Ingeniously simple and reliable
level measurement technology

UWT
LEVEL CONTROL

Solutions for the

Steel Industry

SOLUTIONS

Reliable measurement technology for versatile solutions in the steel industry

World crude steel production reaches every year several billion tons and statistical data shows that crude steel production could continue to increase at an average growth rate of about 4.55%.

Society demands a higher level of automation and environmental protection from the producers and also consumers of iron and steel. Companies can only meet the demands with advanced and reliable monitoring and control instruments.

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 for the steel industry. 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 steel industry.

Depending on the application, level sensors contribute to a functioning and sustainable development of a low-carbon steel industry.

The right measurement technology for every process within steel 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“.

made in Germany

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

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

Vibranivo® Series 1/2/5/6

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

Vibranivo® Series 4000

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"

Mononivo® Series 4000

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

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

RFnivo® Series 8000

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

Capanivo® Series 4000

Capacitive Level Switch

- Flexible use, compact design
- Stainless steel and plastic version
- With threads from ½"
- No maintenance
- Corrosion resistant construction
- Level limit detection in liquids, slurries, foam, interfaces and solids

Capanivo® Series 7000

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

Capanivo® Series 8000

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

NivoBob® Series 3000

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

NivoBob® Series 4000

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..35 V 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 ¾", G/NPT

NivoGuide® Series 3000

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 ¾"
- 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

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

NivoRadar® Series 3000

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

NivoRadar® Series 4000

Radar Sensor

- Use in process and storage tanks up to 15 m
- Flush antenna
- Very compact with 1 ½" 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

NivoRadar® Series 7000

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

NivoCapa® Series 8000

Visualisation

- 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

NivoTec® Series 2/3/4

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

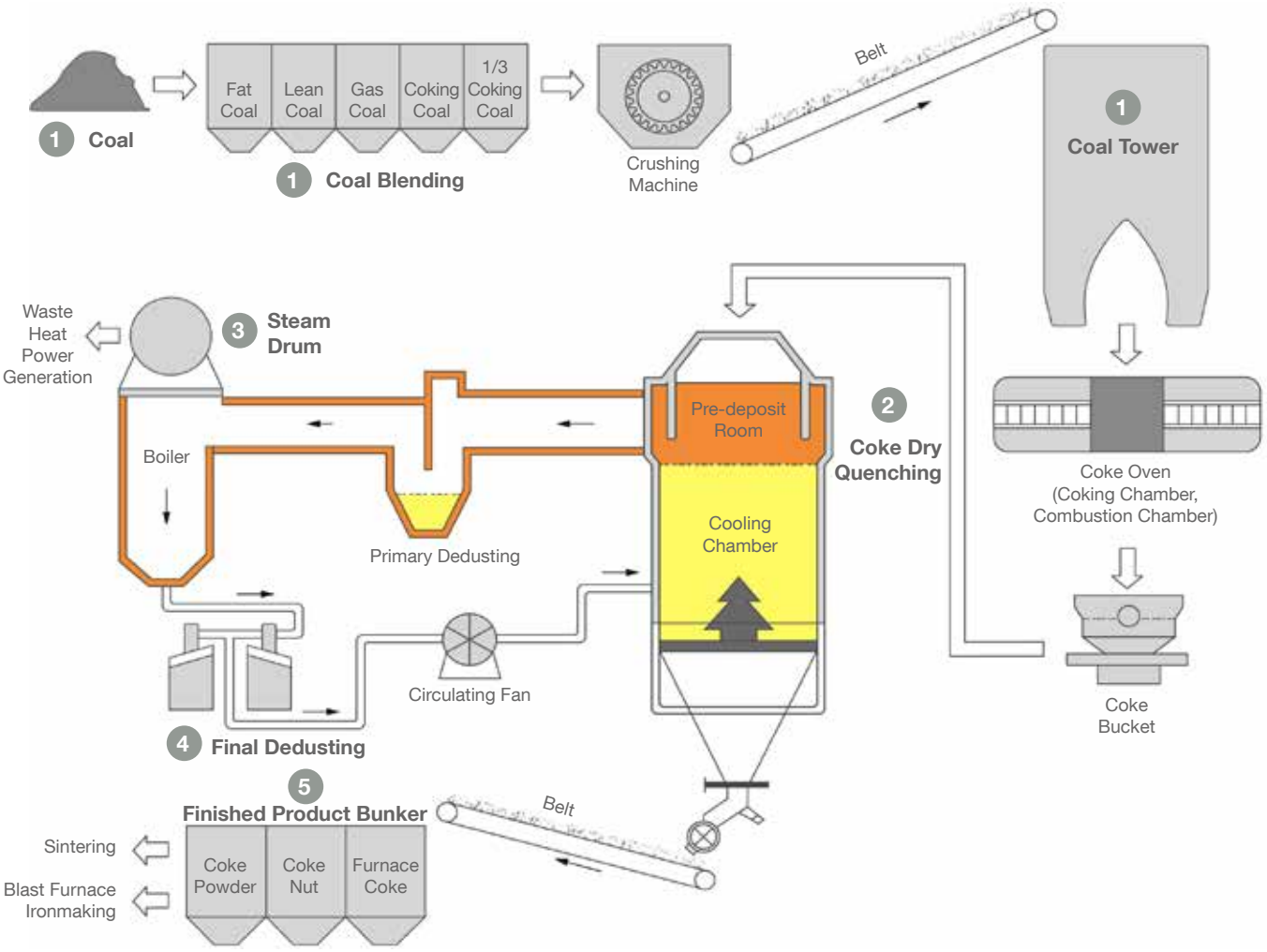
Service

- 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 steel plant with UWT recommendations and appropriate measurement solutions

COKING



1 Raw Coal & Coal Blending & Coal Tower

Main features NR RN RF

- Suitable for various raw material measurements
- Anti-dust interference
- 78GHz Technology, FMCW
- “Active Shield” to prevent caking

2 Coke Dry Quenching

Main features NR High temperature isolation device

- 78GHz Technology, FMCW
- High temperature resistant
- High pressure resistant

3 Steam Drum

Main features NG NC

- High temperature and pressure resistance
- Guided wave radar / TDR / GWR with vapor compensation
- SIL2 certificate

4 Final Dedustingt

Main features RF RN

- High temperature resistant
- “Active Shield” to prevent caking
- Dustproof design

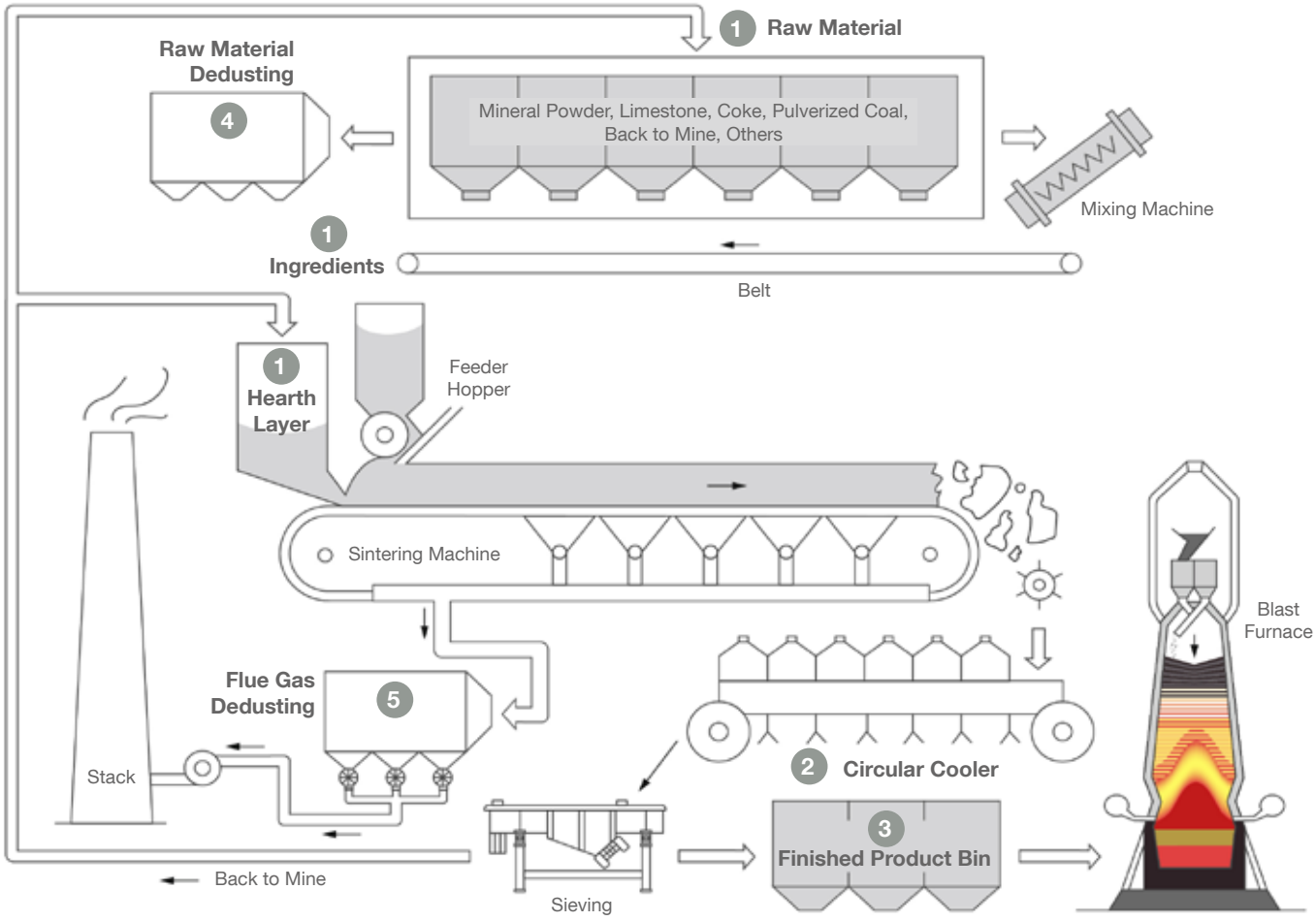
5 Finished Product Bunker

Main features NR RN RF

- Anti-dust
- Abrasion and scouring resistant
- 78GHz Technology, FMCW
- “Active Shield” technology

RN	Rotary paddle switch Rotonivo®	CN	Capacitive sensor Capanivo®	NB	Electro-mechanical Iot 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®

SINTERING



1 Raw Material & Ingredients & Hearth Layer

Main features NB NR RN RF

- Suitable for various raw material measurements
- Anti-dust interference
- Scouring resistance
- “Active Shield” to prevent caking

2 Cooler Hopper

Main features RN RF

- Anti-dust interference
- Robust design
- High temperature type
- “Active Shield” to prevent caking

3 Finished Product Bin

Main features NR RN RF

- Suitable for large range measurements
- Anti-dust interference
- Abrasion resistant
- “Active Shield” technology

4 Raw Material De-dusting Hopper

Main features RN RF VN MN

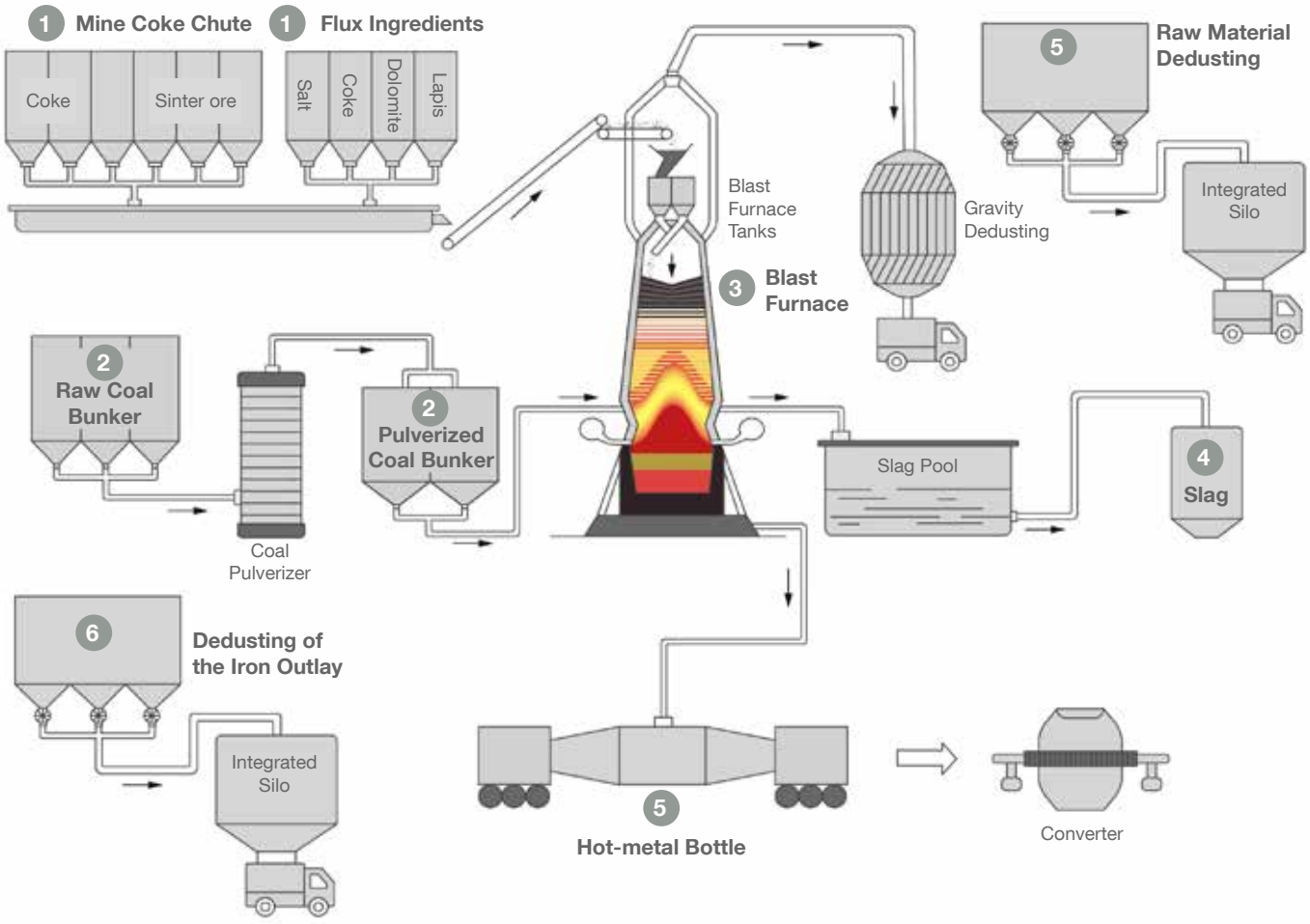
- Anti-dust interference
- “Active Shield” technology
- High sensitivity

5 Esd Ash Hopper

Main features RN RF

- High temperature and high pressure type versions
- Robust design
- “Active Shield” technology

IRONSMELTING



1 Mine Coke Chute

Main features NR RN RF

- Suitable for large range measurements
- Anti-dust interference
- Abrasion resistant
- "Active Shield" technology

2 Raw Coal Bunker & Pulverized Coal Bunker

Main features NR NB RN RF

- No interference from sticky material
- Abrasion resistant
- Easy installation and commissioning

3 Blast Furnace

Main features NR High temperature isolation device

- High temperature resistant
- 78GHz Technology, FMCW
- Fast response

4 Slag

Main features NR NB RN RF

- No interference from sticky material
- Corrosion resistant
- No effect of water vapor
- Easy installation and commissioning

5 Raw Material Dedusting & Hot-metal Bottle

Main features NR NB RN RF VN MN

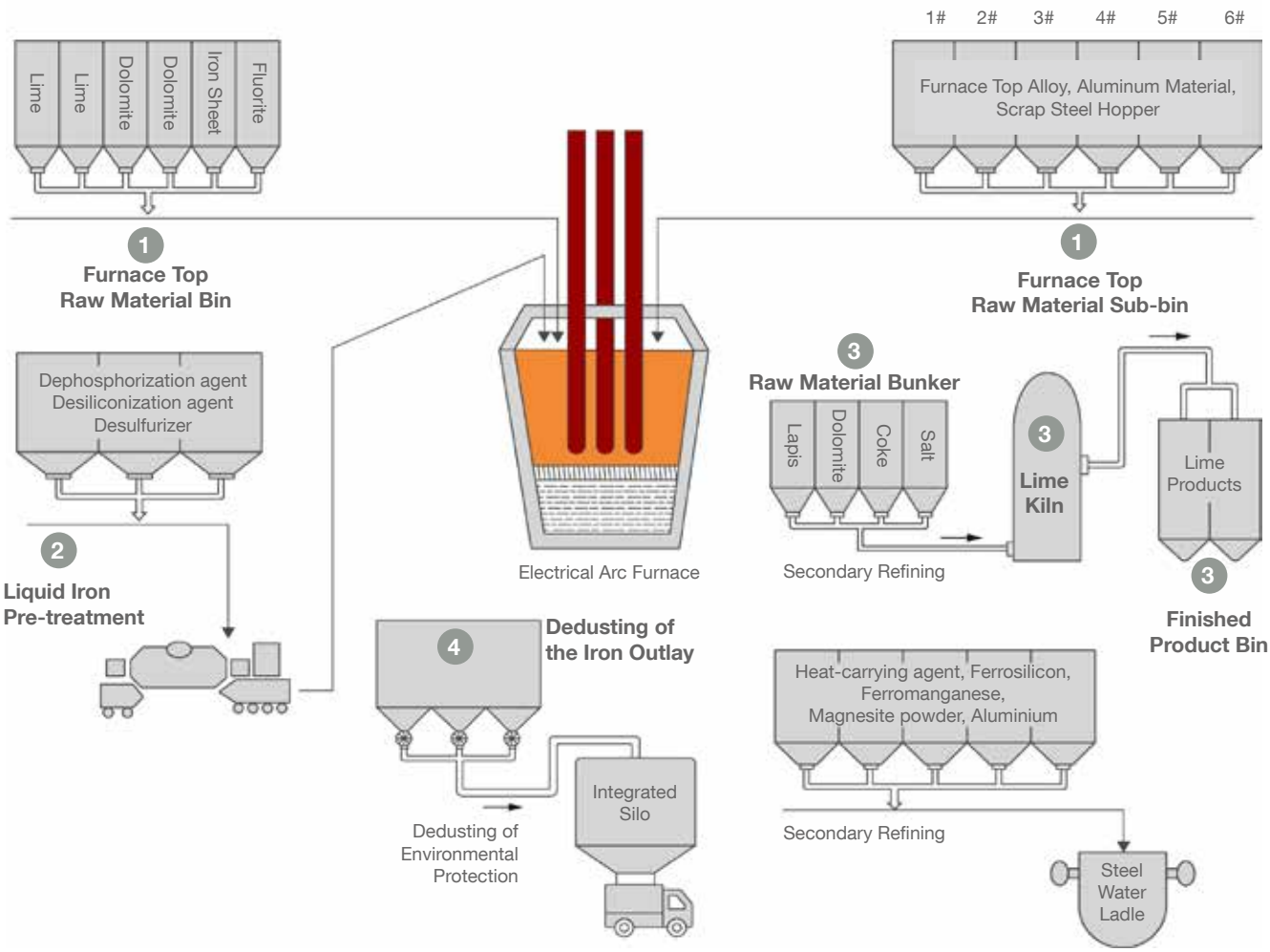
- Anti-dust interference
- Multiple measurement principles available
- Easy installation and commissioning

6 Dedusting of the Iron Outlay

Main features NR NB RN RF

- 78GHz Technology, FMCW
- Tape version NB, pop-up cleaner
- "Active Shield" technology
- Easy installation and commissioning

STEEL MAKING



1 Furnace Top Raw Material Bin/sub-bin

Main features NR RN RF

- No interference from sticky material
- Wear resistant
- Easy installation and commissioning

2 Liquid Iron Pre-treatment

Main features NR RN RF

- Corrosion resistant
- 78GHz Technology, FMCW
- “Active Shield” technology

3 Raw Material Bunker & Lime Kiln & Finished Product Bin

Main features NR RN RF

- Suitable for large range measurements
- Anti-dust interference
- Easy installation and commissioning

4 Dedusting Of the Iron Outlay

Main features NR NB RN RF

- No interference from sticky material
- High temperature type
- “Active Shield” technology

Solutions with added value for your processes

Raw Material Bunker / Finished Product Bunker

Requirements Met by UWT:

- Accurate measurement results even within dusty environments
- Abrasiveness of bulk solids materials
- Heavy build-up/caking
- Reliable detection of varying types of bulk solids materials

Dry Quenching Coke Oven

Requirements Met by UWT:

- Suitable for high temperature applications
- Abrasion and Scouring resistance
- Not affected by sticky material
- Robust measurement technology resistant to extreme pressure and extreme temperatures of up to 1,200 °C

Steam Drum

Requirements Met by UWT:

- Accurate measurement even under steam conditions
- Safe and reliable
- SIL2 certification

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 steel industry's processes.

The raw material bunker and finished product bunker of coking plant are characterized by large dust, lumpy material and serious scouring.

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 sintering process, various raw materials are conveyed through the belt to the sintering machine and sintered to the finished product. 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, pellets and other bulk materials are detected early through the use of appropriate measurement principles thus any consequential damage is reliably avoided.

Raw Material Bunker / Batch Bunker / Finished Product Bunker

Requirements Met by UWT:

- Precise measurement results despite highly dusty environments
- Resistant to material scouring
- No interference from caking
- Varying extension lengths required
- Suitable for a wide variety of solids level measurement

Sintering Machine

Requirements Met by UWT:

- Measuring cart material thickness, small range, high accuracy requirement
- High temperature applications
- High frequency radar level meter
- Stable and reliable

Ash Hopper

Requirements Met by UWT:

- High dust working conditions
- Multiple measurement principles available
- Easy to install and commission

Cooling Machine Hopper / ESD Ash Hopper

Requirements Met by UWT:

- Suitable for high temperature working conditions
- High dust working conditions
- Robust and reliable

Pelletizing Process

Requirements Met by UWT:

Raw Material Bunker / Batch Bunker / Shaft Kiln

- Suitable for high dust conditions
- Heavy mechanical abrasion
- Robust and reliable

Pellet Induration / Cooling System

- High temperature up to 800 °C
- High-dust working conditions
- High precision

ESD Ash Hopper

- High temperature
- High pressure
- High dust
- Suitable for high and low level monitoring

Mine Coke Chute / Raw Material De-Dusting / Fuel & Coal Injection System

Requirements Met by UWT:

- Accurate measurement even under high dust conditions
- Resistant to material scouring
- Anti-sticky material interference
- Multiple measurement methods to choose

Blast Furnace

Requirements Met by UWT:

- High temperature up to 1,200 °C
- Fast response time
- High dust
- Unaffected by sticky material hanging from steam condensation in the process
- Corrosion resistant

Blast Furnace Ironmaking is the most important part of the metallurgical (steel) industry. Blast Furnace Ironmaking is the continuous production process of reducing iron ore into pig iron. Solid raw materials such as iron ore, coke and flux are fed into the blast furnace in batches by the top charging device according to the prescribed batch ratios, and the furnace throat material surface is kept at a certain height. The coke and ore form an alternating stratified structure in the furnace. The ore material is gradually reduced and melted into iron and slag during the descent process, which is gathered in the furnace cylinder and released from the iron and slag mouths periodically.

Application-related product design,
responsive **service** and **short delivery times**

Steel making is to put pig iron into the steel making furnace to melt according to certain process, that is to get steel. The material in steelmaking for measurement also has the characteristics of large dust and serious scouring.

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.

Raw Material Bin / Sub-Bin

Requirements Met by UWT:

- High dust conditions
- Resistant to scouring and abrasion
- Easy installation and commissioning

Liquid Iron Pre-Treatment

Requirements Met by UWT:

- Corrosion resistant
- No interference from sticky material
- Completely maintenance-free

Electrical Arc Furnace

Requirements Met by UWT:

- Meet high temperature up to 1,200 °C
- Limited installation space
- Multiple disturbances: high dust, steam, magnetic fields

Lime Preparation

Requirements Met by UWT:

- High temperature
- Large product range
- Sticky and high dust conditions

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 steel industry.

Medium	DK Value
Dolomite	6.8 - 8
Iron Pentacarbonyl	2.6
Iron Oxide	14.2
Iron Silicide	10
(Raw) Coal	1.2 - 1.8
Coke	3
Salt	3 - 15
Lime	2.2 - 2.5
Water	80
Manganese Carbonate	2.3
Ferromanganese	2.8 - 3.2
Metal Powder	6

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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SOLUTIONS