorbic acid (vitamin C), reducing (residual) sugars, carbon dioxide, ash & ash alkalinity, calcium & magnesium, chloride (NaCl) and sulphate. pH and conductivity is also measured.



Chlorine Colorimeter

The YSI 900 is an ideal solution for quick, simple, accurate chlorine measurements and is the perfect replacement for simple colour charts that are commonly used to test incoming water quality prior to production processes. Tablet and powder pack reagents are available.

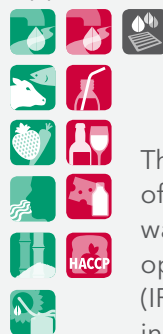


Mini Data Logger EBI 11

EBI 11 mini data loggers are used to ensure proper and efficient pasteurisation of bottled fruit juice, beer and dairy products. Special adaptors facilitate safe use up to 10 BAR and 150 °C with stored PU & F Values easily being extracted via a wireless hub.

Photometer pHOtoFlex Series

Applications:



The portable colorimeter series of pHOtoFlex offer more than 135 Standard parameters for water, food, beverage and aquaculture. With optional docking station and pH or Turbidity (IR) measurement, these "real" multi-parameter instruments cover up to three analyses in just one handheld meter.

- Intuitive handling
- GLP compliant data management
- AQA and user defined programs



Beer and Cider

Brewing beer has been a common process of providing people with a bacteria free, nutritious drink for many millennia and today its popularity as a mass produced beverage is augmented by the latest trend to have locally sourced craft brews; often made with organic ingredients and produced using traditional methods. All beers start with water, base cereals and hops for flavour that when combined with yeast, enable fermentation.

Automatic determination of alpha acids in hop extracts using conductometric titration is paramount for beers to be consistent across brews and the FDA compliant TitroLine 7000 provides this in accordance with EBC 7.4. Handheld refractometers with specific gravity scales are used to control the overall “mash” or “wort” prior to fermentation. A pHotoFlex TURB meter fitted with a light source (either a tungsten lamp in Europe or infrared (IR) LED in the USA) is often employed in all sizes of production to monitor resulting colloidal suspensions that result from yeast, proteins, polyphenols and even carbohydrates. Turbidity values of beer vary largely between 3 to 5 NTU for pilsner, 5 to 7 NTU for stout, around 10 NTU for ale and up to 15 NTU for lager beers, where 1 NTU is equal to 2 EBC turbidity units.

Importantly the pHotoLab 7000 series spectrophotometers with PL6-BREW package provides many of the other required analyses; these include bitterness, total polyphenols (EBC method), reduction capacity (potential), anthocyanogenes, colour (EBC & ASBC methods), free amino nitrogen (FAN), steam volatile phenols (smoked malts for smoked beers only), photometric iodine test and TAN (thiobarbituric acid number).

Whilst alcohol content can be determined using the *refractive index & specific gravity method*; the YSI 2900 biochemistry analyser offers additional precision and is ideal for controlling low or no-alcohol beers.



Density Meters

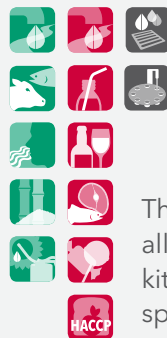
DSG Series density meters are available in 2 unique models offering great flexibility as well as ease of use. Accurate up to 5 decimal places, and able to determine alcohol by content, these instruments are simple, reliable, and precise.



Spectrophotometer

photoLab 7000 Series

Applications:



This “All-in-One” photometer allows systematic analysis using barcoded test kits for standard parameters measurement of spectra, kinetics and colour. MEBAK brewery software provides simple analysis of beer using internationally recognized methods.

- QC and AQA options
- User administration
- 200+ standard parameters
- GLP compliant data management





Canning and Preserves

Preservation of food using simple techniques to prevent oxidation and spoilage caused by microorganisms has been occurring for thousands of years. The addition of oil, vinegar, salt, acids or sugars in potted fruit, vegetables, fish and meat as well as in cooking sauces, ketchups, chutneys and jams is now commonplace around the world. In beverages, fermentation is effectively used for delivering safe, microorganism-free beer and wine. Dehydration is also frequently used in Asia for preserving egg based noodles, where the prime requirement is to displace water.

Refractometers measure the °Brix or sugar content of soups, sauces, chutneys, jams & jellies as well as the refractive index or blend ratios of oils and vinegars; whilst conversely, the measurement of water content of dried food is facilitated by the volumetric TitroLine 7500 Karl Fischer titrator.

Pasteurisation or sterilisation processes are key to delivering safe, preserved food. IP68 rated mini data loggers facilitate both needs with records of PU Value (pasteurisation unit) for beverage producers and calculated F Values used to express the cumulative effect of lethal high/low temperatures and exposure times. This ensures microbial destruction within the canning sector. Results are communicated via a wireless data hub to a PC using ebro's WinLog software.



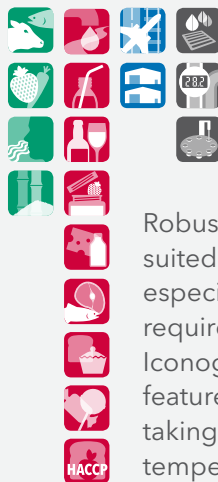
EBI 11 Data Logger Adaptors

Special adaptors allow data loggers to be placed in jars, cans or plastic cartons so that they can be passed through the pasteurisers to ensure food safety.

Refractometer

RFM700

Applications:



Robust, fully automatic refractometers ideally suited for use in food and beverage industries, especially where non-skilled operators are required to make critical process actions. Iconography guides the user and a time delay feature provides for stable readings when taking measurements of samples at elevated temperatures of up to 100°C.

- Sapphire prism in easy clean sample dish
- 0-100 °Brix and user scales
- Fast response temperature compensation (ATC)
- Simple operation for factory use



Dairy

Raw milk is processed into various food products so that it can be transported and consumed safely, typically in the form of a pasteurised or dehydrated product, cheese, butter or fermented derivatives such as yoghurts and crème fraîche. Xylem Analytics offers a wide range of dedicated solutions providing new opportunities to optimise dairy production from improving quality and safety of raw material and verification of end products.

Whenever microorganisms are added to raw milk, pH measurement helps to control the process and provides quality of the end product. For example, the pH value of yoghurt will decrease in just a few hours from pH 6,8 to pH 4,4 (equivalent to 1% lactic acid) when the fermentation will be stopped and the product cooled for packaging. Similar processes can be seen when producing whey butter, cheese and others such products.

pH electrodes used for protein-rich samples need to have a special, non-ceramic junction or a iodide based reference electrolyte to avoid clogging.

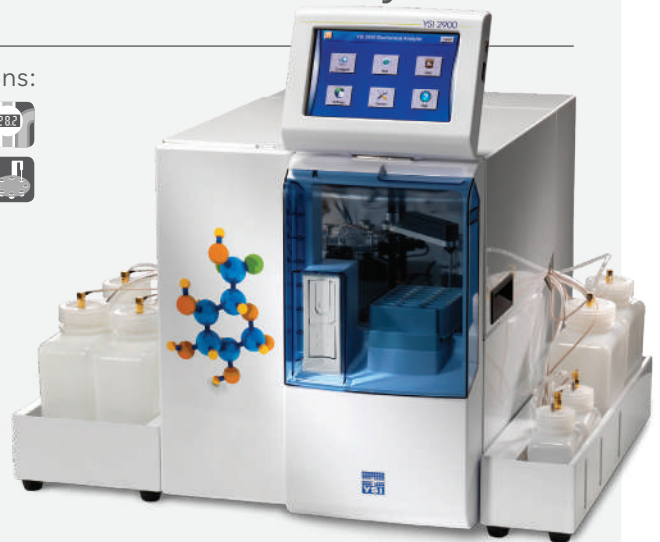
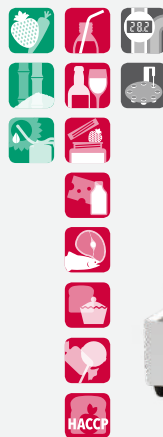
Analysis of lactose is a critical in milk processing. Lactose is a disaccharide composed of the monosaccharides D-glucose and D-galactose, joined in a β -1,4-glycosidic linkage and being optically active, polarimetry provides a simple analysis. Further methodology includes mid-infrared detection, fluorometry, photometric, gravimetric detection, differential pH techniques, oxidation-reduction titration, gas/liquid chromatography, high pressure liquid chromatography and enzymatic assays; many of which are provided by Xylem brands.

Additionally, the TitroLine 7000 is ideal for measuring sodium, chloride, calcium and Kjeldahl nitrogen content of certain dairy products.



Multi-Parameter Analyser 2950D

Applications:



Using YSI's highly accurate biosensor technology, the 2950D may measure up to 6 compatible chemistries. These include glucose, lactate, sucrose, galactose and lactose within the dairy industry with applications varying from lactose in cheese/milk, lactate in silage, probiotic production and many more.

- Accurate results in 60 seconds or less
- Flexible sampling options including 96 well-plate
- Anti-clogging fluidics
- Operator friendly

FS 3700 Automated Chemistry Analyzer

Advanced continuous flow analyzer designed to improve laboratory productivity by automating wet chemistry test procedures.

Used in dairy processes for the analysis of nitrate and nitrite in milk.





Meat and Fish

Processing of meat takes many forms; from fresh to vacuum packed and then to processed foods such as sausages, hamburgers, fish cakes and commonly, ready meals in flavoured sauces. However, in an effort to deliver fresher food to the table, more meat and fish products are being processed and packed in sterile environments so that they may be delivered with lower or no salt or sugar containing preservatives. Keeping microbiological threats at a distance and maintaining a long shelf life is a delicate balancing act. Preparation areas, storage and transport are all part of the cold chain for fresh food delivery, with EBI 25 and EBI 300 data loggers playing an important role throughout the process.



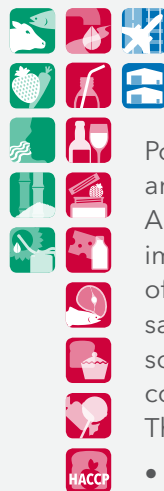
Measuring the pH of meat, fish and their preserving sauces is important. BlueLine 21 pH penetration electrodes with integral temperature and IDS digital technology for use with HandyLab Mk II meters are available as well as three analogue versions that may be used as replacements for existing meters. Conductivity and °Brix measurement is also provided.



Refractometer

Abbe 5

Applications:



Popular within so many food and beverage applications, the Abbe 5 refractometer plays a particularly important role in measuring the fat content of meat and fish during processing. The test sample is simply dissolved in an aggressive solvent of known RI after which the fat content is easily calculated. The Abbe 5 is ideal for academia.

- Simple low cost model
- Full Brix & wide RI scales
- Integral digital temperature display



SSX 210 Salt & HandyLab pH Meters

ebro's SSX 210 rigid probe may be used to penetrate meat and fish enabling the measurement of salt content by conductivity. For more precise readings customers choose the HandyLab pH meter.



Bakery

Whether baking bread, cakes or biscuits, the temperature and time spent in the oven is critical if goods are to be consistent between batches. Ebro supply a number of precision thermometers and data loggers for measuring oven temperatures within the bakery sector. Ebro's TLC 700 core thermometers are used to penetrate cooking dough, finished bread and cakes during experimental research so that internal temperatures can be assessed. Meanwhile, when fitted in a protective case, the EBI 40 oven logger system may be used in pizza ovens and the like so that up to 12 sensors can assess heat distribution within standard and conveyor belt ovens.

OPTi digital handheld refractometers measure the concentrations of tomato pastes on pizzas as well as jam and cream fillings in biscuits and cakes so that consistency is maintained.

Titration plays a part too. The TitroLine 5000 provides for simple acid titrations such as acid in Sauerteig, a popular German sourdough bread, as well as salt and hydrogen carbonate in regular dough. Sulphites (SO₂) sometimes used as an anti-oxygen stabiliser in dried ingredients that are added to baked products is also achieved; whilst Karl Fischer titration is used to measure dry substances.

Finished cakes such as muffins may also be tested for dextrose and sucrose content using the YSI 2900 analyser and are unaffected by colour, turbidity, density, pH, or the presence of reducing substances.



EBI 40 Data Logger

Up to 12 sensors placed at various points in an oven monitor for uniform distribution of heat during the cooking process so that final product quality is maintained.



TLC 750i Thermometer

Dual IR and core temperature sensor for use in the bakery and professional kitchens in accordance with GLP and HACCP.



Titration

TitroLine 7500 Series

Applications:



The TitroLine 7500 series includes standard Karl Fischer, Trace and the 7750 version for both potentiometric titration and volumetric KF titration. Incorporating the all latest physical and metrological attributes of the new TitroLine series including colour display, keypad and intelligent burettes, methods library and more; these instruments offer great versatility in food and beverage environment. The TitroLine series delivers an accuracy according to DIN EN ISO 8655, part 3.

- Versatile & precise
- High accuracy interchangeable burettes
- Print to secure PDF
- USB connectivity for mouse, keyboard and more



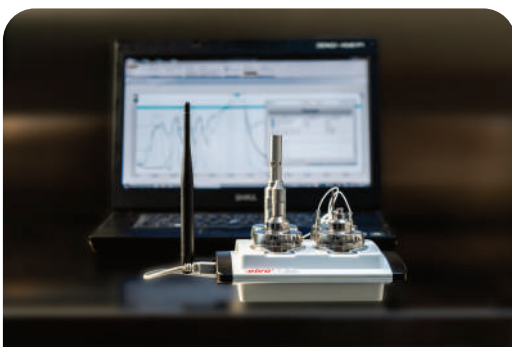
Confectionery

Confectionery products, also known as sweets or candy, are sold in a range of forms, varying from pure chocolate and complex truffles to jellies, gums, liquorice, toffee and the like. Raw cocoa, peanuts, sugar and creams make up many centres and how they are processed determines the final texture, stickiness, crispness and taste.

Analysis plays an important role throughout production. Refractometers control complex sugar blend ratios and also test for fat content in chocolate and cocoa. The oleic content of peanuts, which when correct increases the quality of the end product and its shelf life, may also be measured with a refractometer.

YSI 2900 biochemistry analysers or ADP polarimeters may be used to test correct ratios of sucrose and glucose blends so that desired crisp, brittle or chewy fillings are achieved with the blends being controlled in the factory by refractometers. Gelatine is an important part of confectionery and this is tested by handheld refractometers, YSI analysers and TitroLine 5000 titrators.

During production, cooking temperatures are critical, with some processes taking up to two weeks to dry the product. Ebro EBI data loggers are used in ovens alongside handheld TLC 700 thermometers used in the factory. TitroLine KF 7750 Karl Fischer titrators are used regularly to check moisture content of finished nougat, toffee, gums, pastilles and boiled sweets following sample homogenisation or heat treatment to enable the measurement.



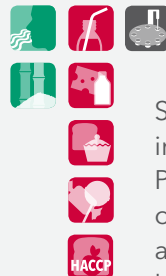
EBI 12 Data Logger

EBI 12 data loggers are commonly used to continually monitor critical temperatures during the cooking process of confectionery in manufacture. A data hub provides easy extraction of stored data so that cooking times can be examined and corrected accordingly.

Polarimeter

ADP400 Series

Applications:



Sugar blend ratio is very important in the confectionery industry. Polarimeters are used to ensure mixtures of glucose, invert sugars and pure sucrose are correct otherwise final product will not behave like intended - *smooth and silky vs. brittle and snappy*.

- High accuracy low cost model
- Robust design for factory operation
- Choice of sample cells
- Available with or without XPC Peltier Temperature Control





HACCP

Food safety is of paramount importance throughout the food chain. Hazard Analysis & Critical Control Points (HACCP) is an internationally recognised system that ensures the food we eat traverses a stringent quality control audit trail. Governments across the globe adopt various levels of HACCP, advising both producers and distributors according to their local needs. Specific methods for dairy, meat, fruit juice and the such like are published and many of the instruments already featured in this brochure play an important role in the procedures.

pH, conductivity, oxygen and most importantly temperature are commonly tested. Pathogen and pesticide residue testing of fruit is very important and is satisfied by the specific GC detectors manufactured by OI Analytical. Titration and spectrophotometry also meet the needs of manufacturers as they inspect goods for incoming residues and contaminants.

Meanwhile out in the field, consumers are protected by food inspectors that perform spot checks to ensure meats and other foods susceptible to microbiological attack using test kits provided by Xylem brand ebro.

As an aside, alcohol in beer, wine and cider is tested by trading standards officers to ensure they do not exceed the declared content; providing consumers with the reliable data they need before making any decisions about operating machinery.



Food Safety Test and Inspection Kits

The food inspection kit contains the required handheld instruments, data loggers and tools for comprehensive food inspections.

Kit comprises:

- Frying oil monitor FOM 330
- Laboratory thermometer TFX 422C
- pH meter PHT 810
- Dual infrared thermometer TLC 750i
- Temperature data logger EBI 300
- Buffer solutions
- Electrode cleaner
- Knife, tweezers, scissors, magnifying glass, flashlight





Cold Chain

Cold chain is defined as a temperature controlled supply chain that ensures safe delivery of perishable items such as medicines and foodstuffs. There are a number of stages within the chain stretching from deep within the food processing arena right through to the supermarket shelf but typically cold chain refers to storage, warehousing and long or short haul transport.

Perishable foodstuffs such as fruit, vegetables, dairy, fish and meat require temperature and sometimes humidity or pressure monitoring during transportation from their source to restaurants and supermarkets around the World and this monitoring need is satisfied by our ebro brand.



OPTi Digital Handheld Refractometers

Refractometers check the oxygen and nitrogen build up within cold storage warehouses by monitoring the °Brix of fresh fruit. They are also used in fleet management to ensure radiator antifreeze and diesel exhaust fluids (DEF/ AdBlue®) are in order.





Cold Chain

In order to ensure that storage cases within the cold chain have not been opened or left outside of their thermally controlled environment for any significant time, the latest EBI 300 multi-use or more typically, the disposable EBI 330 temperature data-loggers are used as they are a more convenient solution to ensuring that such critical foodstuffs have not been “thermally abused.”

Typical breaches that the EBI 300 can help detect include complete or more dangerously, intermittent failure of air-conditioning plant, delayed transfer between transport media such as truck to plane, insufficient cooling of secondary media prior to transfer and even deliberate attempts by rouge transport companies to reduce fuel costs by raising or even stopping the air-conditioning during the journey.

Configuration and data access is made via a secure web environment that does not require any special software to be downloaded locally; eliminating the need for expensive and inconvenient validation. It’s simply “plug & play!”



EBI-300 USB Data Logger

Multiple use models

EBI 300 USB data loggers enable convenient constant monitoring of temperature and humidity of foodstuff during transit so that an audit trail may be reported at reception of goods, ensuring critical food safety parameters have not been breached. EBI 300 Multi-use models are reusable easily configured and have a convenient LCD display. 21 CFR Part 11 (Winlog.basic) DIN EN 12830, ATP, VO (EG) 37/2005 compliant.

- IP65 tamper proof design
- Optional external probes for use in warehouses and supermarkets
- No special software required
- Secure PDF report



Single use models

The EBI 330 USB single use data logger provides cost-saving continuous temperature monitoring.

Operation is simple:

- Configure via the web portal
- Activate the logger and finally
- Plug the logger in to a PC to get a full report of the data captured





Retail

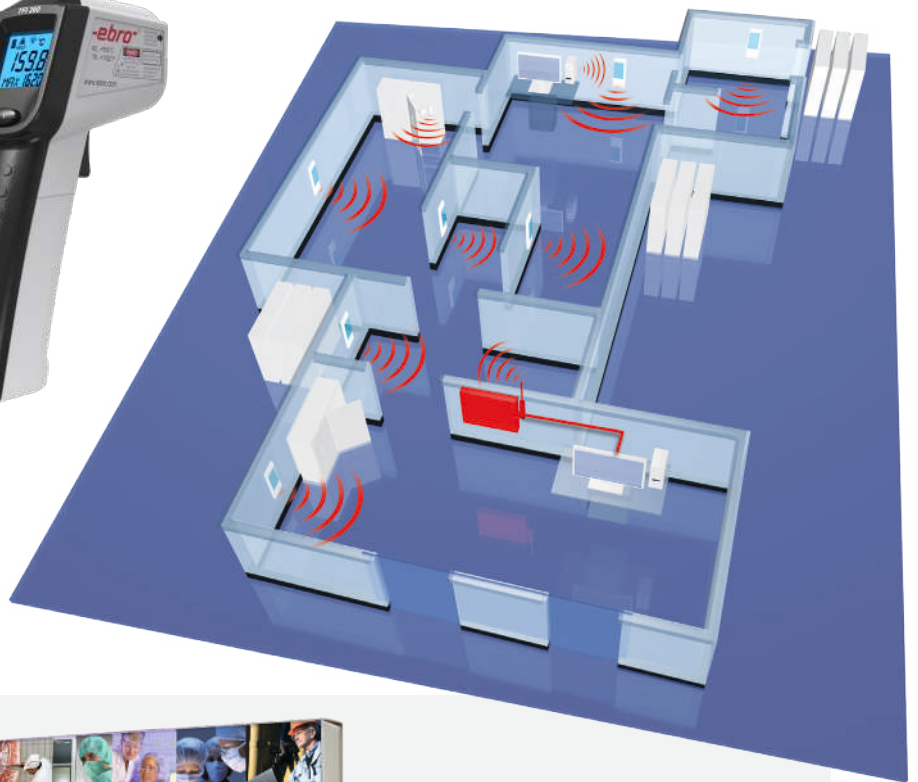
Although most of the instrumentation supplied by Xylem is on a B2B platform, the general public will come into close contact with our products on a daily basis. In supermarkets, wireless refrigeration monitoring triggers remote alarms under fault conditions so that corrective action can be taken immediately in an effort to prevent spoilage and waste.

In smaller scale establishments, standalone data loggers ensure temperature and in some cases humidity levels are not breached, while simple infrared or core thermometers test the temperature thresholds of uncooked meats and cheeses on display.



Infrared Thermometer TFI 260

Rapid non-intrusive measurement of product temperature is easily achieved using an infrared precision thermometer and ebro offer a choice of models to satisfy this need, including a waterproof model that may be used within harsh working environments as well as others for testing incoming materials or refrigerated goods in storage or on display.





Catering

Not only do we expect our food to be safe, we like it to taste consistently good and we want it to be delivered in a sustainable manner by way of efficient production, good logistics and therefore low waste. Xylem helps with this need throughout the cycle and even at the very end, our products help deliver consistent, safe and sustainable products.

Handheld refractometers, such as the OPTi, have been commonly used to calibrate beverage dispense systems for many years. These systems combine syrup and locally sourced carbonated water so that taste is not impaired. The OPTi Digital Handheld Refractometer is able to use two separate measurement scales with product specific temperature compensation in order to uniquely provide Brix analysis of soft drinks at point of dispense and % glycol within beer dispense cooling systems from a single instrument.

Nowadays, alongside regular use of core thermometers in the kitchen, chefs even use OPTi refractometers to control the blend of freshly made stock (bouillon), ghee, sauces and soups in an effort to deliver consistency.

And finally with safety in mind, ebro's newest FOM 330 frying oil meters test the quality in commercial deep fat fryers so that our chips taste better and are free from toxic build-up; and savings can be made too by knowing when not to change the oil too early.



Food Oil Monitor (FOM 330)

Knowing when to change the cooking oil in deep fat fryers is paramount in terms of taste and toxins. The FOM 330 is a simple tool for testing the quality of cooking oil so that food tastes fresh, unimpaired by the flavours left behind by previous cooking.

Ensure toxin build up in frying oil is kept to within safe limits and deliver foodstuff in good condition, time after time.

The Food Oil Monitor kit is ideal for use in restaurants, fast food chains, and as an inspection tool for food safety inspectors.

- One button operation
- Rugged sensor protection
- Oil change alarm
- Measures hot oil directly in the fryer
- Calibration certificate



Instrumentation for Continuous Monitoring and Control

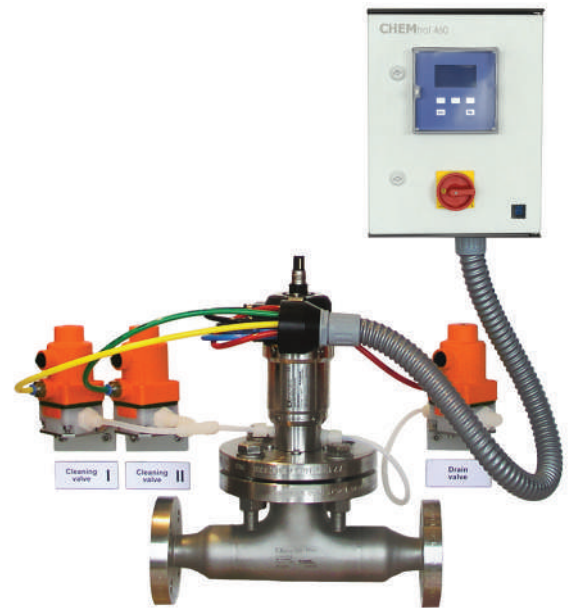
CHEMtrac Armatures for Continuous Measurement of pH, Cond. & DO

Continuous monitoring of pH is essential part of food manufacturing as well as being an important part of CIP (cleaning in place) as it provides an auditable trail that food safety procedures have been adhered to.

SI Analytics provides high-quality armatures that facilitate on-line pH, redox, and conductivity and dissolved oxygen measurement, with electrodes and sensors capable of measuring at very high process temperatures and being fully retractable either by hand or electro-pneumatic means.

Multiple electrodes and sensors may be fitted in a single process line to capture a complex mix of data to efficiently provide food and beverage manufacturers with the essential data needed but at a much reduced cost compared to using manual sampling and laboratory analysis.

- Manual and automatic retractable holders
- Stainless steel 316L, Hastelloy, PP, PVDF or PEEK
- DN32/40/50, ANSI, NPT, Triclamp, DN25, Varivent or Neumo
- CHEMtrol system for automation of retraction and cleaning



Monitoring and Control of DO and Other Parameters in Aquaculture

Easily manage a full scale farming operation or just one tank from anywhere in the world with YSI's 5200A, 5400, 5500D, and AquaManager family of products.

These monitors and software integrate process control, feeding, alarming, and data management into one product and are available as either a multi-parameter monitor for dissolved oxygen, temp, pH, ORP and conductivity with automatic salinity compensation, or as a multi-channel DO and temperature monitor.

In addition, each monitor has configurable inputs for additional sensors and management. Connectivity is extensive. E-mail and SMS alarming is available from network-connected PC running AquaManager software, allowing you to be in touch with the farm all day and every day.

- Six configurable sensor inputs (digital and analogue)
- Event logging with alarm set-points and programmable actions
- Conditional feed timer with Feed Smart software
- Flexible dosing and control management
- Expansion interface modules including 4-20 mA for networking to a larger, farm-wide PLC or SCADA system





Instrumentation for Continuous Monitoring and Control

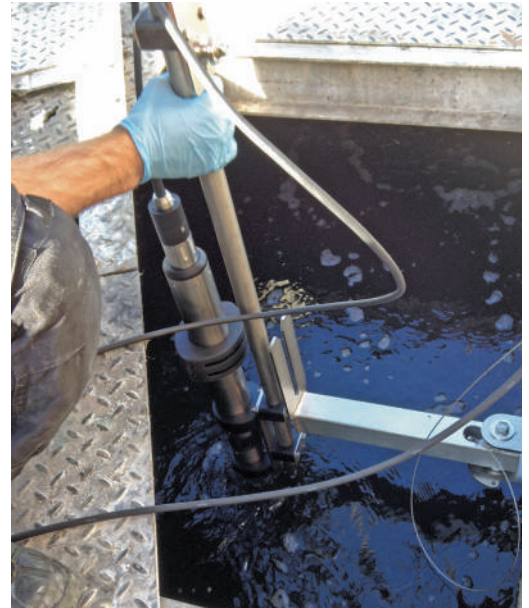
Industrial Effluent Monitoring & Control Systems

As well as manufacturing complete on-line analytical systems for potable water, Xylem offers a complete family of submersible IQ sensors and data capture systems for monitoring effluent and waste streams leaving industrial sites.

Turbidity plays an important role detecting undissolved solids that may indicate a failure in the treatment plant. The VisoTurb is second to none when it comes to reliability and longevity; its integrated ultrasonic cleaning system ensures sensors perform accurately and continuously in the harshest of field conditions. Other sensors are available within IQSN for the measurement of ammonium, nitrate, nitrite, pH, conductivity, DO, turbidity, COD, TOC, DOC, BOD, SAC and UVT.

Collection of data and performance of certain control functions including remote alarms is performed by the IQSN System 2020 XT controller that handles up to 20 IQ parameter inputs.

- Wide choice of IQ sensors including turbidity, DO, TDS, TOC, BOD and more.
- Output options include PROFIBUS, Modbus RTU, EtherNet/IP, Modbus TCP with connectivity using analogue or GSM modems



Xylem Watermark®

Xylem Watermark's mission is to provide and protect safe water resources for communities in need around the world and educate people about water issues.

Through Xylem Watermark, Xylem works with best-in-class nonprofits to address the full spectrum of water challenges by providing financial support, water technology, and sanitation and hygiene education. Xylem Watermark delivers sustainable solutions, combining community-based interventions with regular monitoring to ensure projects meet local water needs.

For more information, go to www.xylemwatermark.com

xylem
watermark®
Because Every Drop Counts

Premium brands – globally recognised heritage



For a century, Bellingham + Stanley has been at the forefront of instrument design and technology and today is regarded by many international brands as the leader in the field of refractometry and polarimetry.

- Refractometers
- Polarimeters
- Density Meters
- Certified Reference Materials

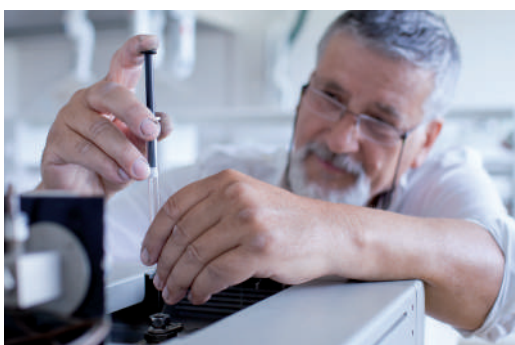
www.bellinghamandstanley.com



ebro has been servicing the scientific world with innovative measurement solutions for over fifty years and today, customer feedback still plays an important role within the business model. To ebro, customer care not only means supporting existing product and software; it also means being able to provide custom solutions within their field of excellence too.

- Precision thermometers
- Food safety test kits
- Food oil meters
- Humidity, pressure & temperature data loggers

www.ebro.com



Since 1963 OI Analytical has been providing innovative products used for chemical analysis and is a key supplier of sample preparation and turn-key analytical solutions for testing food products and water for chemical contaminants.

Beverage & water analyses include:

- Total organic carbon (TOC) & cyanide
- Organophosphorus & organochlorine pesticides
- Volatile organic compounds (VOCs)

Sample preparation for food and fruit analyses include:

- Antibiotics
- Organophosphorus pesticides
- Organochlorine pesticides

www.oico.com



SI Analytics®

For many years, SI Analytics has been producing innovative electrodes and meters that today has culminated in some of the world's leading electrochemistry instrumentation.

- Titrators & burettes
- Viscosity measuring systems
- Capillary viscometers
- High performance pH electrodes
- pH, dissolved oxygen & conductivity meters

www.si-analytics.com



Established in 1945, WTW has provided outstanding leadership in the design and production of superior quality water testing instrumentation and continues to offer the world's broadest range of products in their field.

- UV/Vis spectrophotometers
- Photometers
- Turbidity
- Dissolved oxygen

www.wtw.com



Founded in 1948 and formerly known as Yellow Springs Instrument Company, YSI develops and manufactures scientific instruments, sensors and systems that serve a variety of scientific markets worldwide.

- pH, dissolved oxygen & conductivity meters
- Biochemistry analysers

www.yisi.com

Proven brands – service you can rely on



Xylem prides itself on supplying only the best quality products. We source our materials from sustainable sources and design our products for reliability and longevity.

Our brands operate a quality management system in accordance with or similar to ISO 9001:2015 amongst other industry regulatory compliances such as UKAS for calibration and testing, where ISO/IEC 17025:2017 is the industry standard.

Whatever the product, Xylem ensures best practice from start to finish.



Xylem’s analytical products are available directly from the manufacturer and from a network of carefully selected distributors to meet the needs of the markets we serve.

And we don’t stop there. Once installed Xylem offers preventative maintenance and repair services across the globe. On-site validation is key to performance and our products are supported by a comprehensive range of consumables including reagents, buffers, powder pillows and most importantly; internationally recognised Certified Reference Materials that together, help ensure reliable results, time after time.



There’s a lot more to Xylem

Xylem comprises five growth centres – Treatment, Transport, Dewatering, Analytics and Applied Water Systems. These businesses are interconnected, anticipating and reflecting evolving needs and sharing their applications expertise to cover every stage of the water cycle.



Regional support centres – food & beverage

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Instrumentation from Xylem Analytics is used in numerous applications across the food & beverage industry worldwide.

Xylem Analytics is committed to delivering superior service to our customers and we are always an email or phone call away.

To receive additional product information, get a quote, or to simply get some good advice from one of our knowledgeable Application Specialists, contact us at one of our offices throughout the UK, Americas, or rest of the world.

For more information on regional support centres and local offices please visit our website.

www.xylemanalytics.com

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

Xylem Analytics' global brands have been leaders in the laboratory instrumentation market for decades, and are relied upon every day across more than 150 countries. Working in true partnership with our clients, we listen, learn and adapt to individual needs, offering deep application expertise built upon our long history of innovation in instruments and services. Our solutions for analysis, measurement and monitoring help enable many of today's modern laboratories and industrial processes, and provide our customers the trusted and high performing solutions they need to succeed.

Xylem Analytics is part of Xylem Inc., a global company focused on solving the world's most challenging and fundamental water issues. As accurate analysis is crucial to the water industry, Xylem Analytics taps its diverse product brands for leadership in that field and beyond, providing the best laboratory and field monitoring instrumentation across a wide variety of industries.

For more information on how Xylem can help you please visit www.xylem.com

