

Ingeniously simple and reliable  
level measurement technology



Solutions for the

# Grain Industry



# Reliable measurement technology for versatile solutions in grain mills

Due to the diversity of today's grain mills, consumers have a vast variety of bread and pastry products available to them. The multi-step processes in the flour production call for state-of-the-art components from reliable manufacturers.

UWT solutions for the measurement of level and point level of bulk solids are already being used successfully in silos and process vessels within grain mills around the world. With the experience of qualified professionals with many years of industry knowledge we are able to provide you with individually tailored level measurement solutions for every process within your plant, making us the ideal partner for OEMs or mill operators.

To ensure the smooth, safe and efficient operation of every single process - from grain delivery to flour loading - UWT offers a comprehensive range of innovative measurement technology. Our continually growing product portfolio ensures that we will be able to meet the variable and complex challenges of this industry in the future.

## Hygienic Design

UWT offers EHEDG certified products that comply with the high standards required by the food industry. Our products have been extensively developed and tested to eliminate product residue. All components that come into product contact are made from material suitable for food processes. To meet this requirement we only use materials adhering to regulation 1935/2004 (EC).

With superior and certified designs that fully comply with food manufacturing regulations, UWT therefore guarantees plant safety, around the world.

## Explosion protection

Within mills there are areas with potentially explosive environments caused by dust from grain and flour. These areas have to be assessed and classified into corresponding zones. Plant technology also has to be adjusted and approved according to these individual zones. For level control within the flour milling industry, UWT offers sensors which do fulfil the requirements of the ATEX, IEC-Ex, FM and CSA Directives. Our sensors are designed for safe and reliable use in potentially explosive environments.

UWT will always be on hand during the construction stage and advise with the correct choice of level sensors for the corresponding zones and necessary classes.





Quality assurance and quality management have for many years been well established values at UWT. Our level sensors are defined by their reliable functionality, easy handling and long service life. In accordance with the high demands and standards found in the food industry sector we offer comprehensive support for your requirements and technical needs.

## We offer the right measurement technology for every process within your plant



UWT with its high performance technology and advanced solutions is able to support and ensure the smooth operation of the grain production process:

### ■ Highest quality means long service life

UWT provides a guaranteed “Made in Germany“ quality with a product performance rating of 99.8% within the warranty period. The high quality of our products is ensured by continual improvement processes.

### ■ Individual product concepts - flexible, modular and economical

UWT will configure the appropriate measurement technology for each of your applications. Even under constantly changing conditions, the sensors by their modular design offer flexible configuration (individual parts are available at all times). KIT solutions enable swift, individual equipment configuration and efficient stock-keeping. Sensor, process fitting, electronics and housing are matched to the specific requirements so that the installation is provided with an effective and reliable measurement technology.

### ■ Planning security through precision

Modern, high-quality technologies ensure continuous stress-free process flow. We develop sensors with maximum compatibility for your processes, so that they can be perfectly integrated into your systems and thus offer optimal support.

## UWT Portfolio

UWT provides sensors for the measurement of level and limit level in bulk solids and liquids. Depending on the medium and the application, different measurement techniques are used. In addition, we offer a range of complete systems for level monitoring and visualisation. The product lines include not only an economic standard but also particularly high grade, premium versions which can meet customers' various needs.

UWT devices are completely maintenance-free and importantly, carry international certificates. These certificates are adapted in view of the constantly expanding international markets. All limit switches are available with universal voltage electronics as standard or as an option.

**6** YEARS  
GUARANTEE  
**APPROVED  
QUALITY**

## Approvals world-wide



## Quality Certificates



## Level limit switch

### Rotary Paddle Level Switch

- Variable extension lengths – either rope or tube
- Extension and process connection available in stainless steel
- Adjustable sensitivity
- EHEDG compliant
- Suitable for use in high temperatures of up to 1,100 °C
- Modular design
- Rotonivo® 6000 SIL 2 compliant
- All-rounder for all applications
- Wide variety of configuration options

### Rotonivo® Series 3000/6000



### Rotary Paddle Level Switch

- Variable extension lengths – either with pendulum shaft or rope extension
- Version with plastic housing and process connection
- Various process connections
- Adjustable sensitivity
- Modular design
- Plastic design offers increased corrosion resistance

### Rotonivo® Series 4000



## Vibrating Fork Level Switch

- Variable extension lengths – either rope or cable extension
- Extension and process connection available in stainless steel
- Sensitive to the lightest bulk materials (< 5 g/l)
- EHEDG compliant
- Version with separate housing available
- NAMUR-electronics
- Suitable for interface measurement within sediment tanks/containers

## Vibrating Fork Level Switch

- Variable extension lengths – either rope or cable extension
- Extension and process connection available in stainless steel
- "Extension, process connection and oscillators cast from one mould"  
Sensitivity from 30 g/l

## Vibrating Single Rod Level Switch

- Variable extension lengths – either rope or cable extension
- Heavy mechanical loading
- High quality material in the process (SS 316L)
- High surface quality
- Sensitivity adjustable in 4 settings
- Temperature range from -40 °C to +150 °C
- Robust version suitable for overpressure up to 16 bar
- Compact limit switch with threads from 1"

## Capacitive Level Switch

- Variable extension lengths – either rope or cable extension
- Extension and process connection available in stainless steel (Stainless steel probe material with FDA conformity)
- Version with plastic coated extension available
- Can be used in low dielectric values from 1.5 DK
- EHEDG compliant
- Suitable for use in high temperatures of up to 500 °C
- Suitable for use in process pressures of up to 25 bar
- "Active Shield Technology" for anti-caking functionality
- Available as remote version
- User friendly parameter setting via display and function buttons with measurement results given also via display
- Simple automatic calibration at start up

## Vibranivo® Series 1/2/5/6



## Vibranivo® Series 4000



## Mononivo® Series 4000



## RFnivo® Series 3000



## Capacitive Level Switch

- Level limit detection in liquids, slurries, foam, interfaces and solids
- "Potted electronics, "Active Shield Technology" against material build-up ensures high functional safety"
- Robust design, PFA isolation for high chemical resistance
- Digital electronics with integrated display and operating menu, programmable
- Extended rod version or rope version
- Suitable for use in high temperatures of up to 400 °C
- Suitable for use in high pressures of up to 35 bar
- Sensitivity: dielectric constant  $\geq 1.5$

## Capacitive Level Switch

- Variable extension lengths – either rope or cable extension
- Versions available with plastic housing, process connection and extensions
- Extension FDA compliant
- Can be used in low dielectric values from 1.6 DK
- Suitable for use in high temperatures of up to 180 °C
- "Active Shield Technology" for anti-caking functionality
- Integrated earthing in process connection
- No calibration required

## Capacitive Level Switch

- Flexible use, compact design
- Stainless steel and plastic version
- With threads from 1/2"
- No maintenance
- Corrosion resistant construction
- Level limit detection in liquids, slurries, foam, interfaces and solids

## Capacitive Level Switch

- Extended pipe version or cable version
- Flexible use, range of process connections, hygiene versions, digital version with LCD
- Potted electronics, "Tip Sensitivity" against material build-up ensures high functional safety"
- High safety standard
- Sensitivity: dielectric constant  $\geq 1.5$
- Level detection independent of tank wall/ pipe
- High chemical resistance on probes
- No maintenance

## RFnivo® Series 8000



## Capanivo® Series 4000



## Capanivo® Series 7000



## Capanivo® Series 8000



## Level Transmitter

### Electro-mechanical Plumb Bob Sensors

- Measuring range up to 50 m (silo height)
- Easy commissioning
- Rope and tape version
- Integrated tape cleaner
- Threaded or flanged process connection
- Modbus and Profibus interface
- Reliable measurement results independent of material
- Suitable for interface measurement within sediment tanks/containers

### Electro-mechanical Plumb Bob Sensors

- Measuring range up to 30 m (Silo height)
- Easy commissioning
- Rope and tape version
- Integrated tape cleaner
- Threaded or flanged process connection
- Aiming flange for angled installations

### Guided Wave Radar Sensor TDR

- High sensitivity: dielectric constant  $\geq 1.5$
- Heavy mechanical loading
- Aluminum housing or stainless steel housing, protection level up to IP68
- High quality process connection material SS316L, PA coated, insulation FKM/FFKM/EPDM
- Electronic 2-wire, 9.6..35V DC, 4 - 20 mA, HART
- Rod or rope version
- Robust version suitable for overpressure up to 40 bar
- Temperature solution up to +200 °C
- Threads from  $\frac{3}{4}$ ", G/NPT

### Guided Wave Radar TDR

- Digital electronics with integrated display and operating menu, programmable
- High sensitivity: dielectric constant  $\geq 1.4$
- Aluminum housing or stainless steel housing, protection level up to IP68
- High quality process connection material SS 316L, PA coated, insulation FKM/FFKM/EPDM
- Accurate measurement, threads from  $\frac{3}{4}$ "
- Rod 6 m, rope 75 m or coax version 6 m
- Robust version suitable for overpressure up to 400 bar
- Ultra-low and high temperature applications, temperature range -196 °C to +450 °C
- Electronic 2-wire, 9.6..35 V DC, 4 - 20 mA, HART
- SIL2 certificate

### NivoBob® Series 3000



### NivoBob® Series 4000



### NivoGuide® Series 3000



### NivoGuide® Series 8000



## Radar Sensor

- Measuring range up to 100 m (Silo height)
- Simple, six-step commissioning
- Aiming flange model
- 4° beam angle
- Temperature solution up to +200 °C
- 78 GHz technology
- Lens antenna and mounting flange are flush

## Radar Sensor

- Use in narrow, medium-sized silos up to 30 m
- Very compact with 1" process connection (PVDF)
- Various mounting accessories
- Measurement to antenna tip (no blocking distance)
- Very high sensitivity (DK value  $\geq 1.1$ )
- 80 GHz technology
- 4° narrow beam lobe
- Potted PVDF housing
- Degree of protection IP66/ IP68
- Temperature solutions -40 °C to +80 °C
- WHG certification

## Radar Sensor

- Use in process and storage tanks up to 15 m
- Flush antenna
- Very compact with 1 1/2" process connection (PVDF)
- Various mounting accessories
- Measurement to antenna tip (no blocking distance)
- Very high sensitivity (DK value  $\geq 1.1$ )
- 80 GHz technology
- 8° narrow beam lobe
- Potted electronics
- Degree of protection IP66/ IP67
- Temperature solutions -40 °C to +80 °C
- WHG certification

## Capacitance Level Transmitter

- Variable extension lengths – either rope or rod extension
- Continuous level measurement in liquids, slurries and solids  
Performs viscous materials (conductive or nonconductive), even in challenging environments involving vapour and dust
- PFA isolation for high chemical resistance
- Suitable for use in high temperatures of up to 200 °C
- Suitable for use in high pressures of up to 35 bar
- "Active Shield Technology" against material build-up ensures high functional safety
- No maintenance
- Robust version

## NivoRadar® Series 3000



## NivoRadar® Series 4000



## NivoRadar® Series 7000



## NivoCapa® Series 8000





- Web-based visualisation solution
- Level monitoring and analysis via ethernet
- Remote access via internet option
- Complete system for plug and play
- Sensor interface for 4-20mA or Modbus RTU
- Expandable to monitor up to 15 or 30 silos within a plant
- Full, empty, demand, fault alarm via email option
- Signal output for silo full alarm
- Effective silo management



Complete system for:

- Level indication
- Trend display
- Data storage
- Remote fill level analysis

## Project Planning

- Individual consultation for appropriate measurement
- Project support for technical queries
- Project planning for customer specific solutions



## Service

- Sensor configuration by experienced application technicians
- Swift, professional installation and commissioning
- Full documentation of settings for future reference
- Full training for operating personnel



# Customized measurement solutions for every process:

## Aspiration/De-dusting/Filter

(during whole process)

Level measurement in primary and secondary vessels and in aspiration filter systems

### Main features

CN

- Compact sensor
- High sensitivity
- „Active shield“ against caking
- No calibration necessary

## 1 Conveying system

Blockage alarm for elevators and for chain and screw conveyors

### Main features

CN

MN

- Compact sensor
- No moving parts
- „Active shield“ against caking
- No calibration necessary

## 2 Cleaning/Weighing/Drying

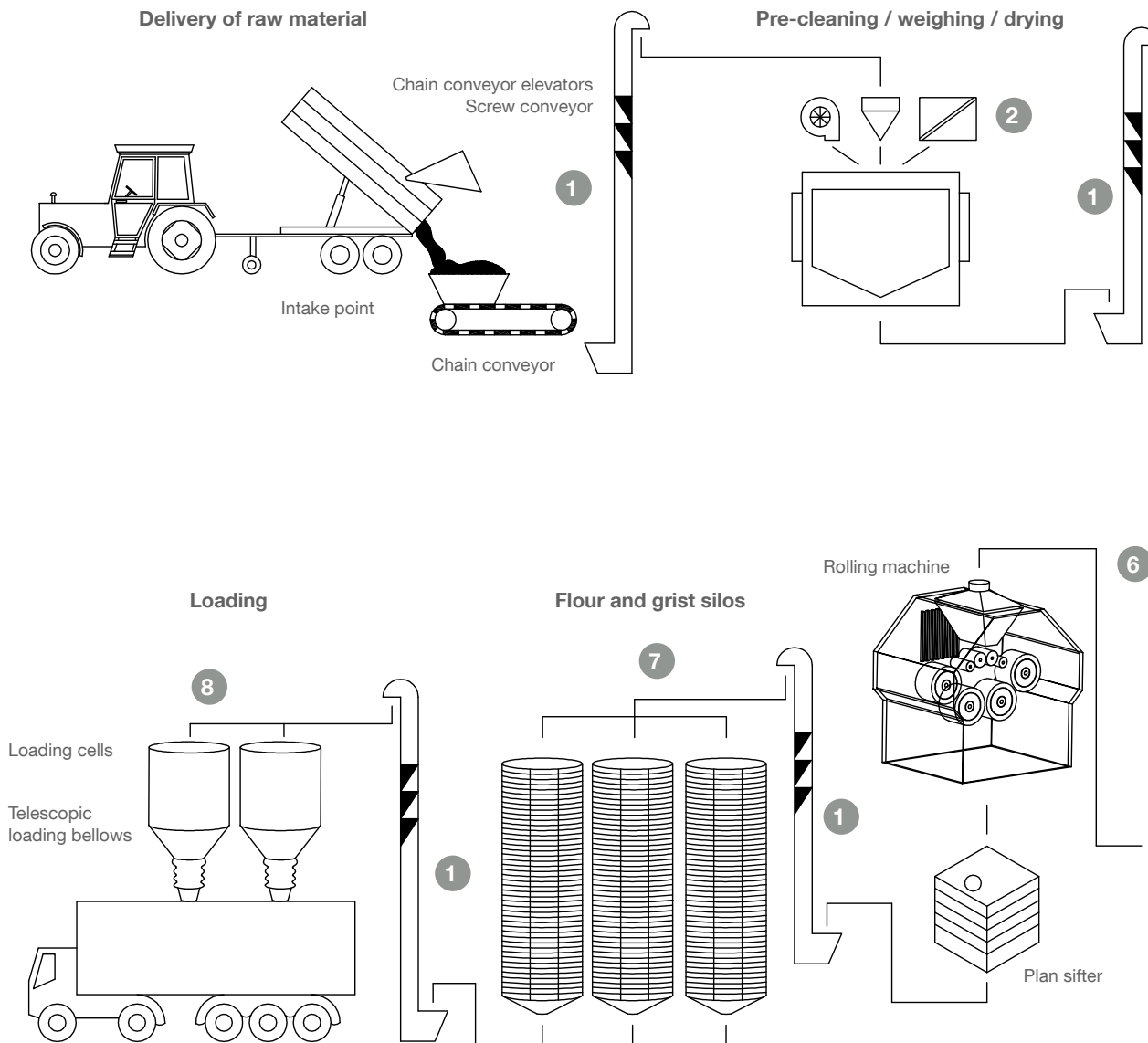
Level limit measurement in primary and secondary vessels

### Main features

RN

MN

- Suitable for all raw bulk materials
- Small connecting thread
- Robust measuring method
- ATEX Certification



## 8 Loading

Level limit measurement in big bag filling station

### Main features

VN

- Compact design
- Rapid reaction
- High sensitivity
- Reliable switch off

## 8 Loading

Level limit measurement in loading bellows and in tundish

### Main features

RN

- Reliable and compact sensor
- Short version for loading telescope
- Broad VT vane for high sensitivity
- Durable, high load bearing mechanics

## 7 Flour silos

Overflow protection and empty signal in flour silos

### Main features

RN

MN

RF

- Variable extension lengths
- Adjustable sensitivity
- Precision despite dusty environment
- Certified design

### 3 Grain Storage

Level measurement in cereal silos

#### Main features

**NB NR NG**

- Measuring range up to 100m
- Measurement during filling
- Easy installation and commissioning
- Plug and play

### 3 Grain Storage

Overflow protection and empty signal in cereal silos

#### Main features

**RN**

- Robust measuring method
- Reliable overflow protection
- Precise empty detection
- Maintenance free

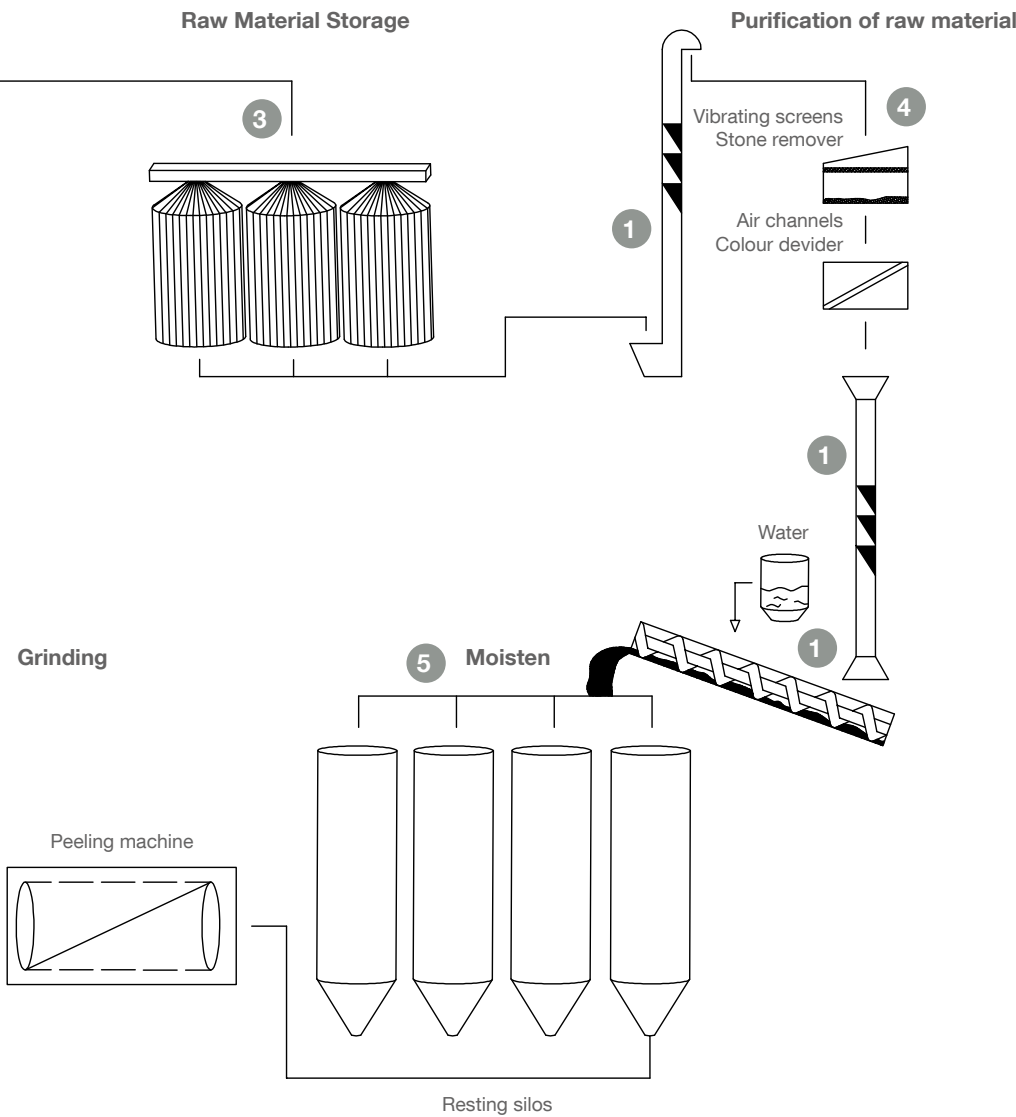
### 4 Raw Material Purification

Level limit measurement in primary and secondary vessels

#### Main features

**CN MN**

- Compact sensor
- Small connecting thread 1"
- No moving parts
- Adjustable sensitivity



- RN** Rotary paddle switch Rotonivo®
- VN** Vibrating fork Vibranivo®
- MN** Vibrating rod Mononivo®
- CN** Capacitive sensor Capanivo®
- RF** Capacitive sensor RFnivo®
- NC** Capacitive transmitter NivoCapa®
- NB** Electro-mechanical lot NivoBob®
- NR** Radar sensor NivoRadar®
- NG** TDR sensor NivoGuide®

### 5 Moisten

Level limit measurement in resting silos

#### Main features

**NB NR NC**

- Measuring range up to 100m
- Reliable overflow protection
- Measurement during filling
- Easy installation and commissioning

### 7 Flour silos

Level limit measurement in flour silos

#### Main features

**NB NR NG**

- Measuring range up to 100m
- Measurement during filling
- Suitable for very fine material
- Easy installation and commissioning

### 6 Grinding

Level limit measurement in primary vessels

#### Main features

**VN MN RF**

- Dustproof product design
- Fast reaction
- Abrasion resistant
- ATEX Certification

### 5 Moisten

Overflow protection and empty signal in resting silos

#### Main features

**RN RF**

- Reliable backfill detection
- Variable extension lengths
- Robust design
- Certified design

## First class sensors for smooth process operations

UWT offers uncomplicated, high-performing and absolutely reliable measurement technology at an affordable price that can be safely and easily integrated into any equipment. Our products have proven their high quality, flexible implementation and high durability in a wide variety of grain processing applications. In various raw materials (such as wheat, spelt, rye, barley or millet) en route to the final product within differing process plants and processing stages.

The main processes involved in the production of flour are delivery and storage of the raw material, cleaning, weighing, drying, moisten, grinding and finally loading. Other important process steps such as aspiration, de-dusting and filtering as well as conveying and dosing applications are found throughout the entire manufacturing process. UWT level technology is used in almost all sectors, for level indication or to control limit levels for all bulk solids. With this reliable sensor technology, an important contribution is made to make these processes safer and so operate at an optimal level.



### Conveying Processes

Requirements met by UWT:

- ✓ Restricted space within pipes and shafts
- ✓ Adjustable sensitivity
- ✓ Abrasiveness of bulk solids materials
- ✓ Material flow suppression with simultaneous safer backflow signalling
- ✓ Short reaction time to the overflow protection
- ✓ Small process connection



## Your partner for different conveying processes

Throughout the process of flour production raw materials, semi-finished goods and final products are transported from one production process to another using different conveying systems such as elevators, chain and screw conveyors.

Here, controlled material flow is essential to ensure an effective production process. With the different devices offered by the UWT portfolio of products there is a sophisticated solution for the detection and monitoring of moving solids in varying bulk transport systems for almost every application. Faults in conveyor systems for raw material or other bulk materials are detected early through the use of appropriate measurement principles thus any consequential damage is reliably avoided.



## Increased **efficiency** through efficient handling of the **raw material**

### Your partner when pre-cleaning, weighing and drying

UWT measuring technology will always provide a professional solution in terms of precision and process reliability to support a grain processing facility. In order to optimise the precise handling of varying materials, it is vital that the measuring devices offer adjustable sensitivity. As a result, UWT sensors easily detect bulk density below 5g/l (0.3lb/ft<sup>3</sup>) or DK values from 1.5. Through the flexible adjustment of the device to adapt to the varying conditions the level of automation of the weighing, dosing and mixing process is effectively increased.



### Pre-cleaning / Weighing / Drying

Requirements met by UWT:



- ✓ Level detection of varying types of bulk solids materials
- ✓ Resistant to extreme temperatures
- ✓ Fast reaction to the overfill protection
- ✓ Functional reliability against condensation and caking
- ✓ Precise measurement results despite highly dusty environments
- ✓ Pinpoint accuracy
- ✓ High sensitivity of the sensor
- ✓ Level measurement in steep sided cones
- ✓ Flexible extension lengths for varying switching points within the dosing process

## Your partner for varying storage processes

In order to ensure a continuous supply chain, both the raw and the finished product must be clearly and properly stored. Intermediate storage containers such as varying types of pre-hoppers, tempering cells or surge hoppers are used to store material waiting for further processing, mostly ingredients used for adding and mixing.

The UWT sensor used during warehouse processes is mainly for level measurement and overflow protection. Here UWT's simple electromechanical measuring system has proven itself in practice as a full detector for continuous level measurement. This durable technology is considered an all-rounder in all materials and delivers a consistently reliable level signal.

In addition to the electromechanical lot systems radar sensors are often used for continuous level measurement in different storage vessels. The radar offers an impressive measuring range of up to 100 meters and is - due to its high sensitivity - particularly suited for the use in very fine solid material such as flour. A high-frequency signal (78 GHz) is transmitted with a very narrow beam angle of 4° which allows the use in tall and narrow silos. Using the adjustable aiming flange, the radar can be perfectly aligned as the probe can be fixed to the desired point; for example at the silo discharge.

In combination, the visualisation system, NivoTec®, can be used within the storage silos to detect the levels remotely, analyse trends and round off the logistics management system.



### Storage Processes

Requirements met by UWT:



- ✓ Large measuring distances in tall silos
- ✓ High accuracy despite large diameter of container
- ✓ Rapid response to overflow protection
- ✓ Precise measurement results despite highly dusty environments
- ✓ Sufficient sensitivity for measurement in fluidised products
- ✓ Level measurement of material within steep gradient cones
- ✓ Effective silo management
- ✓ Complete systems for level monitoring with visualisation

An extensive product portfolio of innovative measurement technology allows us to equip any desired process area for a variety of measurement tasks. All UWT sensors have an output performance rating of nearly 100% and are completely maintenance free. Therefore, they are good investments in order to maintain 24 hour a day production.

The product portfolio contains worldwide certified designs and includes both EHEDG versions for hygienic applications as well as sensors which carry the approvals according to ATEX, IEC Ex, FM, etc. directives. The devices therefore guarantee global plant safety via their certified designs.

## The right technology for level monitoring and overflow protection





## Your partner for different processes within bulk material handling

Crucial for a smooth production process is a transparent content level control of different material in the upstream and downstream intermediate containers such as resting silos or vessels. There the installed technology is used for content and level detection to ensure a regulated material processing.

For high process temperatures for example, UWT provides sensors in high temperature versions operating under up to 1,100°C. Our product portfolio also includes very compact sensors with small M30/1" process connections that can be easily integrated in limited or awkward spaces for precise material detection. UWT also offers appropriate solutions where the measurement technology needs to overcome challenges such as caking.



Sophisticated measurement solutions provide a **CONTINUOUS** process flow

### Moisten / Resting

Requirements met by UWT:



- ✓ Large measuring distances in tall silos
- ✓ Rapid response to overflow protection
- ✓ Ability to compensate for agitated/changing surface of the bulk solids
- ✓ Level detection of varying types of bulk solids materials
- ✓ Where high temperatures, condensation, dust and caking are characteristics of the application
- ✓ Flexible extension lengths for varying switching points





## Intermediate Containers

Requirements met by UWT:



- ✓ Short reaction time to the overfill protection and rapid detection of low-level control for small transfer containers
- ✓ Accurate measurement results even within dusty environments
- ✓ High temperatures
- ✓ Varying types of bulk materials
- ✓ Resistant to caking caused by moisture within the application
- ✓ Varying extension lengths required
- ✓ Output signal with timing control



## Your partner for moisten and resting processes

At this stage of the manufacturing process the grain is precisely dosed, mixed and moistened and then stored in resting silos before being moved onto the grinding process.

The UWT measurement technology also offers a professional solution in terms of precision and process reliability to support a flour mill plant. Therefore, the anti-caking technology, as found within the capacitive sensing devices, is of critical importance. The integrated "Active Shield Technology" ensures, even with very sticky, floury whole grain type or a viscous mix, uninterrupted compound feed production which is of a consistently high quality.

## Your partner for grinding and sieving processes

Here the grain enters the rolling machine for grinding. The crushed grain is then moved on to the plan sifter for sieving. This process is repeated several times until the desired consistency of the product is achieved. In addition to plain flour, a variety of semi-finished or by-products - each with different particle sizes and textures - pass through this process. The finished items are then stored in flour silos ready for dispatch.

### Grinding / Sieving

Requirements met by UWT:

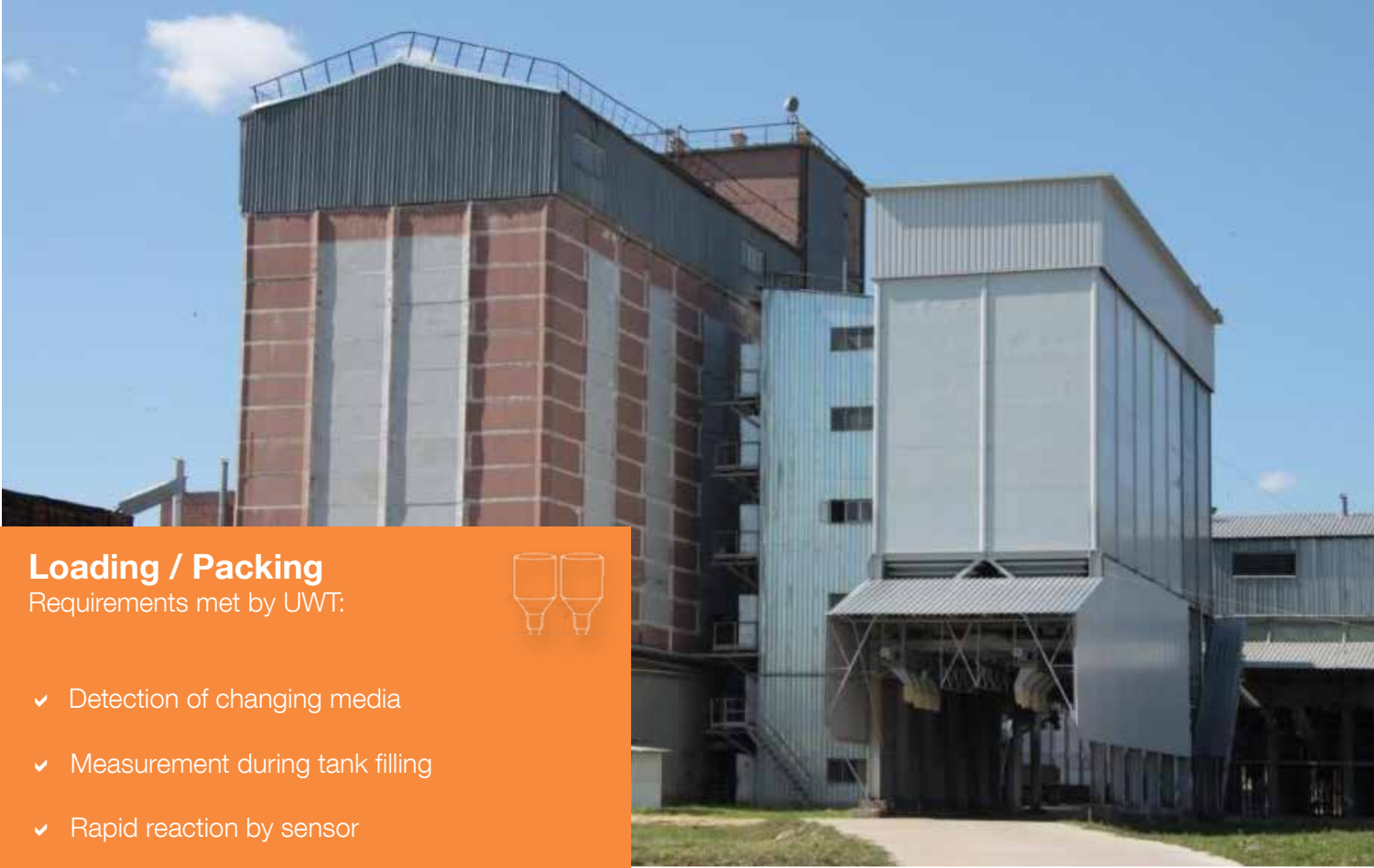


- ✓ Strong vibrations within the process
- ✓ Varying particle/grain size
- ✓ Continually precise measurements regardless of material properties
- ✓ Ability to detect abrasive media
- ✓ Partial fine grained bulk solids
- ✓ Highly dusty environments within pre-vessel of roller
- ✓ Numerous sieving steps in the plan sifter
- ✓ Explosion protection
- ✓ Robust device design
- ✓ Varying installation positions as required
- ✓ Maintenance free technology



For example the vibrating principle and the capacitive method are most suitable level monitoring solutions for the crushing or grinding process as found in the rolling machine. With their corrosion resistant construction and totally dust-proof design, the vibrating rod probes and capacitive limit switches have regularly proven their reliability within aggressive environments. Both are available in different versions and can be easily integrated in limited or awkward spaces.





## Loading / Packing

Requirements met by UWT:



- ✓ Detection of changing media
- ✓ Measurement during tank filling
- ✓ Rapid reaction by sensor
- ✓ Accurate measurement in dusty environments
- ✓ Extra short version within loading telescope
- ✓ High mechanical loading
- ✓ Rapid response time to overfill protection for small transfer containers to large bags
- ✓ Durable functioning principle
- ✓ High sensitivity of measurement technology
- ✓ Easy installation



## Your partner in packing and loading

Our creative team will configure specifically tailored sensors for your process specifications. For packing and loading processes, our portfolio offers reliable devices for the demand signal when filling and flexibly adjustable limit switches for loading cells.

**We design solutions with  
added value for your  
processes**



# Breathe new life into silo management with the Visualisation Software NivoTec®

## Doing it the hard way...

Flour mills are often faced with the following situation:

Poor monitoring of stock levels within a mill creates unnecessary logistic costs by over-deliveries, short deliveries and having to reschedule deliveries sometimes at very short notice in an effort to try and maintain optimum stock levels. This increases costs for the mill as a supplier as well as for their customers.



Effective silo logistics and management is crucial for the high number of mills within the baking and food industries.

## ...or the easy way

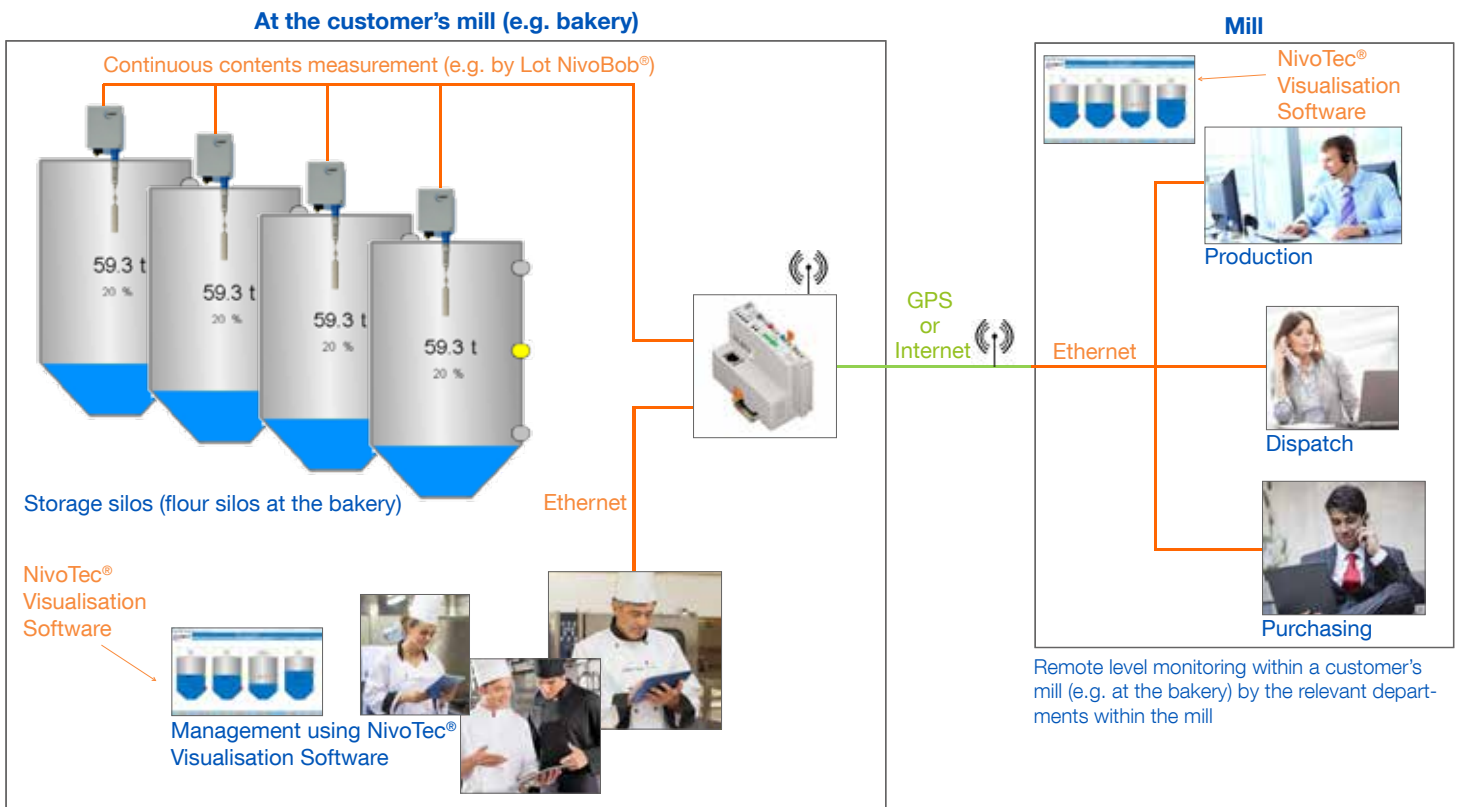
Planning logistics with accurate knowledge of precise stock levels can be performed as follows:

On each silo of the miller's customers (e.g. bakeries) the maintenance free and easy mounting NivoBob® 4000 is fitted to the bakery's silo for accurate level monitoring. The signals are then processed by the UWT software NivoTec® combined with a Wago web controller where the information is passed via the internet. The miller can securely access information (password-protected) 24/7h via any internet browser.

It is also possible to include any other customers to the NivoTec® visualisation system without any additional hardware or cost to the mill. If the priority is to remotely access the data, off site, a GSM modem can be used to monitor the installations. In this situation, no Ethernet connection is required, only a SIM card in the WAGO to pass the modem.

This modem collects the level signals and sends them in an encrypted log via a mobile phone network over the Internet to the mill controller.

The current silo levels can be displayed at the mill control centre using the UWT NivoTec® Visualisation Software which can be accessed via the Internet browser on any Ethernet PC. The controller can see the real-time status of the silos because the visualisation controller is directly integrated into the Ethernet system. It is also possible to send level alarm messages via E-mail or SMS.



Silo management example for grain mills and their customers



## The objective is...

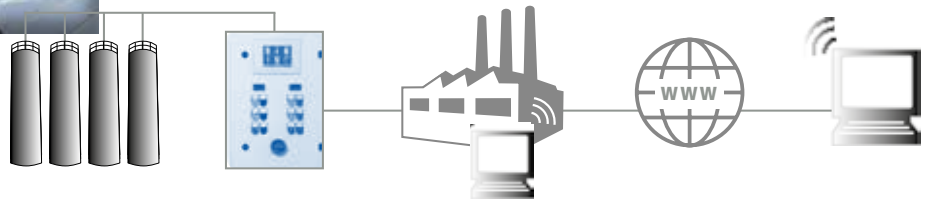
... to monitor from a central point, levels within all applications at the bakery / mill either by internet or mobile data transfer.

### Idea



### The results are:

- Continuous level control
- Improved truck routing
- Improved customer delivery
- Detailed planning
- Cost savings
- Customer loyalty



### More efficiency

### Value

#### Benefits

- At-a-glance overview of current levels at the bakery
- Cost reduction through timely and optimised route planning
- More efficient administration
- On time customer deliveries
- Prevention of overfilling or emptying of the silos
- Ease of multiple connections (e.g. bakeries) via modular operations
- The system can be set up at one customer and can be easily reinstalled at another one
- No additional costs for customers
- Straightforward set up, no additional IT support is necessary

∞ **More transparency and planning security**

∞ **Increased customer satisfaction & stronger customer relationship due to added values**



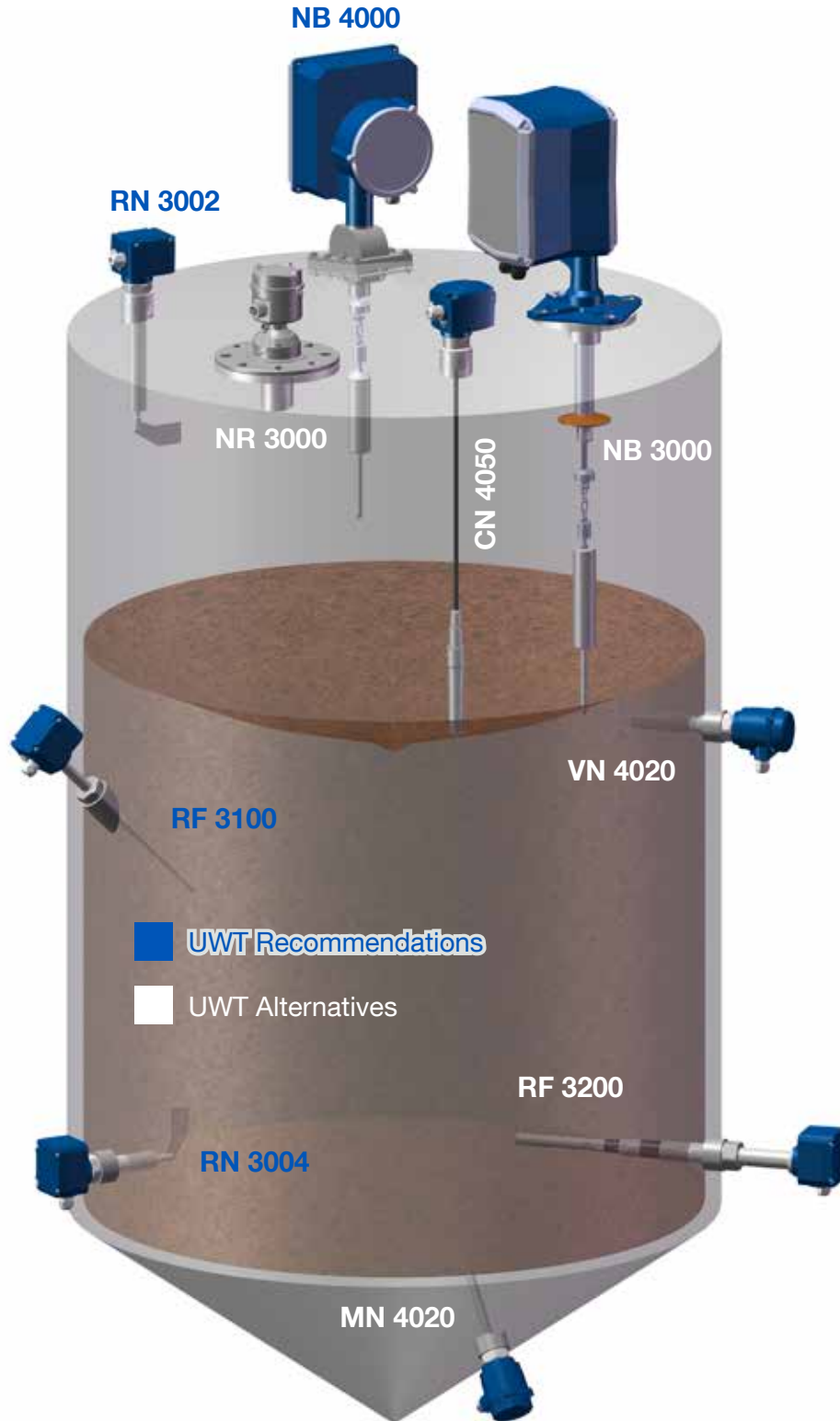
NivoBob® 4000 collection



With the NivoTec® Visualisation Software, accurate and up to the minute silo levels are always readily available on your PC

## Optimal equipment for your silo

The 3D diagram shows examples of limit detectors (full, demand or empty detectors) as well as continuous measurement devices suitable for use in flour or cereal mills. UWT will help to select the correct product for you by analysing your specific application and requirements. Based on this information UWT will deliver a range of recommendations.



**Competence in  
product development,  
application experience  
and professional advice**

Full detector:

**RN 3002 - Paddle switch at a competitive price**

- Full detector with protection tube
- Unaffected by dust
- Compact, maintenance-free sensor

Alternatives:

**RN 4001 - Paddle switch with rope extension**

- Variable extension lengths
- Adjustable sensitivity

**CN 4050 - Reliable Capacitive level switch**

- High sensitivity
- "Active Shield Technology" to withstand caking
- No calibration required

Contents detector:

**NB 4000 - Lot system with integrated tape cleaner**

- Excellent price-performance ratio
- Unaffected by material properties
- Measuring distances up to 30m
- With adjustable flange for direct mounting on silo roof
- Up to 500 000 measurements maintenance-free
- Easy installation & commissioning

Alternatives:

**NB 3000 - Lot system highly configurable**

- Modbus and Profibus interface
- Measuring distances up to 50m

**NR 3000 - Non-contact radar sensor**

- Flange flush lens antenna
- Integrated adjustment flange for optimal device orientation

Empty and demand detector :

**RN 3004 - Paddle switch extra robust**

- Flanges with high mechanical load via protective tube
- Side installation in silo option
- Unaffected by dust (complete dustproof design), electrostatic charging and caking

Alternatives:

**VN 4020 - Vibration fork probe for silos and containers**

- Robust extension
- Cost-efficient vibration fork for a variety of bulk materials

**MN 4020 - Vibrating rod probe with adjustable sensitivity**

- Small connecting thread 1"
- Stainless steel extension



## The most important DK values at a glance

The relative dielectric constant (DK value) of solid media is a decisive factor for determining a suitable measuring principle in level measurement. UWT has provided a table below showing the DK values of the main substances used in the grain industry.

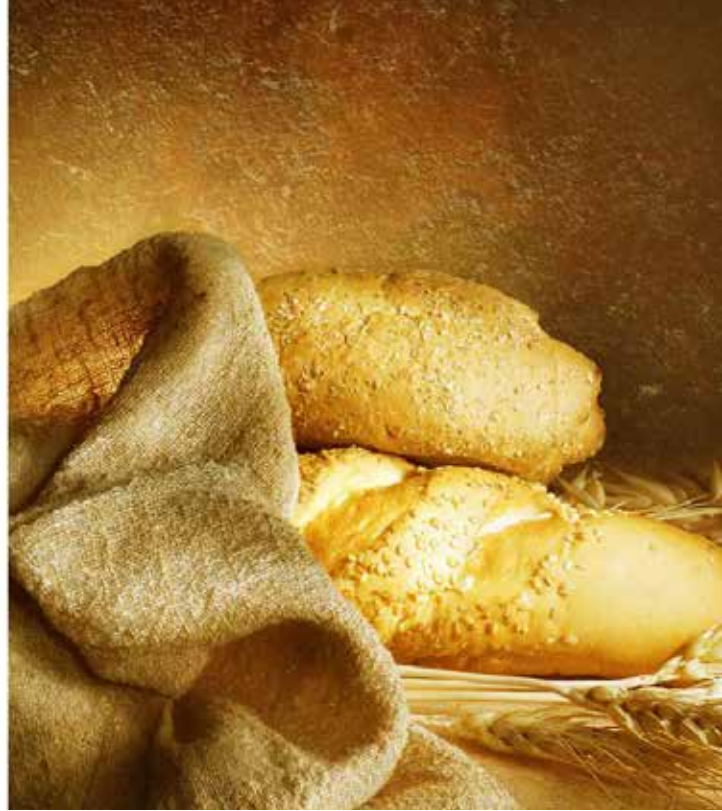
The DK values below are to be regarded as a guideline only. They are applicable to capacitive level limit switches and for measurement using radar sensors.



Medium	DK Value	Bulk Density g/l
Cereal grain	3	600
Oat	4.9	500
Skimmed milk powder	2.2	350
Maize/corn	3.6	770
Malt	2.7	450
Molasses	33.3	1350
Rapeseed	3.3	560
Rye	6	650
Rye bran	2.2	270
Soy bean meal	2.9	520
Water	80	1000
Wheat	4	800
Wheat bran	1.5	290







Wheat, barley, rye, maize, semolina, bran, groats or oats – to name just a few of the approximately 200 officially approved cereal varieties. With its sophisticated sensor techniques, UWT can measure any type of bulk solids and is your partner when it comes to reliable level control.

**UWT measuring technology  
with adjustable sensitivity  
for varying bulk materials**





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