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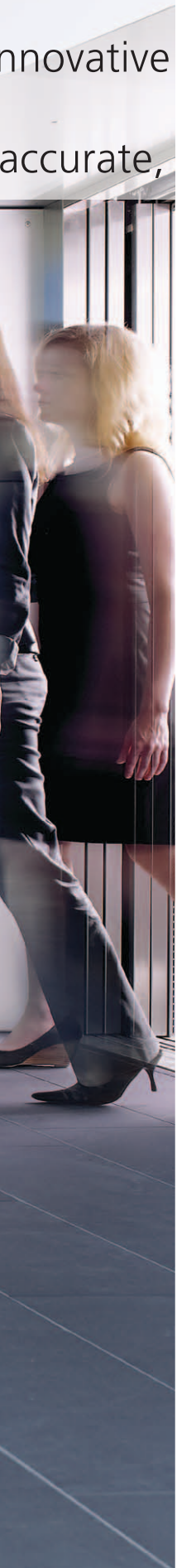
Tough,

The company

standards **for process analysis.**

innovative **sensor technology.**

accurate, **user-friendly.**



SensoTech is a provider of systems for the analysis and optimization of process liquids. Since our establishment in 1990, we have developed into a leading supplier of process analyzers for the inline measurement of the concentration and density of liquids. Our analytical systems set benchmarks that are used globally.

Manufactured in Germany, the main principle of our innovative systems is to measure ultrasonic velocity and density in continuous processes. We have perfected this method into an extremely precise and remarkably user-friendly sensor technology. As well as the measurement of concentration and density, typical applications include phase interface detection or the monitoring of complex reactions such as polymerization and crystallization.

Our LiquiSonic® measurement and analysis systems ensure optimal product quality and maximum plant safety. Thanks to their efficient use of resources they also help to reduce costs and are deployed in a wide variety of industries such as chemical and pharmaceutical, steel, food technology, machinery and plant engineering, car manufacturing and more.

It is our goal to ensure that you maximize the potential of your manufacturing facilities at all times. SensoTech systems provide highly accurate and reproducible measuring results even under difficult process conditions. Inline analysis eliminates safety-critical manual sampling and is immediately available for your automation system. All parameters can also be adjusted with high-performance configuration tools, so that you can react quickly and easily to process fluctuations.

We provide excellent and proven technology to help improve your production processes, and we take a sophisticated and often novel approach to finding solutions. In your industry, for your applications – no matter how specific the requirements are. When it comes to process analysis, we set the standards.

How passion can create new solutions.



The possibilities of tomorrow. Even today. With us.

A top priority for us is to understand the requirements of our customers in a rapid and concentrated way, and implement solutions with foresight and technical excellence.

We include your suggestions and requests in the design and realization of the measurement solution for your application. We are fully committed to you; more importantly we also take the opportunity to develop innovations that we use on a day-to-day basis. We take on new measuring tasks with enthusiasm and dedication. The limits of yesterday are tomorrow's challenge.

We have gained detailed application know-how and considerable engineering competence from the projects that we have undertaken over the long time history of our company. Customers can rely on our experience and capabilities to help them develop solutions.

We are an owner-managed and independent company whose highest priority is the ability to think flexibly. Research plays a decisive role in

the further development of our systems. New functionalities, innovative materials - and the aim to create an optimal analytical system for your application that facilitates safe and cost-effective processes and enables you to gain a clear lead in your market.

It is our ambition to create the best inline analytical systems on the market. As a result we develop solutions for you that are ahead of their time. The quality and possibilities of tomorrow: we can already provide that today.





Processes & industries

Absolute dedication: We are the application specialists.

SensoTech works intensively on the development and implementation of first-class measuring devices for process applications in the plant and the laboratory. Our comprehensive research and product innovation set the standards for state of the art. We are experts in the field of ultrasonic velocity measurement and are able to apply our specialized knowledge in specific applications and industries.

Our LiquiSonic® analytical systems precisely detect and monitor the concentration of all types of liquids – whether it is the original gravity of beer, the composition of cleaning and treatment baths in the steel industry, the sugar content of beverages or the concentration of solutions, acids and alkalis in the chemical industry. You are able to determine the actual concentration value immediately after installation and activation. A field calibration feature allows you to adjust the measurement results to match your reference standards.

Our engineers are application specialists. They have detailed knowledge of the specific requirements of each field of application and fully immerse themselves in the tasks set by our customers. Their knowledge and experience accumulated from numerous applications also help them to devise intelligent solutions to meet new challenges.

Of course, SensoTech also provides excellent system solutions. We have already prepared complete systems for certain industries; combinations of sensor, controller and user interface are adapted to specific applications. LiquiSonic® Plato analyzes the original gravity of liquids in breweries, while LiquiSonic® Lab is used for laboratory applications and LiquiSonic® OCM analyzes and optimizes crystallization processes.

The valuable support provided by SensoTech measuring devices is vital for our customers in a wide range of industrial processes and laboratory applications. From first steps in the laboratory through to mini-plant units, pilot plants and large-scale production – we are a partner you can rely on throughout all phases of process development and for the implementation of your automation concepts.

Concentration and density measurement	Measurement of the concentration and density of liquids, emulsions and suspensions
Phase interface detection	Detection of phase interfaces in pipes and vessels
Product receipt monitoring	Identification and monitoring of the delivered products in loading stations and tank farms
Neutralization	Monitoring the neutralization of acid solutions and process waste water
Gas scrubbers	Monitoring the scrubbing solution concentration at the point of maximum absorption
Evaporators	Monitoring concentration for energy-efficient process control
Polymerization monitoring	Full preparation and process monitoring with defined abort criterion
Crystallization monitoring	Monitoring the degree of supersaturation and the meta-stable range as well as reproducible detection of the seeding point



Your industry, your applications. From the complex to the extraordinary.

Chemistry	<ul style="list-style-type: none"> · Concentration, density: alkalis, acids, solvents, salt solutions, emulsions and suspensions · Polymerization: synthetic rubber, butadiene solution, resins, polyacrylate, polyvinyl acetate, polystyrene · Crystallization: fertilizer/salts, reaction monitoring · Phase detection: butanol, butyl alcohol, epoxy resin, ethyl acetate, oil in water, peracetic acid, silicone resin phases, wax melt · Multi-component analysis: methanol/formaldehyde, caustic soda/sodium chloride, sulfuric acid/oleum
Pharmacy	<ul style="list-style-type: none"> · Concentration, density: solvent, nutrient solutions, active ingredients, emulsions and suspensions · Crystallization: active ingredient and nutrient solution · Phase detection, reaction monitoring
Biotechnology	<ul style="list-style-type: none"> · Fermentation: recipe and feed control · HPLC: eluate control, solvent concentration
Pulp production	<ul style="list-style-type: none"> · Digester: cooking liquor · Evaporation, boiler house: black liquor
Brewery	<ul style="list-style-type: none"> · Lauter tun: extract content · Wort pan: extract content · Filter: original gravity · Filler, blending: original gravity, alcohol, Brix
Food and beverage industry	<ul style="list-style-type: none"> · Concentration: dextrose, acetic acid, fruit extract, fructose gelatin, glucose, coffee extract, evaporated milk, milk, milk powder, whey, oil, juice, sorbitol, starch, soy, palm oil
Sugar industry	<ul style="list-style-type: none"> · Concentration: thin and thick juice, liquid sugar, crystallization, molasses, syrup
Steel and iron	<ul style="list-style-type: none"> · Pickling baths: acids, alkalis · Coating and cleaning baths · Concentration control of rolling and drawing oil emulsions
Petrochemistry	<ul style="list-style-type: none"> · Concentration: water content, (bio) fuels, additives, liquefied gases and biogases, alkylation · Gas scrubber · Phase separation
Semiconductor and photovoltaic	<ul style="list-style-type: none"> · Etching, coating and cleaning baths · Quality control of photoresists · Concentration measurement of coating emulsions and suspensions
Mechanical Engineering	<ul style="list-style-type: none"> · Concentration: rolling oil and cleaning baths, coolant and lubricant, drawing oil, antifreeze
Plant Engineering	<ul style="list-style-type: none"> · Process control and monitoring: blending and filling systems, distillation column, evaporator, extraction plants, crystallizer, separator, gas scrubber, fermenter, filter

Improve quality and productivity, save resources. It's not a miracle, it's SensoTech.

Quality, safety, efficiency: SensoTech analytical systems monitor and optimize all factors that determine the quality and continuity of your processes - at the highest technical level.

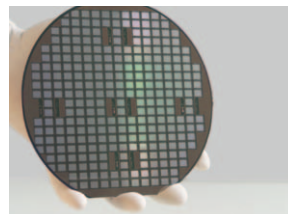
LiquiSonic® is our analytical system that ensures the sustainability of your investments. We provide support for establishing and automatic monitoring of the desired product characteristics. We help reduce the overall production costs by saving raw materials and energy, and ensure the maximum safety and capacity utilization of your plants. The high standards of our development and production processes are certified according to ISO-9001.

With LiquiSonic® you have a measuring system with unrivalled speed of response. All measuring data are available immediately for evaluation and process monitoring. There is no longer a need to take process samples and wait for analysis results. The LiquiSonic® controller alone manages up to 256 different product data sets that can be activated by changing the location or process

conditions. For new applications, you can calculate new product data sets at any time using your own reference values with the help of our Sonic-Work software. These new data sets can then be stored in the controller.

Approvals and conformance requirements such as ATEX, NEPSI, GOST, CSA, FM or GAMP ensure that LiquiSonic® systems can be installed anywhere in the world and in any industry.

Our experienced staff ensures that your requirements are implemented in an ideal and forward-looking manner. We advise on how productivity, high quality and the minimal use of resources can go hand in hand.



SensoTech

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Views

Product

Controller

Sensor

Interfaces

1

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Main View

Sulfuric acid

Concentration

91.27 wt%

Temperature

49.11 °C

Product overview

LiquiSonic®. The measuring system that sets new standards.

LiquiSonic® is a non-contact measurement and analytical method that is independent of conductivity, colour and transparency of the process liquids and is stable as well as very precise.

The sensor principle is based on the relationship between a material's sonic velocity and its density. An ultra-precise time measurement – with a known distance between transmitter and receiver – provides the absolute sonic velocity in the process liquid from which the concentration or density is calculated. Common scales such as °Brix, °Baume, °Plato, solids content or concentration of dry matter can also be determined. In addition, the temperature measurement integrated in each sensor automatically compensates the influence of temperature on the concentration value.

LiquiSonic® consists of up to four sensors and one controller. The devices are connected digitally, which guarantees high, drift-free measurement accuracy and interference-free data transfer at distances of up to 1000 m (3000 ft). Interruptions caused by wiring or extensive recalibration when a sensor is exchanged are now things of the past. The stable and maintenance-free nature of LiquiSonic®, as well as the minimal efforts for installation and operation, all pay off in the long run, especially when following a practise of continuous process improvement.

The ultrasonic measurement process produces results of exceptional quality when applied in the field. It can deal with extreme processing conditions such as temperatures between -100 °C (-150 °F) and +200 °C (375 °F) and process pressures of a few mbar to 500 bar (7000 PSI), as well as complex calculations, such as the simultaneous integration of different physical values. LiquiSonic® allows multiple component measurements to be carried out, such as the independent measurement of scrubbing liquids and the dissolved salt in gas scrubber applications or the alcohol content and residual extract in beer.

We offer our customers versions of the system adapted specifically to a wide range of applications. While common configurations are available for immediate shipment, our highly flexible approach allows us to quickly adapt products for specialized service.



Measure, analyze, monitor. Unrivalled simplicity and precision.

Measuring can be so simple: our sensors have no moving parts that can wear out or age. They are completely maintenance-free and feature a robust and completely enclosed design that does not require gaskets, moveable parts or “optical windows” to the process.

We do not compromise on materials: the standard version of our sensors is made of stainless steel DIN 1.4571 (SS 316Ti). We also offer special alloys such as Hastelloy, Titanium and Tantalum or various plastic coatings for chemically aggressive substances that require corrosion protection measures.

LiquiSonic® immersion and flange type sensors are available in different sizes from DN10 (1/4 ") upwards and can be used in almost every type of application and plant. This means that preferred installation lengths and almost all standard process fittings can be provided. It is also possible to install them in explosion-hazardous areas. High-performance technology packed with massive strength. A special design of the sensor electronics as well as different operating frequencies of the ultrasonic signal also enable stable measuring values, even where there are high concentrations of gas bubbles or strong attenuating liquids.

Other advantages include additional integrated functions, such as flow stop monitoring and full/empty liquid monitoring.

The controller provides a visualization of the process data, manages the data sets to calculate the concentration value and allows for the calibration and adjustment of measuring data. A real time chart shows the trends and provides quick and clear information about the current process cycle, while the menu and display functions are clearly laid out. The user interface is intuitive and simple to use. Password-protected user administration and a data memory for all process values and events ensure the traceability, reliability and safety of the system.

The qualifications necessary for FDA-approved processes (IQ, OQ, PQ) are supported by diverse device functions and comprehensive documentation.

The many interface options include relay outputs, 4–20 mA standard interfaces and various fieldbus interfaces. Useful additional options such as an operator language change or remote access via various modem and Web interfaces ensure that the system can be operated and supported easily from anywhere in the world.



Valuable measuring data for optimal use. At any time, under all conditions. With SonicWork.

LiquiSonic® controllers can also be operated and configured via interface using the SonicWork software. This provides access to all functions of the system and can obtain a readout of all measuring data via a network interface on your office PC or a laptop interface.

The menu functions make it easy to compile and evaluate records and facilitate optimal documentation and diagnostic functions.

Readout of device data sheets: Controller and sensor status, calibration values of all product data sets of all connected sensors, peripheral equipment with configuration of inputs and outputs.

Event memory: Every LiquiSonic® controller has an internal memory to store measuring data. All accesses to configuration data, such as calibration, scaling or data set change are recorded here. The data are presented in an universal format and can be processed further if desired. In research and development, the data memory readout is an optimal tool for the analysis of reactions and experiments.

Calculation of own product data sets: Fast, flexible reaction to process changes or modification of the measurement ranges of a product with regard to concentration or temperature.

The remote access function is also user-friendly. The LiquiSonic® controller can be configured from any location via a modem, the Internet or intranet, whereby you also have access to all device functions.

SonicWork gives the user the flexibility to adapt the analytical system parameters to any changes made in the product or process. Were modifications made to the process? Simply transfer and manage a new product data set to your measuring system. You want to use your LiquiSonic® system for another measuring task? Simply configure it optimally for the new task by loading the corresponding configuration.



A globally networked

Quality aware

All based on

Quality and Support

SensoTech



ked team, **established partnerships.**

ness that **is second to none.**

unlimited **passion for development.**

Enthusiasm for technical progress is the driving force behind our company as we seek to shape the market of tomorrow. As our customer you are at the centre of all our efforts and we are committed to serving you with maximum efficiency.

We work closely with you to develop innovative solutions for your measurement challenges and individual system requirements. The growing complexity of application-specific needs means it is essential to have an understanding of the relationships and interactions involved.

Creative research is another pillar of our company. The specialists in our research and development team provide valuable new ways to optimize product attributes, such as testing new types of sensor designs and materials or the sophisticated functionality of electronics, hardware and software components.

Our SensoTech quality management also only accepts the best production performance. We have been certified according to ISO 9001 since 1995. All device components pass various tests in different stages of production. The systems all go through an internal burn-in procedure. Our maxim: maximum functionality, resilience and safety.

This is only possible due to our employees' efforts and quality awareness. Their expert knowledge and motivation form the basis of our success. Together we strive to reach a level of excellence that is second to none, with a passion and conviction in our work.

Customer care is very important to us and is based on partnerships and trust built up over time.

As our systems are maintenance-free, we can concentrate on providing you with support in the form of professional advice, commissioning and training.

Within the concept stage we analyze the conditions of your application on site and carry out test measurements where required. Our measuring systems are able to achieve high levels of precision and reliability even under difficult conditions. We remain at your service even after installation and can quickly respond to any queries thanks to remote access options adapted to your needs.

In the course of our international collaboration we have built up a globally networked team for our customers in order to provide advice and support in different countries. We are focused on effective knowledge and qualification management. Our numerous international representatives in the important geographical markets of the world are able to refer to the expert knowledge within the company and constantly update their own knowledge by taking part in application and practice-oriented advanced training programs.

Customer proximity around the globe: an important element of our success worldwide, along with our broad industry experience.



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In liquids, we set the measure.

