



## Application Notes

### Moisture in Milk Powders

Moisture content at various stages throughout the production process will impact the energy costs, the efficiency of the process and the yield. Final moisture will affect storage and flow, and solubility properties.

During processing it's important to maximise the removal of water in the evaporator as this is up to 20x cheaper a process, but increasing the total solids (TS) content of the material entering the spray dryer requires the outlet temperature of the spray dryer to be increased by approximately 1°C for a percentage increase in TS. The rise in outlet temperature causes a rise in powder temperature increasing the likelihood of the product sticking and blocking cyclones if process variables aren't tightly controlled.

If by careful control the moisture content can be controlled closer to the quality specification upper limit, the gain is two fold; water is being sold as product and fuel costs have been reduced.

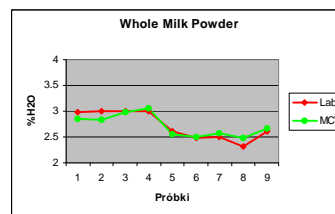
Should final moisture exceed the upper limit it will cause the milk powder to cake and possibly discolour. More importantly it will lose solubility, making it difficult to reconstitute.

#### Overview of Process

Raw milk is pasteurised then separated into a skimmed milk and cream, then depending upon the end product, a fixed percentage of cream is added to the skimmed milk - Standardisation Process. The milk is evaporated to increase Total Solids %, then dried in a Spray dryer.

#### Measurement Location and Performance

The MCT 360 can be installed looking through a sapphire window into the Fluid Bed Dryer or a transparent section of pipe after exiting the dryer, alternatively it can be configured with a powder sampler for measurement within a pneumatic pipe.



Measurement Information	
Moisture Range	1.8 – 4.0%
Accuracy	0.1- 0.2%