

## NIVUS - Products and Services





## NIVUS - Instrumentation for Water Industry



**The NIVUS group** is a German-based leading developer, manufacturer and supplier of measurement instruments for the water industry. Since 1967 the company has been pointing the way ahead by setting new standards and by continuously

developing high quality products and solutions.

The company head office is located in Eppingen/Germany. With 9 international subsidiaries and more than 40 distributing partners worldwide NIVUS is a real global player.

### **Cutting edge technology and quality while offering optimum consultancy.**

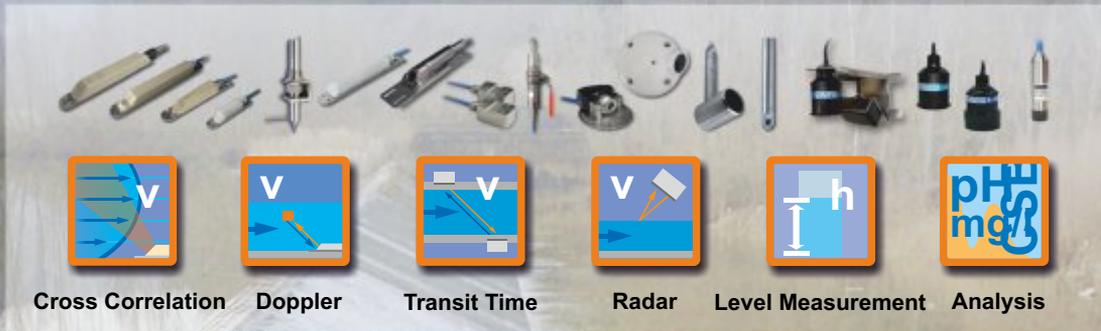
In simple terms: it is our mission to provide the perfect measurement solution for your application. One of the key aspects for ideal measurement solutions is to offer optimum consultancy right from the start, while focussing on your specific measuring task as well as special application requirements. Our team has many years - or even decades - of experience and know-how and regularly participates in internal and external seminars and training courses.

Our motivation to offer the best measurement systems in terms of handling, reliability, variety and accuracy to our customers drives us to constantly improve our existing solutions. Our entire team strives to offer you the perfect measurement and the best service: from the first contact to on-time shipping, from initial consultancy to maintenance on a regular basis – we put the focus on you and your needs!

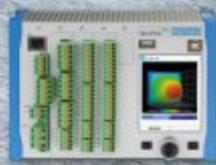
## Product Range

The suitable solution for each application. Tried and tested measurement systems to perfectly fit your needs. Measurement systems which measure right what they should, reliably and accurately - even under difficult conditions. This is our claim!

### Sensor technology



### Transmitter



### Intelligent transmission of measurement data



### Software solutions



## Fields of Activities

### Channel Networks Monitoring

Portable and permanent measurement systems for continuous measurement of flow and level in channel network systems.



### Wastewater Treatment Plants

Portable and permanent measurement systems for continuous measurement of flow and level in all areas of wastewater treatment plants.



### Measurement Campaigns

We supply all services from one source: from device rentals to complete planning, implementation and data evaluation, leakage monitoring, discharges of flowing water and many more. Used for master plan studies and for the calibration of hydraulic models.



### Flowing Waters Rivers & Channels

Flow measurements in flowing waters for flood protection, calibration and validation of hydrologic calculation models, dimensioning and operation of facilities in water industry.



### Industry & Hydropower

Flow measurements of inlets and outlets conducting cooling water, circulation systems and turbine intakes of power plants and industry; penstock monitoring and turbine efficiency monitoring.

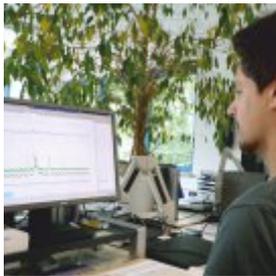


### Water Supply & Water Distribution

Measurement of level and pressure in deep wells and conveyor systems as well as flow measurements at elevated tanks, water purification plants and water treatment plants.







## Products and Services



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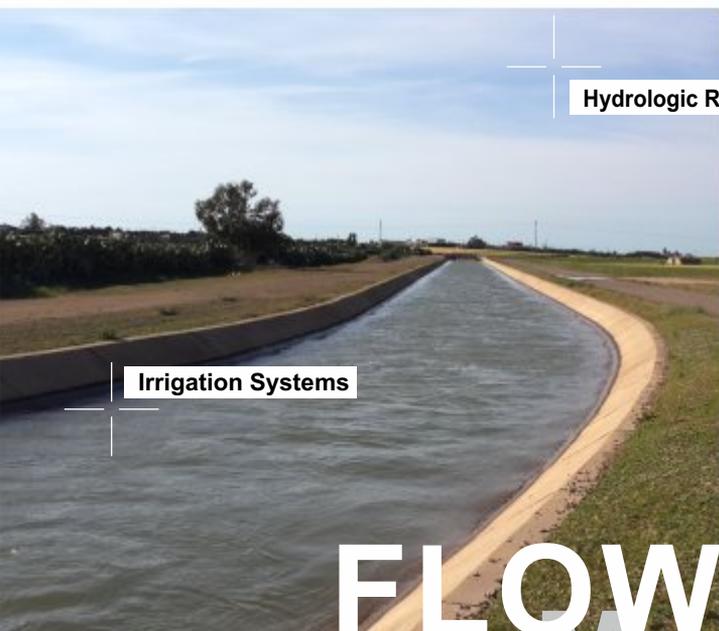
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Leakage Monitoring	



### REFERENCES

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# FLOW Measurement

## The perfect solution for each application

Regarding flow measurement in water and wastewater NIVUS distinguish between two basic methods:

### Flow Velocity Measuring Methods

NIVUS provides portable and permanent metering systems for continuous flow measurement using ultrasonic flow and radar velocity measurement. For any liquid from clean water to wastewater and for a variety of flumes such as part filled and full pipes, channels and surface waters we supply appropriate measurement systems. Our innovative units stand for highest accuracy and measurement reliability combined with easy installation and straightforward operation.

### The Hydraulic Method (Q-h Relation)

For classic flow measurement methods on Venturi flumes, weirs, dam shutter and similar applications, NIVUS provides appropriate metering and evaluation instruments.



Flow Velocity Measurement Methods

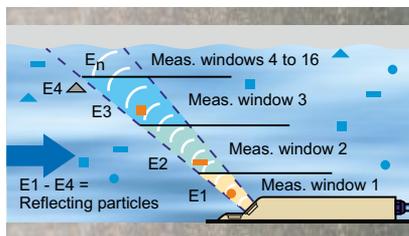
$$Q = \bar{v} \cdot A$$

The flow velocity measurement method is an indirect method for flow investigation in part filled and full pipes, channels and surface waters.

The average **flow velocity** ( $\bar{v}$ ) is measured within the fluid using flow velocity sensors based on ultrasonic or radar measurement technology. The wetted **cross-sectional area** (**A**) depends on the section profile as well as on the flow level (**h**).

Wastewater

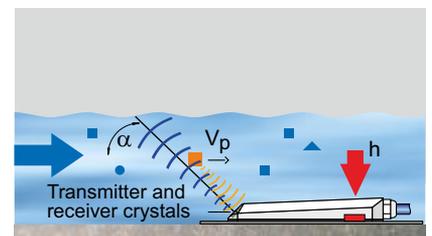
Cross Correlation Method



- The measurement method for universal use in slight to heavily polluted water
- Very high accuracy
- Measures the real flow velocity profile

Reflectors within the water (particles, minerals or gas bubbles) are scanned by an ultrasonic impulse and subsequently are saved as echo patterns. A second scan follows a few milliseconds later. Correlating both signals allows us to calculate the flow velocity. Repeating this procedure in varying flow levels enables determination of the real flow velocity profile.

Doppler Method



- For measurement in slight to heavily polluted water
- Latest intelligent fourth-generation Doppler technology

The Doppler method uses a continuous ultrasonic signal with a defined frequency and a known angle to be sent into the water. The moving particles generate a frequency shift which is proportional to the flow velocity of particles.

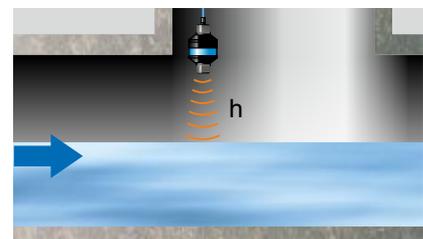
These values are used for statistical averaging. The Doppler method cannot be used to perform distance-related flow velocity measurements.



## Hydraulic Methods

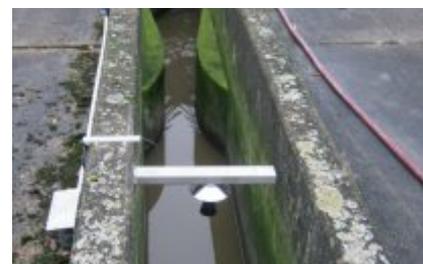
$$Q = k \cdot f(h)$$

## Ultrasound, Radar, Hydrostatics



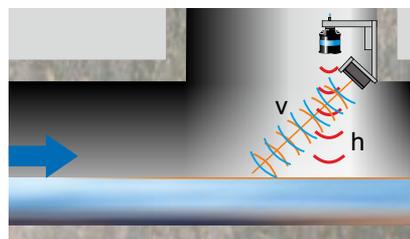
- Non-contact measurement
- Easy installation
- For clean and wastewater

Hydraulic flow measurement detects flow with level measurement in combination with hydraulic structures like weirs or Venturi or with two parallel level measurements. The calculation is based on the known geometries and special hydraulic knowledge in combination with special norms (i. e. DIN 19559 Part 2 for Venturi or DWA A111 for weirs).



## Wastewater and Water

## Radar Method



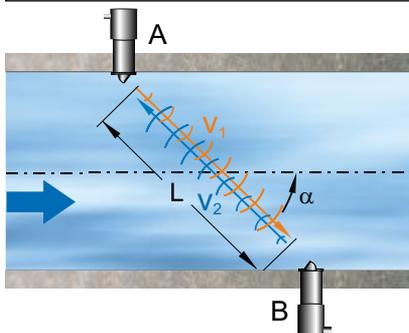
- Non-contact measurement
- For all liquid media
- Installation without interrupting processes

The radar flow meter detects the flow velocity on the water surface. The surface velocity can be detected by reflections of the radar signals on surface waves. The evaluation of the signals are done by the Doppler method. With an additional level measurement and the known channel geometry the flow can be measured accurately.



## Water

## Transit Time Method



- For clean to slightly polluted water
- Meets IEC 60041/ISO 12242/ EN ISO 6414 requirements
- Very high measurement accuracy

The transit time method is based on detecting the transit time of ultrasonic signals between two sensors. Here the signal transit time towards the flow direction is shorter than against the flow direction. The difference between both transit times is proportional to the average flow velocity along the measurement path. The average velocity within the section is calculated by the transmitter.





Flow Velocity Measurement Methods

Sensors

NIVUS provides appropriate sensors for each application. Optimised mounting accessories enable easy sensor installation.

- Drift-free sensors with absolutely stable zero point
- Easy installation thanks to perfectly matched mounting accessories
- Installation under process conditions possible
- The selection of sensor variations ensures the best possible solution for each application
- Error-proof connection over long distances thanks to digital signal transmission

Sensors for flow velocity measurement

Wastewater									
Channel shape									
Sensor types	<table border="1"> <thead> <tr> <th>Pipe sensor cross correlation</th> <th>Wedge sensor cross correlation</th> </tr> </thead> <tbody> <tr> <td> <p>for installation in pipes using nozzle and cutting ring screw joint</p> <p><b>Various versions:</b></p> <ul style="list-style-type: none"> <li>■ v-measurement only</li> <li>■ combined v- and h-measurement</li> </ul> </td> <td> <p>for installation on channel bottom or channel wall</p> <p><b>Various versions:</b></p> <ul style="list-style-type: none"> <li>■ v-measurement only</li> <li>■ combined v- and h-measurement (ultrasonic)</li> <li>■ combined v- and h-measurement (pressure)</li> <li>■ combined v- and 2x h-measurement (ultrasonic and pressure)</li> </ul> </td> </tr> <tr> <th>Pipe sensor Doppler</th> <th>Wedge sensor Doppler</th> </tr> <tr> <td> <p><b>Various versions:</b></p> <ul style="list-style-type: none"> <li>■ v-measurement only</li> <li>■ combined v- and h-measurement</li> </ul> </td> <td> <p><b>Various versions:</b></p> <ul style="list-style-type: none"> <li>■ v-measurement only</li> <li>■ combined v- and h-measurement (ultrasonic)</li> <li>■ combined v- and h-measurement (pressure)</li> <li>■ combined v- and 2x h-measurement (ultrasonic and pressure)</li> </ul> </td> </tr> </tbody> </table>	Pipe sensor cross correlation	Wedge sensor cross correlation	<p>for installation in pipes using nozzle and cutting ring screw joint</p> <p><b>Various versions:</b></p> <ul style="list-style-type: none"> <li>■ v-measurement only</li> <li>■ combined v- and h-measurement</li> </ul>	<p>for installation on channel bottom or channel wall</p> <p><b>Various versions:</b></p> <ul style="list-style-type: none"> <li>■ v-measurement only</li> <li>■ combined v- and h-measurement (ultrasonic)</li> <li>■ combined v- and h-measurement (pressure)</li> <li>■ combined v- and 2x h-measurement (ultrasonic and pressure)</li> </ul>	Pipe sensor Doppler	Wedge sensor Doppler	<p><b>Various versions:</b></p> <ul style="list-style-type: none"> <li>■ v-measurement only</li> <li>■ combined v- and h-measurement</li> </ul>	<p><b>Various versions:</b></p> <ul style="list-style-type: none"> <li>■ v-measurement only</li> <li>■ combined v- and h-measurement (ultrasonic)</li> <li>■ combined v- and h-measurement (pressure)</li> <li>■ combined v- and 2x h-measurement (ultrasonic and pressure)</li> </ul>
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**External level measurement**

<p><b>Air-ultrasonic sensor</b></p>  <p>For installation in channel crown. For connection to transmitters</p>	<p><b>Ultrasonic compact echo sounders</b></p>  <p>With integrated electronic evaluation</p>	<p><b>Ultrasonic sensors</b></p>  <p>For direct connection to NivuMaster transmitters</p>	<p><b>Radar sensors</b></p>  <p>For connection to NivuMaster transmitters</p>	<p><b>Pressure probes</b></p>  <p>Hydrostatic Pressure Probes for direct connection via 4-20 mA</p>
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Comprehensive description and overview of sensors can be found in chapter Level Measurement.

Water		Wastewater and Water	
			
<p><b>Pipe sensor/Wedge sensor</b></p> <p>for installation in pipes or channels, various versions, also with drinking water approval</p>  <p>WRAS APPROVED PRODUCT</p> <ul style="list-style-type: none"> <li>■ v-measurement</li> </ul>	<p><b>Rod sensor</b></p> <p>for fastening on channel walls, various versions</p>  <ul style="list-style-type: none"> <li>■ v-measurement</li> </ul>	<p><b>Radar sensor</b></p> <p>for installation above the channel</p>  <ul style="list-style-type: none"> <li>■ v-measurement</li> <li>■ additional h-measurement necessary</li> </ul>	
<p><b>Clamp-on sensor</b></p> <p>for installation on full pipes</p>  <ul style="list-style-type: none"> <li>■ v-measurement</li> </ul>	<p><b>Hemispherical sensor</b></p> <p>for installation on channel wall</p>  <ul style="list-style-type: none"> <li>■ v-measurement</li> </ul>		

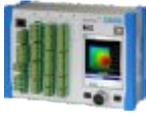
To Transmitter



Flow Velocity Measurement Methods

Transmitters

Wastewater

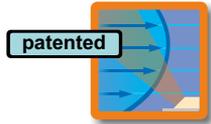
	NivuFlow 750	NivuFlow 7550	NFP	NivuFlow Mobile 750
				
				
	Page 16	Page 18	Page 20	Page 21
	++	++	++	++
	++	++	-	++
	++	++	-	++
	-	-	-	-
<b>Measurement Method</b>	<b>Cross Correlation</b>	<b>CC/Radar</b>	<b>Cross Correlation</b>	<b>Cross Correlation</b>
Installation Mode	permanent	permanent	permanent	portable
Real flow velocity profile measuring	+	+	+	+
Measurement of the surface velocity	-	+	-	-
<b>Inputs</b>				
0/4 - 20 mA with 12 Bit resolution for external level and external setpoints	4	4	-	1
4 - 20 mA for external level (2-wire)	1	1	-	2
Redundant level measurement	+	+	-	+
Digital inputs	7	5	1	1
Max. number of v-sensors	9	3	1	3
Sedimentation measuring	+	-	-	+
<b>Outputs</b>				
Relays	5	5	2	1
Analog outputs	4	4	3	1
<b>Data storage</b>				
	+	+	-	+
<b>Communication</b>				
Modbus-TCP/RTU, optional GPRS	+	+	-	-

		Water			Wastewater and Water
OCM F	PCM F	NivuFlow 650	NivuFlow 600	NivuFlow Mobile 600	NivuFlow 550
					
					
Page 23	Page 25	Page 26	Page 28	Page 29	Page 30
+	+	+	+	+	-
+	+	+	-	-	+
+	+	+	-	-	+
-	-	+	-	-	+
Doppler		Transit Time			Radar
permanent	portable	permanent	permanent	portable	permanent
-	+	-	-	-	-
-	-	-	-	-	-
2	-	4	2	1	1
1	2	1	1	2	1
-	+	-	-	1	(+)
4	1	4	2	1	2
1	1	32 paths*	32 paths*	2 paths	1
-	+	-	-	-	-
5	1	5	2	1	2
3	1	4	2	1	2
-	+	+	+	+	+
-	-	+	+	+	+

\* with extension module

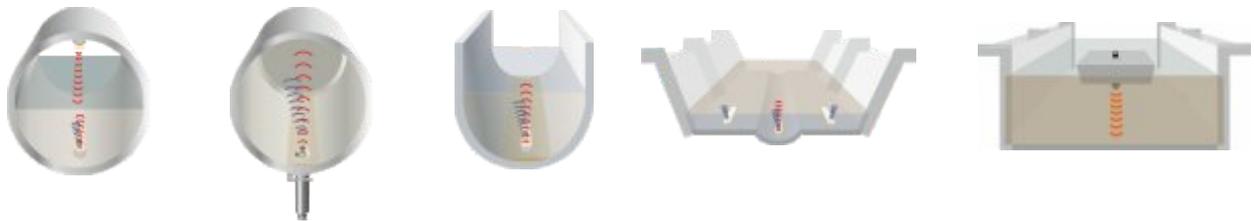


Flow Velocity Measurement Methods	Wastewater	Cross Correlation & Radar Method
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The unique NIVUS cross correlation flow meters feature a patented profiling technology for accurate flow measurements, providing outstanding flow measurement performance.

### Permanent Measurement Systems



### NivuFlow 750

Flow metering at the highest technical level. Universal use in wastewater for part filled pipes and channels



NivuFlow 750 is the successor to the well-known OCM Pro CF. New numeric discharge models saved in the transmitter's internal memory allow more accurate and reliable determination of flow rates even under difficult measurement conditions. The compact dimensions of the new transmitter allow to install the unit on DIN rails and in switching cabinets even under confined conditions.

### Ex-Separation Interface iXT



- Very high measurement accuracy
- Suitable even for very difficult applications
- Real-time measurement of real flow velocity profiles
- Intuitive, modern operating concept for quick and easy initial start-up
- No calibration required
- Extensive diagnostic functions for reliable initial start-up and quick maintenance
- IP 67 field enclosure available

### Multiplexer MPX

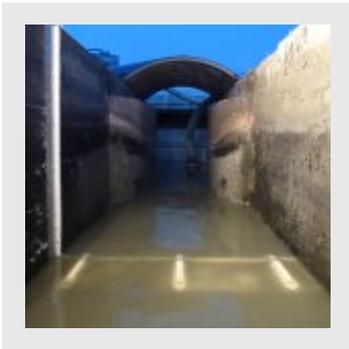


<b>Suitable for shapes</b>	Full and part filled channel shapes such as pipe, egg, rectangular, U-profile, trapezoid channels, detection of large flow volumes, free profiles etc.
<b>Typical applications</b>	Channel network systems, inlets and outlets of wastewater treatment plants, billing purposes, discharge control, surface water and stormwater monitoring, CSO and SSO and many more



**Flow measurement with cross correlation wedge sensor within a pipe**

- Precise detection of flow at varying levels
- Detection of local velocities spread across the complete level
- Redundant flow measurement



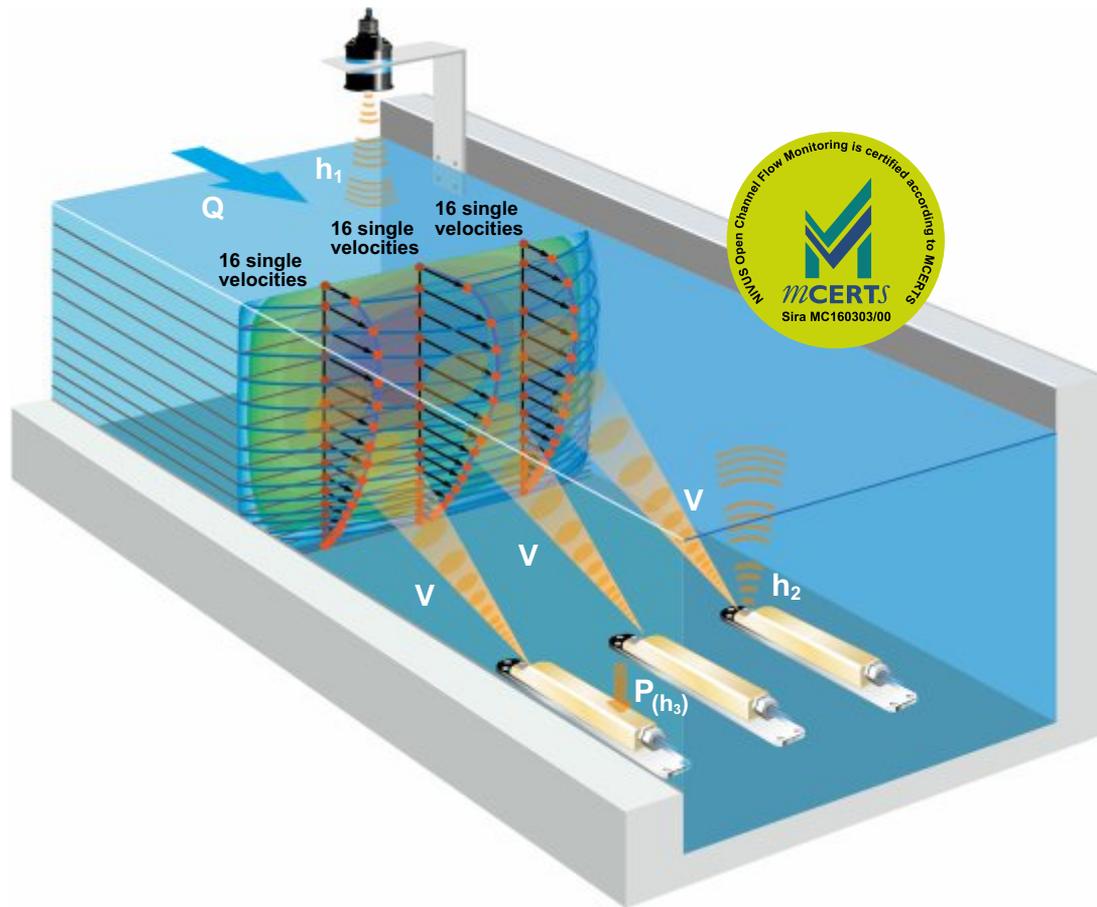
The new developed NIVUS-COSP technology combines the high accurate velocity measurement with a hydraulic model, turning the available velocity measurement into a grid measurement according to VDI/VDE.

Using a NivuFlow 750 plus 3 sensors results in a measurement grid with 48 individual spatially allocated velocities providing high accurate flow measurement.

- Visualisation of real flow conditions
- Continuous grid measurement
- Automatic error compensation



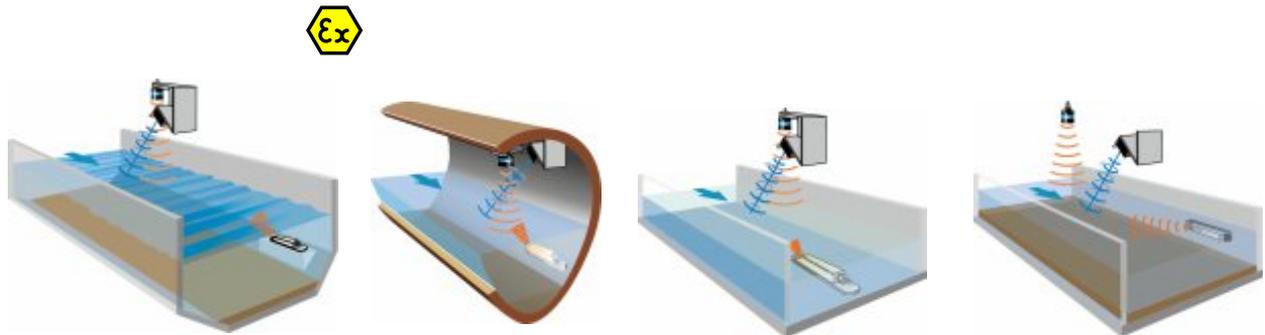
NivuFlow is available as unit for installation in control cabinet or with a robust field enclosure



The alternative to EMFs. Installation without the need to remove the EMF.



Flow Velocity Measurement Methods    Wastewater    Cross Correlation & Radar Method



**NivuFlow 7550**



NivuFlow 7550 is a hybrid measurement system which was particularly developed for flow metering in part filled pipes and channels. Mainly in difficult applications the flow meter stands out for reliable results thanks to its advantages by using two measurement technologies.

- Redundant flow measurement
- Contactless Radar
- Surface velocity measurement
- Ultrasonic sideways velocity profile sensor
- Two independent flow measurement technologies increase the accuracy and reliability
- All sensors are above the area of sedimentation
- No maintenance
- Reliable measurement in low flow level circumstances

<b>Suitable for shapes</b>	Part filled channel shapes such as pipe, egg, rectangular, U-profile, trapezoid channels, detection of large flow volumes, free profiles etc.
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<b>Typical applications</b>	<p>Continuous and reliable flow metering in overflow situations</p> <p>Sedimentation detection with ultrasonic level measurement in case of overflow</p> <p>Measurement places featuring high dirt loads and sedimentation</p> <p>Measurement places featuring bed load / debris</p> <p>Measurement places with limited installation options within the channel</p> <p>Reliable flow metering in shooting discharge and low flow levels</p>
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### Contactless Radar Flow Measurement

The contactless low-maintenance radar sensor provides reliable operation even at very high discharge velocities with low flow levels.

Dynamic hydraulic models for various channel shapes based on varying filling levels enable accurate detection of the real flow rate.

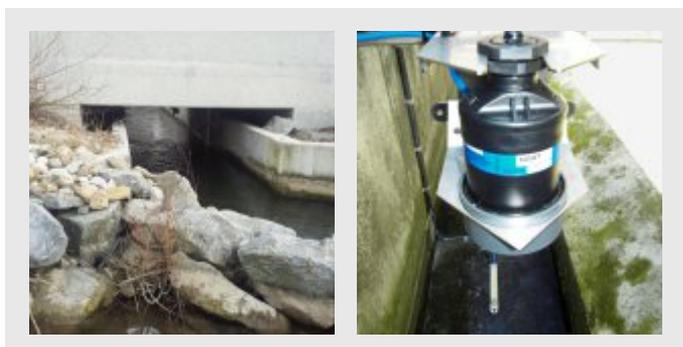
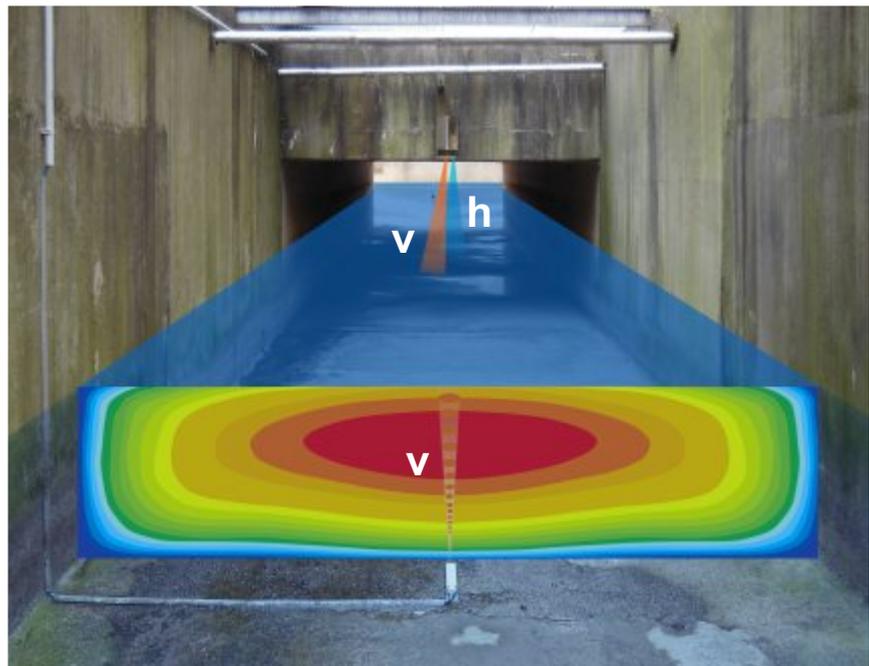
### Ultrasonic Flow Measurement as Overflow Sensor

The ultrasonic cross correlation sensor can be used as overflow sensor. In such cases the sensor provides reliable and accurate results in overflow situations where radar sensors cannot be used for measuring. Thanks to the flow profile detection and the detection of sedimentation on the bottom the flow rate is determined very accurately.

Information on sedimentation is also considered for further measurements using the radar system. The ultrasonic sensor can be used as permanent redundant measurement too.



**Holder bracket**





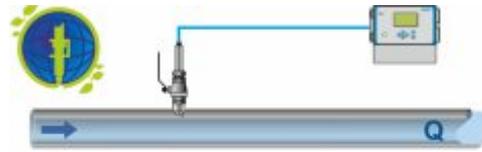
Flow Velocity Measurement Methods	Wastewater	Cross Correlation Method
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Installation EMF



- Interruption of operation
- Installation and Transportation
- 3 Mechanics
- 1 - 2 Days

Installation Ultrasonic Flow measurement NFP



- Install while running
- Easy transportation and installation
- 1 Mechanic
- 2 Hours

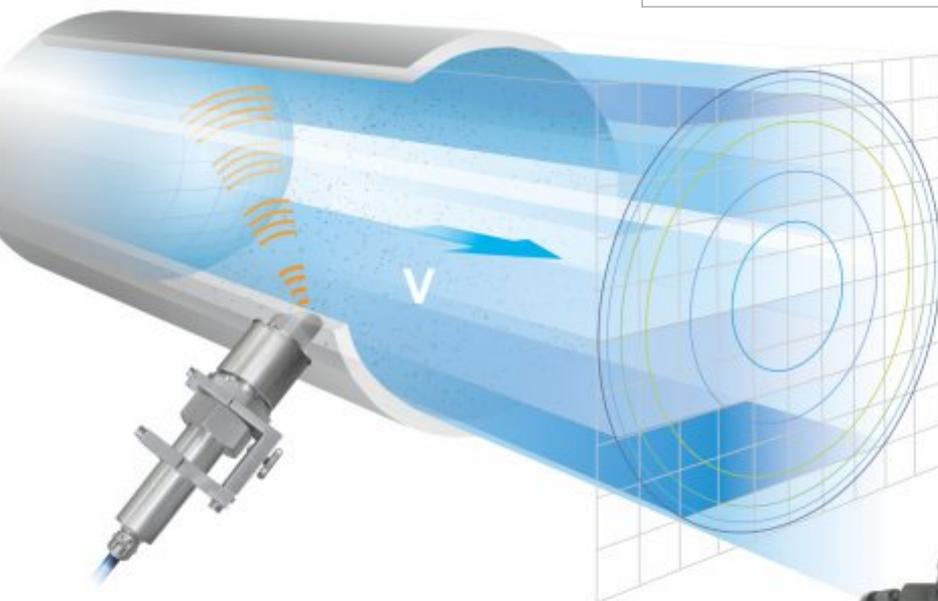
NFP (NIVUS Full Pipe)

Flow measurement in full pipes - the cost-effective alternative to EMF



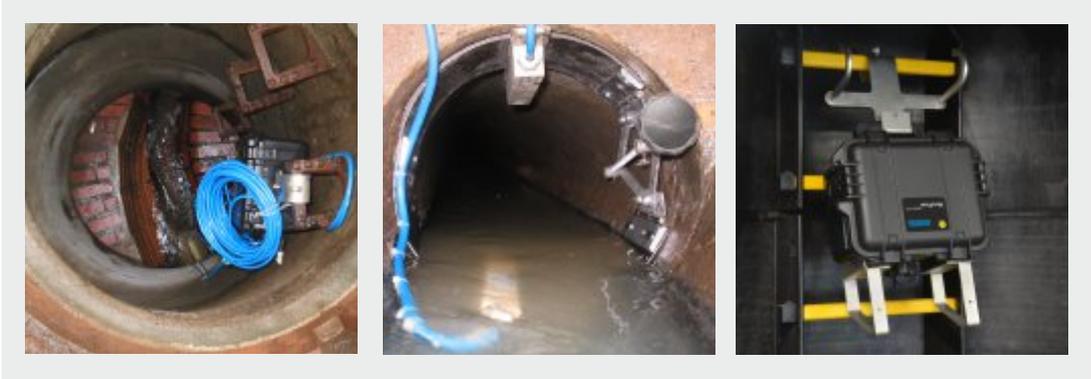
- One Sensor for all diameters
- Upgrading during operation
- Installation without the need to empty the pipeline
- Easy installation and straightforward commissioning
- Low space requirements, can be installed almost anywhere
- Measurement in oily, greasy and muddy fluids

<b>Suitable for shapes</b>	Full pipes up to 800 mm diameter, greater diameters see NivuFlow 750
<b>Typical applications</b>	Pump stations for stormwater, dirty water and combined wastewater, wastewater treatment plants, pressure pipelines, drainage lines, return sludge lines, recirculation lines and many more

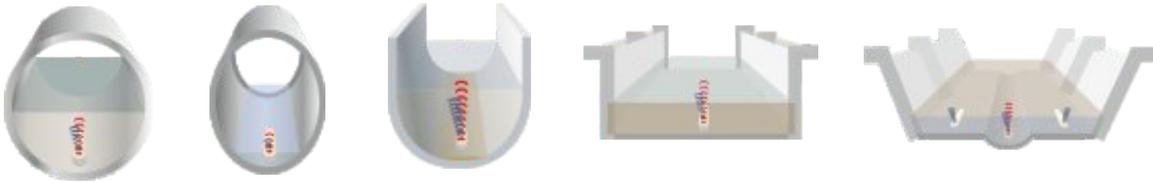


All you need: nozzle, ball valve and sensor as alternative to EMF. Installation without the need to interrupt the process flow - save time and costs





### Portable Measurement Systems



### NivuFlow Mobile 750

For high accurate and portable flow metering in part filled and full channels. The well thought-out power management and the built-in modem allow for long-term measurements with automatic data transmission. NivuFlow Mobile 750 is the successor to the PCM product family..



- Extremely long battery life – 250 days with 5-minute measurement cycle
- Flood protected IP68 locked, IP67 open
- Operation via smartphone, tablet etc.
- Quick start assistant
- Automatic sensor detection
- Up to 3 flow velocity sensors
- Wide range of sensors for best application solutions

<b>Suitable for shapes</b>	Full and part filled shapes such as pipe, egg, rectangular, U, trapezoid, free profiles and many more
<b>Typical applications</b>	Use in Ex areas, calibration basis of hydraulic calculation models, determination of extent of sewer channel restoration, location of extraneous water loads, throttle verification



Flow Velocity Measurement Methods	Wastewater	Cross Correlation Method
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### Extensions for NivuFlow Mobile 750

Easy and flexible sensor installation possible within a few minutes



### Pipe Mounting System

up to DN 2000

The flexible mounting system makes installation especially easy for you. The NFM sensors can be installed within a very short time during mobile use.

- Made of stainless steel, corrosion-proof and wear-free
- Easy installation without tools
- Adaptable and flexible
- Available for DN 150 up to DN 2000

### NPP (NIVUS PipeProfiler)

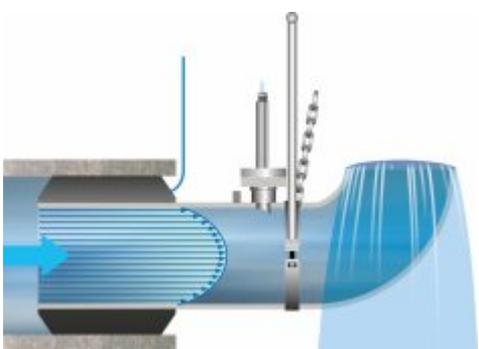
Portable pipe measuring section for NivuFlow Mobile 750

new

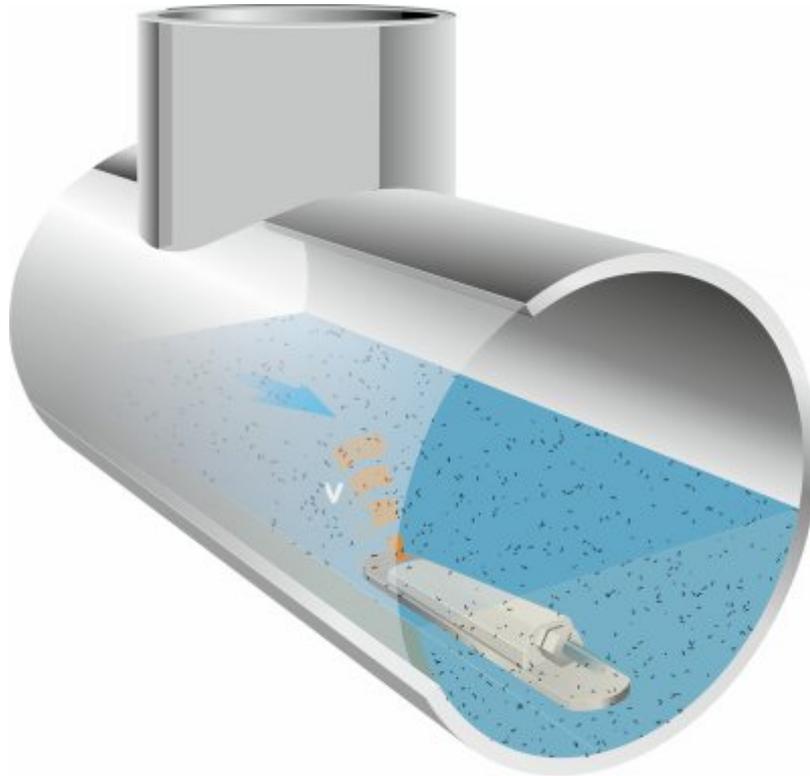


- Variable use in different pipe diameters
- Calibrated measurement system
- For very low flow rates
- Measurement in full filled conditions with ideal flow profile

<b>Suitable for shapes</b>	Pipelines from DN 150 to DN 600
<b>Typical applications</b>	Measurement of very low flow rates, improvement of poor flow conditions



## Permanent Measurement Systems



### OCM F



#### Cost-efficient flow metering for universal use

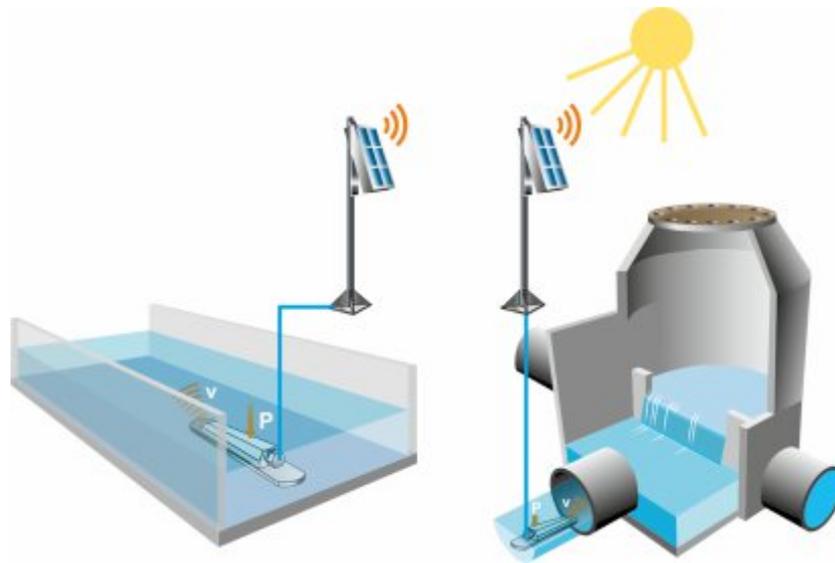
- Intelligent Doppler technology
- Inexpensive to buy
- Reliable and safe to operate, more than 30 years of product experience
- Easy installation without additional constructions
- Built-in data memory, readout via USB
- Measurement in heavily polluted and abrasive media

<b>Suitable for shapes</b>	Part filled shapes such as pipe, egg, rectangular, U, trapezoid, free profiles
<b>Typical applications</b>	Measurements and discharge control in pump stations, stormwater treatment plants and WWTPs



Flow Velocity Measurement Methods	Wastewater	Doppler Method
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Solar Powered Measurement



### NivuLog SunFlow



Self-sufficient measurement for part filled channels in remote locations

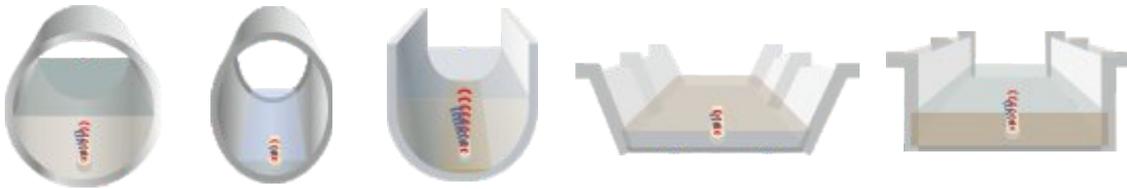
- Mains-independent, solar-powered flow measurement station
- Extremely robust and compact IP68 enclosure
- Solar panel protected by armoured glass
- Built-in rechargeable buffer battery and recharge control
- Direct connection of sensors using encapsulated terminal compartment
- Adjustable measurement and transmission cycles

<b>Suitable for shapes</b>	Part filled pipe, egg, rectangular, U-, trapezoid and free profiles
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<b>Typical applications</b>	Flow measurement in storm water tanks, channel networks, irrigation channels, mine drainage water cleaning units, course of streams, etc.
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## Portable Measurement Systems



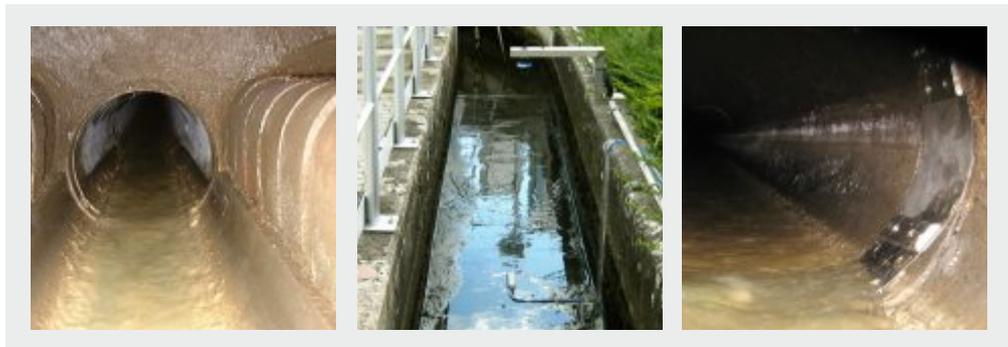
## PCM F



### Cost-effective flow metering for universal use

- Cost-effective installation due to low mounting efforts
- Easy and straightforward commissioning, no programming skills required
- Data easily readable even under poor ambient conditions thanks to large back-lit display
- Integrated controller for discharge control

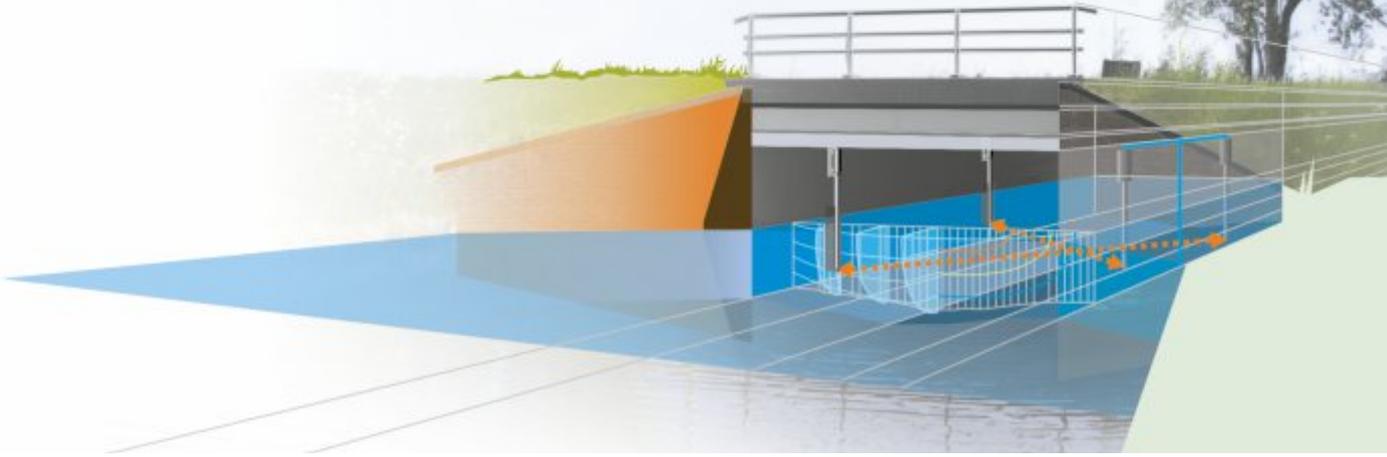
<b>Suitable for shapes</b>	Part filled and full shapes such as pipe, egg, rectangular, U, trapezoid, 2r egg, free profiles and many more
<b>Typical applications</b>	Measurements and discharge control in pump stations, stormwater treatment facilities and wastewater treatment plants





Flow Velocity Measurement Methods	Water	Transit Time Method
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### Permanent Measurement Systems



### NivuFlow 650

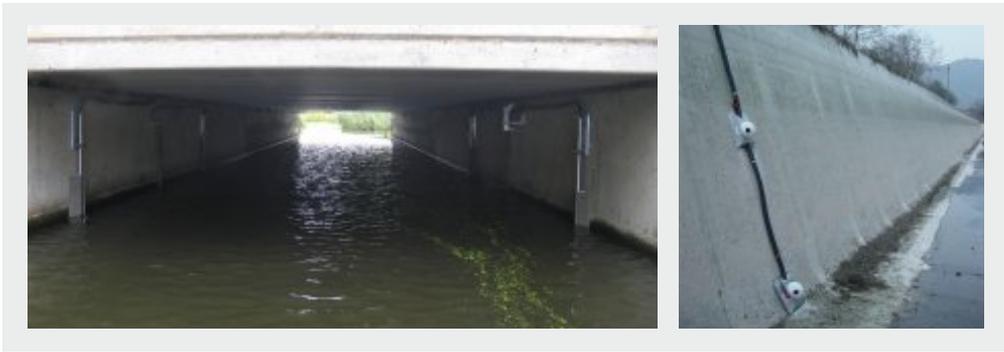
High accurate flow measurement for clean to slightly polluted water in pipes, channels and surface water

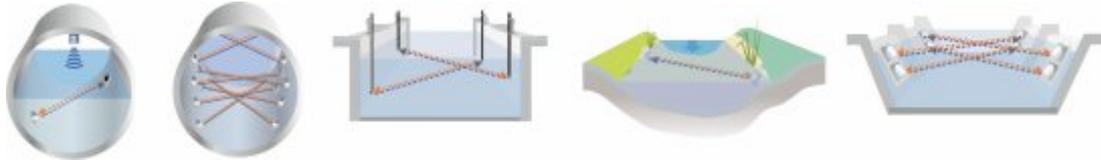


- Ultrasonic transit time difference measurement
- Single or multi path measurement, up to 32 measurement paths with extension modules
- Uncomplicated integration into existing control systems thanks to universal interfaces
- Easy commissioning through sensor alignment menus
- IP 68 field enclosure available

<b>Suitable for shapes</b>	Full and part filled pipes, rectangular channels, natural streaming water and many more
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<b>Typical applications</b>	Measurement in surface water such as rivers, channels, irrigation systems, drainage systems as well as cooling water, process water, hydropower plants, penstock monitoring, turbine efficiency monitoring and many more
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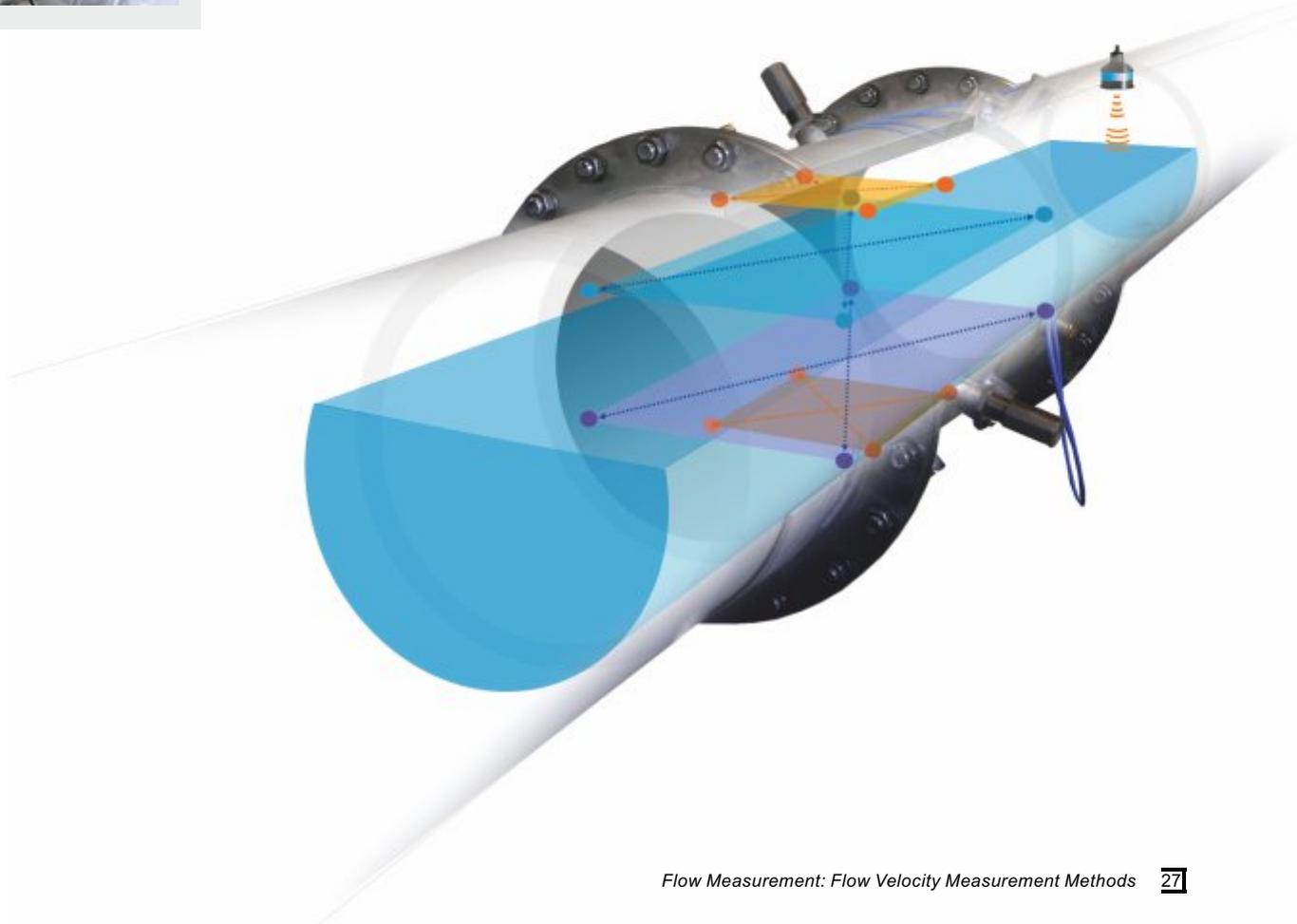
### Measurement in open channels

- Reliable measurement even under difficult conditions such as undefined cross section profiles or moving river profiles
- Wide range of sensors for vertical side walls as well as for free shapes
- Reliable measurements even in very wide channels and rivers
- Single path and multi path measurement possible



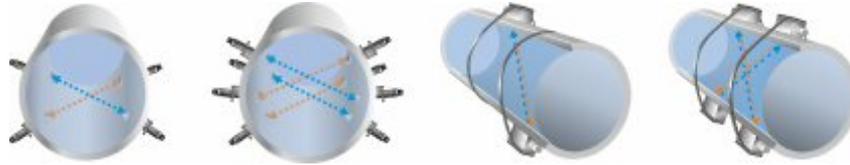
### Measurements in pipes

- Reliable flow measurements under pressurised conditions and in pressureless pipes
- Wide range of sensors for optimum measurements
- Single path and multi path measurements possible
- Installation without process shutdown





Flow Velocity Measurement Methods	Water	Transit Time Method
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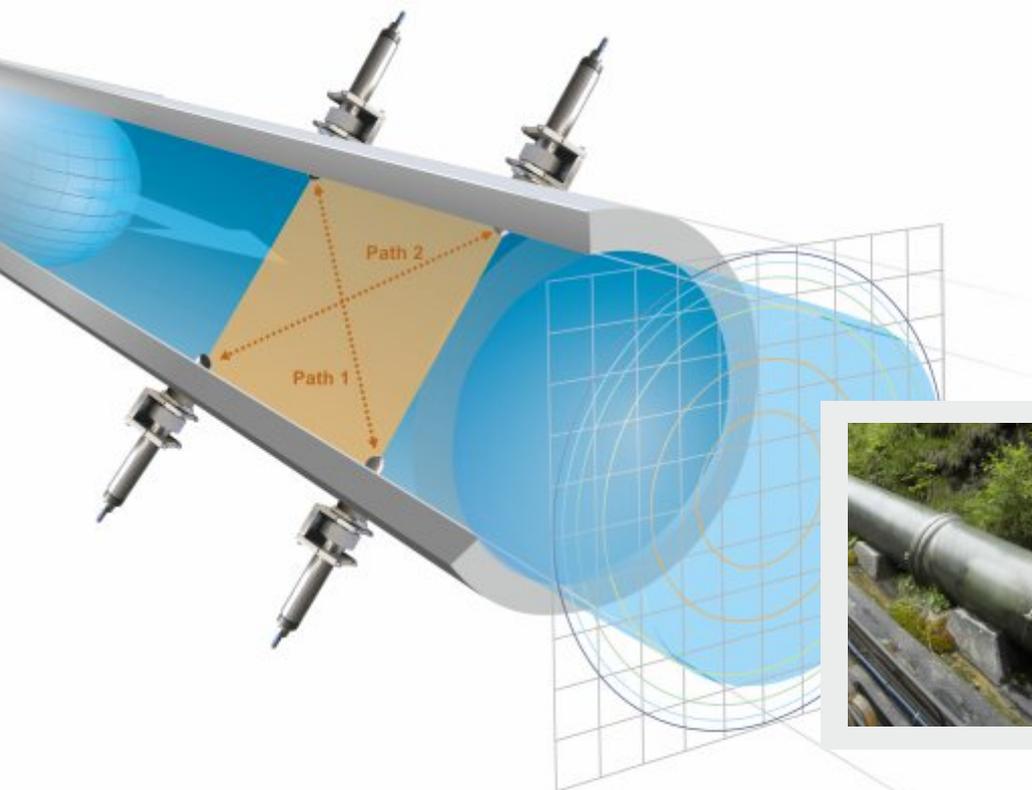
### NivuFlow 600



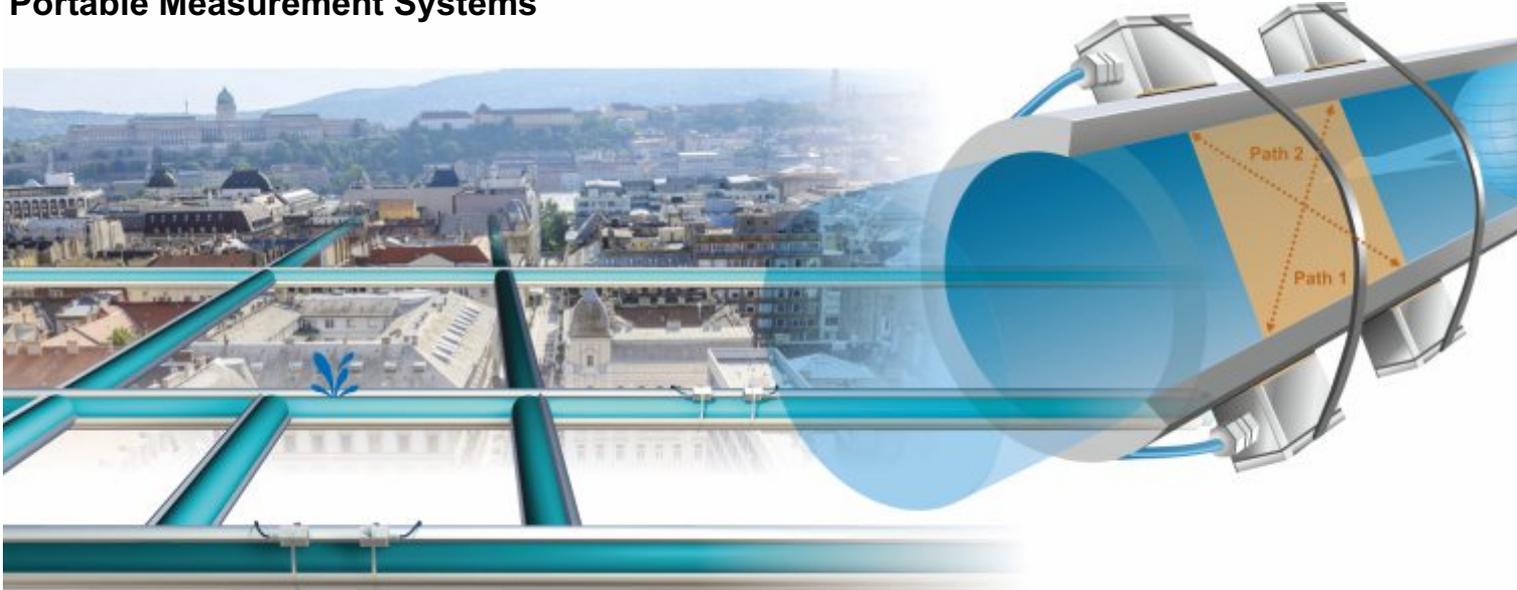
Flow measurement for clean to slightly polluted water in full pipes

- Ultrasonic transit time measurement
- Single path or multi path, up to 32 measurement paths with extension modules
- Flow measurement with pipe sensors, wedge sensors or contactless clamp-on sensors
- Easy installation without process shutdown
- Easy commissioning due to sensor alignment in dialogue mode

<b>Suitable for shapes</b>	Full pipes between DN200 and DN12000 (insertion) or between DN80 and DN6000 (Clamp-On)
<b>Typical applications</b>	Suitable for retrofitting Process water in pipes, cooling water, circulation systems, hydropower plant, water supply, production and treatment of drinking water, slide valve monitoring, turbine utilisation monitoring



## Portable Measurement Systems



### NivuFlow Mobile 600

Robust portable flow meter using the transit time method. For long-term monitoring of full pipes. The measurement data can be transmitted via integrated GPRS Modem to the NIVUS Web portal.



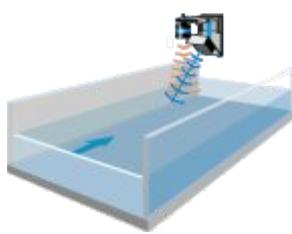
- Monitoring of flow, temperature and pressure
- Flood protected: IP68 locked, IP67 open
- Extremely long battery life
- Rechargeable battery can be replaced by user
- Operation via Smartphone, Tablet, Notebook
- For extreme environmental conditions
- Up to 2 measurement paths

<b>Suitable for shapes</b>	Full pipes
<b>Typical applications</b>	Leakage detection, pump verification analysis of users behaviour in water supplies, intakes and outlets conducting, cooling water or circulation systems, monitoring of process water and service water





Flow Velocity Measurement Methods	Wastewater	Radar Method
	and water	



### NivuFlow 550

Contactless flow measurement for part filled channels in clean and wastewater



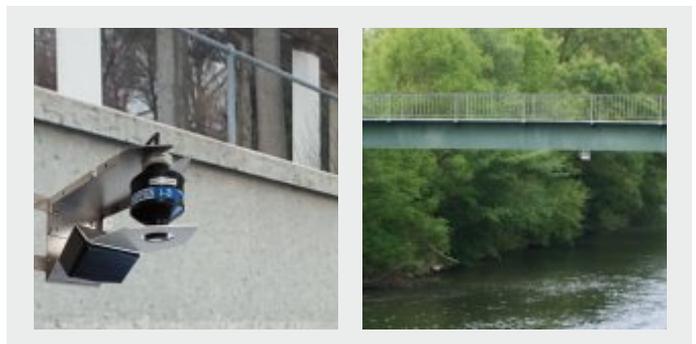
- Contactless flow velocity measurement
- Installation without interrupting processes
- Determination of surface velocity
- Low maintenance
- Easy installation and operation
- For use in aggressive/abrasive media



<b>Suitable for shapes</b>	Part filled channel shapes such as pipe, egg, rectangular, U-profile, trapezoid channels and free profiles etc.
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<b>Typical applications</b>	Surface water, cooling water, process water, alpine rivers and creeks, wwtp intake and discharge
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### Holder bracket



## Hydraulic Methods



The hydraulic methods are used to calculate flow  $Q$  from level  $h$  considering a  $Q - h$  relation.

$$Q = k \cdot f(h)$$

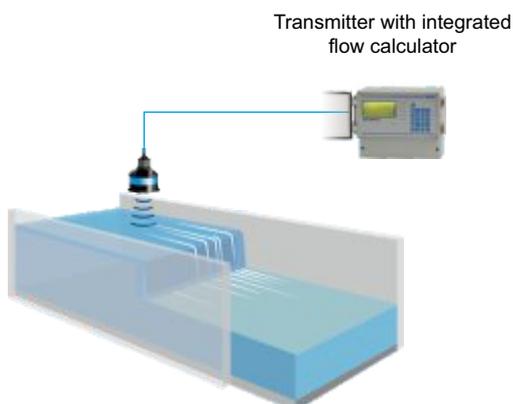
Defined  $Q - h$  relations can be found at hydraulic constructions such as weirs, Venturi flumes etc.



### Measurements on weirs

Different kinds of weirs (e.g. overflow weirs, triangular weirs and similar) are in use depending on the flow volumes.

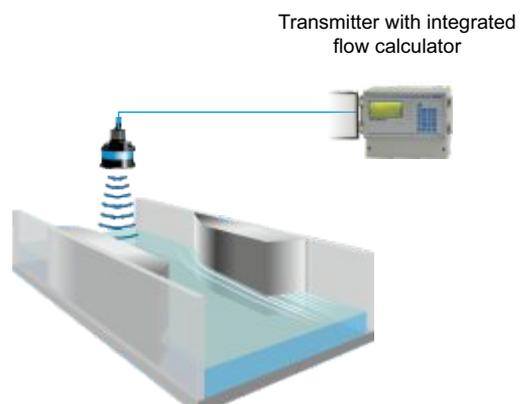
The overflow height is a measure for the flow.



### Measurements on Venturi flumes

Venturi measurements are flow measurements in particularly shaped flow channels, where a contraction creates a change of the flow velocity from streaming to shooting.

Impoundage height and flow correlate exponentially with each other: this allows to calculate flow from the flow level measurement.





Flow Velocity Measurement Methods

Measurements at weirs / Venturi flumes

### Venturi Flumes



The dimensions are adjusted to the channel width and to the maximum expected flow volume. The Venturi flume is calculated according to DIN 19559 Part 2.

- Available as single half shells or as complete unit in many sizes
- High-quality workmanship, made of stainless steel

### HydraulicCalculator Plus



Flow measurement system for the calculation of overflow volumes according to DWA A111 on sills and weirs tending to backwater formation or with tangentially oncoming flow as well as in special constructions.

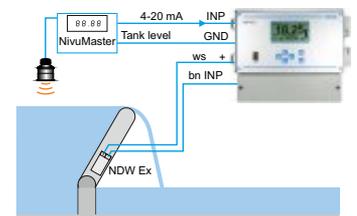
- Large graphic display 128 x 64 pixel
- Comfortable operation in dialog mode
- Calculation according to DWAA111 implemented
- Direct connection of 2- and 3-wire sensors possible

### NDW

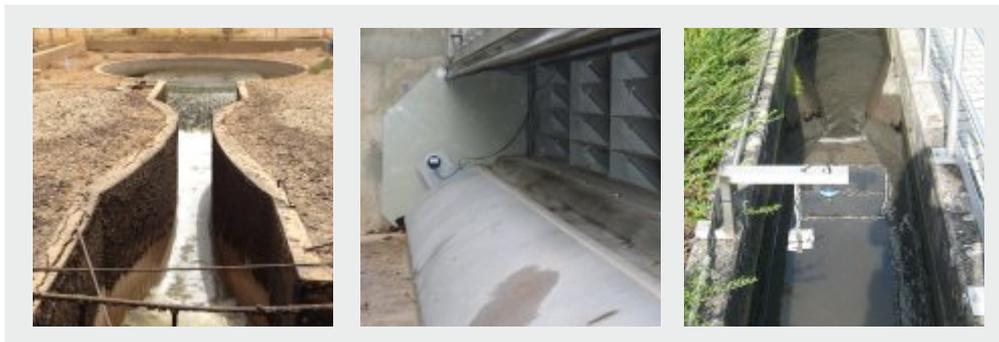


The NDW Inclinometer utilises a capacitive measurement method to measure the inclination (angle measurement) on movable weir flaps. This allows for discharge volume measurement with the aid of the “HydraulicCalculator Plus“ transmitter.

- Ex approval (optional)
- Wear-free and maintenance-free
- Robust and corrosion-resistant
- Submersible (IP 68)



Measurement with storage level correction



## NivuSoft

Precisely adjusted functions for processing of measurement data



- Visualisation of measurement data
- Project administration
- Data evaluation
- Calculating functions
- Statistics evaluation
- Reporting
- Expansion options



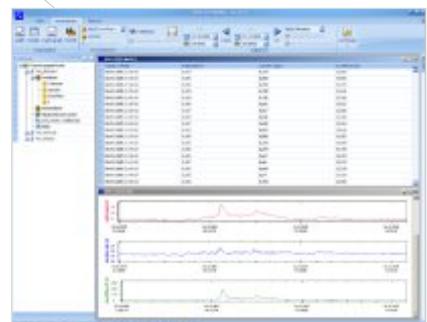
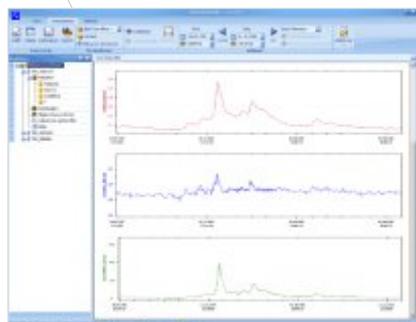
NivuSoft is a software with precisely adjusted functions for processing of measurement data in the water industry. NivuSoft provides a variety of options for the visualisation and evaluation of measurement data up to reporting functions. It is possible to e.g. indicate multiple hydrographs from different measurement places in one common graph.

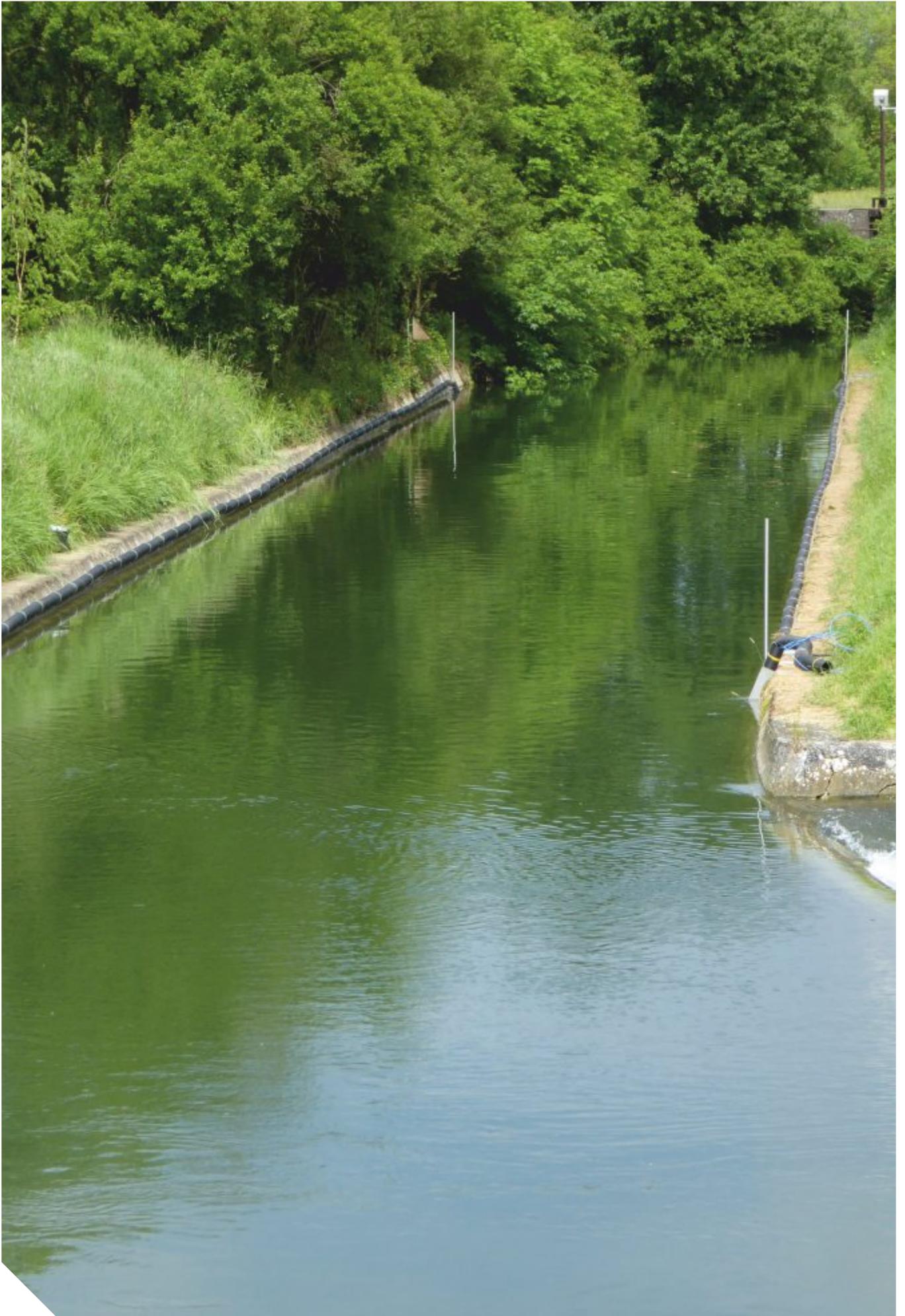
This allows to quickly monitor the discharge behaviour within the channel network and is an effective tool to verify plausibility.

Modifications, zoom settings or special views in synchronised graphs, tables or statistics are indicated in all components simultaneously.

NivuSoft provides all common calculating functions required to analyse measurement data as known from hydraulics and fluid mechanics. Flow calculation suitable for all shapes according to DWA and calculation of overflow volumes complete the range of functions. NivuSoft provides versatile options from the documentation of measurement places through indication of readings as tables and graphs to special reports such as evaluation of extraneous water.

Appealing design, clear control elements as well as drag&drop functions ensure intuitive operation.







## High-accurate and universal measurement solutions

### Continuous Measurement

NIVUS provides ultrasonic measurement systems for non-contacting measurement of level, distance, empty space or volume. The units are suitable for many measurement and control functions (e.g. on pumps). The ultrasonic measurement may not be suitable for liquids tending to foam formation. In addition, therefore, we offer hydrostatic measurement systems.



Continuous Measurement

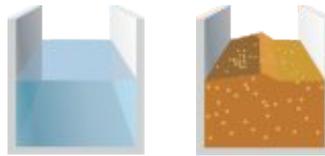
Contactless Measurement Principle

Liquids

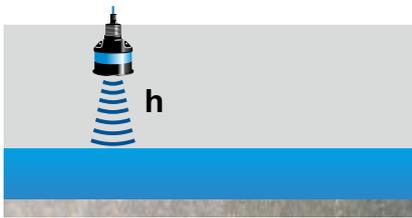


Liquids

Bulk Solids

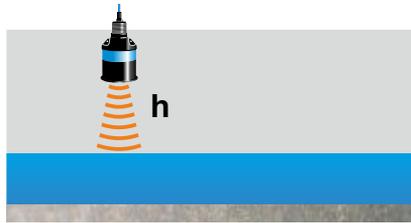


Ultrasonic Measurement Principle



The sensor continuously transmits ultrasonic impulses which are reflected from the surface of the liquid. The reflected waves are detected by the sensor again. Level, distance or volume are calculated depending on the sound transit time.

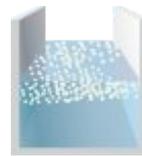
FMCW Radar Measurement Principle



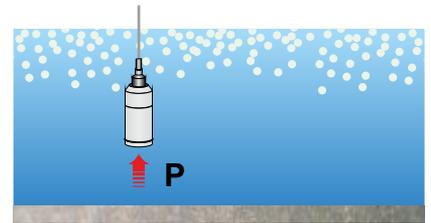
The FMCW radar sensors are emitting a continuous microwave signal. A frequency difference  $\Delta f$  is determined by comparing the transmitted signal with the received signal. This frequency difference is direct proportional to the distance which the transmitter converts to a filling level. Radar measurements are insensitive to gas, pressure, mist, wind or temperature fluctuations.

Measurement in Medium

Liquids, also with foam formation



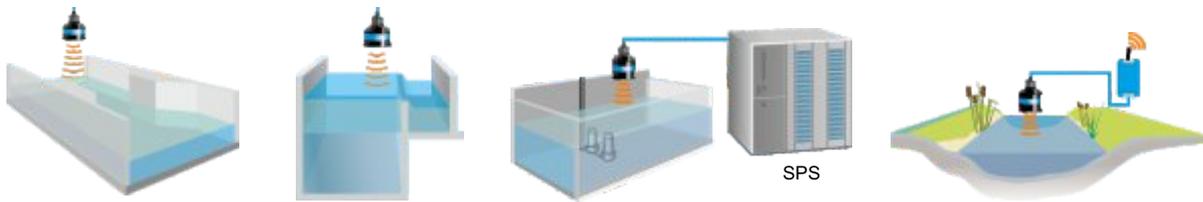
Hydrostatic Measurement Principle



Pressure sensors convert the mechanic parameter "pressure" into a direct proportional electric signal. The built-in amplifier converts the electric sensor signal into an easy-to-handle standard signal of 4...20 mA.



## Compact Ultrasonic Level Meter



### i-Series



**Install sensor, connect, done!**

**Ultrasonic sensor with integrated transmitter. Designed for use under poor ambient conditions such as moisture, aggressive vapours and dust. Easy installation, no additional efforts and space necessary since there is no transmitter required.**

- Sensor as independent, comfortable level measurement
- Ideally suitable for battery operation through quick measurement times
- Resistant to humidity, aggressive environments and heavy temperature fluctuations
- IP68 protection
- Alarm output in case of flooding possible
- Direct connection to SPS possible
- Easy integration into control systems
- DATEM - digital echo processing with automatic false echo avoidance
- Easy wiring directly to terminal unit in Ex-areas (no Zener barrier required)

Typical Applications	Measurement of distance, level and volume under poor and less accessible conditions, e.g. in pump stations, special constructions, sewerage channels and water purification.
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Type	i-3	i-6	i-10	i-15
<b>Range</b>	0,125 to 3 m	0,3 to 6 m	0,3 to 10 m	0,5 to 15 m
<b>Resolution</b>	1 mm	2 mm	3 mm	5 mm
<b>Meas. uncertainty</b>	2 mm	4 mm	3 mm	5 mm
<b>Temperature</b>	-40 to +80°C			
<b>Sonic angle ↴</b>	<10°			
<b>Ex approval</b>	II 2 GD Ex m IIC T4, II 1 GD Ex ia IIC T4			
<b>Cable length</b>	5 m, 10 m, 20 m, 30 m, 50 m and 100 m; special lengths on request			
<b>Outputs</b>	4 - 20 mA (3,8 - 22 mA, 2-wire), HART® (for programming via NIVUS software)			
	<b>Front thread for i-3, i-6 and i-10, flood protection head for all types without front thread</b>			

to Terminal Device

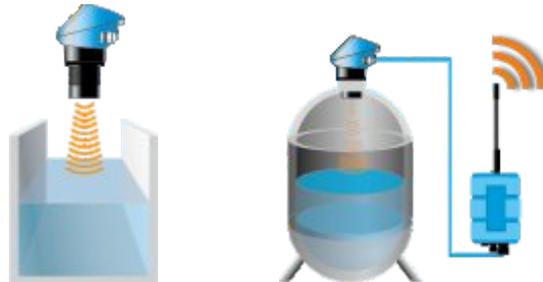


## LEVEL MEASUREMENT

Continuous Measurement

Ultrasonic

### Compact Ultrasonic Level Meter



### NivuCompact

Compact echo sounder with on-site display and keypad for direct parameterisation



- Combi unit including sensor and transmitter
- Measuring ranges from 0.2 to 10 m
- Digital echo processing and linearisation
- Ideal for battery operation due to very quick startup and measuring times
- Integrated temperature compensation

#### Typical applications

Level and volume measurement of liquids in vessels and containers





Continuous Measurement
Ultrasonic

## Sensors: P-Series



The ultrasonic sensors with integrated temperature compensation for connection to NivuMaster series transmitters provide many possibilities for measurement of liquids and bulk solids.

- Flexible installation: maximum cable length 1000 m
- Very low in maintenance due to non-contacting measurement
- Versatile through measurement ranges from 0.07 m to 40 m
- Submersible thanks to IP 68 protection
- Versions with PVDF enclosure for use in aggressive liquids
- Safe operation through Ex approvals Zone 0, 1 and 2 according to ATEX

<b>Typical applications</b>	Measurement of distance, level and volume in liquids e.g. for pump stations, special constructions, sewerage channels, surface water bodies and vessels
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Typ	P-M3	P-03	P-S6	P-06	P-10	P-15	P-25	P-40
<b>Range</b>	0.07 to 2.4 m	0.125 to 3 m	0.2 to 6 m	0.3 to 6 m	0.3 to 10 m	0.5 to 15 m	0.6 to 25 m	1.2 to 40 m
<b>Resolution</b>	+/- 0.5 mm		+/- 2 mm					
<b>Measurement uncertainty</b>	1 mm		0.25 %					
<b>Protection</b>	IP 68							
<b>Temperature</b>	-30°C to 95°C (Ex -30°C to 75°C)		-40°C to 95°C (use in Ex zone -40°C to 75°C)					
<b>Sonic angle ↴</b>	12°		12°		10°	9°	10°	7°
<b>Ex approval</b>	II 2GD Ex m II T6 (II 1GD Ex ia IIC T6 also available, only in connection with intrinsically safe transmitter (ia))							
<b>Cable length</b>	5 m, 10 m, 20 m, 30 m, 50 m and 100 m; special length upon request							

to NivuMaster Series Transmitter



## Sensors: R-Series



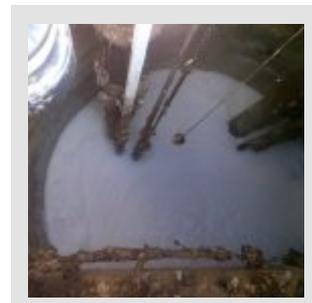
The new R-Sensor is a radar sensor for continuous contactless level measurement in liquids, pastes, sludges and bulk solids.

- Latest 63 GHz FMCW radar technology
- Insensitive to gas, pressure, mist or temperature fluctuations
- Compatible to all NivuMaster versions
- Measurement through plastic containers
- Compact and easy to install
- Robust and flood-proof IP68 enclosure
- ATEX approval for zones 0/1

Range	0.077 - 16 m
Resolution	+/- 1 mm
Measurement uncertainty	+/- 2 mm
Sonic angle ↗	8°
Ex Approval	II 2 G Ex mb IIC T4 Gb (Zone 1) / II 1 G Ex ia IIC T4 Ga (Zone 0)
Protection	IP68 / NEMA 6P
Temperature	-40°C to 80°C
Dimensions	130 x 90 mm
Cable length	5 m, 10 m, 20 m, 30 m, 50 m and 100 m; special length upon request

<b>Typical applications</b>	Measurement of distance, level and volume of liquids, pastes, sludges and bulk solids even under poor conditions e.g. in pump stations, special constructions, sewerage channels, silos and containers.
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to NivuMaster Series Transmitter

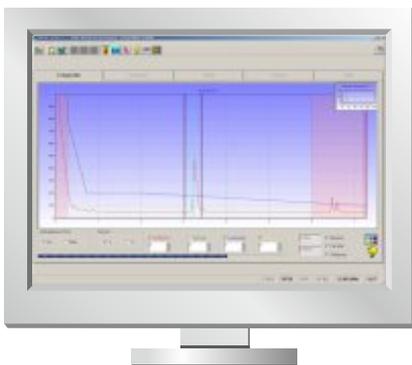
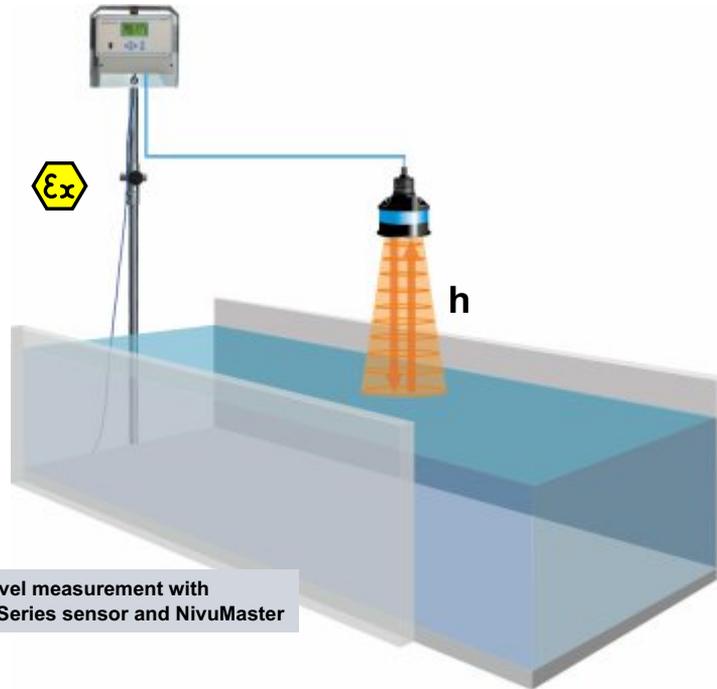


Continuous Measurement

Ultrasonic

FMCW-Radar

## Transmitter: NivuMaster-Series



Convenient evaluation of readings on PC

The connected P- and R-Series sensors are supplied by the NivuMaster transmitters which moreover process signal data and indicate computed measurement values. Ideal for measurement and control in level and volume applications.

- Universal use for almost all liquids and bulk solids, measurement of level, distance, volume, difference and flow
- Alarms in case of flooded sensors possible
- High measurement reliability through integrated agitator avoidance
- Connection of maintenance-free, Ex-protected ultrasonic and radar sensors
- Up to 6 relays and galvanically isolated mA outputs
- Easy echo analysis and setting of parameters via PC
- Integrated emergency power switchover



Continuous Measurement	Ultrasonic
	FMCW-Radar

**Table Of NivuMaster Series Transmitters**

		NivuMaster L-2	NivuMaster 3 Relays
			
Level measurement/ distance measurement		+ + / +	+ +
Volumetric measurement/ empty space measurement		+ + / +	+ +
Pump control/ slide valve control		-	+
Volume measurement		-	+ +
Comparative measurement		-	-
Measurement on stormwater overflow tanks		-	+ +
<b>Operation</b>			
Display		Optional	+
Keys		Optional	+
<b>Inputs</b>			
Sensors / optional 4-20 mA / digital		1 / - / -	1 / - / -
<b>Outputs</b>			
Relays / mA output		2 / 1	3 / 1
Rs232 interface		1	1
<b>Construction</b>			
Wall mount IP 65 / DIN rail mounting		+ / -	+ / +
19" version (rack mount)		-	+
Panel mount		-	+
Ex approval according to ATEX		Zone 0, 1 und 2	Zone 0, 1 und 2
		Compact standard model with 2 relays for level and volume measurement.	For measurement of level and volume as well as for pump control and extended control tasks.

**NivuMaster 5 Relays**



**NivuMaster LD-5:2**



**NivuMaster LF-5:2**



**NivuMaster Plus**



	+	+	+	+
	+	+	+	+
	+	+	+	+
	+	+	+	+
	+	+	+	+
	+	+	-	+
	+	+	+	+
	+	+	+	+
	+	+	+	+
	2 / optional 4-20 mA / -	2 / - / -	1 / - / -	2 / optional 4-20 mA / 7 x digital
	5 / 1	5 / 2	5 / 2	6 / 1
	1	1	1	1
	+	+	+	- / -
	+	+	+	-
	+	+	+	+
	Zone 0, 1 and 2	Zone 0, 1 and 2	Zone 0, 1 and 2	Zone 0, 1 and 2
	Extended NivuMaster 3 Relays model including additional control options.	Model for connection of 2 sensors; particularly for comparative measurements on screening plants. For measurement and output of difference and level.	Particularly for use in stormwater treatment plants. For independent measurement and output of liquid level and discharge volume using one single sensor.	Model specialised for pump management. For comfortable control of up to 5 pumps and error message output.





Comparative measurement using hydrostatic pressure probes

NIVUS provide individual solutions for various applications in the field of pressure measurement and hydrostatic level measurement.

Hydrostatic measurements are always to prefer as long as there are problems due to foam formation on the surface of the liquids to measure.

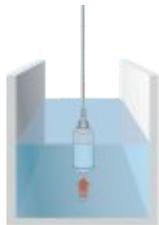
NIVUS hydrostatic measurement technology can be used universally, is robust and provides a high degree of operational reliability. Installation is easy thanks to wire probes and 2-wire loop powered technology.



## Pressure Probes For All Applications

You can find appropriate pressure probes to connect to NivuCont Plus, NivuCont S transmitters or other evaluation devices with 4-20 mA inputs for each measurement application.

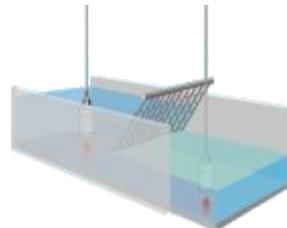
Level Measurement



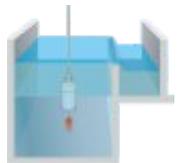
Volumetric Measurement



Comparative Measurement



Measurements On Stormwater Overflow Tanks



### Submersible/Suspended Probes

for clean to heavily polluted liquids

NivuBar Plus II



NivuBar H III



NivuBar G II



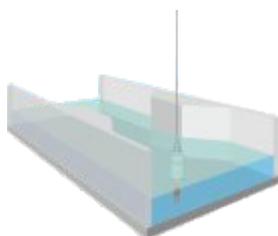
<b>Diaphragm</b>	Ceramics	Ceramics	Ceramics
<b>Measurement principle</b>	capacitive	capacitive	capacitive
<b>Ex Approval</b>	Zone 0 standard	Zone 0 optional	Zone 0 standard
<b>Measurement range</b>	1, 2, 4, 6, 10 m water column/ other on request	0 - 20 m water column adjustable/ other on request	1, 2, 4 m water column/ other on request
<b>Application</b>	suspended on cable	suspended on cable	mounting 1" thread
	<ul style="list-style-type: none"> <li>• Level monitoring in open tanks, flumes and basins</li> <li>• Wastewater treatment plants, water processing, pump stations, stormwater holding tanks, water supply</li> </ul>		

- High operational safety through integrated overvoltage protection
- Low installation efforts due to 2-wire loop powered technology
- Reliable operation in Ex areas thanks to Zone 0 protection
- Sensor bodies available in various materials such as PVC, Teflon or Hastelloy: resistive against aggressive liquids such as acids or bases
- Suspended probes available with only 17 mm diameter for measurements in wells or depth measurements

**Pump Control**



**Volume Measurement**



**Pressure Measurement**



**Pressure Measurement**



**Screw-In Probes**

**for clean to slightly polluted liquids**

**AquaBar II**



**AquaBar BS**



Stainless steel  
piezoresistive

Stainless steel  
piezoresistive

-  
2, 4, 6, 10 m water column/  
other on request

-  
2, 4, 6, 10 m water column/  
other on request

suspended on cable

suspended on cable

- Environmental technology: water supply, wastewater treatment plants
- Level monitoring in open tanks, flumes and basins

- Depth measurement in wells
- Groundwater level measurement

**for clean to heavily polluted liquids and gases**

**HydroBar G II**



Ceramics  
capacitive

Zone 0 optional

1, 2, 4, 6, 10 m water column/  
other on request

screw-in using 1,5" thread

- Level measurement in closed tanks and pipe systems
- Environmental technology: water supply, wastewater treatment plants

**for clean to slightly polluted liquids and gases**

**UniBar E II**



Stainless steel  
piezoresistive

Zone 0 optional

1, 2, 4, 6, 10 m water column/  
other on request

screw-in using 1/2" thread

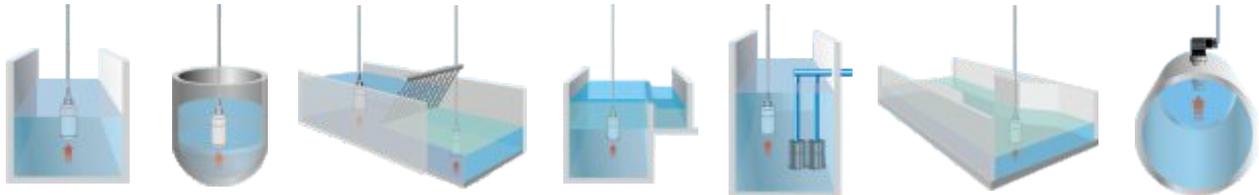
- Level measurement in closed tanks and pipe systems
- Water supply

**To Transmitter**



Continuous Measurement Hydrostatic, Pressure

Transmitters



NivuCont Plus

Multifunctional process transmitter for complex measurement and control tasks in connection with hydrostatic 2-wire pressure probes



Field enclosure



19" version (rack and panel mount)

- Universal use thanks to versatile control and calculation operations
- Parameter backup via PC possible
- Low installation efforts due to 2-wire technology
- Flexible through various enclosure versions (19" version, rack and panel mount; field enclosure)
- Easy and comfortable start-up without the need for programming skills through multilingual menu operation
- Very good readability even under poor conditions thanks to large back lit graphic display
- Complex control tasks feasible using extended pump management

Typical Applications	
	Level measurement for stormwater overflow tanks, wastewater treatment plants, pump sumps, water supply pump management, tank cleaning control, comparative measurements on rakes, overflow volume measurements, trend detector, volume calculation, linearisation

NivuCont S

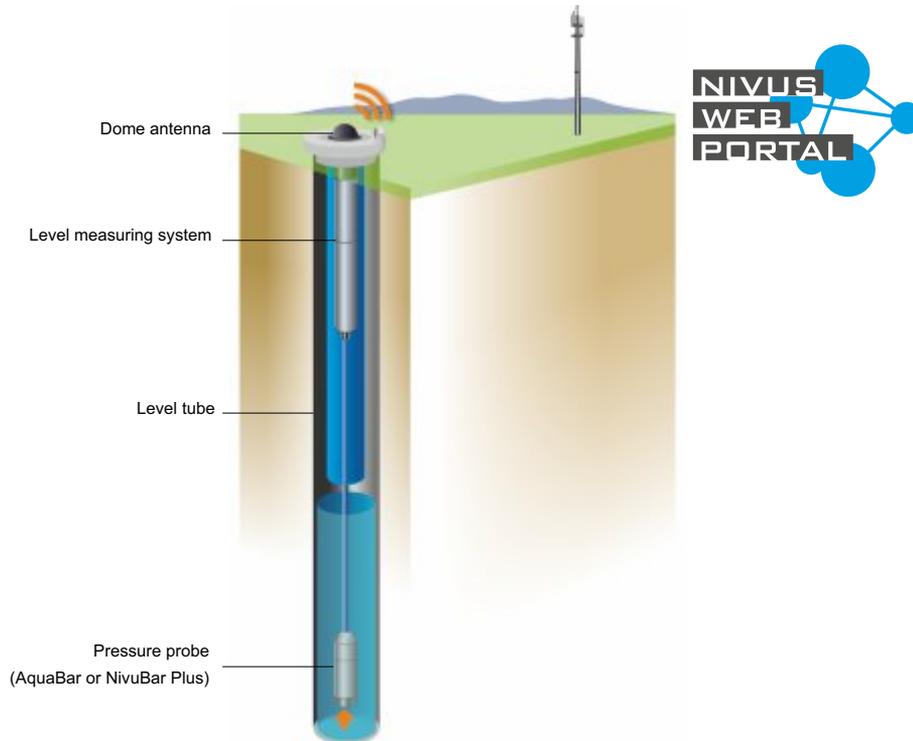
Process transmitter for simple measurement and control tasks in connection with hydrostatic 2-wire pressure probes



- Variable use through DIN rail mounting or panel mount
- Easy operation, clear LED display

Typical Applications	
	Level measurement for stormwater overflow tanks, wastewater treatment plants, pump sump, water supply pump switchover, small waterworks or pump stations

## Self-Sufficient Level Measurement Systems



### Level Data Collector



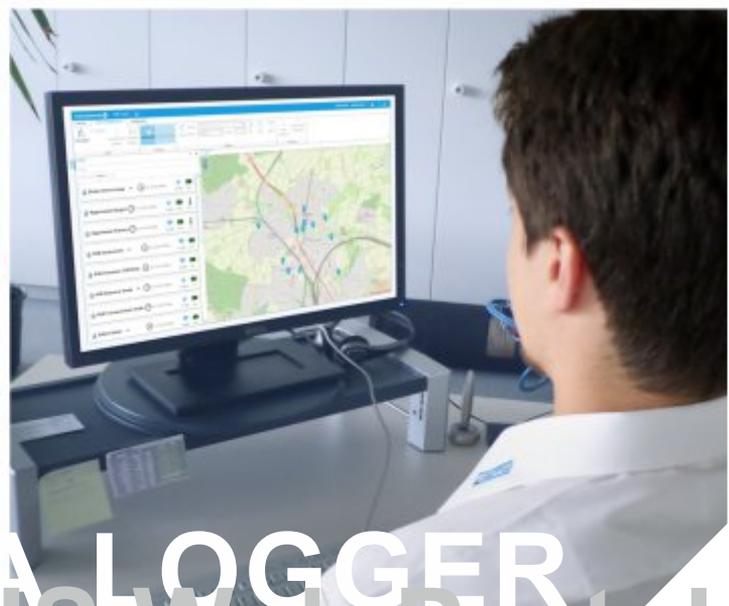
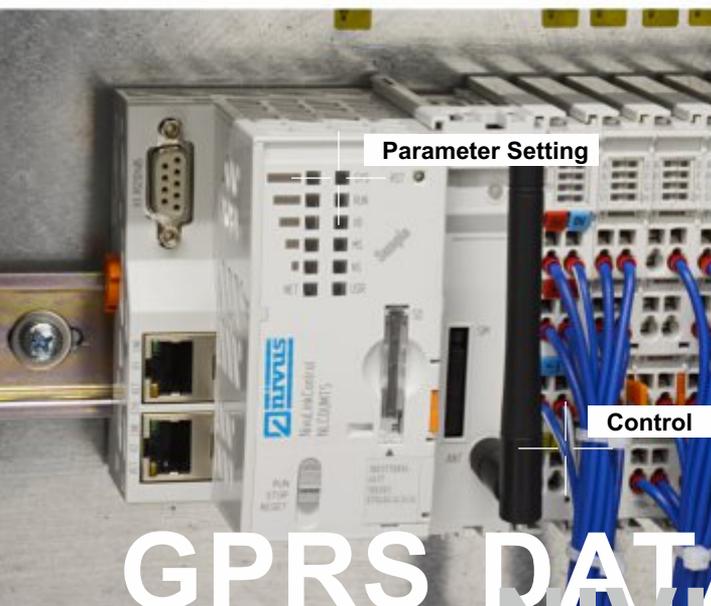
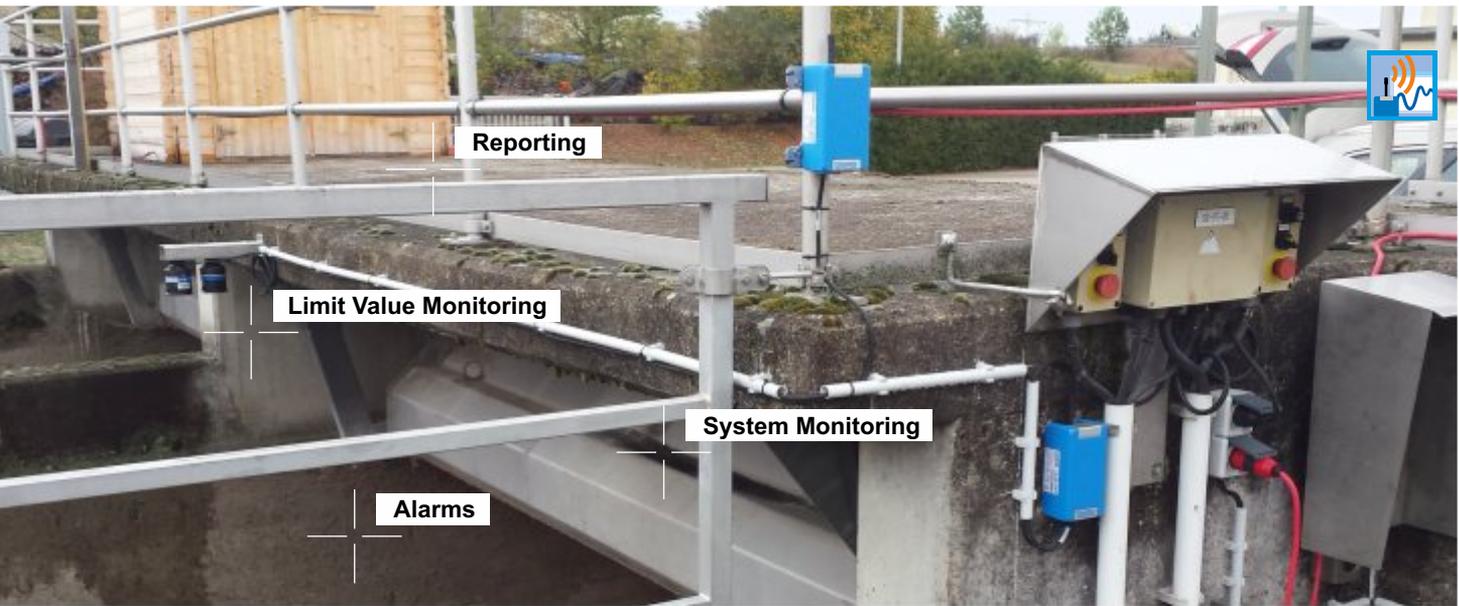
Level measurement system with submersible pressure probe for data transmission via GPRS to the NIVUS web portal

- Extremely robust stainless steel enclosure, protection Ip68
- Data transmission via GPRS interface possible
- Extra long lifetime through MicroPower® technology
- Terminal clamps for 2-wire systems such as pressure probes or compact echo sounder. This allows to connect any sensor without problems

**Typical applications**

Level measurement





# GPRS DATA LOGGER

## NIVUS Web Portal

### GPRS Data Logger

The NIVUS GPRS data loggers enable stand-alone operation of measurement places e.g. for level and tank monitoring, level measurement and limit level monitoring independent from mains power. Recorded data are transmitted to the NIVUS Web Portal using GPRS.

Excellent energy efficiency, reliable and stable transmission of readings and the sturdy construction of the data loggers allow to establish an almost maintenance-free and cost-efficient measurement data network.

### NIVUS Web Portal

The "NIVUS Web Portal" is a comprehensive data management system with direct worldwide access. It is here where the readings transmitted via GPRS from the data logger are saved. Moreover, there are many possibilities available for the direct analysis of measurement data, system verification and for data forwarding through alerting options.



GPRS Data Logger and NIVUS Web Portal

**Data logger with GPRS transmission to NIVUS Web Portal**

- Unlimited access to your measurement data via Internet
- Extremely long (rechargeable) battery life of up to 5 years
- Extensive options such as alerting, monitoring of limit values and computing via NIVUS Web Portal
- Stable and cost-efficient data transmission

GPRS Data Logger



**NivuLink Micro**

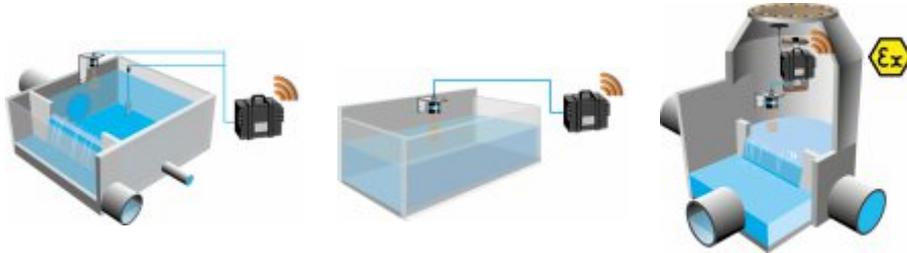


**Self-sufficient IoT Gateway**

- Independent system with long battery lifetime up to 5 years
- Robust and compact IP 68 enclosure
- 4 universal inputs
- TLS encryption
- Free adjustable measurement and transmission cycle
- External power supply e.g. via solar panel possible
- Event-based logging and transmission
- Switchable power supply for up to four 2-wire sensors
- NIVUS SIM logging in with best available service network and 1 year of free data transmission (customer SIM can be used)

<b>Typical applications</b>	Level monitoring, level measurement on stormwater tanks, monitoring of silo plants and many more
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## GPRS Data Logger



### NivuLevel Mobile

101011  
new  
101011

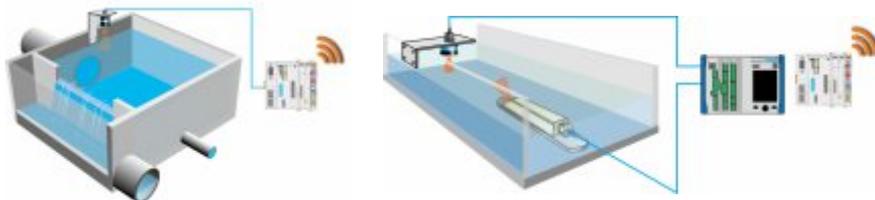


#### Self-sufficient GPRS/UMTS data logger for Ex areas

- Automatic transmission of measurement data
- Suitable for use in Ex zone 1
- Provides power supply for sensors
- Extremely long rechargeable battery life
- Battery can be easily replaced by operator
- Flood protection: IP68 locked, IP67 open
- Operation via Smartphone, Tablet, etc.

#### Typical applications

Event logging on stormwater treatment plants, level measurement in water bodies, level measurement in sewers with storage capacity



### NivuLink Control Compact IoT Gateway



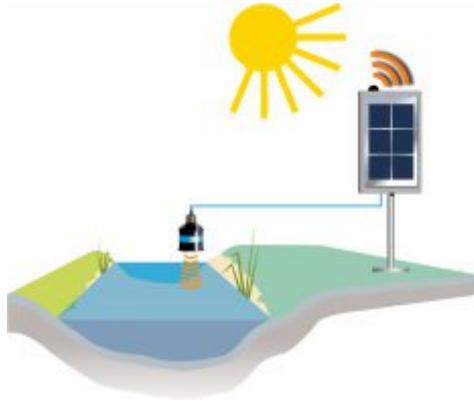
- Signal inputs via WAGO I/O boards
- Quad band GPRS modem optional
- TLS encryption
- Connection to S7 or NivuFlow units as well as to IO modules
- Programmable application-related computing functions
- Adjustable measurement and transmission cycles
- Alarm and trigger functions
- Built-in readings memory, extendable with SD card
- NIVUS SIM logging in with best available service network and 1 year of free data transmission (customer SIM can be used)

#### Typical applications

Stormwater treatment plants, sewer networks, pump stations, groundwater measurement spots, flood level, silo levels, weir measurements and many more.



GPRS Data Logger



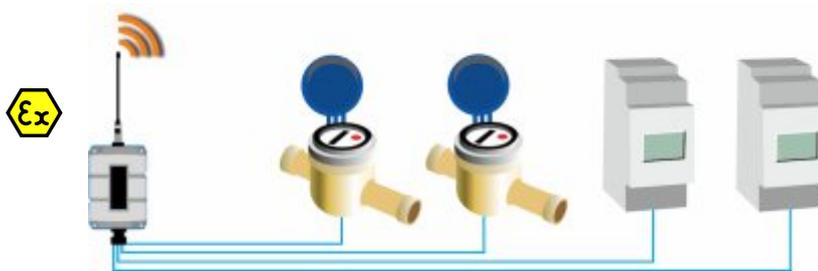
NivuLog Easy Sun



GPRS data logger NivuLog in solar panel enclosure

- Extremely robust IP68 enclosure, compact construction
- Solar panel protected by armoured glass
- Built-in rechargeable buffer battery and recharge control
- Direct connection of sensors using encapsulated terminal compartment
- Very low costs for commissioning and operation

<b>Typical applications</b>	Level monitoring, level measurement in stormwater tanks, rain gauge, silo system monitoring
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NivuLog Nano AMR



Smart data logger for remote meter readout via GPRS

- Parallel data handling of up to 4 meter
- Reliable data connection
- Compact construction with internal battery compartment
- Extremely long battery life of up to 5 years
- Unlimited access to your measurement data via Internet

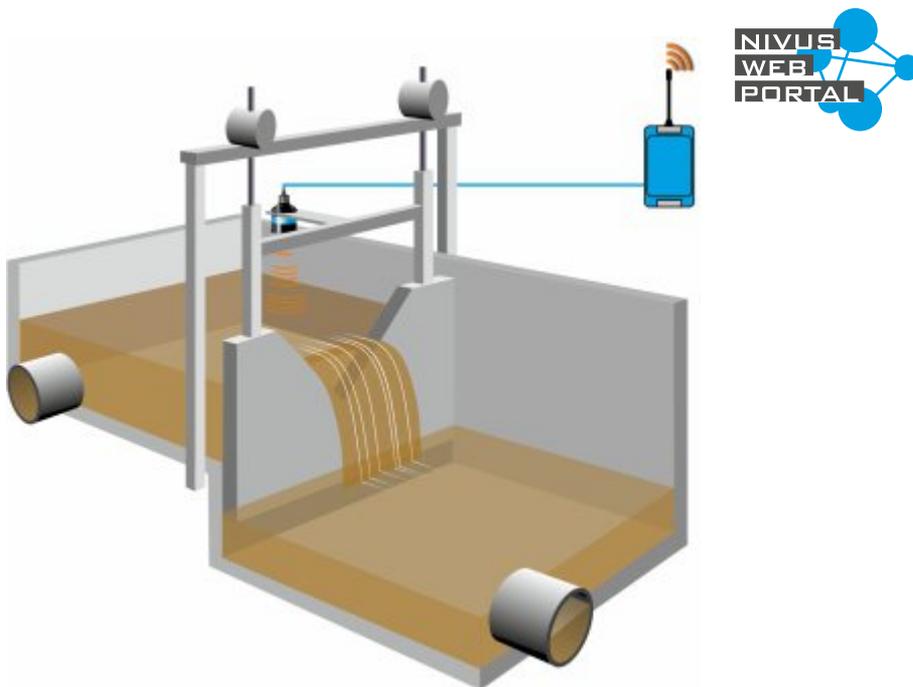
<b>Typical applications</b>	Remote readout of water, gas and energy meters
-----------------------------	--

## NIVUS SIM Data Rates for Telecontrol Units

When using the NIVUS Data Rate we offer attractive transmission package deals.

### Your Benefits:

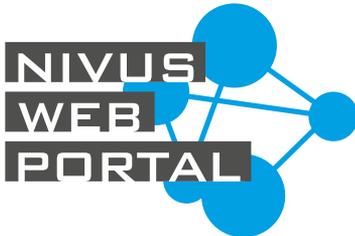
- **Automatic login with best available service network (international)**
  - Highest possible accessibility and data availability
  - Automatic changeover of service network in case of network failure
  - Independent of provider even in case of relocation
- **Telephone support for metering, transmission and evaluation from one source**
  - One contact person for all matters, straightforward, comprehensive and quick advice





"NIVUS Web Portal" Internet Portal

### NIVUS Web Portal



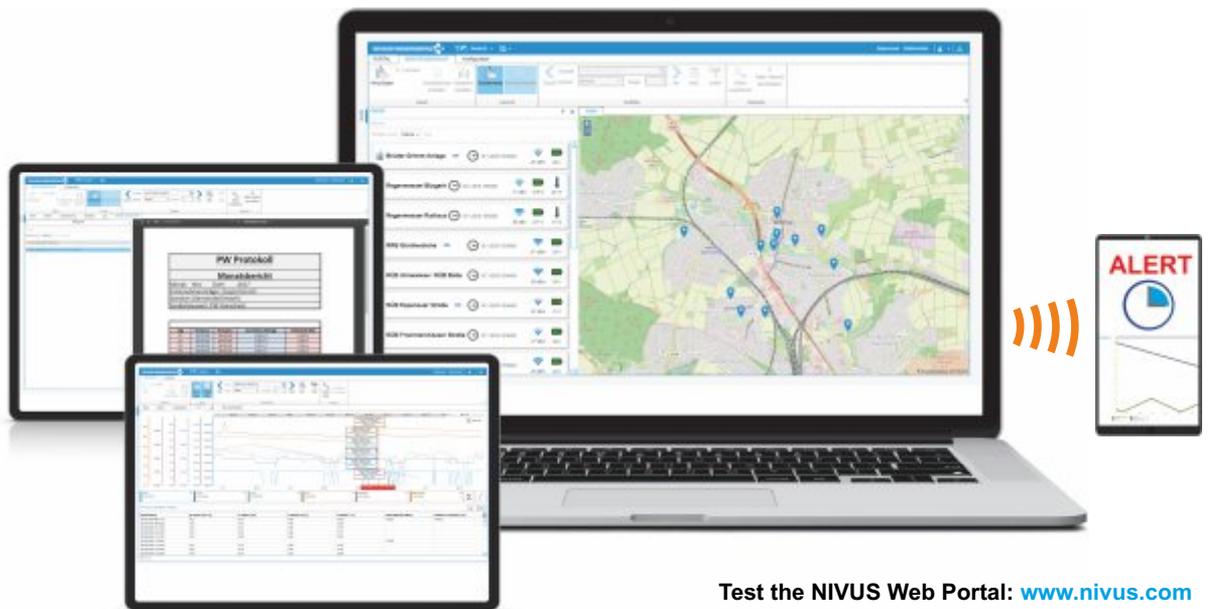
Internet data portal for efficient management of measurement data, measurement places and devices. Using the NIVUS Web Portal with device overview and measurement data export is free of charge. Extra modules such as for logs or visualisation can be easily ordered additionally.

- Easy and reliable access to readings at any time from anywhere
- The most relevant system parameters available at one sight
- Alerting
- Automatic creation of customer-specific protocols
- Predictive maintenance for your measurement places
- No software installation required



#### Application examples

- Event logging of stormwater treatment plants
- Level measurement of water bodies
- Level measurement in sewerage channels with storage capacity
- Pump monitoring
- Mobile and permanent flow measurement



Test the NIVUS Web Portal: [www.nivus.com](http://www.nivus.com)



### Example: Stormwater Overflow Tank

Thanks to special functions and matched telecontrol systems the NIVUS Web Portal allows for reliable event logging on stormwater overflow tanks.

- Event reports according to A128, M 207 and M 260 acc. to DWA
- Automated recording, logging and storage
- Individual documentation

## NIVUS Web Portal Modules

Our measurement data web portal has a modular structure. This allows you to scale your data handling individually.



### Devices/Map Module

- Indication of all devices on a map
- Device information (field strength, battery power, temperature, ...)
- Direct entry to visualisation images, charts, reports
- Quick overview in compact form



### Alarm Module

- Logging of operation and error messages
- Indication of messages with extensive filtering criteria
- Evaluation following duration and frequency
- Alarm forwarding via e-mail



### Visualisation Module

- Easy and quick representation of process images
- Overview on all process data as tables



### Files and Reports Module

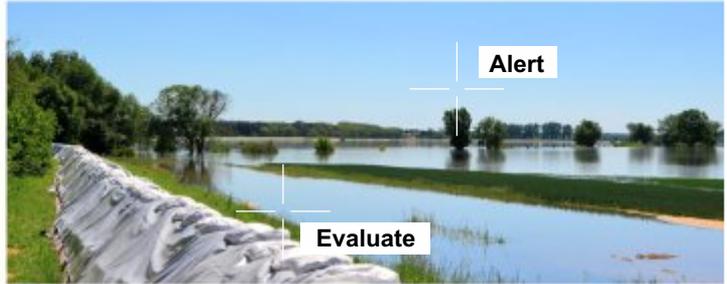
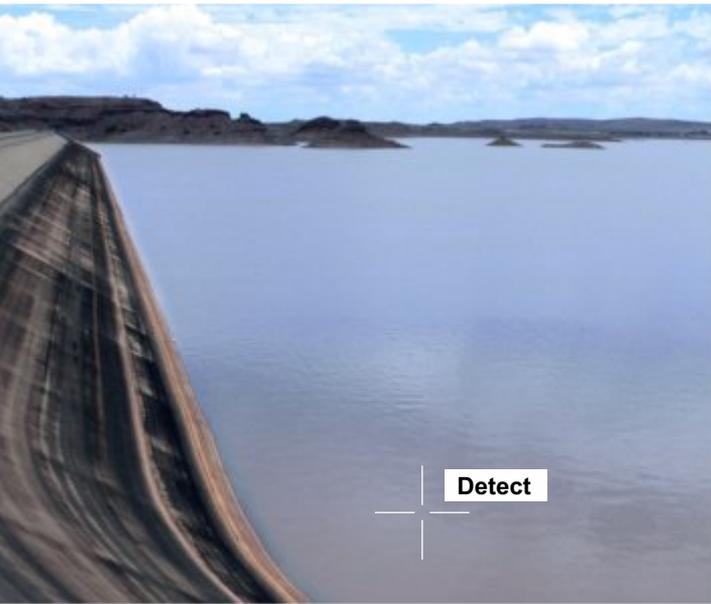
- Automatic creation of protocols and reports
- Customer-specific templates
- Export of reports
- PDF preview in browser



### Hydrograph Module

- Creation of charts with high time resolution
- Extensive export options for your data





# TELE control

## Gateways

Our NivuLink Gateways are multi-purpose tools for measurement and control tasks in the telecontrol sector. Measurement values are reliably detected, evaluated and are transmitted to the centralised database.

## NICOS - web-based SCADA and Process Control Software

Use NICOS for monitoring and for the documentation of your processes in centralised and decentralised plants. Thanks to the modular design NICOS is suitable for both minor processes as well as for large decentralised process landscapes. Our software package contains many special functions particularly for the water industry.

## NivuLink Control



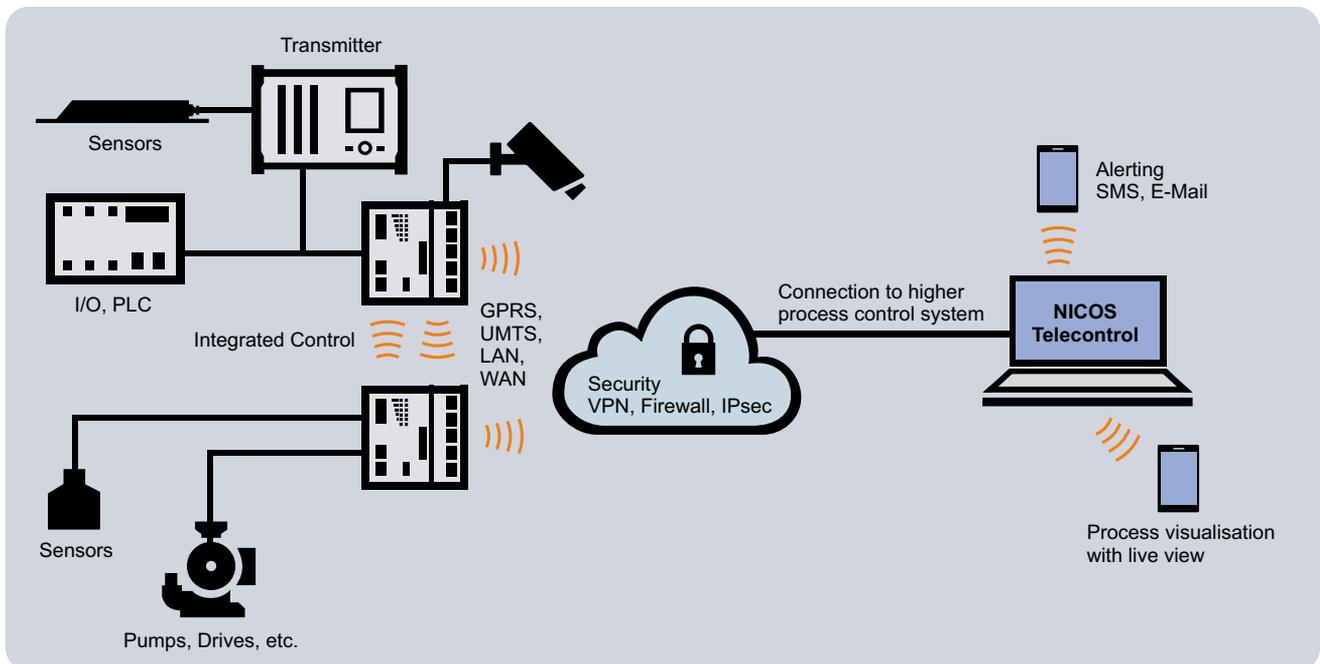
NivuLink Control is a reliable and safe control module with PLC function for measurement and control tasks in the Internet of Things.

- Control function for telecontrol
- Quad band GPRS Modem optional
- Programmable application-related computing functions
- Alert and trigger functions
- Connection to S7 or NivuFlow units as well as to IO modules
- Permanent data availability
- Minimal data transmission volume
- Maintenance-free

Typical applications	
	Stormwater treatment plants, sewerage networks, pump stations, groundwater measurement places, flood level, silo levels, weir measurement and many more

### Programmable according to IEC 61131-3

- Direct connection of WAGO-I/O terminals
- 2 x ETHERNET (configurable), 1 x serial RS-232/-485
- Linux operating system with RT-Preemption-Patch
- Configuration with e!COCKPIT or web-based management surface



## NivuLink PumpControl

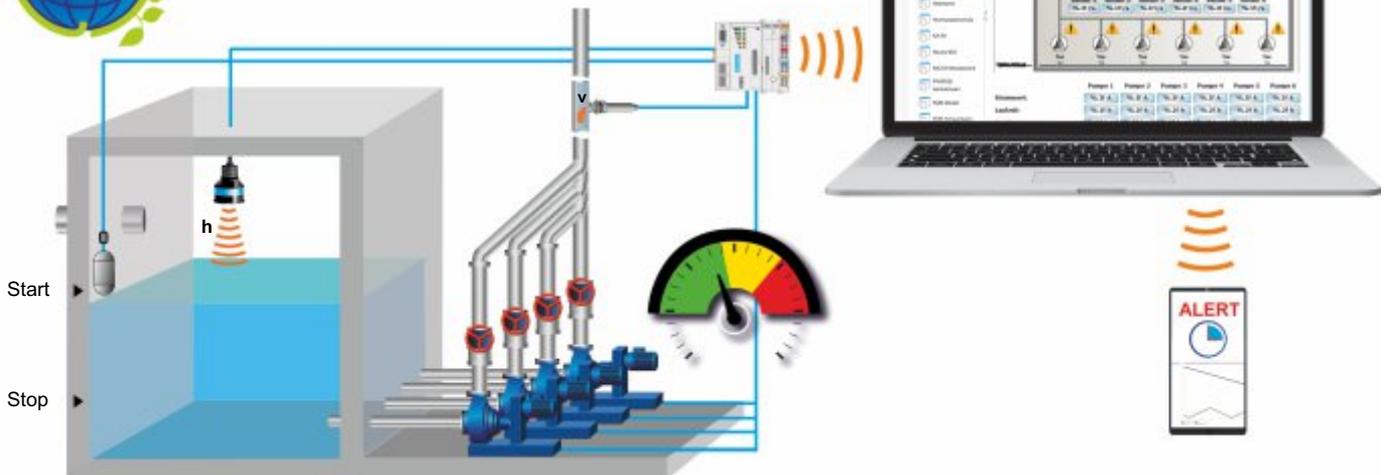
The NivuLink PumpControl ensures efficient and needs-oriented operation of pumps.



- Flexible installation and quick setting of pump control parameters via web browser
- Remote diagnosis of outbuildings using failsafe telecontrol protocols
- Lower operating costs through reduced energy consumption
- Higher operational security through optimised processes
- Assessment of life cycle costs

Typical applications

Pump control



NICOS SCADA and Process Control Software

## NICOS Software

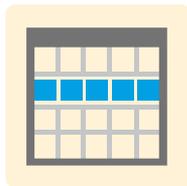


Our scalable SCADA solution can be tailored to exactly fit your needs and applications. The modular structure and the comfortable data management allow using the software for minor and large process landscapes. Special tools facilitate the use in the water industry.

- Transparent processes
- Maximum operational effectiveness through optimal processing of information and highest user-friendliness
- Easy automation of processes
- Modular structure for individual systems
- Worldwide access through web and cloud technology
- Easy connection to external/third-party systems and easy integration of existing processes
- Individual logging and process control

## NICOS Modules

The NICOS SCADA system has a modular structure. This allows you to assemble your individual control system solution.



### Manager Module

- Overview on all process data as tables
- Quick overview in compact form
- Input mask for laboratory values



### Device Module

- Indication of all devices with parameters set within the data project
- Distribution of devices on map
- Device information (field strength, battery power, temperature, ...)
- Direct access to visualisation images, charts, reports



### Alert Module

- Logging of operation and error messages
- Indication of messages with comprehensive filtering criteria
- Evaluation related to duration and frequency
- Forwarding of alerts via SMS, e-mail, voice alarm



### Visualisation Module

- Representation of individual and animated process landscapes
- Use of templates and symbols for maximum efficiency
- Easy integration of vector graphics



### Analytics Module

- Easy creation of dashboards for individual overviews on process data
- Select variables with "drag and drop"



### Maintenance Module

- Planning module for maintenance and repair of machinery
- Alerting related to runtime or operation time



### Files Module

- Management of all files such as report templates, created reports, documentations, etc.
- Overview on all files within the current data project
- File preview in browser (Excel, PDF)



### Reporting Module

- Free creation of multi-page data and event reports
- Overview on all reports
- Edit report templates and create reports



### Scheduler Module

- Creation and representation of on-call schedules
- Continuous monitoring of process plants
- Individual alerting configuration (e-mail, SMS, voice alarm)



### Symbols Module

- Extension to the "Visualisation" module
- Symbol editor
- Management of templates for object-oriented process visualisation

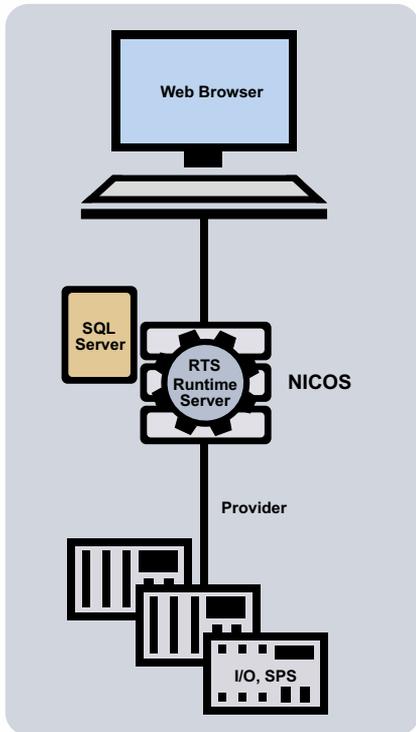


### Charts Module

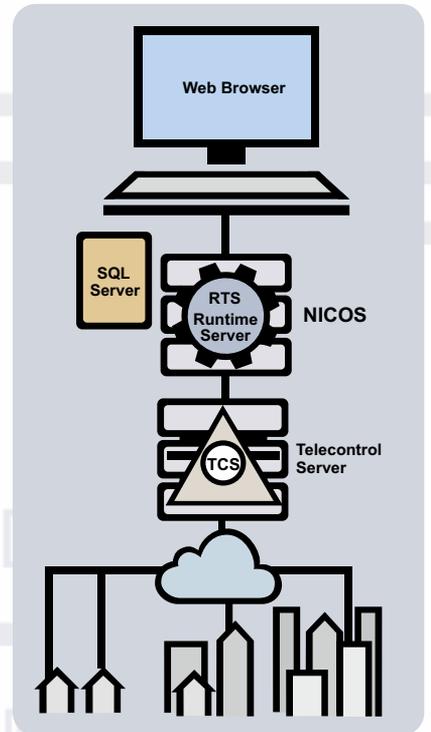
- Creation of user-defines charts with high time resolution
- Extensive import and export options
- Comprehensive library of mathematic functions

NICOS SCADA and Process Control Software

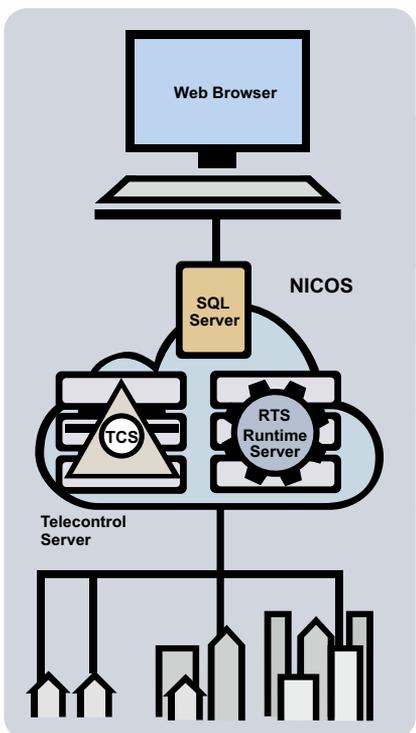
Very small to large Systems feasible



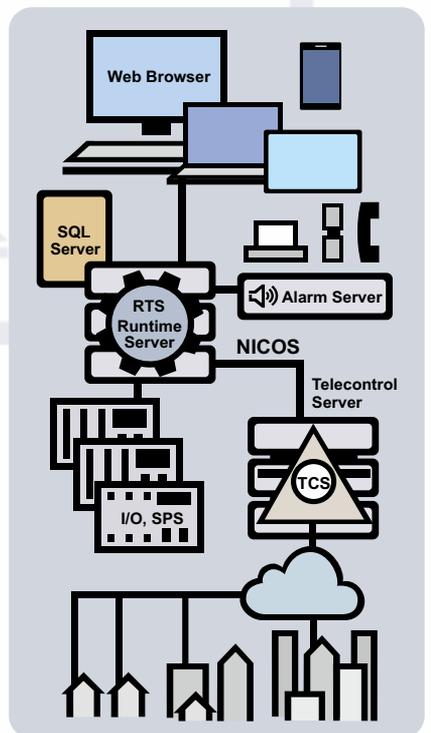
**Control System**  
Contains a NICOS Edition and a communication driver for connection to I/Os or PLC.



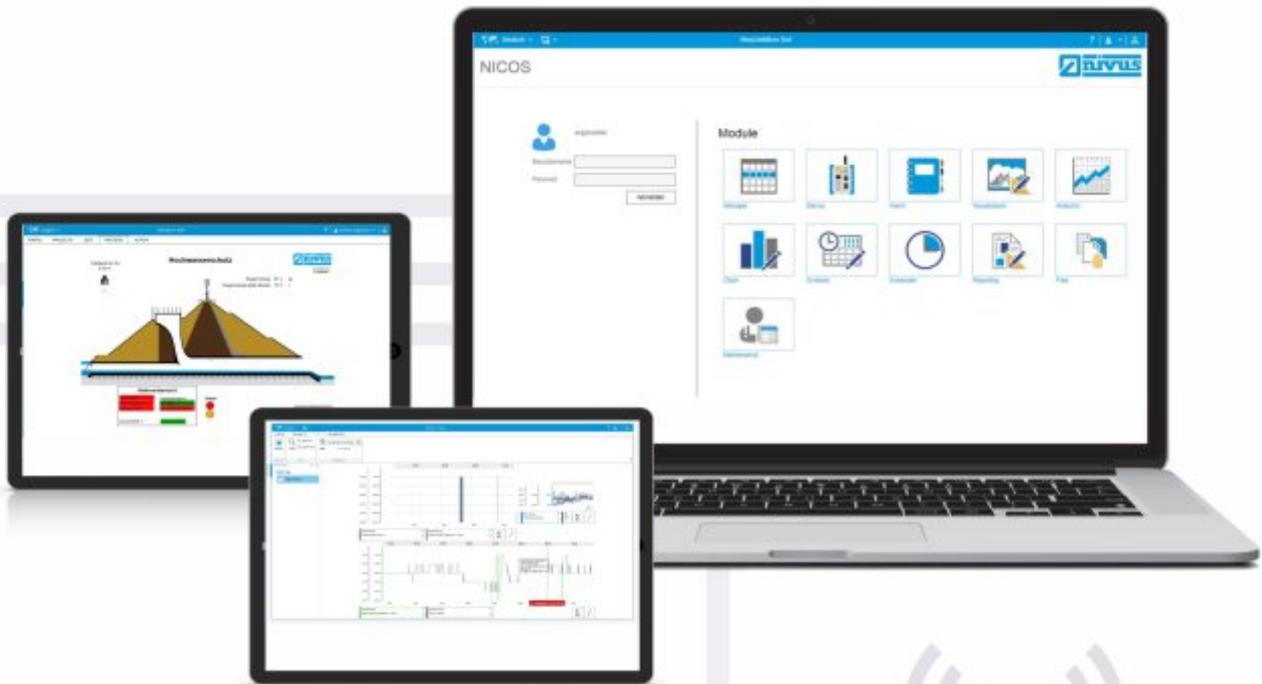
**Telecontrol System**  
Contains a NICOS Edition and a telecontrol server for the connection of telecontrol stations.



**Cloud System**  
Contains a NICOS Edition and a telecontrol server on a rental basis in the cloud.



**Control and Telecontrol System**  
Contains a NICOS Edition and a telecontrol server for the connection of telecontrol stations, a communication driver to connect the PLC to the control system and the alarm server for error messages via SMS, e-mail, ...



## Typical NICOS Applications

Monitoring and control of plants and distributed stations as well as data storage and event logging in:

- Water industry applications such as wells and pump stations of water supply networks, stormwater overflow tanks and lifting plants of wastewater networks
- Biogas plants, wind and water power
- Power engineering, photovoltaics
- Building control systems etc.

## NICOS Lease

Benefit from the advantages of a professional SCADA and process control system without high purchasing costs. NICOS in connection with a high-end hardware system on a rental basis provides very high flexibility.





# SERVICES

## Services

Urban Drainage Monitoring / Channel Network Monitoring

### Data collection in drainage systems

Reliable measurement data is the best way to ensure economic planning, the best possible management and efficient water pollution control. From selecting the measurement points to evaluation of data - we offer complete services all from one source.

You may select from various options from instrument rental to complete planning, implementation and data evaluation carried out by our staff.

Being integrated into NIVUS GmbH as innovative manufacturer, there is always a pool of the latest state-of-the-art devices at your disposal. Close collaboration with the research department as well as with the software and device development divisions allows to constantly improve measuring solutions. For this reason it is possible to meet even extremely complex requirements and to realise project-specific solutions.

Measurement data on flow, level and precipitation are indispensable input parameters to calibrate hydrodynamic channel network models. Covering a wide area we carefully and reliably collect basic data for you to ensure that your sewerage master plan can be maintained sustainably.

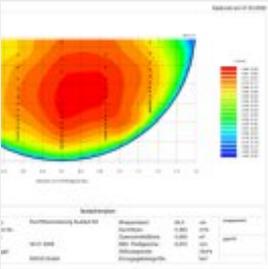
### As part of measurement campaigns we collect for you

- Precipitation discharges and combined water discharges
- Dry weather discharges (dirty water and extraneous water)
- Quality parameters in wastewater systems and water using online spectrometers (e.g. CSB, AFS, NO<sub>3</sub>)
- Discharges of flowing water

Based on your request we will gladly prepare a non-binding offer considering your objectives and requirements. You can rent high-quality instruments from us if you wish to collect data yourselves, our urban drainage monitoring department will give you any support on questions regarding measurement systems and measurement points.

A team of engineers and technicians from water industry and electrical engineering is at your disposal for comprehensive advice.

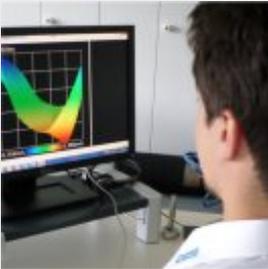
**Quality in every step**



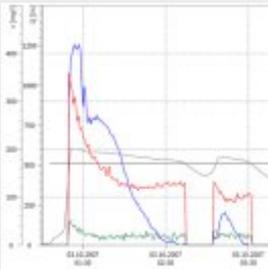
Planning and advice



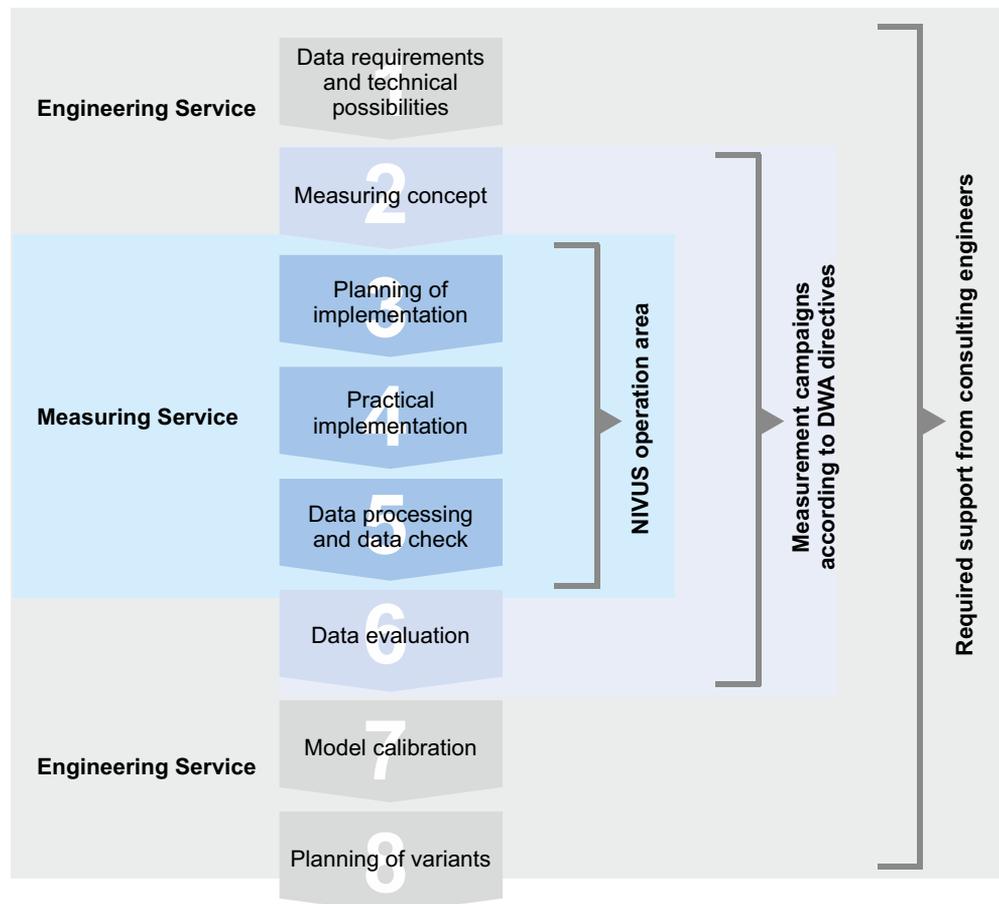
Implementation



Data check...



...and evaluation





### NIVUS - reliable performance worldwide

Almost all European capitals are convinced by the well-engineered NIVUS products as well as the many years of experience in everyday operation. Please find extracts of our reference list below.

Toronto, Canada



London, England



Mexico



Bogotá, Colombia

Colombia

Santiago de Chile, Chile



Chile

Barcelona, Spain



Trento, Italy



Paris, France



Brazil



Vienna, Austria

Port Elizabeth, South Africa



**Copenhagen, Denmark**



**Perm, Russia**



**Warsaw, Poland**

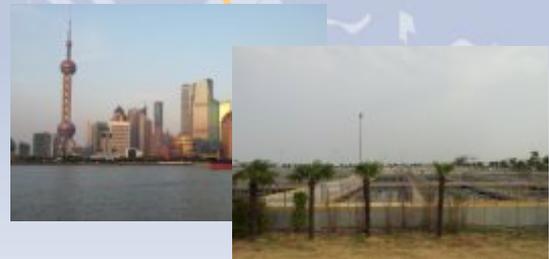


**Changwon City, Korea**

**Mumbai, India**



**Shanghai, China**



**Al Aweer, Dubai**



**Mekka, Saudi Arabia**



**Budapest, Hungary**



The NIVUS "Applications and Solutions" brochure provides an overview on the versatile use of the NIVUS measurement systems shown here. You can either download the brochure from [www.nivus.com](http://www.nivus.com) or order a printed copy.

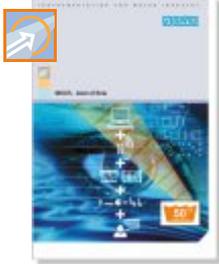
**Phone: +49 (0)7262 9191-0 E-Mail: [info@nivus.com](mailto:info@nivus.com)**



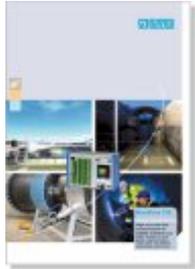
## REFERENCES

You want to know more details?

Ask for our brochures or find out more on [www.nivus.com](http://www.nivus.com). Below just a small selection.



Best of Flow



NivuFlow 750



NFP



NivuFlow Mobile 750



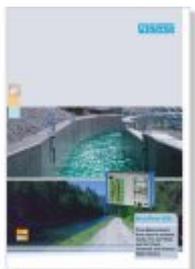
NPP II



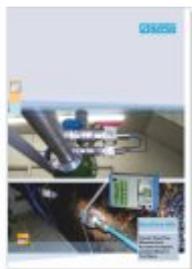
OCM F



NivuLog SunFlow



NivuFlow 650



NivuFlow 600



NivuFlow Mobile 600



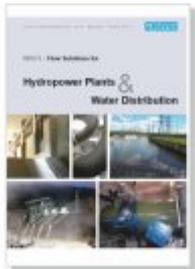
NivuFlow 550 / 7550



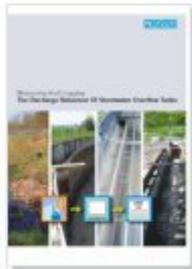
NivuSoft



RainGauge



Hydropower Plants



Measuring and Logging



i-Serie



R-Serie



NivuMaster



Level Data Collector



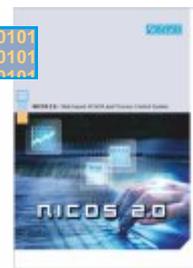
NIVUS Web Portal



NIVULink Micro



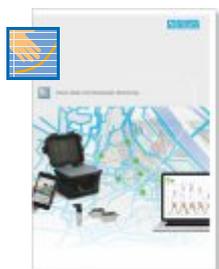
NIVULevel Mobile



NICOS



NIVULink Control



Urban Drainage Monitoring



and much more



[www.nivus.com](http://www.nivus.com)



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