

# WATER & SOLIDS CONTENT FOR THE DAIRY INDUSTRY

Real-time process monitoring  
in food production



QUALITY  
MADE IN  
GERMANY

**BERTHOLD**

# WATER AND SOLIDS CONTENT MONITORING DURING PRODUCTION

Water is a characteristic component of dairy products. It determines consistency and influences the taste as well as the quality of the final product. In most countries, the water content of butter is subjected to strict monitoring. According to one regulation, for example, the water content of butter in Europe may not exceed 16 %.

With the latest microwave technology, it is possible to monitor the water or solid content during production in real time, which enables early detection of deviations. This makes it possible to maintain consistent quality and cost-efficient production. It also ensures that the dairy products comply with all legal requirements and that the product meets expectations.

## Process control in dairy plants

The measuring system provides continuous and real-time information on the current water content or dry matter on a wide range of dairy products. The measurement can be applied directly in the main stream, therefore a bypass is not required. The materials used, which are FDA and EHEDG approved, allow easy cleaning and are resistant to high temperatures, acids and bases. Furthermore, performance is not affected by colour, viscosity or inhomogeneity of the product.

## The measuring principle

The measurement system generates microwaves that interact with the water molecules due to their high dielectric constant. This interaction causes an attenuation of the microwave energy, which can be detected as phase shift and attenuation. Since the phase shift and attenuation change are directly proportional to the water content in the product, the concentration or solids content in the medium can be determined with high accuracy. The superior multi-frequency technology from Berthold ensures very stable and reliable measurements, unaffected by interfering reflections or resonances from the measuring environment.

## Typical Applications

- Butter
- Margarine
- Curd
- Cream cheese
- Yogurt
- Non-dairy plant-based alternatives



*Quality control with the LB 566 and a DN100 FlowCell during butter production before packaging*

## Customer Benefits

- Online monitoring of the water or solids content during production
- Precise and reliable measurement < 0.2 wt.% (standard deviation)
- Simple system calibration
- Production optimization

## Characteristics

- Multi-frequency technology for dynamic plausibility control of the raw signal
- Representative microwave measurement captures the entire pipeline cross section
- CIP and SIP resistant materials
- Low-wear and maintenance-free



*Schematic representation of a water/solids content measurement on a pipeline with FlowCell*





## 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.

**Berthold Technologies GmbH & Co. KG**

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