

BRIX MEASUREMENT IN THE CRYSTALLIZER

Highly accurate and reproducible
Brix and concentration measurements



 **BERTHOLD**

BRIX MEASUREMENT FOR CONTINUOUS VACUUM PANS

The ability to monitor and control various parts of the sugar production process is key to producing high quality products. In this process, there are several critical process points where reproducible and accurate measurements are required. Among them are continuous vacuum pans (crystallization), evaporator pans and milk of lime. Using state-of-the-art microwave measurement technology, Berthold's MicroPolar Brix measurement systems can do the job online and in real time. Trends can be recognized and process actions can be taken to ensure high quality and cost efficient production.

Measuring °Brix and concentration in the crystallizer

Controlling the boiling process in vacuum pans is one of the most important and critical activities in the sugar production process. High accuracy is required to determine the seeding point to insure proper crystal structure and size of the product. The thick juice is heated in the crystallization process under vacuum conditions. When a certain concentration is reached, the juice is seeded with tiny sugar crystals to promote the growth of uniform crystals. With the microwave measuring systems from Berthold, the juice concentration (°Brix) is monitored throughout the crystallization process, and a precise determination of the seeding point can be determined. The Berthold LB 565 MicroPolar Brix is the ideal solution for providing a highly accurate and reproducible measurement. The brix measuring systems are applied in all crystallization stages. Due to its robustness and superior sensor flushing, the measuring systems have proven time and time again that they work reliably and trouble-free even in continuous operating conditions. Even after the final crystallization stage, the °Brix concentration of the massecuite can still be reliably measured at the outlet pipe, after the product has passed through the pump.

Measuring principle

The MicroPolar measuring system uses the special dielectric property of water. It generates microwaves that interact with the water molecules. This interaction induces a weakening of the microwave energy, which can be detected as phase shift and attenuation. As the phase shift and attenuation change is directly proportional to the water content, this allows the determination of the concentration of the medium with high accuracy. Berthold's superior multi-frequency technology guarantees highly stable and reliable measurements that are unaffected by interferences caused by reflections or resonances. The microwave power of a MicroPolar system is so low (max. 10 mW) that the material to be measured is neither heated nor changed in any way.

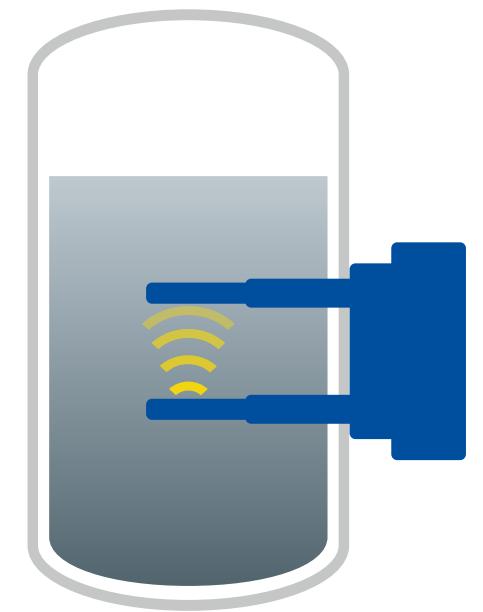


Customer Benefits

- Very precise determination of the seeding point
- Uniform sugar crystals and improved quality
- Reliable control during entire crystallization process
- Continuous production, without process downtime
- Pt100 for temperature compensation if needed
- Integrated reference line for disturbance-free measurement
- Optional flushing of probe with low water consumption

Technical Features

- Installation in batch pans or vertical vacuum pans VKT (continuous operation)
- Side or bottom installation of container probe in crystallizers, chambers, or outlet pipe
- High resolution through focused measurement signal
- Integrated temperature control for operation in batch process
- Easy to calibrate and maintenance-free system
- Robust sensor antennas with easily replaceable PEEK caps



Schematic representation on a vacuum pan using container probe with integrated flushing device



THE EXPERTS IN MEASUREMENT TECHNOLOGY

Berthold Technologies stands for excellent know-how, high quality and reliability. The customer is always the focus of our solution. We know our business!

Using our varied product portfolio, our enormous specialized knowledge and extensive experience, we develop suitable solutions together with our customers for new, individual measurement tasks in a wide variety of industries and applications. Berthold Technologies is specialised in radiometric process measurements for 70 years. More than 30 years ago Berthold expanded their portfolio and introduced microwave technology to the sugar industry. Today sugar mills worldwide depend on measurement solutions from Berthold. Our expertise in microwave technology is one of our core competences – the vast amount of systems in operation in the sugar industry worldwide speaks for itself.

We are here for you – worldwide!

The engineers and service technicians from Berthold Technologies are wherever you need them. Our global network assures you fast and above all competent and skilled assistance in case of need. No matter where you are, our highly qualified experts and specialists are ready and waiting and will be with you in no time at all with the ideal solution for even the most difficult measurement task.

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