

Ingeniously simple and reliable
level measurement technology



Solutions for the Cement Industry







Reliable measurement technology for versatile solutions in the cement industry

UWT solutions for level and point level measurement of bulk solids and liquids are already being successfully used in silos and process vessels within the cement and building material industry around the world. Innovative technologies combined with comprehensive industry knowledge, allow us to provide a comprehensive range of customized measurement technology to meet with total flexibility the variable and complex challenges of this industry.

As one of the world's leading suppliers of level sensors, UWT has over 40 years of expertise and experience in level measurement and control, and is committed to providing comprehensive, advanced, established and reliable equipment. Such as all types of rotary paddle level switch, vibration level limit switch, capacitive level limit switch, electromechanical plumb bob sensors, radar sensor and guided wave radar. These instruments have been widely used in various processes of the cement and building material industry.

The right measurement technology for every process within cement & building material plants



Quality assurance and quality management have for many years been well established values at UWT. The level sensors are defined by their reliable functionality, easy handling and long service life. In accordance with the high industry standards comprehensive support for individual requirements and technical needs are offered.

Customer-oriented planning and experienced project management delivered by the experts at UWT allow the development of creative ideas and specified solutions that can be implemented efficiently.

The level sensor is an indispensable element of the technical equipment within a plant for the detection and monitoring of levels and limit levels within the different process stages.

All UWT devices are designed to allow easy integration into the various processes and are characterized by being completely maintenance free in accordance with the principle of "install and forget".



UWT with its high performance technology and advanced solutions is able to support and ensure the smooth operation of industry processes:

Highest quality means long service life

UWT provides a guaranteed “Made in Germany” quality with a product performance rating of almost 100% within the warranty period. The high quality of the products is ensured by continual improvement processes and extensive device tests.

Individual product concepts: flexible, modular & economical

UWT will configure the appropriate measurement technology for each application. 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. Sensors are developed with maximum compatibility for processes, so that they can be perfectly integrated into 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

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 3000/6000



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 ≥ 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 ≥ 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 ≥ 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 ≥ 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..35V 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 ≥ 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

- 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 ≥ 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



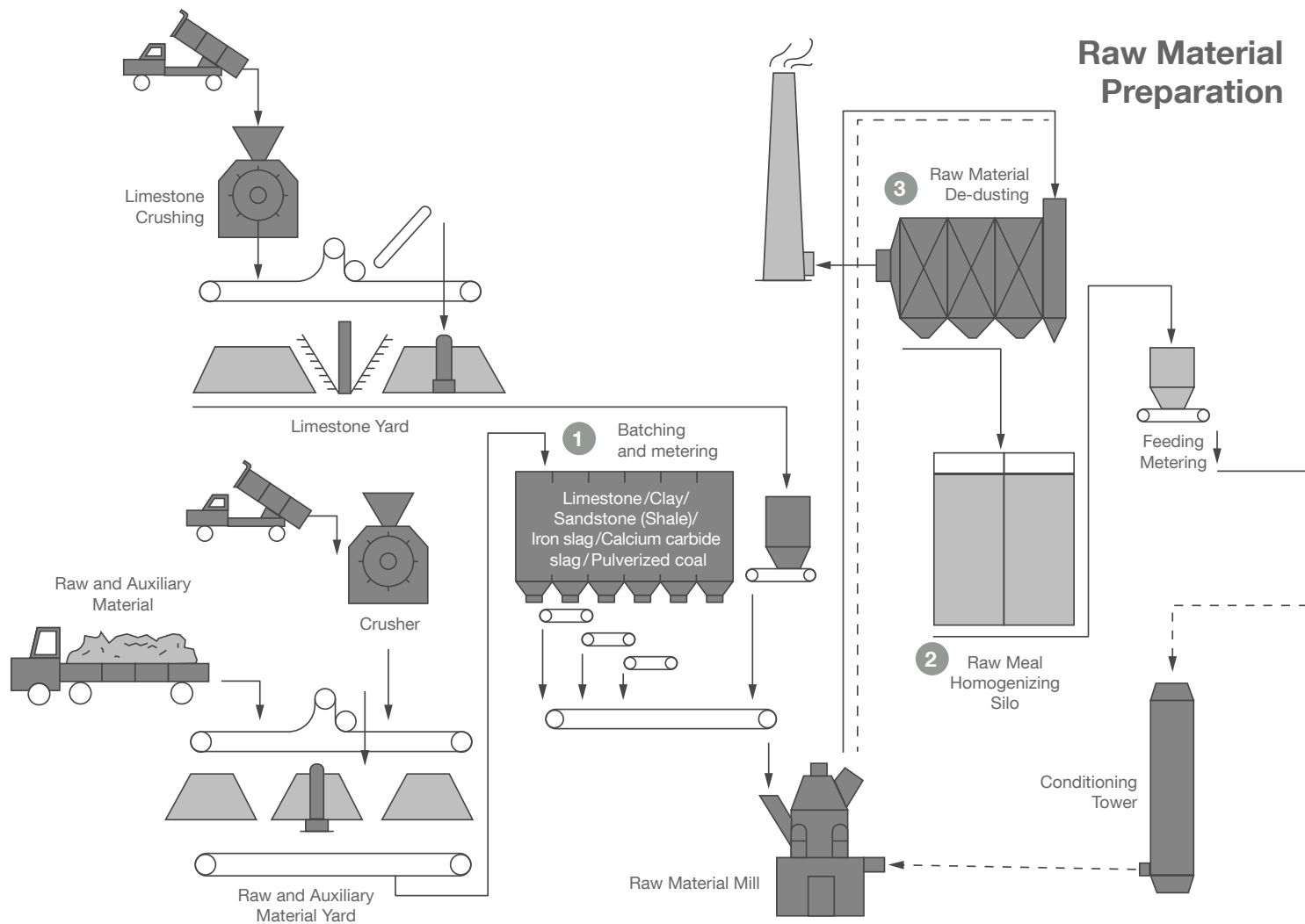
Service

- 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:

Process flow diagrams for cement plant with UWT recommendations and appropriate measurement solutions



1 Raw Material & Auxiliary Material & Fuel Silos

Main features

NB NR RN RF

- Suitable for level measurement in varying conditions
- Complete dust isolation
- High frequency radar
- "Active Shield" technology

2 Raw Meal Homogenizing Silo

Main features

NB NR

- Measuring range up to 50m
- High frequency radar
- Pop-up cleaners
- Stable and reliable

3 Electrostatic precipitator (ESD) for Raw Materials

Main features

RN RF VN MN

- Free from dust interference
- Suitable for finest powders
- "Active Shield" technology
- Easy installation and commissioning

4 Ash Hopper of Grate Cooler

Main features

RF RN

- High temperature type
- Extremely robust designs
- Various extension lengths for selection
- Completely maintenance-free

5 Cement Clinker Silo

Main features

NR NB RN RF

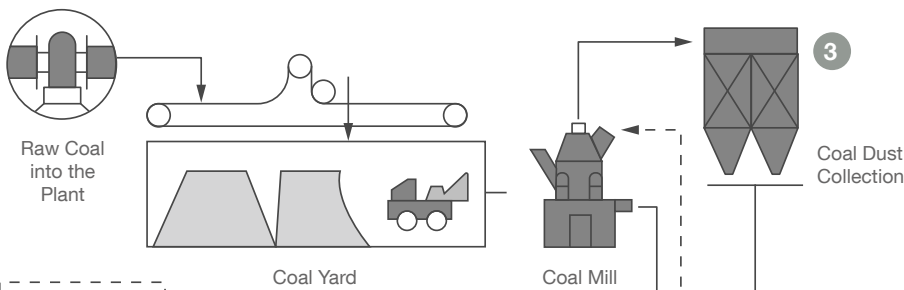
- High temperature type
- Suitable for long range measurement conditions
- "Active Shield" technology

7 Cement Silo & Bulk Cement

Main features

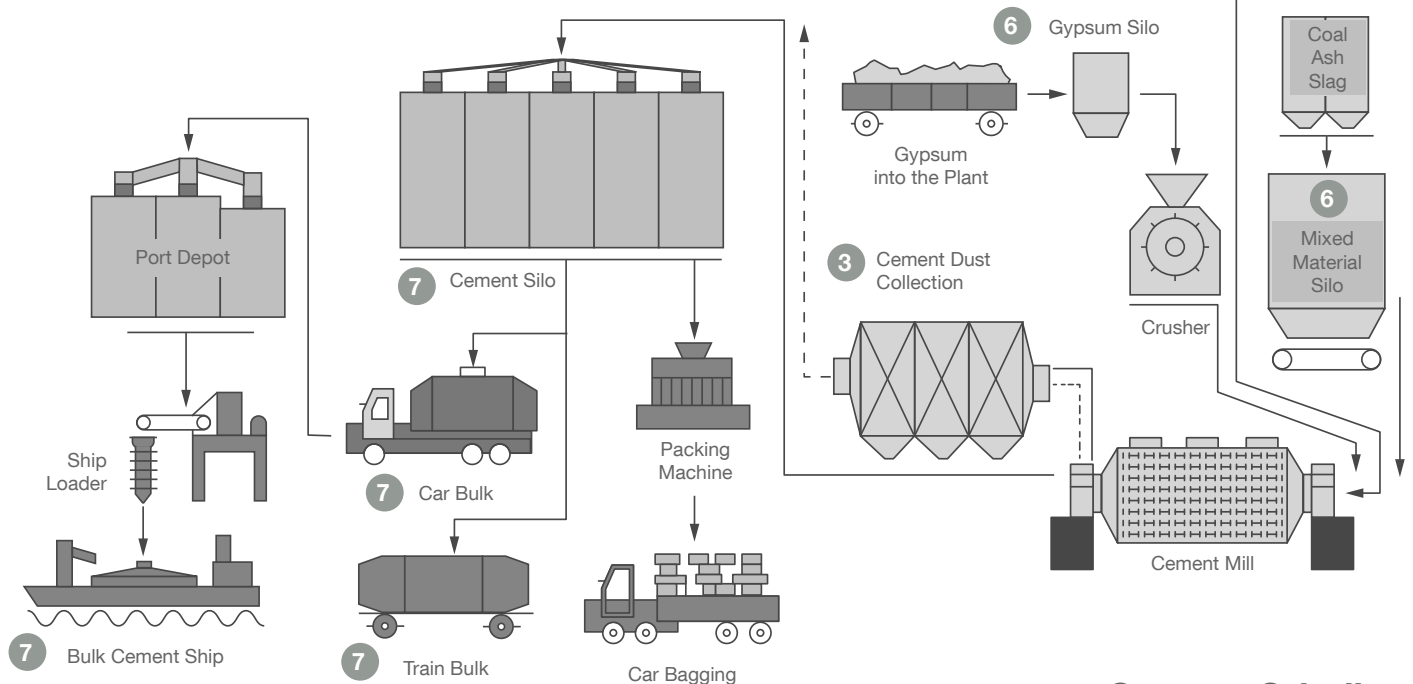
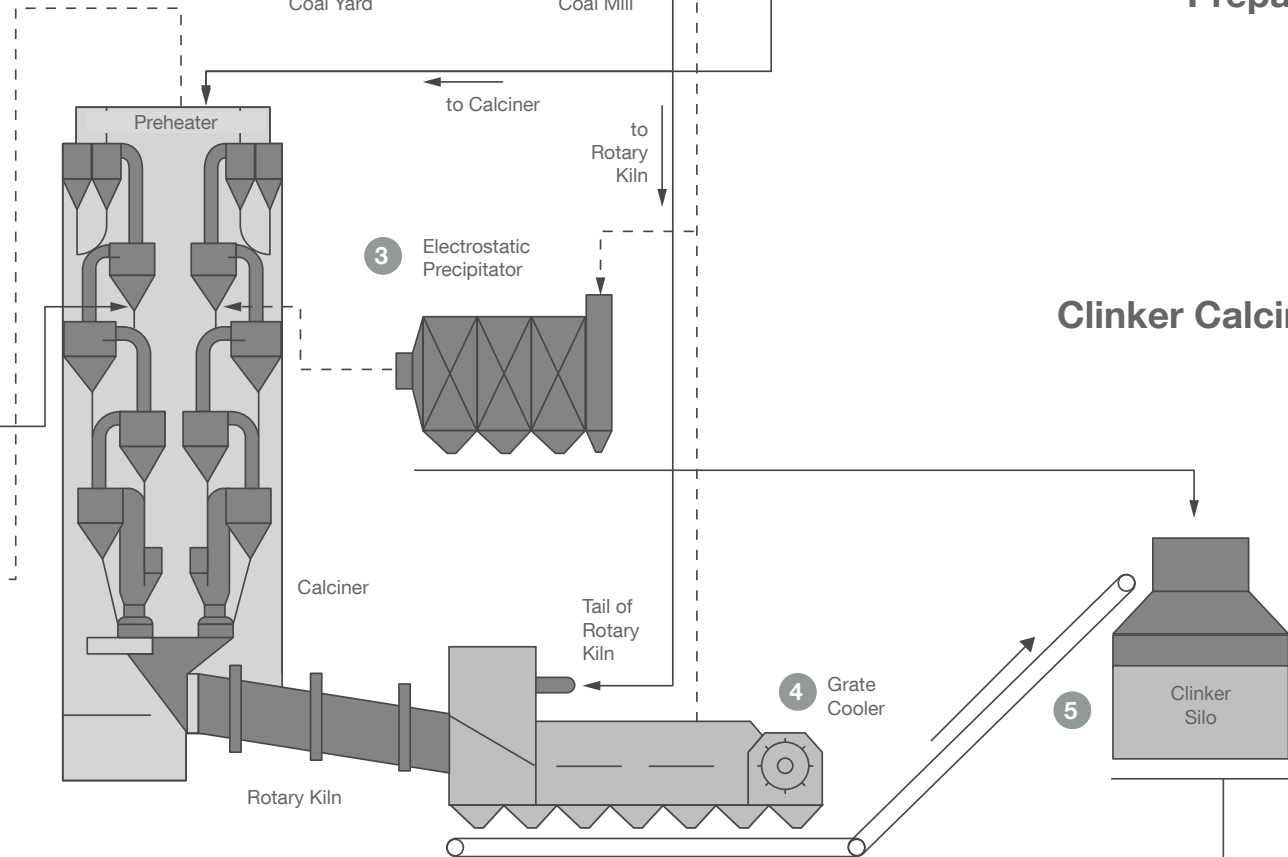
NR RN RF

- No interference from condensate
- No effect of sticky material hanging
- Completely maintenance free



Pulverized Coal Preparation

Clinker Calcination



Cement Grinding

RN Rotary paddle switch Rotonivo®

CN Capacitive sensor Capanivo®

NB Electro-mechanical lot NivoBob®

VN Vibrating fork Vibranivo®

RF Capacitive sensor RFnivo®

NR Radar sensor NivoRadar®

MN Vibrating rod Mononivo®

NC Capacitive transmitter NivoCapa®

NG TDR sensor NivoGuide®



Raw Material Silos & Auxiliary Material Silos & Fuel Silos

Requirements Met by UWT:

- Ensure accurate measurement in high dust environment
- Resistant to material scouring and abrasion
- Heavy build-up/caking
- Reliable detection of varying types of bulk solids materials

Raw Meal Homogenizing Silo

Requirements Met by UWT:

- No interference from high dust conditions
- Not affected by steam condensation in the process of sticky material
- Long-range accurate measurement

Electrostatic Precipitator (ESD) for Raw Materials

Requirements Met by UWT:

- High dust conditions
- Multiple measurement methods available
- Easy installation and commissioning



UWT offers uncomplicated, high-performing and absolutely reliable measurement technology at an affordable price that can be safely and easily integrated into any equipment. UWT's products, with their high-quality characteristics that has been tested by actual application conditions, are widely used in the manufacturing processes for building materials.

The sensor used during warehouse processes is mainly for level measurement and overfill 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.

UWT's rotary paddle level switch has double bearing structure, clutch type motor articulation method, anti-scouring, not subject to dust interference; Radio Frequency Admittance level switch, with three poles and two insulation layer structure, active shielding technology, with LCD display, easy to debug; UWT can also provide high frequency radar level meter, not subject to dust interference, stable and reliable.



In the preheat decomposition process, the main challenge for any level measurement device are the high temperatures. These are within the section of the grate cooler about up to 600 °C. Whereas the medium temperatures, such as the cement clinker, are about 250 °C to 350 °C. Therefore, the level measurement technology used must be robust and able to meet the high temperature requirements according to the actual working conditions.



Grate Cooler Ash Hopper

Requirements Met by UWT:

- Suitable for high temperature applications
- Accurate measurement in high dusty environments
- Tight installation space
- Severe sticking and caking material

Cement Clinker Silo

Requirements Met by UWT:

- Suitable for long range conditions
- High dust conditions
- Temperatures reach 250 °C and more
- Accurate and reliable measurement





In grate cooler ash hoppers and cement clinker silos, there are often cases of hanging and sticking material. Therefore, anti-sagging technology is important as a performance standard for capacitive and RF-conductor level sensors. The integrated "Active Shield" technology ensures that even when the entire probe is covered with powdery and sticky mixtures under very demanding conditions, it still maintains high quality measurement results.





UWT measuring technology will always provide a professional solution in terms of precision and process reliability to support a cement production facility. In order to optimise the precise weighing and dosing of varying materials, it is vital that the measuring devices offer adjustable sensitivity. As a result, UWT sensors easily detect DK values from 1.5 or bulk density below 5 g/l (0.3 lb/ft³).

Through the flexible adjustment of the device to adapt to the varying conditions the level of automation of the weighing/metering process is effectively increased.



Cement Raw Material & Auxiliary Material

Requirements Met by UWT:

- Suitable for measuring a wide range of solid materials
- Unaffected by the sticking of hanging material from steam condensation in the process
- Overfill protection requires fast response

Cement Product Storage & Bulk Cement

Requirements Met by UWT:

- Moisture prone to clumping of sticky materials
- Condensation in winter affects measurement
- Low density and low dielectric constant

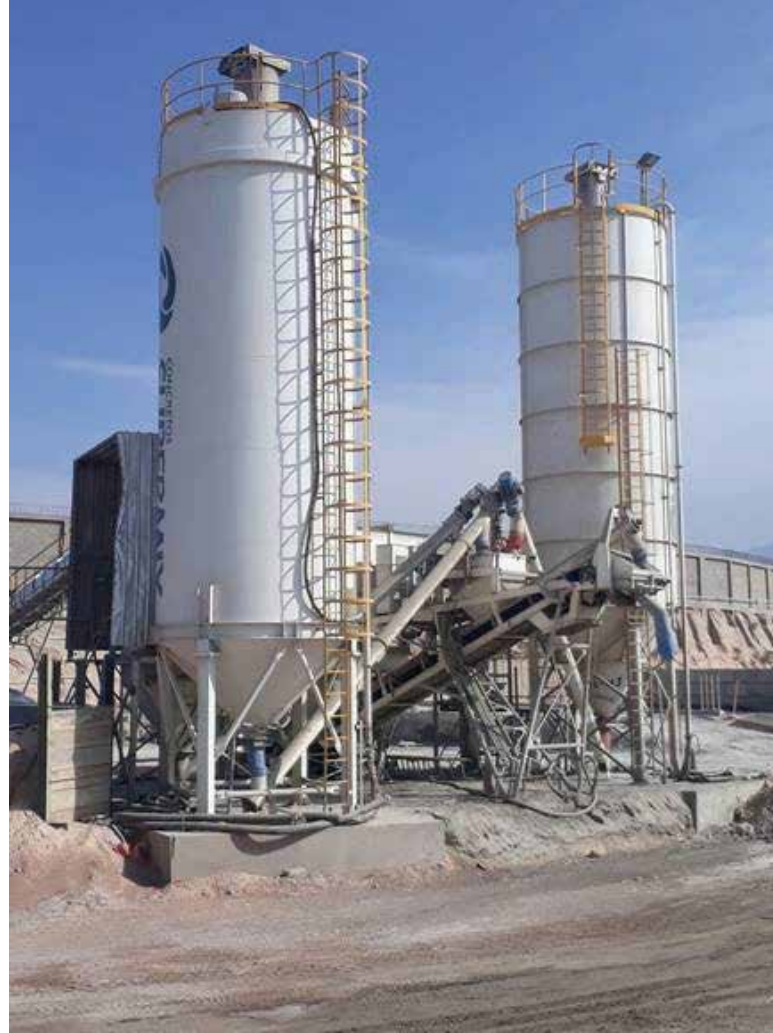
Electrostatic Precipitator (ESD) Ash Hopper

Requirements Met by UWT:

- Low dielectric constant
- High dust conditions
- Easy installation and commissioning







Cement Plant Water System

Requirements Met by UWT:

- Measurement of corrosive liquids
- Unaffected by condensate
- Multiple measurement options available

Concrete Process

Requirements Met by UWT:

- Free from wet and sticky materials
- Capable of measuring a wide range of different materials
- Models for every installation requirement

Subgrade Process

Requirements Met by UWT:

- Suitable for high dust conditions
- Small installation space
- Easy to install, stable and reliable








The most important DK values at a glance

The relative dielectric constant (DK value) of solid and liquid media is a decisive factor for determining a suitable measuring principle in level measurement. UWT has provided a table below showing the DK values, to be regarded as a guideline, of the main substances used in the building material and cement industry.

Medium	DK Value
Lime	2.2 - 2.5
Lime Granulate	4
Lime Powder	3.3
Sandstone (Shale)	10
Coal Powder	2 - 4
Calcium Carbonate	6.1
Clay	1.8 - 2.8
Water	80
Gypsum	2.5 - 6
Cement	1.5 - 2.1
Clinker (Cement)	2.7
Cement, Iron Portland	3.5



At home and
abroad, for many
years **valued**
plant management
companies have
placed their **trust**
in our products, our
knowledge
and our **service**



UWT - Your global partner for the future



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