

FOR WATER AND SEWAGE

# WATER INDUSTRY

INSTRUMENTATION



3 YEARS WARRANTY @ NIVELCO - WHERE ELSE?

# NIVELCO

WATER INDUSTRY



### FROM POTABLE WATER ... TO SEWAGE!

The instrumentation requirements of the water/waste-water industries can be fully covered by the wide selection available with NIVELCO's range of instruments. Originally a portfolio of level instruments, pressure and water analytics have been added more recently.

NIVELCO's instrumentation offering now encompasses all the technologies needed in water production and purification. All instruments are available ATEX Ex rated, conforming to the requirements of most countries. Small and medium sized systems are easy to set up using the NIVELCO's MultiCONT process controller, which can read and program any NIVELCO transmitter. Alternatively, our NIVISION software is used to integrate NIVELCO transmitters into any process control system.

- PiloTREK (Pulse Burst Radar)
- MicroTREK (Guided Wave Radar)
- EasyTREK, EchoTREK (Ultrasonic)
- NIVOCAP (Capacitive)
- NIVOPRESS N (Hydrostatic)

- NIVOFLOAT (Float)
- NIVOCONT (Conductivity switch)
- NIVOPOINT (Magnetic tracking)
- NIVOMAG (Magnetic coupling)
- NIVOSWITCH (Vibrating fork)

#### CONTINUOUS LEVEL MEASUREMENT

#### POINT LEVEL DETECTION

#### LIQUID ANALYTICS

- AnaCONT LEP/LER (pH, ORP)
- AnaCONT LED (Dissolved oxygen)
- AnaCONT LCK (Conductivity transmitter)

#### PRESSURE MEASUREMENT

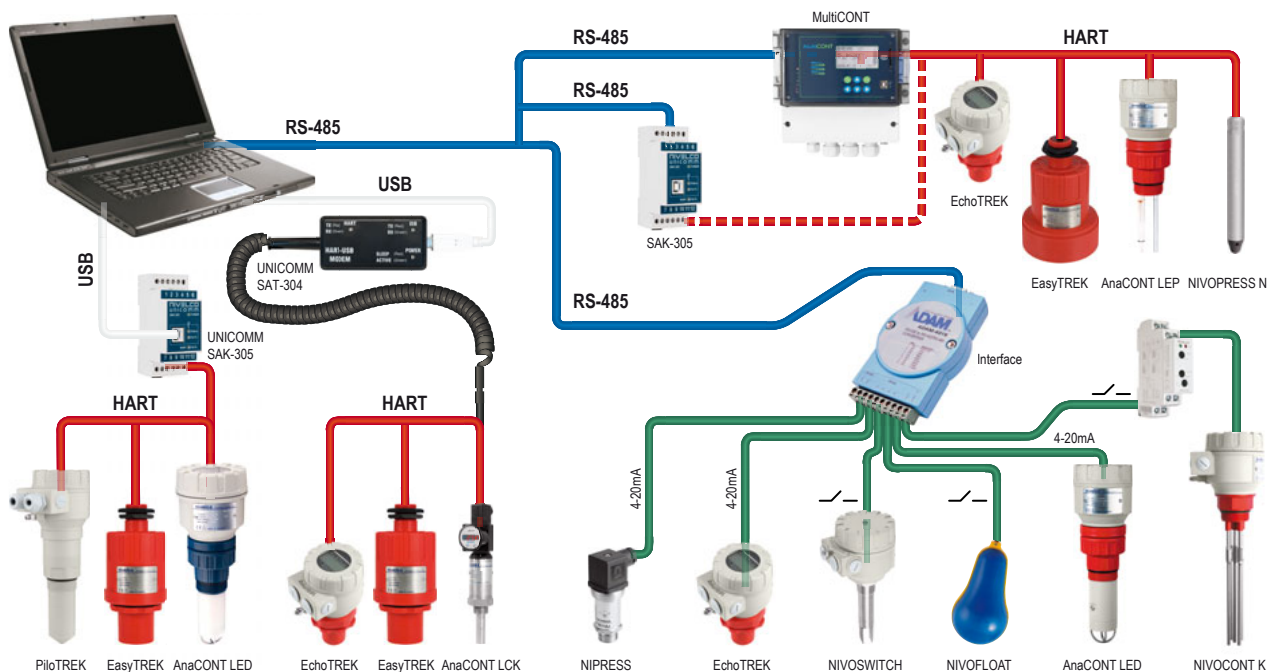
- NIVOPRESS D (Hydrostatic)
- NIPRESS (Piezoresistive)

#### FLOW MEASUREMENT

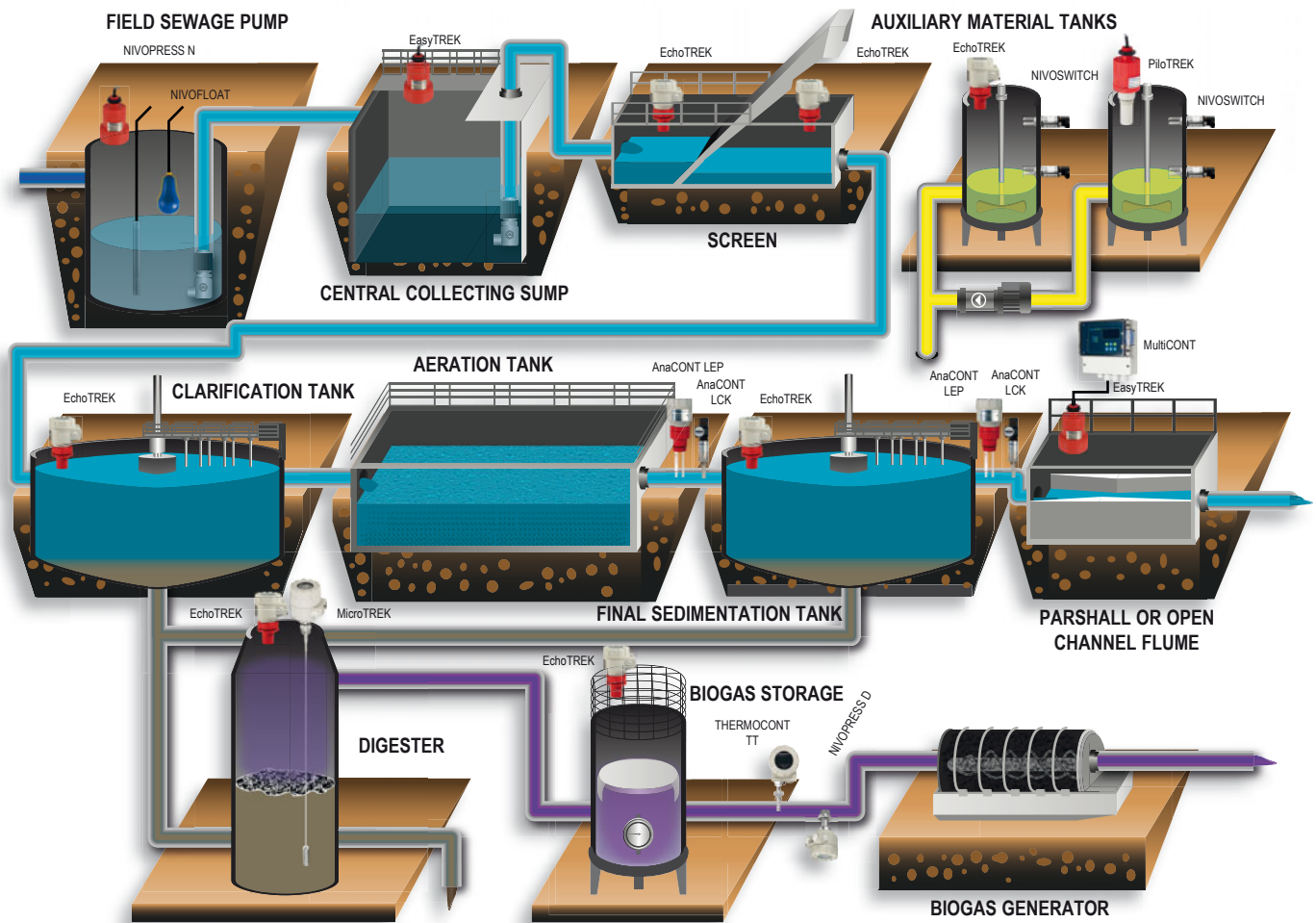
- Parshall (Open channel ultrasonic)

### FIELD INSTRUMENTS IN MEASUREMENT SYSTEMS

Level transmitters can be connected to the MultiCONT process controller, or with the help of suitable interfaces or modems, NIVELCO field instruments can provide measurement results and control signals directly to the process control system. NIVISION process visualization software provides a perfect choice for process visualization, data collection, measurement-database management and process control tasks.



## SEWAGE TREATMENT



**Sewage treatment can be divided into 2 major parts:** field sewage collection and pumps, and the central sewage treatment facility. The sewage treatment process also has 2 separate sections: water treatment processes and slurry treatment processes.

### COLLECTION SUMPS / PITS:

The sewage is collected in underground sumps or pits, also known as wetwells, and is pumped to the sewage treatment plant.

### Measurement and control tasks:

Reliable continuous level measurement is necessary to provide pump start and stop signals with fail safe switch-off points to avoid dry running.

### RECOMMENDED INSTRUMENTS:

- The **EasyTREK SP** type non-contact ultrasonic level transmitter models with IP68 ingress protection are our recommendation for this measurement task.
- Another popular choice for deep sumps is the flush mounted **NIVOPRESS NC** type hydrostatic borehole transmitter or the **NIVOPRESS NP** series with recessed membrane equipped with a sewage adaptor working on the principal of the diving bell
- A PLC or our **MultiCONT** process controller unit is ideal to process the 4-20 mA + HART signals and to control the switching points
- For fail-safe protection the robust **NIVOFLOAT NWP** float level switches are recommended

### CENTRAL SEWAGE TREATMENT FACILITY, WATER TREATMENT PROCESS:

The sewage pumped in from the network contains a lot of organic and non-organic materials in suspended form as well as in solution. This pollution has to be removed. The particles are filtered with a mechanical screen. The dissolved pollution can be reduced by adding coagulant materials. The reduced slurry is then separated from the water in the sedimentation tank. The purified sewage can be streamed to any natural water after chemical inspection and yield measurement.

### RECOMMENDED INSTRUMENTS:

- Ultrasonic level transmitters for level measurement (2-wire integrated (blind) or compact versions), **EchoTREK** or **EasyTREK**
- The **AnaCONT** range of analytical measurement devices are ideal for the pH and DO analysis of the cleaned water
- Open channel flow metering can be done using our **Parshall** flume, and **EasyTREK** level transmitter. For calculation and data logging a **MultiCONT PED** controller can be used.

- Continuous level measurement with **PiloTREK** Pulse Burst Radar in the storage or slowly mixed tanks
- High and low level switching with **NIVOSWITCH** vibrating fork sensors

### CENTRAL SEWAGE TREATMENT FACILITY, SLURRY TREATMENT PROCESS:

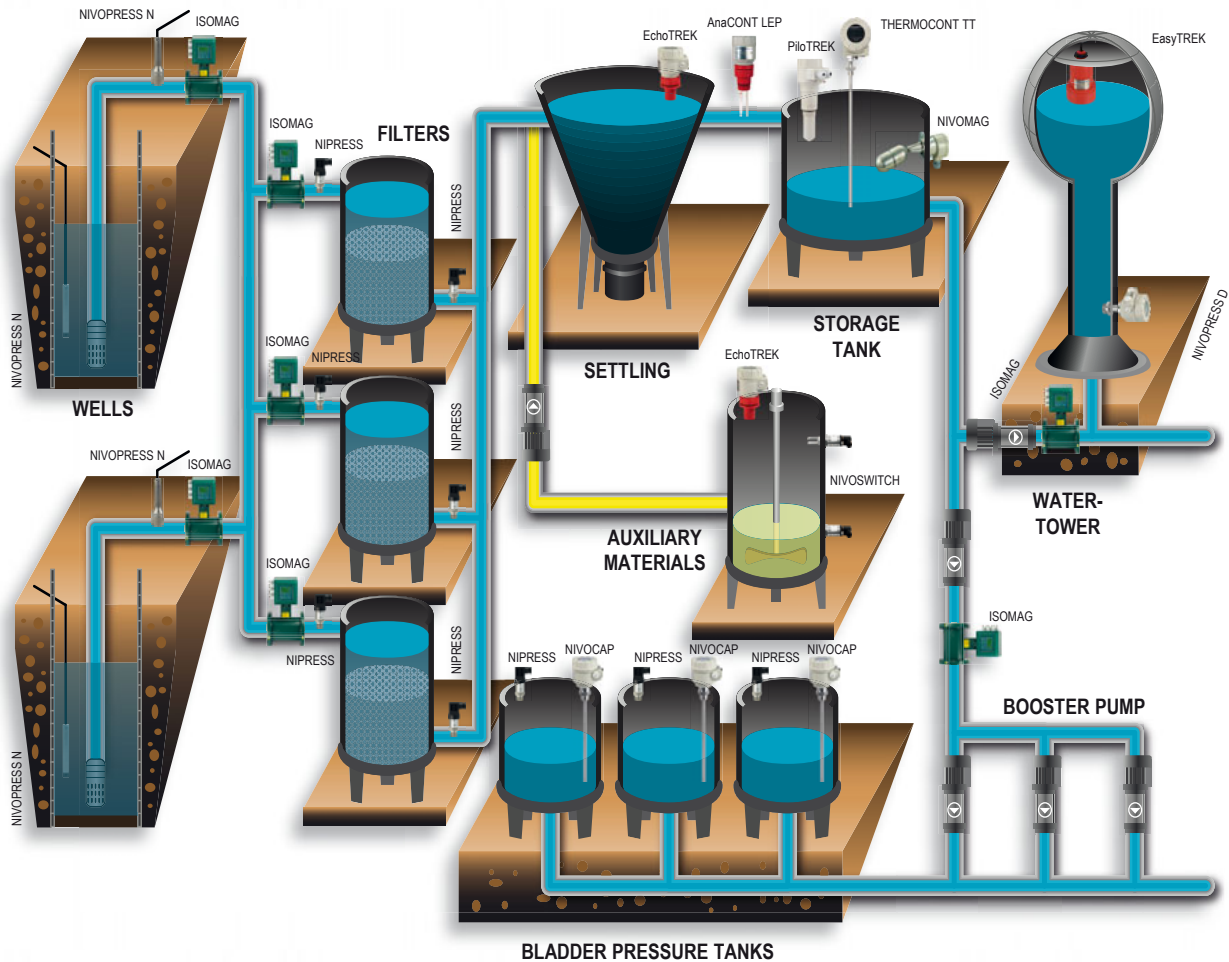
The slurry separated in the sedimentation tank is transferred to the digester tank. The emitted biogas is stored in a biogas tank and then fed to a biogas generator. The biogas section of the plant is classified as a hazardous environment. The slurry retained in the digester is transported from the plant after dehydration.

### RECOMMENDED INSTRUMENTS:

- ATEX certified ultrasonic level transmitters (**EchoTREK** or **EasyTREK**) or ATEX certified guided microwave level transmitter (**MicroTREK**) can be used for level measurement
- Our choice for measuring the temperature of biogas, is the ATEX certified temperature transmitter **THERMOCONT TTJ Ex**
- We recommend an ATEX certified pressure transmitter the **NIVOPRESS DT Ex**



## POTABLE WATER PRODUCTION



Potable water production can be divided into 3 sections:  
production wells, purification, treatment, and the distribution system.

### WATER PRODUCTION WELLS:

The production wells are drilled in ground layers rich in water, the pumps are lowered into the wells to pump the raw water to the central water treatment facilities.

#### Measuring tasks:

- Continuous level measurement of the well
- Temperature measurement of the water
- Hydrostatic pressure of the production well
- Yield of the produced water
- Dry-run protection of the pumps

#### RECOMMENDED INSTRUMENTS:

- Hydrostatic level transmitters that combine level and temperature measurement: the **NIVOPRESS N** transmitter family.
- Piezoresistive pressure transmitters: **NIVOPRESS NZK** types
- Water input measurement: **ISOMAG** electro-magnetic flow meters

### WATER TREATMENT:

The raw water pumped from the production wells contains different organic and inorganic materials. These materials have to be removed from the water. Removal is done either by mechanical filters or by adding coagulant materials to the water to help precipitate the contaminating materials. The resulting slurry is separated in settling tanks. The clean water is often passed through sand or other final filtration stages.

#### RECOMMENDED INSTRUMENTS:

- Pressure measurement with **NIPRESS** type pressure transmitters
- Level measurement with **EchoTREK** ultrasonic level transmitters
- Continuous level measurement in the water storage tank with **PiloTREK** Pulse Burst Radar level transmitter
- pH measurement of the clean water with **AnaCONT** analytical instruments
- Low/high level switching with **NIVOSWITCH** or **NIVOMAG** switches

### WATER DISTRIBUTION SYSTEM:

To distribute the water to the customers, the pressure in the system has to be increased.

This is done by booster pumps, water towers or bladder pressure tanks.

#### RECOMMENDED INSTRUMENTS:

- Pressure control at the bladder pressure tanks with **NIPRESS** pressure transmitters and **UNICONT** controllers
- Water level control at the bladder pressure tanks with **NIVOCAP** level transmitters and **UNICONT** controllers
- Water level measurement in the water tower with **EasyTREK** ultrasonic level transmitters from either the top or the bottom of the water tower with **NIVOPRESS D** type hydrostatic level transmitters

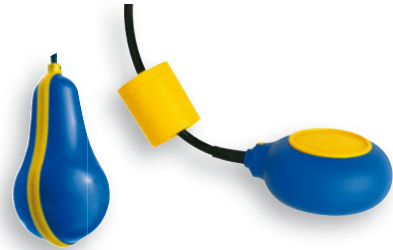


## INSTRUMENT SELECTION



### NIVOFLOAT

- For water and sewage
- Level switching of tanks, basins and sumps
- Filling / emptying control
- Level switching of sewage pumps
- Fail safe indication



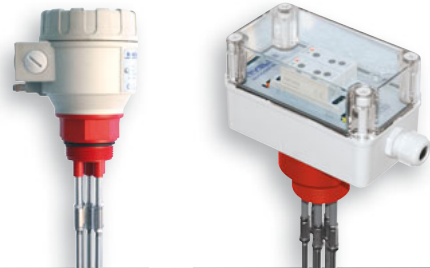
### EasyTREK

- IP 68 protection
- Continuous level measurement in basins, wells, sumps
- Level controlling of sewage pumps
- Tank fill/empty control
- Flow measurement
- Remote programming
- Volume calculation



### NIVOCONT

- Electronic level switch for conductive liquids
- Compact and separated types
- Filling / emptying control
- Indication of water rush-in



### EchoTREK

- Continuous level measurement in basins, wells, sumps
- Tank fill/empty control
- Flow measurement
- Remote programming
- Volume calculation



### PiloTREK

- High precision level measurement of liquids, slurries, emulsions
- Level measurement in high temperature and high pressure applications



### NIVOPRESS N

- Draw-down protection of wells
- Level measurement in tanks, basins
- Control of sewage pumps
- Remote programming

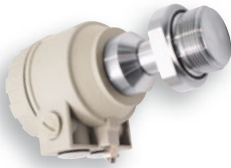






### NIVOSWITCH

- Level switch with no moving parts
- Self-cleaning operation
- Level switching in tanks, basins
- Controlling of pumps



### NIVOPRESS D

- Hydrostatic level measurement
- Pressure measurement
- For foaming, corrosive liquids
- Remote programming



### Open-channel flow measurement

- Ultrasonic level transmitter
- For calibrated, standard Parshall flumes
- Suitable for all flume types
- Suitable for water or sewage
- Certification of measurement
- Treated effluent sewage measurement
- Yield measurement of irrigation canals



### AnaCONT pH/ORP transmitter

- Compact analytical transmitter
- Checking of water quality
- Waste water treatment
- Application oriented probes
- Wide range of accessories



### AnaCONT conductivity transmitter

- Mini-compact analytical transmitter
- Potable water production
- Water processing
- Water purification



### AnaCONT dissolved oxygen transmitter

- Compact analytical transmitter
- Measurement of surface water
- For water and waste water treatment
- For swimming pools
- Application oriented probes
- Wide range of accessories

