



PROTRAC: Radiation-based process instrumentation

Reliable instrumentation for extreme process conditions

Whether level, limit level, density, interface or mass flow: ProTrac delivers precise measuring results in industrial production and handling processes, and that even under the most difficult operating conditions.

Reliable measuring results

Extreme temperatures, high vessel pressures, concussions, aggressive media or problematic physical product characteristics – those are some of the challenges the new radiometric gauge from VEGA easily masters.

As rough as conditions may be in your process, ProTrac provides you with reliable measurement data on filling level, limit level, density, separation layer and mass flow. The instrument sets standards in the area of safety as well as being particularly easy to handle.

Flexibility through detector variety

The big plus of the ProTrac instrument series: you can choose between different types of detectors. ProTrac can thus be optimized for widely different applications becoming the specialist for your particular measuring task.

FiberTrac is equipped with a flexible plastic detector for level measurement in round and conical vessels. SoliTrac's PVT rod detector is the solution for vertical vessels. PoinTrac takes care of simple level detection tasks, while MiniTrac was especially developed for density and limit level measurement in cramped, difficult-to-access places.



“With ProTrac you get well-engineered radiometric instrumentation that has everything right. The experience and knowledge from 60 years of practical application are embedded in ProTrac. For you this means: high operational reliability, accurate measuring results and long-term process continuity.”



PROTRAC: All advantages at a glance

- Simple mounting and operation
- Integrated safety features
- Self-monitoring and diagnosis
- Developed acc. to IEC 61508
- Qualified up to SIL2

PROTRAC in the plics[®] system

Electronics



4 ... 20 mA/
HART



Profibus PA



Foundation
Fieldbus

Housings



Aluminium
double chamber



Stainless steel
double chamber

Indicating and adjustment module



PLICSCOM



VEGACONNECT

Detector



PVT
scintillator



Flexible plastic
scintillator



NaI
scintillator



Trend-setting measurement technology orientates itself around the people who use it. That's why we developed plics® – the world's first modular product system for instrumentation. Every one of our sensors is custom built from plics® components and thus optimally fulfils the requirements of every industry and its specific applications.

Simpler planning with plics®

Being able to freely select and combine sensor, process connection, electronics and housing greatly simplifies instrument selection and engineering for applications in machines and systems. Cost reduction with plics® thus starts already in the planning stage.

Clear advantages in plant construction

Short delivery times, uncomplicated connection and fast setup and commissioning save the plant builder a lot of time and expense. The layout, wiring and setup of VEGA instruments are always the same, so whoever knows this can readily install and operate any plics® measuring principle in any application.

Assistance for the user

plics® delivers a convincing performance in daily use, thanks to its high operational reliability and simplified maintenance, as well as the reduced replacement part stocks resulting from the use of common components. In this area, the consistency of technology and operation simplifies and accelerates work with different plics® instruments.

The plics® advantages for PROTRAC

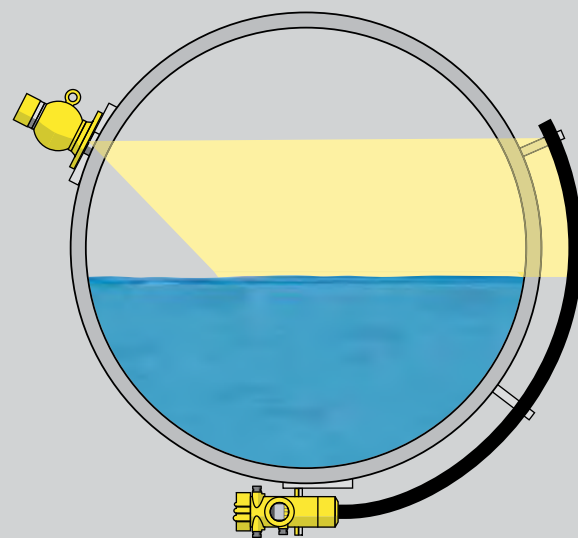
The new ProTrac sensors provide you with all the advantages of the instrument concept plics® in the area of radiometric measurement of level, density, mass flow as well as level detection.

- Different detector types for optimal adaptation to the measuring task
- Fast setup and commissioning through application-specific, menu-driven operation
- Housings of aluminium or stainless steel
- Measurement data memory for service and diagnosis
- Simple electronics exchange

Innovative technology

How it works

The basic element of radiometric (also known as nucleonic) measurement is a radioactive preparation that emits gamma rays. A Cesium-137 or a Cobalt-60 isotope is usually used as the radiation source. A special detector mounted on the opposite side of the tank picks up the radiation. This scintillator is able to convert the radiation received into flashes of light that are counted and evaluated. Because gamma rays are attenuated by changes to the process medium this technology can calculate the level, the limit level, the density or mass flow from the intensity of the incoming radiation, i.e. from the number of light flashes.



Security at the highest level

ProTrac is equipped with the optimized source container VEGASOURCE. The lead-filled housing protects the surroundings against gamma rays so well that VEGASOURCE allows operation even without a control area. At the same time it protects the isotope from damage. VEGASOURCE is also available in a fire-resistant version as per ISO 7205 and IEC 60405.

The radiation is emitted through a narrow ray path in the housing and focussed in the direction of the detector. This radiation emission channel can be completely closed if required. The shutter mechanism of the source container can also be pneumatically operated.





Application diversity through flexibility

Until now, multiple rod detectors had to be connected in series for level measurement in round and conical vessels. Now there is FiberTrac, a sensor with flexible plastic fibres. The flexible detector can be up to 7 m long and very simply contoured to the vessel shape. So today, one single instrument often suffices where several were previously required. To allow for extremely long measuring ranges, FiberTrac can also be cascaded. For measurement in straight sided vessels there is SoliTrac, which has a classic PVT rod detector. With its crystal scintillator in compact design, MiniTrac is the specialist for density measurement. And last but not least there is PoinTrac, a level switch that offers a convincing price and performance capability.



Asset management

All ProTrac instruments are equipped with a clever asset management system for self monitoring and diagnosis. They continuously check all components and functions for accuracy and correctness fully automatically. ProTrac switches from “green” to “yellow” status according to the traffic light principle when it recognizes even the tiniest deviations from the optimal state. There is thus sufficient time to correct the problem – well before a real disturbance or breakdown can occur. This guarantees highest availability and prevents expensive system standstills.

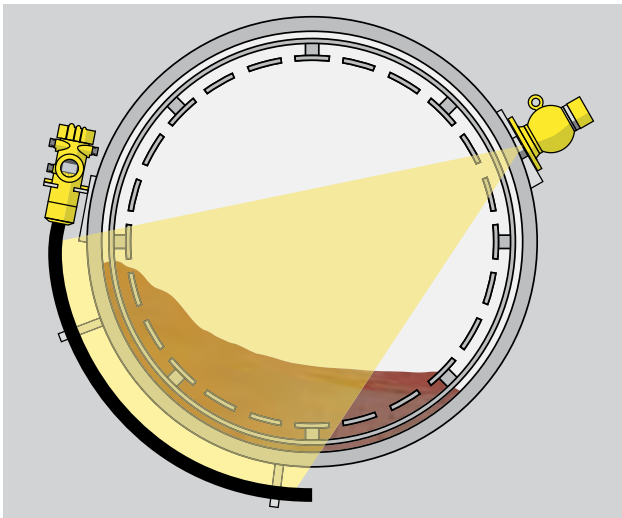
Status messages acc. to NE 107 or VDI/VDE 2650

		Failure
		Maintenance required
		Function check
		Outside specification

Versatile in use

Radiometric gauges are used for point level detection as well as continuous level, density and interface measurement. This non-contact measurement technology lends itself well for measuring liquids, suspensions and muds as well as all kinds of bulk solids. Radiometry is used everywhere that measuring conditions are extreme or out of the ordinary: in extreme heat or cold; for corrosive, abrasive or hazardous products; under conditions of strong foam or dust generation; in vessels under vacuum or high pressure.

Measurement with rotation and heat



Polyester melt

The versatile synthetic material polyester is produced in a rotating reactor.

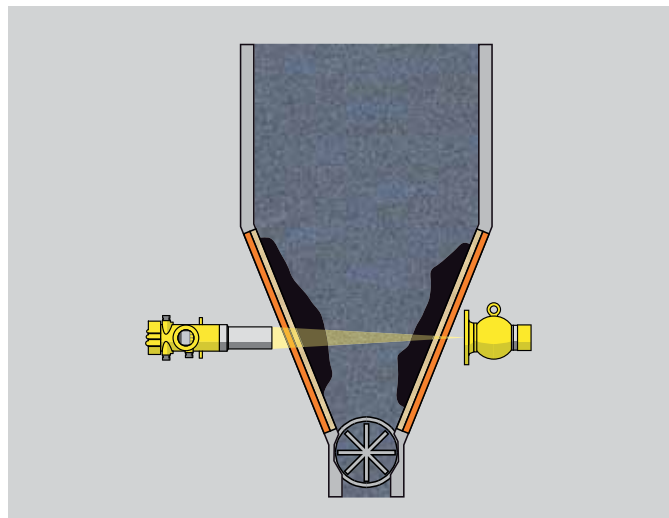
Process conditions

Vacuum in the rotating melt vessel and a process temperature of up to +280° C.

Solution

The radiometric measuring system is mounted on the outside of the vessel. It measures changes of the filling level contactlessly, right through the vessel wall. The flexible plastic detector FiberTrac lends itself well for the round shape of this container.

Continuous measurement of buildup



Cyclone monitoring in cement production

The raw meal for clinker production is preheated in cyclones. Some of it forms buildup on the container walls in the lower part of the cyclone – the thickness of this layer needs monitoring continuously to prevent blockage.

Process conditions

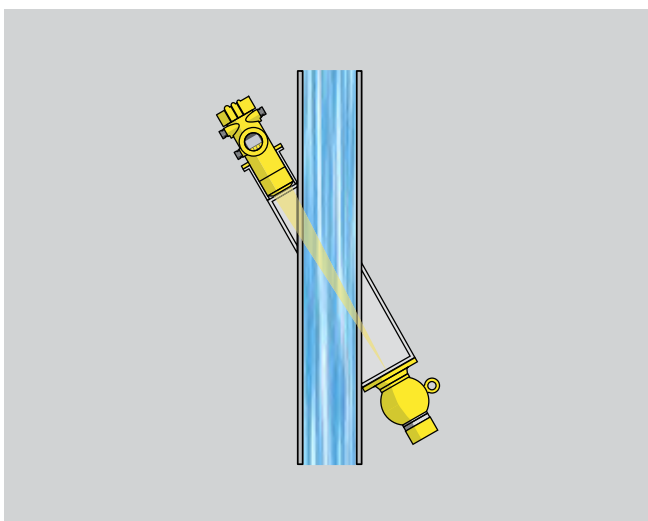
The hot raw meal has a temperature of +800° C, the cyclone is lined with fire-proof brick.

Solution

The gauge attached to the outside of the cyclone monitors the increasing layer thickness on the inside walls. The raw meal buildup is then removed with a blast of compressed air. Ideal solution: the point level sensor PoinTrac.



Lime milk density measurement



Flue gas desulfurization with lime suspension

To lower their emission values, coal-fired power stations operate flue gas desulfurization systems. In such systems, the density of the lime milk used for desulfurization must be continuously measured.

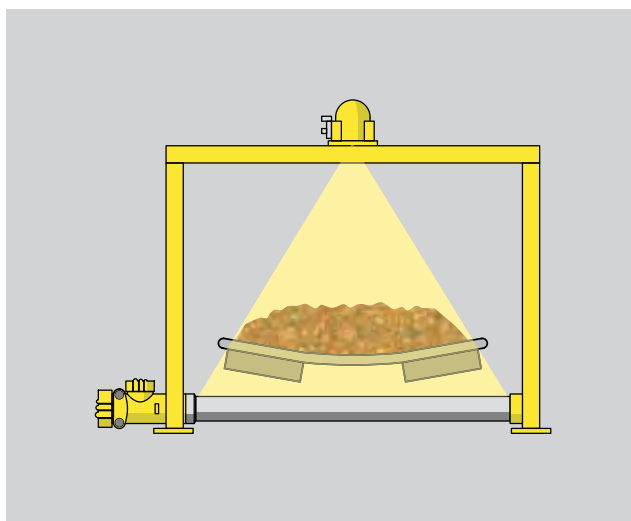
Process conditions

Lime milk is extremely abrasive. Pipes with a diameter of less than 100 mm increase the speed of the flow and prevent the material from depositing on the pipe walls.

Solution

The radiometric gauge MiniTrac determines the density contactlessly from the outside of the pipe.

Mass flow measurement of solids



Clinker conveyor belt

The red-hot clinker is transported on conveyor belts to a temporary storage area. To control the production processes, the feed rate must be accurately measured.

Process conditions

The hot clinker has a temperature of about +200° C.

Solution

WeighTrac determines the exact feed rate of the hot clinker without contact. Thanks to its frame construction the gauge can be easily installed directly over the conveyor belt.

Setup and adjustment



“ProTrac speaks the language of your automation equipment and can be simply integrated into any process control system. Setting up a radiometric measurement is now simpler than ever before: you can set the parameters of normal level or density applications with the on-site adjustment module PLICSCOM directly on the instrument. For more complex measurement setups, the powerful and highly effective DTMs and EDDs take over this task.”

For remote parameterization of ProTrac both a DTM and an EDD are available. Quick and reliable setup and commissioning is guaranteed through simple selection of the desired application in the adjustment software. Out on the plant, the setup process can be carried out either with the help of the adjustment module PLICSCOM or a HART Handheld 375. If adjustment is not possible directly at the measuring point, the remote indicating and adjustment unit VEGADIS 61 can be used.

PLICSCOM – the multifunction talent

The indicating and adjustment module PLICSCOM is used for measurement indication, adjustment and diagnosis directly on the sensor. Its menu structure is clearly arranged and enables really easy setup and commissioning. Status messages are displayed in clear, easily-understandable text. Furthermore, all instrument data, such as, e.g., measuring range, electronics temperature, linearization curve, current output and pulse rate, can be called up immediately.

External indicating and adjustment unit VEGADIS 61

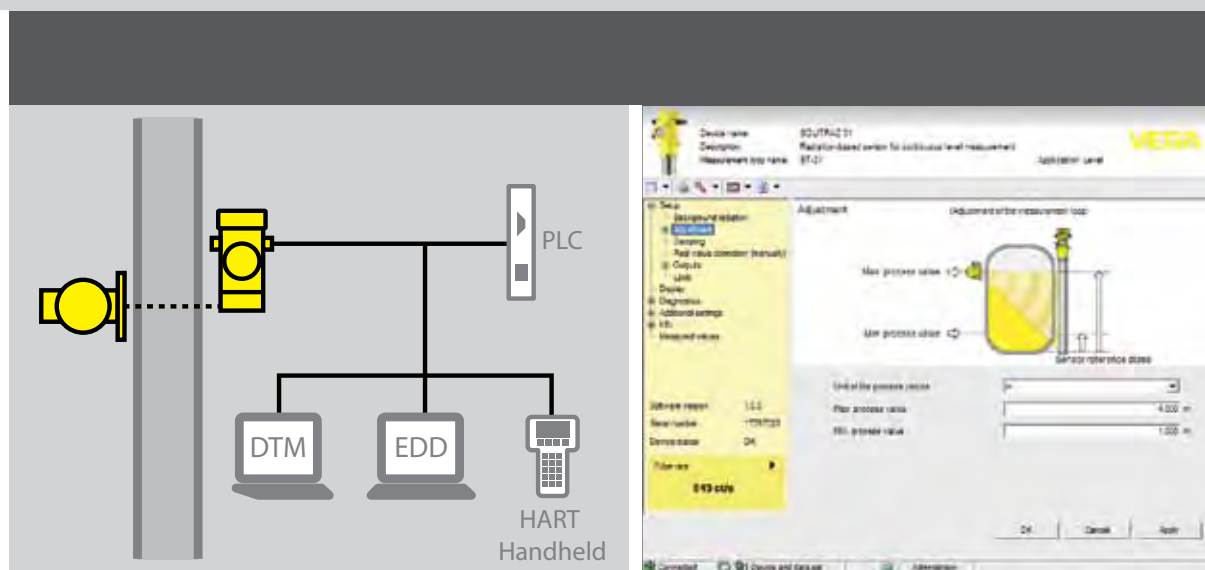
The external indicating and adjustment unit VEGADIS 61 with integrated PLICSCOM is connected to the sensor via a standard cable up to 50 meters long. It enables setup and commissioning of the measuring point in difficult-to-access mounting locations without an additional power supply.

PC adjustment with VEGACONNECT

Versatility allows flexible work: the mobile VEGACONNECT connects communication capable VEGA instruments to any PC uncomplicatedly via the USB interface. Configuration of these instruments is carried out via the reliable adjustment software PACTware in connection with a DTM. VEGACONNECT can also be used as a universal HART modem for the sensors of other manufacturers.

Setup with HART handheld 375

The HART handheld 375 also allows on-site sensor parameterization. In order to access the HART parameters of the sensors, the sensors must be connected to the 4 ... 20 mA/HART cable via a minimum working resistance of 220 ohms.





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VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany

Phone +49 7836 50-0
Fax +49 7836 50-201
E-mail info@de.vega.com
www.vega.com

Looking Forward **VEGA**