

SENSORS FOR FOOD AND LIFE SCIENCES.












HYGIENIC BY DESIGN

**ANDERSON-NEGELE**



## Sensor Technology for the Dairy and Cheese Industry

-  TEMPERATURE
-  PRESSURE
-  LEVEL
-  POINT
-  FLOW
-  CONDUCTIVITY
-  TURBIDITY
-  WEIGHING SYSTEMS
-  PROCESS ADAPTERS

How can I optimize my dairy and cheese production with Anderson-Negele instruments?

How can I avoid waste with sensing technology?

How can I comply with PMO regulations?

What can digitalization with IO-Link do?

How can hygienic design help in product quality and safety?

[ANDERSON-NEGELE.COM](http://ANDERSON-NEGELE.COM)




## How can I optimize my dairy and cheese production with Anderson-Negele instrumentation?

Intelligent sensing technology can help you ensure **reproducible product quality** throughout the production process, automate processes, minimize energy and resource consumption, and avoid production downtime and food waste.

As diverse as raw material quality, recipes and processes in the production of dairy and cheese products are, so are the demands on measurement technology. That's why we offer a **complete sensor program**, each with a wide range of variants and options. You get **exactly the performance you want** for every application and every business type, from regional producers of milk or cheese specialties to industrial dairy plants – no more, no less.

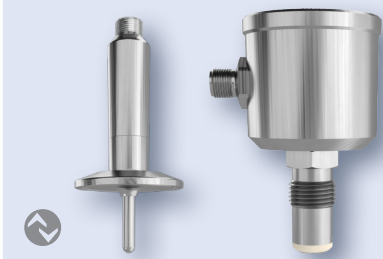
**Our tip:** This brochure provides an overview of the most important products and information. All the details and configuration options can be found on our website. Clicking on the icon will take you directly to the online product category. Of course, we are also happy to help you personally in finding the optimal solution for you.

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 = Product category online link

### Temperature

They are indispensable in almost **every step** of production and for CIP control. That's why we offer them in 2 standards (Big and Mini), with a **comprehensive performance range** and an almost infinite variety of **configurations, process connections, and options**.



TSMA / TSBA

- ✓ For vessels and pipes from DN25
- ✓ Flush design available
- ✓ Accuracy <math>\pm 0,1 K</math>
- ✓ Extremely robust and permanently precise
- ✓ Optional programming display

### Pressure

Keep **optimum control of process or vessel pressure** at all times. Many sensor options provide the most suitable solution for **every application, every requirement and every desired pressure measuring range**, be it as an on-site display or for PLC connection.



Transmitter: P42

Transmitter with Display: MPF

Gauge: EL

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>✓ Extremely robust, even with pressure shocks</li> <li>✓ Absolute, Relative or Compound measurement</li> <li>✓ Vacuum-proof</li> <li>✓ Many transmitter versions and options available</li> </ul> | <ul style="list-style-type: none"> <li>✓ Modular design with Smart Replace Design</li> <li>✓ Two options with display or with user interface</li> <li>✓ Easy on-site configuration, commissioning, and diagnostic routines</li> <li>✓ Other digital display transmitters available</li> </ul> | <ul style="list-style-type: none"> <li>✓ Extremely robust, even with pressure shocks</li> <li>✓ Accuracy up to <math>\pm 0,25 \%</math></li> <li>✓ 90 mm display</li> <li>✓ Two-point adjustment</li> <li>✓ Many versions and options available</li> </ul> |
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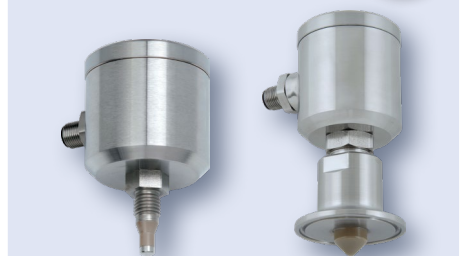
### Level

Different temperatures, different vessel shapes, pressurized or aseptic processes, different densities, differently foaming media, different turbidity and solids contents - highly **different requirements and dynamic changes** influence the control of the filling level of your various vessels and containers. However, at all times you need to know exactly **how much product is in the vessel** or ensure that a **vessel does not overflow or run dry**. That's why we offer **different measuring techniques and many different designs and options**, so that you get the best solution for every purpose and application.



- |  |   |  |
|--|---|--|
| <p>Hydrostatic: L3 / SL</p> <ul style="list-style-type: none"> <li>✓ Always precise due to significantly reduced temperature effect</li> <li>✓ Direct output of volume, level or pressure</li> <li>✓ Integrated tank linearization and density compensation</li> <li>✓ Various models / options</li> </ul> | <p>Potentiometric: NSL-F / NSL-M</p> <ul style="list-style-type: none"> <li>✓ Highly accurate even with foam, pasty or adhering media</li> <li>✓ Installation from the top, below, or side, curved rod possible</li> <li>✓ For all vessels up to 3 m, incl. pressure tanks</li> </ul> | <p>Differential Pressure: D3</p> <ul style="list-style-type: none"> <li>✓ Parallel output of head and differential pressure</li> <li>✓ Fully electronic device, without capillaries</li> <li>✓ Integrated tank linearization and density compensation</li> </ul> |
|--|---|--|

### Point Level



Conductive: LB / Capacitive: LS

- ✓ Reliable point level control even with foamy or viscous media
- ✓ Hygienic installation on top, below, or side
- ✓ Very fast reaction time
- ✓ Also for double-walled vessels



## How can I avoid waste with sensing technology?

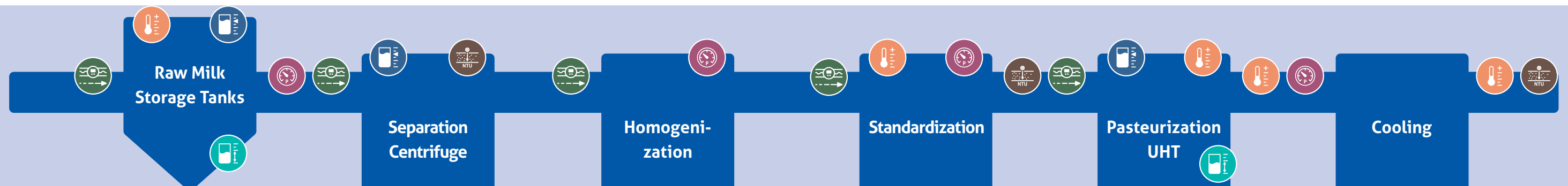
For a producer, this not only means an **ecological and ethical** component, but also **pays off in hard cash**. Every liter of wasted resources means lost value. And every liter of product that ends up in the gutter even causes additional expense in wastewater treatment.

Areas where **intelligent instrumentation can help prevent losses include**, in particular, phase transition between two media, insufficient product quality due to processes that are not optimally

controlled, inaccurate level control in storage or process vessels, and a CIP process that is not automated.

**Our tip:** Examine all your processes for their optimization potential. We will be happy to help you on site.

Milk Receiving





Many of our sensors are available as "remote" version. The actual measuring device and the electronics unit with operating display are separated. This **protects the electronics from vibrations and high temperatures** and can significantly increase the service life. It is also extremely practical, as you can simply place the electronics and displays where it is most **convenient and accessible for easy and quick reading or programming.**

## What advantage do remote sensors offer me?

**Our tip:** Get the perfect overview of all processes and containers without having to bend down or walk around and ensure easy programming and longer service life with remote sensors.

= Remote version available

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### Flow Meters

Here's how to **keep control** of your products, monitor your blending, and ensure the **reliable operation** of your production equipment: electromagnetic, turbine, or coriolis mass flow meters offer a **solution for any media.**



**Electromagnetic: FMQ / IZMAG**

- ✓ From the compact, robust, low-cost all-rounder to the high-end version
- ✓ Measuring range 30 l/h to 280000 l/h (8 gal/hr to 74000 gal/hr)
- ✓ Measuring accuracy up to  $\pm 0.2\%$   $\pm 1$  mm/s
- ✓ Process temperature up to 165 °C / 325 °F, CIP up to 130 °C / 266 °F (30 min.)



**Coriolis: Micro Motion**

- ✓ Flow and density measurement in a compact hygienic flow meter
- ✓ Exceptional reliability and safety
- ✓ Liquid mass flow accuracy up to  $\pm 0.05\%$
- ✓ Liquid density accuracy (g/cm<sup>3</sup>) up to  $\pm 0.0005$



**Turbine: HM**

- ✓ Non-contact turbine pulse measurement for aqueous media
- ✓ Ideal for non-conductive media such as exhaust water, oils, cleaning agents and acids
- ✓ Measurement accuracy:  $\pm 0.5\%$

### Flow Switches

Flow monitors give an alarm when the flow stops and are **ideal for monitoring** pump systems, filters, cooling circuits, the CIP return or for detecting misdirected media.



**Calorimetric: FTS**

- ✓ Switch range 0.1...3 m/s
- ✓ Very short response time
- ✓ Temperature compensated

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### Turbidity

Turbidity sensors can be used to clearly distinguish between liquids based on their clarity, but also on their fat content. Do you want to safeguard your product quality by precisely monitoring the degree of turbidity? Control the phase transition of milk, cream and whey with maximum efficiency? Supervise the function of your filter systems? Reuse slightly contaminated CIP media and thus save costs? Minimize wastewater costs through contamination monitoring? Then our turbidity sensors are **your perfect solution.**



ITM-51

- ✓ Front-flush design with backscatter light technology
- ✓ Easy installation due to screw or clamp connection
- ✓ Measuring range: 200...300 000 NTU
- ✓ High safety and durability due to glass-free sapphire optics



ITM-4

- ✓ Four-beam alternating light technology (90° scattered + 180° transmitted light)
- ✓ Measuring range: 0...5 000 NTU
- ✓ Measuring accuracy: resolution 0.1 %
- ✓ Response time < 1 sec.
- ✓ Many process connections from DN25 to DN100

### Conductivity Sensors

For active, automated phase transition, control of the CIP return of acid / caustic / water and concentration control of the CIP cleaners: ILM-4, your **safeguard for process reliability.**



ILM-4

- ✓ Measuring range:  $\leq 1... \leq 999$  mS/cm
- ✓ Sensor response time only 1.2 sec.
- ✓ Configurable from basic to high-end model
- ✓ Extremely robust and durable: 5 years warranty



## How can hygienic design help in product quality and safety?

Anderson-Negele products are designed and built **exclusively for food and beverage applications.** Therefore, they meet the requirements for hygienic production, **certified by 3-A and EHEDG.** This means **maximum hygienic protection** of your products, easy **equipment cleaning**, and ultimately maximum **peace of mind for you and your customers.**

When it comes to process connections, we also offer a wide range of solutions that ensure hygienic integration into your plants through dead space-free design and superior material and surface quality.

**Our tip:** In addition to our "HYGIENIC BY DESIGN™" approach, which is the basis for all our products, we also have a range of specialized solutions. Process connections such as thermowells or the CPM adapter series simplify hygienic installation and operation and can even be retrofitted.





## How can I comply with PMO regulations?

PMO stands for "Pasteurized Milk Ordinance", a regulation that ensures that Grade "A" dairy products meet the highest safety standards in the US. The FDA issues a "Memorandum of Milk Ordinance Equipment Compliance" (M-b), a letter of conformity to show that a particular device/system has been found to be compliant with the requirements within PMO. This requires a comprehensive technical product review and in-depth evaluation of performance data by a regional Dairy Equipment Review Committee.

**Our tip:** We have M-b's issued for a number of products. This certificate confirms to the State Inspector that the device meets the standards and requirement within the PMO. If you use devices with M-b, you can face the inspections with confidence.

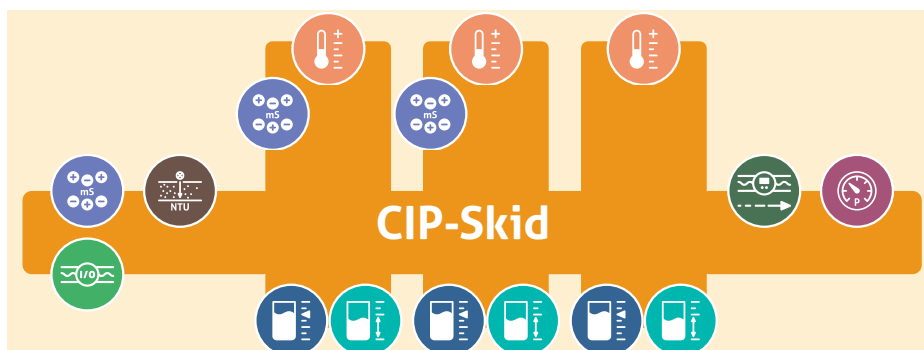
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### Grade "A" Pasteurization

M-b

For continuous pasteurization systems like HTST we have M-b's issued for following Sensors and Process Recorders. For VAT Pasteurization we have an M-b issued for the complete VAT Pasteurization Controls Package.

Process Recorder: PPR / AV9900	Flow Meter: IZMS	Temperature: FD	Differential Pressure: GB	Pasteurization Controls Package: VAT
<ul style="list-style-type: none"> <li>✓ PPR is the first digital process recorder with M-b</li> <li>✓ For audit-ready digital records and annotations, streamlined workflows, remote access and approval and secure storage</li> <li>✓ Avoids consumables cost and unplanned downtimes</li> <li>✓ AV9900 is a failsafe chart solution for up to 4 inputs</li> </ul>	<ul style="list-style-type: none"> <li>✓ Measuring range 30...280 000 l/h (8 ...74 000 gal/hr)</li> <li>✓ Measuring accuracy up to ±0.2 % ±1 mm/s</li> <li>✓ Process temperature up to 165 °C / 325 °F, CIP up to 130 °C / 266 °F (30 min.)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Digital Reference Thermometer</li> <li>✓ 21 CFR 113 for retort applications</li> <li>✓ Measuring range -50 to 350 °F</li> <li>✓ Display distance from sensor up to 1500'</li> </ul>	<ul style="list-style-type: none"> <li>✓ Efficient control of the continuous pasteurizer regenerators</li> <li>✓ Sensors and range options for standard and UHT applications</li> </ul>	<ul style="list-style-type: none"> <li>✓ Complete system including:               <ul style="list-style-type: none"> <li>✓ One AJ-300 Circular Chart Recorder</li> <li>✓ Two CT8V probes for airspace and product temperature measurement</li> </ul> </li> </ul>



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## What can digitalization with IO-Link do?

Most Anderson-Negele sensors with IO-Link are equipped with "Flex-Hybrid Technology", i.e. **digital IO-Link and analog 4...20mA communication in parallel**. Even if the plant is operated analog, you can commission all sensors with only one software via computer. Specific programming can be easily transferred to other sensors by copy-paste. And in the case of a sensor exchange, the entire individual programming is transferred simply by plugging it in.

**Our tip:** With Flex-Hybrid Technology, you already have advantages in installation and commissioning. And if you switch to digital IO-Link technology later, there is no need for new sensors.

= IO-Link version available

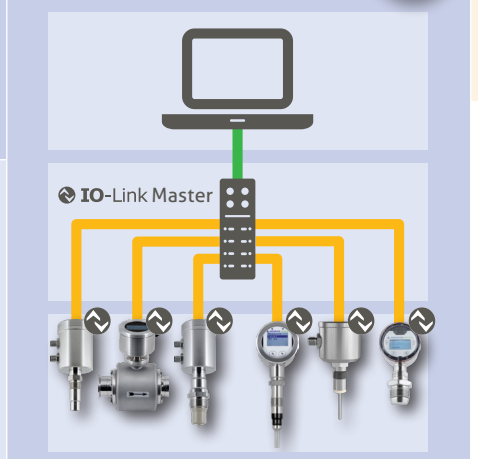
### IO-Link

Your key to greater efficiency: sensors with IO-Link in Flex Hybrid technology. These make **planning, commissioning and operating** your plants **easier, faster and more flexible**. For **existing analog plants**, Flex-Hybrid means easier programming, sensor changes with "plug-and-play", and if you upgrade to IO-Link control at some point, the sensors are changed over just by plugging them in.

- ✓ Extensive sensor program for almost all measuring categories
- ✓ Only one software for programming and configuration
- ✓ Suitable for all IO-Link masters
- ✓ Add-on instructions (AOI) available

- ✓ Automatic programming transfer when replacing a sensor

More info at [www.io-link.com](http://www.io-link.com)



## And does all this really work in practice?

Many customers use our sensors under a wide **variety of everyday requirements**. Discover how other dairies and food producers are successfully overcoming their challenges with Anderson-Negele sensors. Our **case studies show examples** where we have been able to help our customers achieve their goals through application consulting, product testing or technical support. You can **find our case studies** and application reports online here:

<https://www.anderson-negele.com/us/dairy/>



**Our tip:** Our case studies can give you a small overview of the variety of applications where intelligent sensor technology, used correctly, can make your work easier, improve quality and reduce costs. We would be happy to visit you to find answers to your questions on site. **Please contact us!**

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HYGIENIC BY DESIGN

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