



Your Partner in ENVIRONMENT & PROCESS ANALYSERS



Company Profile



DNP INTERNATIONAL is a company specialized in design and development of industrial analyzer systems, with several years of experience in design, development, commissioning and start-up of complete process analyzer systems for almost any application. We have the ability to provide full service for on-line analyzer systems. Whether the process in your company requires a simple sample system or -component, a single-stream analyzer or a complete integrated analyzer; DNP is qualified to design and produce according to your specific demands.

Today, DNP has a long list of satisfied customers in all most all segments of the markets like Power, Petrochemicals, Refineries, Steel Plants, Fertilizers, Chemical Plants, Cement Plants, Pharma & Biotech, Oil & Gas, Water and Waste water treatment Plant, Municipal Sewage and Drinking water Treatment Plant, Glass manufacturing units, Research Institutes, Technical Education Institutes and so on.

History:

DNP INTERNATIONAL was founded and registered on May, 2005 as a privately owned company. Our independence enabled us to maintain an unbiased approach to our clients and their requirements and to provide a complete product. The priory activities are the sales and services of online analyzers. Over the years DNP became a reputable full service Analyzer Systems Integrator. The combination of Analyzer Manufacturer Representative and Analyzer Systems Integrator gives the final user customer the assurance of complete analytical systems with full single source responsibility.

Profile:

DNP has the ability to provide full service to clients requiring high quality analyzer systems. This extends from providing initial surveys, both in the field and in the office, till final commissioning and maintenance of complete analytical systems.

We make dissimilarity between the following activities:

- 1. Analyzers: all activities in reference to the sales of analyzers and contacts with the represented analyzer manufacturers.
- 2. Analytical systems: all activities in reference to engineering, design and production of analytical systems.
- 3. Support & service: all back-up and after sales activities of the analyzers and analytical systems division.

The service covers outlined:

- Consulting
- System specification and engineering
- Detailed engineering, equipment selection and specification
- Project management
- System design
- Fabrication and assembly of analytical systems
- Site management
- Pre-commissioning and commissioning of systems





Support Solution

Full Fledged Service Center

- Fully Equipped Service Centre Facility
- Service through trained engineers
- In house as well as On-site Service facility
- Maintain a stock of critical spares to ensure Minimum downtime

Service Maintenance Contract

- Comprehensive
- Non-Comprehensive





Turn Key Projects

All back-up and after sales activities of the analysers and analytical systems.

The service covers outlined:

- Consulting;
- System specification and engineering;
- Detailed engineering, equipment selection and specification;
- Project management;
- System design;
- Fabrication and assembly of analytical systems;
- Site management;
- Pre-commissioning and commissioning of systems.

Training

- Training is vital aspect to the success of instrument performance
- Hands-on Training work shop
- Special Training course designed as per customers requirement
- Free Service and Training camp





Business Solution

Environment Solution



Process Solution



	Process Ga	s Analyser		Steam &	Water Analysis (SWAS)	System
H₂S	CH₄	СО	CO2	Silica	Sodium	PO ₄
O ₂	C_2H_2	NH ₃	NCI ₃	Hardness	рН	Conductivity
Acet	yline	C	S ₂	тос	ORP	Turbidity
Formal	dehyde	Acetal	dehyde	Chlorine	Ozone	Refractometer
But	ene	Tolune -	- Xylene	Dissolved Oxygen	Hydrazine	Alkalinity



Waste Water Automation System



DNP is your specialist in the field of Municipal Sewage Treatment Plant (STP) & Industrial Waste Water Treatment Plant (WWTP) water analysis and sensors. We are qualified to design and produce according to your specific demands and can also provide completely integrated analyser stations or a measurement network.

We offer specific sensors and analysers which can be placed directly in water or can be used as by-pass system, which in a very short period gives insight in the water composition. Because of this it is possible to realize continuous marking or automatic process control. Process control or marking can be executed on parameter level or water quality change.

DNP has the abilities and facilities to provide full service to clients requiring advice, supply and maintenance of analysis systems of high quality.

Commonly used analyzer for Waste Water Treatment Plants are;

- Total Organic Carbon (TOC)
- COD
- BOD
- Total Suspended Solid (TSS)
- Oil in Water •
- Ammonia
- Hydrogen Sulfide (H₂S)
- Ammonical Nitrogen
- Dissolved Oxygen
- Sludge Level and MLSS
- Phosphate

- Benzene
- .
- ٠
- •
- Chlorine

- Antimony (Sb),
- Arsenic (As), • Bismuth (Bi)
 - Cadmium (Cd)
- Chromium (Cr)
- Cobalt (Co)
- Copper (Cu)
- Gold (Au)
- Iron(Fe)
 - Lead (Pb)
- Mercury (Hg)

- Manganese (Mn)
- Silver (Ag),
- Selenium (Se) •
- Thallium (Ti)
- Molybdenum (Mo)
- Nickel (Ni)
- Zinc (Zn)
- Level
- Flow

Drinking Water Automation System

DNP is your specialist in the field of Drinking Water Plant water analysis and sensors. We are qualified to design and produce according to your specific demands and can also provide completely integrated analyser stations or a measurement network.

DNP has the abilities and facilities to provide full service to clients requiring advice, supply and maintenance of analysis systems of high quality.

Commonly used analyzer for Drinking Water Plants are;

- Flow
- Level
- pH Analyzer

- Conductivity Analyzer
- Chlorine Analyzer Hardness Analyzer





- Chromate
- pН
- Conductivity
- Colour
- Hydrocarbons
- Phenol
- Chromium (Cr6)

DM Plant Automation System



DNP is your specialist in the field of Demineralise (DM) Plant water analysis and sensors. We are qualified to design and produce according to your specific demands and can also provide completely integrated analyser stations or a measurement network.

We offer specific sensors and analysers which can be placed directly in water or can be used as by-pass system, which in a very short period gives insight in the water composition. Because of this it is possible to realize continuous marking or automatic process control. Process control or marking can be executed on parameter level or water quality change.

DNP has the abilities and facilities to provide full service to clients requiring advice, supply and maintenance of analysis systems of high quality.

Commonly used analyzer for DM Water Plants are;

- Silica Analyzer
 - Sodium Analyzer
- Total Organic Analyzer
- Copper Analyser
- Flow
- pH Analyzer

- Conductivity Analyzer
- Chloride Analyzer
- Iron Analyser

Cooling Water Automation System



DNP is your specialist in the field of Cooling Water Plant water analysis and sensors. We are qualified to design and produce according to your specific demands and can also provide completely integrated analyser stations or a measurement network.

We offer specific sensors and analysers which can be placed directly in water or can be used as by-pass system, which in a very short period gives insight in the water composition. Because of this it is possible to realize continuous marking or automatic process control. Process control or marking can be executed at parameter level or water quality change.

DNP has the abilities and facilities to provide full service to clients requiring advice, supply and maintenance of analysis systems of high quality.

Commonly used analyzer for Cooling Water Plants are;

- ORP Analyzer
- Chlorine Analyzer
- Alkalinity Analyzer
- Total Suspended Solid (TSS) Analyzer
- Oil in Water Analyzer
- pH Analyzer
- Conductivity Analyzer
- Chloride Analyzer
- Silica Analyzer



Steam & Water Analysis System (SWAS)



Features:

- Truly designed as per ASME PTC 19.11 recommendations
- Compact double helix type, shell & tube sample coolers
- First time All the High Pressure components upto Pressure reducer can withstand temperature upto 550deg C. (i.e. Valve to Pressure reducer)
- Automatic High Temp. Shut-off valve are used for high temperature protection
- The Entire system is protected upto 600Deg F upto High Temp. Sample Shut-off valve
- No Power Supply required. No wiring !!!!!
- Rod-in-Tube type pressure reducer for High pressure sample lines as recommended by ASME PTC 19.11
- On line pressure regulator cleaning
- No Filters are used
- Back pressure regulator with Stainless steel diaphragm
- Easy access of components.
- Stainless Steel Cooling water pipeline
- Totally Maintenance free





On-line Water Analyser for Process Monitoring



Multiparameter Controller



pH / ORP / Conductivity



Dissolved Oxygen (PPB)



Dissolved Oxygen (PPM)



Portable Sludge Level



Ozone/ Chlorine/ CIO₂



Ammonia / Phosphate



Silica / Phosphate Analyzer





Turbidity & TSS Analyzer



Hardness/Alkalinity/Ammonia









TOC Analyzer





On-line Water Analyser for Environment Monitoring

Our technology based on UV spectroscopy offers unparalleled reliability and very low operating cost.

UV - Vis Spectroscopy

The measuring principal is based on the UV light absorption spectroscopy. The water circulating in a flow cell is illuminated with a UV source (Xenon Lamp). The Spectral composition of the light going through the cell is analyzed and the quantity of light absorbed by organic matter is measured according to the Beer-Lambert Law.

UV spectroscopy does not require reagent addition, nor does it require direct contact between the detector/emitter and the sample.





Advantages:

- Low maintenance
- No drift or premature ageing of the detector
- The patented Flow cell allows very high level of suspended solid without clogging
- Fast: The measuring time is less than 10 seconds for most parameters. For ammonia (NH₄) and H₂S (measurement in gas phase), and for phosphate (measurement by colorimetry), the measuring time is about 3 minutes.

Compact and Easy

The new mechanical design allows analysis of up to 12 different parameters in a one single analyzer, thus reducing its size and its cost. No preparation of the sample is required even for highly charged effluent. Our patented flow cell and the diameter of the tubing avoid the risk of clogging. In case of high concentration of suspended solid it is possible to add a settling down time before the measurement to avoid interference due to the particles.



Multiplexing

When different streams need to be analysed, for example inlet and outlet of a plant, a optional multiplexing system delivers relay contacts to control external electric-valves or external pumps.

Up to 6 different streams can be selected.

The measuring channels can be either duplicated (each one having its own 4-20ma output or MODBUS register), or measured sequentially to fit with the maximum of 16 measuring channels (a MODBUS register indicates which stream is currently being measured).

Water Analyzer

- UV254
- COD/BOD/TOC
- Ammonia
- Hydrogen Sulfide Oil
- OilPhenol
- Hydrocarbons

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- Hydrocard
 Nitrate
- ColourTurbidity

Conductivity

Benzene

Dissolved oxygen

NO₃

TSS

pH

- Chromate
 - BTXPhosphate
 - Rhodamine

Chlorophyll A

Cr6

Ammonia (NH₄) & Hydrogen Sulphide (H₂S): A UNIQUE method

UV gas absorbance after stripping



No	Element	No	Element
1	Stripping pot	4	Air pump
2	Temperature probe	5	Xenon Lamp
3	Flow cell	6	Spectrograph

Two methods for absorbance spectrum treatment







The ammonia and hydrogen sulphide measurement are based on the UV absorption of the ammonia gas or hydrogen sulphide gas after stripping phase.

Consequently, the turbidity or colour of the sample has absolutely no influence and measurements can even be carried on activated Sludge.

The ammonia gas has a typical periodic absorption spectrum that is analysed using a Fast Fourier Transform (FFT) that brings an exceptional selectivity. No interference has never been reported after years of operation on many different applications.

A small quantity of NaOH solution is added to the sample for ammonia, or hydrochloric acid for hydrogen sulphide.

Advantages:

- Unique method
- No effect of colour or suspended solid, tested on activated sludge
- Absolutely no interferences
- Fast responce time: 3 minutes

Oil in Water (PAH) – UV Fluorescent

UV-VIS Fluorescence



No	Element	No	Element
1	Xenon Lamp	4	Excitation filter
2	Emission filter	5	Photomultiplier
3	Flow cell	6	Reference detector

Advantage:

- High sensitivity
- Short response time
- Low maintenance





COD Analysis – UV Spectroscopy

Working Principal: UV - VIS Spectroscopy:

The measuring principal is based on the UV light absorption spectroscopy. The water circulating in a flow cell is illuminated with a UV source (Xenon Lamp). The Spectral composition of the light going through the cell is analyzed and the quantity of light absorbed by organic matter is measured at 254nm according to the Beer-Lambert Law.

UV spectroscopy does not require reagent addition, nor does it require direct contact between the detector/emitter and the sample.

Unique Features:

- Analyzer SCAN the sample between 180 and 800 nm in order to measure a pollutant in a complex matrix.
- The UV Xenon Lamp is specified for 10⁹ flashes which corresponds to a life time of 10 years on the basis of one measurement every minute.
- No preparation of the sample is required even for highly charged effluent.
- The measuring time is less than 10 seconds.
- Mutiplexing System allows measurement in more than one sample stream.

BOD/TOXICITY Analysis

We detect the BOD using the plant's own biomass and determine the toxicity with highly sensitive bacteria, fast and reliable.

BioMonitor[®]

The miniature WWTP

- BOD: 1 200,000 mg/l
- Toxicity: 0 100%
- Respiration in mg O2/I * min
- Response time: 3 4 min.
- High grade decomposition
 Active sludge activity
- Active sludge activity
- BOD Monitoring
- Environmental protection
- Clarification plant protection For the control and optimization of
- clarification plants

The BioMonitor[®] work like a miniature clarification plant. The plants own activity sludge decomposes the content of the waste water and the oxygen necessary to do this is measured. This process takes place in the waste water cascade of the analyser, functioning exactly as it would do in an aeration basin.

The nitrification's respiration inhibition test

- Continuous monitoring
- Self regenerating breeding of bacteria in analyser
- High Sensitivity
- No extra purchasing of test organism necessary
- High reproducibility
- No memory effects

NitroTox[®]

- Toxicity: 0 100 %
- Response time: <5 min.
- Clarification plant protection
- Protection of the nitrification process of a clarification plant
- - Ground water

ToxAlarm®

Laboratory application

Surface water

Toxicity: 0 - 100 %

Response time: <5 min.

The bacteria, regenerated in the analyser itself, consume oxygen when converting ammonia into nitrate. The biomass is highly sensitive against a huge number of toxic substances.

These substances cause an inhibition of the bacteria's respiration which in turn leads to a decrease in oxygen consumption. Form this conclusions can be drawn about the toxicity of the sample.





UV - VIS Spectroscopy

For IWWTP / STP Plant

Meets Regulatory norms

Maintenance Free

Reagent-less



TOC Analysis

From complex industry waste water to pharmaceutical pure water, our TOC analysers determine the parameter quickly and precisely.

The measurement system for the rough

- Combustion at 1200°C
- Catalyst-free
- Salt conc. Up to 30% NaCl .
- High particle content samples • No memory effects
- . Low maintenance •

Quick TOCultra

- True TOC: 0.1 50,000 mg/l •
- Response time: 1 min. (TC)
- TC/ TOC/ COD/ TNb .
- Up to 6 sample streams
- Exact determination of TC, TOC, (TRUE TOC) and TIC .
- Proven thermal oxidation principle
- Highest combustion temperature available (1,200°C) •
- Catalyst-free
- Fast response time of one minute (TC) •
- Multi-stream measurements (optional)
- Individual programmable operator access levels •
- Analyser availability minim. 98% •
- Maintenance and service max. 30 min per week .
- Exceptionally low maintenance and operational costs .

Quick TOC_{airport}

- TRUE TOC: 0.1 50,000 mg/l •
- Response time: <3 min.
- Automatic switching between measurement ranges .

The patented LAR high temperature method at 1200°C guarantees the complete oxidation of all organic particles. Expensive catalysts are not necessary. In addition to, this its robust technique stands out by its minimal maintenance and operation requirements.

Quick TOCuv

- We light up the dark.
- TOC: 0 2000 µg/l
- TC/ TOC/ DOC •
- UV persulfate
- Continal measurements
- Autocalibration •
- Up to 2 sample streams •

Specific solutions for pure water

- Combustion at 1200°C .
- TC/ TOC determination
- Patented QuickCalibration .
- High sensitivity
- Sample transport via injection system 1) a) Extraction of sample from sample
 - stream
 - b) Injection through valve
 - c) Rinsing of the injection needle.

At 1,200 °C

water samples are completely and precisely

analysed.

INTERNATIONAL

- 2) Combustion, oxidation to CO2
- 3) CO2 concentration measurement

Quick TOCpurity

- TOC: 10 2000 µg/l
- TOC: 0.1 10 mg/l
- Process water

Quick TOCcondensate

- TOC: 0 2000 µg/l
- Samples up to 90°C
- Boiler feed water
- Condensate return

Quick TOC_{pharma}

- TOC: 0.1 2000 µg/l
- 21 CRF Chapter 11
- Pharmaceutical HWP / WFI

Quick TOC_{effluent} Simple effluent measurements

- TOC: 0.1 200 mg/l
- Waste water effluent
- Water course monitoring
- Surface water monitoring
- Drinking water



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TOC Analyzer for Pharmaceutical Water

Precise continuous TOC analyses in low ppb ranges for pharmaceutical water

The Consequent Solution for TOC Determination

- **Easiest Calibration and Validation**
- According to USP Chapter 643 EP 2.2.44
- Software according to 21 CFR Chapter 11

QuickTOCpharma is an on-line measuring system for the detection of total organic carbon (TOC) in pharmaceutical water particularly for "Highly Purified Water" (HPW) and "Water for Injection" (WFI), according to USP Chapter 643 and EP 2.2.44.

Features and benefits
Software according to 21 CFR Chapter 11
Catalyst-Free Technique
Easiest Calibration and Validation
Highest Combustion Temperature (1,200°C)
Fast Response Time of 3 Minutes
Closed System to Prevent Contaminations
No Memory effects
Multi-Channel Measurement (Optional)

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Measuring Principle

The TOC is measured by injecting small defined sample volumes into the carrier gas stream that circulates continuously through a high temperature furnace where the water vaporizes and all carbon compounds are converted safely to CO2.

Calibration and Qualification

With the unique calibration method of the Quick- TOCpharma for which LAR has filed a patent it is now possible to check easily the system for correct functioning at any time. For this a calibration gas is used during the calibration period. It is injected into the measuring system similar to the water sample. With the extremely high combustion temperature of 1200°C the complete oxidation of all organic compounds is guaranteed. With this easy procedure the system can always be controlled.

The furnace temperature is of course monitored continuously and it is therefore ensured that measurements can only be performed at the specified combustion temperature.

TOC Analyzer for Effluent Water

Precise TOC Analysis especially for the Measurement Principle WWTP effluent

The QuickTOC_{effluent} of LAR is an on-line Measuring system for the determination of total carbon (TC), total organic carbon (TOC) and dissolved organic carbon (DOC) according to DIN EN 1484, ISO 8245 and EPA 415.1.

The QuickTOC effluent is suitable for almost every TOC measurement at the effluent of industrial and municipal waste water treatment plants. Typical on-line applications are the combined effluent monitoring of TOC and TNb in one single analyser. As a result the maintenance efforts will be reduced significantly compared to multiple analysers operation.

Thermal Combustion Technology

The QuickTOC_{effluent} has been engineered to work without the aid of expensive catalysts by using temperatures of more than 1200°C. Conventional thermal catalytic methods use temperatures between 680° to 1000°C.

Therefore, even difficult to combust compounds are oxidized effectively and rapidly, regardless of their composition.

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Features and benefits

- Measure according to DIN EN 1484, ISO 8245 and EPA 415.1.
- Catalyst- Free Technique Highest Combustion Temperature (1200°C) Highest Reproducibility
- Lowest Operational Costs Self- Explanatory Software
- Infrared Detection





Response Time (2 - 3 Minutes)

Lowest Maintenance Efforts

- Easiest Operation
- TN_b Detection Simultaneous (Optional)
- No Filtration Necessary at the Effluent

COD Analysis

With our analyzers, the chemical oxygen demand is cleanly and safely determined online, without using hazardous chemicals.

The online COD measurement system from LAR, based on their innovative process management, enables an accurate and environmentally friendly determination of the COD themselves to working online.

Quick COD_{ultra_o}

The high temperature method

- COD: 0.1 200,000 mg/l Response time: 3 min.
- Highest combustion temperature available (1200°C) .
- Reagent-free
- Determination of the real oxygen demand .
- Proven thermal oxidation principle .
- Catalyst-free •
- Salt conc. Up to 30% NaCl •
- Multi-stream measurements (optional)
- Individually programmable user levels •
- Analyser availability minimum 98%
- Maintenance and service max. 30 min per week •

Quick COD_{ultra_i}

- The correction method
- COD: 1 150,000 mg/l .
- TC/ TOC/ COD measurements
- Measurements without reagents .
- TOC/ COD correction •

With the ultra-series from LAR, operation is through the easy use of a touch screen or optionally it can be controlled via remote over a network con

Elox100[®]

The electrochemical oxidation

The patented method produces and uses OH radicals as oxidants by use of an electrical potential on an electrode.

COD. The

cleaner

methods.

- COD: 1 100,000 mg/l
- Response time: < 4 min. .
- Electrochemical oxidation •
- Easy operation and maintenance
- Free form chloride disturbances
- High oxidation potential .
- No memory effects •
- Waste water treatment .

INTERNATIONAL

Process control

The Elox100[®] works without dangerous or caustic substances, offering a highly safe and simple operation.



- 1) Sample transport via injection system a) Extraction of sample from sample stream

THE PRINCIPLE.

Even when the water is dirty -

the measurement is clean!

- b) Injection through valve c) Rinsing of the injection needle.
- 2) Combustion, oxygen consumption
- 3) O₂ measurement







Total Bound Nitrogen (TN_b) & Total Phosphor (TP) Analysis

TN_b and TP are important parameters for waste water treatment. We are the only one who offer a combination of these with TOC and COD in one system.

ALL DATE

QuickTON_b

The reagent free TN_b measurement

- N: 0.1 200 mg/l
- Combustion at 1200°C
- Response time: 1 2 min. .
- Measurement of the sample including particles .
- Consistent recovery from ammonia and nitrate nitrogen .
- High salt content possible
- Waste water treatment •
- Process control

The LAR high temperature method guarantees a complete oxidation for all nitrogen bonds in sample. Salt contents are dissolved at this temperature without a problem.

Advantageous in comparison to the wet chemical methods is that the all particle bound nitrogen is completely detected. The high reaction temperature guarantees the consistent recovery from ammonia and nitrate nitrogen.

4 in 1 - The combi-analyser

TOC: 0.1 - 200 mg/l

- TN_b: 0.1 50 mg/l
- TP: 0.01 4 mg/l
- COD: 1 600 mg/l
- Combination at 1200°C
- UV oxidation
- Molybdenum blue method
- Process monitoring
- Industrial and communal clarification plants
- Process control
- Water course Monitoring
- Optional number of parameters
- No memory effects
- COD correction

The measurement system from LAR, safely and reliably determines the total organic (TOC), the total phosphor (TP), the total bound nitrogen (TNb) as well as the chemical oxygen demand (COD).

The TP is calculated parallel to the TN_b and TOC measurements. this is carried out by mixing the untampered sample with UV persulfate and then leading it through a UV reactor. The COD is corrected to the TOC.

Housings

Depending on the requirements of an application, LAR offers a variety of protective housings for protection against corrosion and explosion:

- IP54 (Standard)
- NEMA 4X
- ATEX Zone I (T1 to T4)
- ATEX Zone II (T1 to T4)







High Salt Option

High Salt Concentrations. No Problem.

Based upon the unique LAR high temperature method at 1200°C, salts are completely oxidised and led out of the reactor. Through the special process management and optimised reactor construction lengthy downtimes and the high following cost are minimized.

- Long-life reactor
- Clog-free
- No dilution of sample







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Flow Measurement



The perfect solution for each application

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

Flow Velocity Measuring Methods

We provide portable and permanent metering systems for continuous flow measurement using ultrasonic flow 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 straight forward operation.

The Hydraulic Method (Q-h Relation)

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



Flow Measurement

We provides the best possible measurement method for all applications





Flow Measurement

Flow Velocity Measurement Methods	Permanent	Waste	water	
Transmitters	OCM Pro CF	NFP	OCM F	
		40.47 0 000 0		
	+ +	++	+	
	+ +	-	+	
	++	-	+	
- W	-	-	-	
System	Cross Correl	ation Method	Doppler Method	
Real flow velocity profile measuring	+	+	-	
Ex approval according to ATEX	Zone 1	Zone 1	Zone 1	
Internal 3-step controller	-	-	+	
Display i Operation	128x128 pixel	128x64 pixel	128x64 pixel	
Keys	18 keys	6 keys	6 keys	
Inputs				
0/4 - 20 mA with 12 Bit resolution for	4	-	2	
external level and external setpoints			4	
4 - 20 mA for external level (2-wire)	1	-	1	
	4	1	4	
Max. number of v-sensors	3	1	1	
Sedimentation measuring (WUS + ext. sensor)	+	-	-	
Outputs		-		
Kelays	5	2	5	
Data memory	4	5	5	
Flash card / internal memory	+	-	-	
Data transmission				
Via plug-in compact flash card, TCP/IP,	+	-	-	
Ethernet and Modem (GPRS, ISDN, analog)				
Rs232, TCP/IP via Ethernet/modem (GPRS, ISDN,	+	-	-	
analog), Modbus-TCP, int. web server				
Suitable sensors				
Areas of use	The top unit for universal use in wastewater	For full pipes - the cost-effective alternative to EMF	For measurements in slight to heavily polluted water	



	Water		Portable		Wastewater		Water
NivuChannel	NivuSonic	NivuSonic CO	PCM Pro v	PCM 4	PCM F		PCO
+ +	++	+ +	++	+ +	+		+ +
+ +	-	-	++	++	+		-
+ +	-	-	++	++	+		-
++	-	-	-	-	-		-
Т	ransit Time Method	4	 Cross Correl	ation Method	Doopler Method		Transit Time Method
-	-	-	+	+	-		-
-	-	-	Zone 1	-	-		-
-	-	+	 -	-	-		-
128x128 pixel	128x128 pixel	128x128 pixel	 128x128 pixel	128x128 pixel	128x128 pixel		128x64 pixel
18 keys	6 keys	6 keys	18 keys	18 keys	18 keys		5 keys
4	4	4	 				Lip to 2
4	4	4	-	-	-		00102
1	-	-	 1	2	2		-
- 4	- 4	-	 +	+	+		- Lin to 2
8 paths	2 paths	2 paths	1	1	1		1 path
-	-	-	+	+	+		-
5	5	5	 1	1	1		Lin to 2
4	4	4	 -	1	1	_	Up to 2
+	+	+	 +	+	+		+
+	+	+	Bluetooth/ GPRS	Bluetooth/ GPRS	-		External Modem GPRS
+	+	+	-	-	-		+
High accurate	Accurate	Contactions and	The tes unit for		Expectable		
High accurate measurements in	measurements	pressure indepen-	portable measur-	For demanding	For portable measurements in		ivon-contacting measurement for
part filled and full	in full pipes	dent measurement	ements in hazar-	measurements in	slight to heavily		portable long-term
pipes and channels		in full pipes	dous (Ex) areas	non-Ex areas	polluted water		monitoring



Level Measurement

Continuous Measurement Ultrasonic

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	-	++
Operation		
Display		+
Sensors / ontional 4-20 mA / digital	1/-/-	1/-/-
Outputs		
Relays / mA output	2/1	3/1
Construction		
Wall mount IP 65 / DIN rail mounting	+/-	+/+
19" version (rack mount)	-	+
Panel mount	- 7	+
Ex approval according to ATEX	The NivuMaster L-2 is our cost effective entry model.	For measurement of distance, level and volumes as well as for pump control and extended control tasks.



	D M2	D 02	D 06	B 40	D 45	D 25	B 40	
 sensor Type	P-IVI3	P-03	P-00	P-10	P-15	P-20	P-40	
Sensor: P-Series		¢		P - 10	S 7-15	17445 P-25	- 1011YUS P.40	
 Range	0.07 to 2.4 m	0.125 to 3 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	
 -						1		
Niv	/uMaster L-2	NivuMaste	er 3 Relays	NivuMast	ter LF-5:2	NivuMas	ter Plus	
				A Contraction of the second se		WiruMester Plus		
+ +		+	+ +		·	+ +		
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•								
2 / optional 4	-20 mA / -	2/-/-		1/-/-		2 / optional 4-20 mA	/ 7 x digital	
5/1		5/2		5/2		6/1		
+/+		+/+		+/+		-/-		
+		+		+		-		
+ Zone 0 1 and 1	2	Tone 0.1 and 2		+ Zone 0 1 and 2		- Zone 0, 1 and 2		
For measureme volumes as we extended control	ent of distance, level and Il as for pump control and ol tasks.	Particularly design comparative meas Featuring two mA difference and fillir	ed for urements. outputs for output ng level.	Particularly design water overflow tan For measurement level and overflow	ed f or storm ks. and output of volume.	Particularly designed management, the Ni features 7 digital inp	l for pump vuMaster Plus uts.	



Pressure Measurement

tatic, Pressure

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 M	leasurement	Measurements On Stormwater Overflow Tanks
	Submersible/Suspended P	robes			
	for clean to heavily pollute	d liquids			
	NivuBar Plus II	Nivu	Bar H II	NivuE	Bar G II
	cex	< a black of the second		Cex C	
Diaphragm	Ceramics	Ceramics		Ceramics	
Measurement principle	capacitive	capacitive		capacitive	
Ex Approval	Zone 0	Zone 0 optional		Zone 0	
Measurement range	1, 2, 4, 6, 10 m water column other on request	n/ 0 - 20 m water o other on reques	column adjustable/ t	1, 2, 4 m water co other on request	lumn/
Fastening	suspended on cable	suspended on c	able	screw-in using 1"	thread
Applications	 Level monitoring in open tanks, flumes and basins Wastewater treatment plants, water processing, pump stations, stormwater holding tanks, water supply 				supply







GPRS Data Logger for Flow, Level and Pressure GPRS Data Logger Low-Power data logger with GPRS transmission to D2W Internet portal GPRS Wireless Unlimited access to your measurement data via Internet Extremely long battery life of up to 5 years MicroPower For use in Ex zone 1 Battery Comprehensive possibilities such as remote parameter setting, alarm functions, monitoring and calculation of limit values via D2W - Device to Web Internet portal • Online Data Stable and cost-efficient data transmission Recording Digital 101010 Input/Output Internet Analog Input/Output Alarms low NivuLog 2 Ex NivuLog Easy NivuLog 4 NivuLoq NivuLoq NivuLog Easy Sun PCM Ex PCM NivuLog SunFlow ecipitation Inputs 4 x analog / digital 4 x analog / digital 2 x analog / digital Connection to PCM Pro can be combined as required can be combined as required can be combined as required (Ex) and PCM 4 (non Ex) Outputs 1 x digital 0 - 20 mA. 4 - 20 mA. 0 - 20 mA. 4 - 20 mA. Input 0 - 20 mA, 4 - 20 mA, configuration 0 - 2 V, 0-10 V, Trigger, PWM, digital, day counter, digital, day counter, day counter, interval and interval counter interval counter frequency counter 14 V DC max. 100 mA 14 V DC max. 100 mA Sensor supply 15 V DC (66 mA) optional: 24 V DC (41 mA) min. impulse length 20 ms min. impulse length 20 ms 25000 cycles 440000 cycles 440000 cycles 440000 cycles Memory Standard or rechargeable Standard or rechargeable Standard or rechargeable Standard or rechargeable Power supply battery pack or external power battery pack battery pack battery pack supply (7 - 30 V DC) Measuring From 1min. free configurable From 1min. free configurable From 1min. free configurable From 1min. free event-driven event-driven configurable event-driven interval event-driven Transmission Wake up / online mode, event-Cyclic from 10 min. Cyclic from 10 min. Cyclic from 10 min. driven; cyclic from 10 min. free free configurable Interval free configurable free configurable configurable event-driven event-driven event-driven Protection rating Easy: IP 66/ Easy Sun / Flow: IP 67 IP 67 IP 67 IP 68 Easy: 165/86/58 mm Dimensions 240/100/100 mm 240/100/100 mm 240/100/100 mm (h/w/d) Easy Sun / Flow: 574/295/70 mm



Samplers for Waste Water

MAXX Samplers are the industry's leader in reliable, long-lasting, quality water samplers. MAXX patented vacuum system technology of collecting samples brings the most accurate measurements of any wastewater samplers on the market today. **MAXX vacuum** technology delivers a significant improvement over peristaltic-pump technology for water sampling equipment. The fluid travels only through the intake hose to the metering chamber, and then through the discharge hose, eliminating cross-sample contamination from pumps, valves and distribution plates.

- Able to handle discrete sampling (into 24 bottles) or composite (into 1 bottle).
- Obtain and preserve a repeatable sample volume at a timed interval or after a predetermined volume of flow
- Available in portable, stationary & wall mount configurations to meet your sampling needs
- The MAXX Portable Sampler sets up easily and quickly in the field. Reduced maintenance and reliable results are assured.
- Tolerates Harsh Environments

Ideal for ISO 5667-10 & EPA waste water sampling requirement



Portable Sampler



Stationary Samplers

hose connection

Fully automatic sampling according to the vacuum principle

Vacuum System - The sample is extracted by means of a vacuum, that means the liquid is sucked up through the sample hose and led into a metering vessel in which the sample volume is adjusted.

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Peristaltic-pump water sampling equipment squeezes and pinches the tube in order to draw in the source liquid. This wears down the system more quickly, and takes less accurate samples.





Portable Flue Gas Analyser / Emission Monitoring

Standard Package Includes:

- Meter with Sensor for O_2 and CO
- Filter & Charging Adaptor
- Calibration Report
- Flue gas probe (600°C), Length 50 cm
- Carrying Case & User manual

Measuring Principle:

Infrared photometer (CO2) Electro-chemical cell (O2, CO, SO2, H2S, NO, NO2)

Technical data:

Parameters	Range	
Smallest measuring ranges:	CO	0 300 / 10000 ppm
	NO	0 300 / 1000 ppm
	NO ₂	0 300/ 1000 ppm
	SO ₂	0 300 / 2000 ppm
	CO ₂	0 20 Vol%
	O ₂	0 21 Vol%
	H ₂ S	0 200 / 2000 ppm





We have perfected this method for the measurement of nitrogen oxides in the concentration ranges of 1 % down to 1 ppt (part per trillion). Our NOx analyzers are monitoring continuously processes as well as ambient conditions around the world.

Environmental applications

A broad range of NOx analyzers for indoor, clean room, ambient, tropospheric and stratospheric monitoring.

Industrial applications

Whether combustion, waste incineration or power plant, most of the hot processes call for a measurement of the exhaust gas direct at the source by national laws and international standards.





Car emissions have to follow more stringent rules: You will find exactly the right instrument for your application! Analyzers for hot, moist, or cold, dry sample gas, and including simultaneous measurement of NO, NO2 and NOx reading AK protocol.

Semiconductor applications

We provide solutions for a wide range of complex problems associated with CMP process control. This has been used successfully in manufacturing and development lines worldwide since 1996.







Continuous Emission Monitoring System (CEMS)

The Continuous Emission Monitoring System is a high-end environmental protection monitoring equipment developed and produced independently by our principal, which is mainly for the flue gas monitoring at the occasions such as various boilers, industrial kilns and waste incineration. The core products are high quality spectrometer gas analyzer and laser dust detection instrument, of which our principal possesses all the intellectual property rights.

CEMS measure SO2, NOx by thermal wet method and measure O2 by zirconia method. CEMS are added by condensation device and COx module.

Technical Specifications

Gaseous Contaminant Monitoring Subsystem

Items			Specifications		
Gased	ous	SO ₂	(0~300~5000)ppm		
Polluta	ant	NO/NOX	(0~300~3000)ppm		
		O ₂	(0~30)%		
		СО	(0~1000) ppm, (0~100)%		
		CO ₂	(0~100) ppm, (0~20)%		
		HCI	(0~7~8000) ppm		
		HF	(0~1~10000) ppm		
Death		Transmittance: 0-100%, 80-100%			
		Opacity: 100-0%, 20-0%			
	intation	Extinction: 0-2.5, 0-0.1			
	Tomporatura	Range	(0~400)°		
	remperature	Accuracy	±0.5%F.S		
TPF	Brocouro	Range	(-5~5)kPa		
	Flessule	Accuracy	±0.5%F.S.		
	Elow roto	Range	(5~40)m/s		
	Flow rate	Accuracy	≤5%F.S		





System Features:

- Two-step measurement, higher accuracy and better performance;
- Full components measurement, all parameters integrated into to a panel
- Higher accuracy, adopting hot-wet process to avoid SO2 being absorbed by condensed water;
- Analysis system connected to the measurement cell by optical fiber, easing installation and maintenance;
- Comparing to conventional condensation method, CEMS has no moving parts, featuring compact configuration and long maintenance interval;
- Higher reliability and lower ownership, eliminating the use of costly parts such as peristaltic pump, diaphragm pump and condensation system;
- Gas analysis uses the UV spectroscopy technology, which can deal with the negative effect on measurement from water and dust;
- Adopt unique filter to reduce dust more effectively and improve the blowback significantly, in turn obtain a longer maintenance interval.



Continuous Emission Monitoring System for Incinerator (CEMS)

Measuring Principal:

The Analyzer is a single beam photometer. It's based on the absorption of infrared light. For the calculation of a component's concentration the measuring technology registration of unattenuated and attenuated intensity in the range of absorption wave lengths is required.



Application:

Multi-component gas analysis system for the use in official and process emission measuring systems e.g. for:

- Monitoring of the exhaust gas concentration of combustion plants with most diverse fuel (oil, gas, coal, biomass, substituting fuels, etc) as well as at the thermal waste treatment
- Combustion optimization
- · Monitoring of process management

Examples of Application:

- Power plants
- Waste incinerations
- Refineries
- Cement industry
- Industrial exhaust air
- Paper factories
- · Glass industry

Components, Low TÜV-approved measuring Range & measuring principle

- Meas. components: Max. 8 Infrared components + O + TOC (optionally)
- TÜV-Approval: TI-Air, 13th, 17th and 30th BImSchV
- TÜV-Report: 936/21203173/A
- CO: 0 ... 75 mg/m³ (Gas filter correlation)
- NO: 0 ... 200 mg/m³ (Gas filter correlation)
- NO: 0 ... 50 mg/m³ (Single beam dual wavelength)
- SO₂: 0 ... 75 mg/m³ (Single beam dual wavelength)
- HCI: 0 ... 15 mg/m³ (Gas filter correlation)
- NH₃: 0 ... 30 mg/m³ (Gas filter correlation)
- H₂O: 0 ... 40 Vol% (Single beam dual wavelength)
- CO: 0 ... 20 Vol% (Single beam dual wavelength)
- NO: 0 ... 50 mg/m³ (Gas filter correlation)
- O₂: 0 ... 25 Vol% (Zirconium oxide cell)
- TOC, CH: : 0 ... 15 mg/m³ TOC
- HF: 0 ... 20 mg/m³ (Single beam dual wavelength) (no TUV-approved measuring component)



Air Quality Monitoring Station (AQMS)

As a real-time monitoring system, Air Quality Monitoring System (AQMS) is designed to evaluate air quality, assess environmental and health risk, and predict potential air contamination accident. Awaring of the concentration and variation tendency of toxic and hazardous materials in ambient air, effective pollution control strategies could be generate to improve the quality of ambient air.

AQMS measures multiple parameters including SO2, NOx, O3, CO, NH3, H2S, PM10 (2.5), VOCs, meteorological parameters, heavy metals, aerosol, etc. It can be used in routine of air quality, VOCs monitoring, haze monitoring, dust monitoring, greenhouse gas monitoring, traffic pollution monitoring (transportation routes automatic monitoring stations), acid rain monitoring, heavy metal monitoring, and so on.



Technical specification:



Product Name	Principle	Key Parameter		
SO ₂ Analyzer	Ultraviolet	Range:0-50ppb to 0-20ppb(Dual ranges and auto range		
	Fluorescence	supported)		
		Noise:<0.2ppb(RMS)		
		Detection Limit:<0.4ppb		
NOx Analyzer	Chemiluminescence	Range:0-50ppb to 0-20ppb		
	Method	(Independent range and automatic range supported)		
		Noise:<0.2ppb(RMS)		
		Detection Limit:<0.4ppb		
O2 Analyzer	Ultraviolet Absorption	Range:0-100ppb		
	Method	to 0-10ppb(Independent range and automatic range		
		supported)		
		Noise:<0.5ppb(RMS)		
		Detection Limit:<1ppb		
CO Analyzer	Gas Filter Correlation	Range:0-1ppb to 0-1000ppb(independent range and auto range supported)		
	Method			
		Noise:<0.02ppb(RMS)		
D		Detection Limit:<0.04ppb		
Particulate	βRay	Range:0-1,2,5,10mg/m3 (may be adjusted)		
Analyzer	Absorption	Resolution:0.001mg/m3		
(PM _{2.5} &PM ₁₀)	Technique	Detection Limit: 0.001mg/m3		
		Zero Source Temperature: <1%F.S./10°C		
7		Range Source Temperature: <1%F.S./10°C		
Zero Gas				
Generator		NO<0.025ppm; NO2<0.025ppm		
		SO2<0.025ppm, O2<0.3ppm		
		C = 4 < opp(n)		
		Dow Point: Dow Point Tomporature of H20 < 25°C		
Dynamic		Elements Massuring Assurable 100×10^{10}		
Calibrator		Flow rate Controlling Acculacy. ±1%F.S.		
Calibrator		Reproducibility : ±0.2%F.S.		
		Flow rate ineasuring Linearity: ±(0.5-1)%F.5.		



Online Laser Gas Analysis (LGA) System



(In-Situ System)

(Bypass System)

The Process Gas Analysis System (In-Situ model), based on the technology of the diode laser absorption spectroscopy (DLAS), is the gas laser analysis system with integrated design and high integration. The system, by in-situ measurement that needs no sampling pretreatment, is able to rapidly, accurately and reliably measure various industrial process gases and flue gases emitted for environmental protection, to provide the best solution for the on-line gas monitoring in various industries.

Product Features:

- Laser In-Situ measurement, rapid response, high measurement precision;
- Integrated positive pressure explosion-proof design, safe and reliable;
- Modular design, with the possibility to renew all functional modules on site, easy to maintain;
- High intelligent interface, easy to operate.

Technical Principle:

Diode Laser absorption spectroscopy technology-to measure the gas's concentration based on the principle of absorption spectroscopy formed by the laser energy absorbed by the gas molecule "frequency selecting". When the special wavelength laser beam emitted by the diode laser passes through the measured gas, there shall be curtain functional relationship between the attenuation of the laser intensity and the concentration of the measured gas. Therefore, the concentration of the measured gas can be analysed and gained through measuring the attenuation information of the laser intensity.





Parameters of Measured Gases

Gas	Detection limit	Measuring range
O2	100ppm	(0-1)%vol, (0-100)%vol.
CO	0.6ppm	(0-60) ppm, (0-100)%vol.
CO2	1.4ppm	(0-140) ppm , (0-100)%vol.
H2O	0.3 ppm	(0-30) ppm, (0-100)%vol.
H2S	20ppm	(0-2000)ppm, (0-100)%vol.
HF	0.02ppm	(0-2)ppm, (0-10000)ppm.
HCL	0.1ppm	(0-10) ppm, (0-100)%vol.
HCN	0.3ppm	(0-30) ppm, (0-1)%vol.
NH3	0.2ppm	(0-20) ppm, (0-100)%vol.
CH4	0.4ppm	(0-40) ppm, (0-100)%vol.
C2H2	0.1ppm	(0-10) ppm, (0-100)%vol.
C2H4	0.6ppm	(0-60) ppm, (0-100)%vol.
CH3L	0.6ppm	(0-60) ppm, (0-100)%vol.

Schematic diagram for "single line spectrum" measurement



Online Laser Gas Analysis (LGA) System

Applications:

Industries	Technological Process	Application Field	Measured Gases
	Blast Furnace iron making	Blast furnace analysis	CO, CO2, O2, CH4
		Blast Furnace coal injection Safety Control	02, CO
		Hot Blast stove flue gas analysis	02,CO
		Converter gas recovery	02, CO
	Converter Steelmaking	Converter gas safety control	02
Metallurgy		Converter gas flue gas carbon prediction	CO, CO2, O2
	Coking production	Electric coke safety control	02
		Coke dry quenching cycle gas analysis	O2, CO, O2
		Coke furnace gas analysis	H2S,NH3
	Others	Gas calorific value analysis	CO, CH4
		Boiler flue gas analysis	CO,O2
		Catalytic cracking regenerated flue gas analysis	CO, CO2, O2
	Oil refining	Hydrogen out of alkane	CO, CO2, CH4
	-	Sulfur Recovery	02
	Ethylene cracking	Outlet of reactor etc	CO, CO2 etc.
	EO/EG	Process gas	O2, C2H4 etc.
	PE	Process gas	02
	PP	Process gas	02
	Ethylbenze/Styrene monomer/PS	Process Components	O2, CO/CO2, micro- water in benzene
	РТА	Oxidation reactor control	CO, CO2, O2
Petrochemical	Gas out of coal	Process gas	02
industry	Methanol/ synthetic	Process gas	O2,CO, CO2 etc.
industry	ammonia/ urea	Urea synthetic ammonia carbon ratio	NH3, CO2
	Chlor-Alkali/PVC	Micro –water in CL2,HCL and other corrosive gases	H2O
		Micro-water in EDC	H2O
		Synthetic gas	O2, CO2, C2H4 etc.
		Oxy-chlorinantion process	O2, CO2, C2H4 etc.
		VCM recovered exhaust	02
	Hydrogen peroxide	Oxidation process	02
	Sulphur-burning sulphuric acid	Oxidation process	O2
	TDL	Water gas	02
Environmental Protection	Flue gas emission	Waste incineration smoke analysis	HCL, HF, CO, CO2, O2
		Flue gas denitration process control	NH3, NO, NO2
		Combustion process control	O2, CO, CO2
Cement	Cement production	Rotary kiln inlet & outlet burning process control	O2, CO, CO2
		Coal injection (mill,pulverized coal bunker)safety control	02,CO
		Preheater & whirwind heater burning control	O2, CO, CO2
	Thermal power generation	Burning control	02, CO
Electric power		Coal injection (mill,pulverized coal bunker)safety surbeilance	02, CO







Online Process Gas Analyzer

Laser Trace Gas Analyzer:

Laser trace gas analyzer is the latest achievement of in the field of laser gas analysis, which combines diode laser absorption spectroscopy (DLAS) and integrated cavity output spectroscopy (ICOS) perfectly and in turn enhances the measuring sensitivity hundreds folds.

Parameters of Measured Gases

Gas	Standard measuring range	Minimum Measuring range	Detection limit
H2S	0-200ppm	0-20ppm	1ppm
CO	0-1000ppm	0-200ppm	5ppm
CO2	0-1000ppm	0-200ppm	5ppm
C2H2	0-5ppm	0-0.5ppm	10ppm
02	0-1000ppm	0-100ppm	1ppm





The Newest Generation of On-Line Gas Analyzer:

It offers the possibility to measure several gases by UV spectroscopy, in one single enclosure, using different mathematical algorithms.

UV Spectroscopy

A built-in pressure and temperature sensors allow the compensation on the measurement of gas sample Temperature and pressure variation.

Parameters	Standard Range*	Parameters	Standard Range*
NH ₃	0-500 PPM	Acetylene	0-5000 PPM
SO ₂	0-500 PPM	CS ₂	0-500 PPM
NO	0-2000 PPM	Butene - Toluene – Xylene	0-100 PPM
NO ₂	0-2000 PPM	Formaldehyde	0-5000 PPM
H ₂ S	0-1000 PPM	Acetaldehyde	0-5000 PPM
NCL ₃	0-100 PPM		

SO2 Analysis System:

In the nonferrous metal smelting industry, they usually turn smelting smoke into sulphuric acid in order to prevent the air pollution (including a large amount of SO2) in the smelting process. In the process of sulphuric acid, it is necessary. The concentration of SO2 is closely related to the smelting process, usually between 3% to 20%.

Product Features:

- Advanced all solid state in situ extraction thermal wet method technology.
- High reliability.



Sulfur Ratio Analyzer:

Sulfur reclaimer mostly adopts Claus technique in its sulfur recycling. After Reactor 1-3 in the Claus reclaimer, it is necessary to conduct real-time concentration testing of H_2S and SO_2 , and feedback the H_2S -2SO₂ to DCS to control oxygen input, in order to reach the optimum desulfuration effects.

The measuring methods of this technique has two methods, namely sampling method and in-situ method; these two methods adopt Non-Dispersive infrared absorption measurement, 150°C whole process heat tracing (liquid sulfur, avoiding the water condensation at the same time), using spray catcher to prevent sulfur from entering measuring chamber.



Filter controller

For monitoring dust emissions and detecting effectively damages at filtering precipitators The filter controller consists of an isolated probe which is installed in the clean gas channel. The complete electronic is integrated in the probe head. No additional control unit is required. The charge transferred by contact and triboelectric processes is derived as current, converted in the evaluation unit, amplified and provided as norm signal 4 ... 20 mA. Via a limit value detector the exceeding of the allowable emission limit value can be signalised optically or acoustically.

Due to the compact design the measuring device is especially suited for the construction of complex monitoring systems with several emission sources.



Flow measurement





Application and function

For the operation of a facility with streaming gases (e.g. hall exhaust air, exhaust gases etc.) the continuous registration of the exhaust gas velocity respectively the flow as well as the temperature are often of substantial importance. In case of continuous emission measurements the mass of pollutants has to be disclosed additionally (mass flow [kg/h]).

The flow measuring device for the continuous registration of gas velocity and temperature of gas flows in pipelines. Moreover it is possible to display respectively provide the flow in operational or norm state. The use of the back-pressure and Pt100-measuring principle guarantees a device simply to install and handle as well as a timely monitoring of the measuring parameters.

Dust measurement devices





Application

The dust concentration measuring device is used for the continuous measurement of dust contents, especially for the emission measurement according to TI air, 13th, 17th and 27th BImSchV as well as for the dust concentration measurement in process monitoring. Parallel to the dust measurement flow and temperature of the smoke gas are registered (in combination).

Special features

Target value calibration: Enter a known, averaged dust content in operation state - The analyser determines automatically appropriate calibration factors and shows the quantitative dust content in mg/m³.



Air Pollution Measurement unit (online) - PM10 & PM2.5

This new measurement instrument, designed to determine the concentration of suspended dust particles (nephelometer), makes use of the light reflected by tiny particulate matter.

- Online measurement unit PM10 and PM2,5 fine dust
- Simple operation
- menu-based control using function keys
- Input for external signals
- such as wind direction and wind speed
- Quick selection with JOG-DIAL
- Display of all measurement parameters
- Simple software updating using flash RAM

Option:

Data transmission via tri-band GPRS modem

Low-volume sampler

Reference unit classified as per CEN 12341 / CEN 14907

Flow rate: LVS 3.1: 1.0 ... 3.5 m³/h MVS 6.1: 1.5 ... 5.5 m³/h

Simple operation menu-based control using function keys and JOG-Dial

Operating modes:

- Time of day, Period and Quantity
- Displays for pressure, temperature
- moisture / humidity
 Interface: RS232C
- Simple software updates thanks to a FLASH-RAM
- Automatic recognition of the sampling systems





Automatic dust sampling system

Dust sampling system comprising a highvolume sampler (HVS) and a filter changer with an intake tube and sampling head

Flow rate (controlled): 20 ... 50 m3/h (Nm3/h)

Type PNS16-30.2 in accordance with DIN EN12341 PM (equivalence test)

Magazine with 16 filter cassettes

Input for external signals such as wind direction and wind speed

Options:

- Regulated Peltier cooler filter storage in accordance with DIN EN14907 5.1.3
- Data transmission using integrated GPRS modem



Flame-Ionization Detectors (FID) for measurement of Total Hydrocarbon

FID Application

- Environment Monitoring
- Automobile Exhaust gas Monitoring

Portable THC-Analyser

TÜV approved according to all German standards (TA-Luft, 2.BImSCHV, 17. BimSchV)



FIDs for THC measurement of - Hvdrocarbons in steam

- Hydrocarbons in water



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Stationary THC-Analyser - 19" Rackversion TÜV approved according to all German standards (TALuft,2.BImSCHV, 17. BimSchV)





- Leakage detection
- Monitoring of fuel camps

Microcontrolled THC-Analyser

- very easy in operationincluding software for data logging
 - for data logging

Mercury Analysis

ZEEMAN Spectroscopy

Operation of all the Lumex Mercury analyzers is based on differential Zeeman Atomic Absorption Spectrometry using high frequency modulation of light polarization (ZAAS-HFM)

Advantages

The analysers are supersensitive highly selective real-time instruments that do not require any chemical, any career gases for the operation. Thereby most of the samples are analyzed directly avoiding time-consuming sample preparation and without preconcentration on the gold trap.

Applications:

Environmental Applications – analyses of soil and sediment, biota, ambient air, natural and waste water, precipitation, filters. Oil & Gas industry application – Monitoring of hydrocarbon gas, analyses of crude oil and natural gas condensate, analyses of strata and waste waters.

Emission monitoring - analyses of stack/flue gases, flyash, fuel (coal, sludge, etc.) gypsum, absorbents.

Food analysis - analyses of all kinds of food products (fish, meat, cereals, vegetables beverages, etc.).

Chemical industries - analyses of process gases, quality control, catalyst research.

Health & safety - workplace monitoring, waste treatment, exhaled air urine, hair and blood analyses.

Instruments Application



It's an ultra-sensitive, highly selective mercury analyzer that allows real-time operation for air and gases. Moreover, RA-915 is a portable multifunctional analyzer capable of analyzing gaseous, liquid and solid samples when combined with RP-92 Cold Vapor Attachment and Pyro-915+ Pyrolysis Attachment. Its wide dynamic measuring range covers four orders of magnitude. No chemical, no career gas and no zero gas are needed for the operation. The analyzer is easy to use – it is equipped with a built-in performance verification test cell and auto zero function.



It implements unique advantages of the direct analysis of solid and liquid samples. It performs direct sample treatment excluding sample preparation procedures. The adjustable heating modes and full control over atomization process makes it possible to select the best decomposition procedure and optimize analysis conditions. No carrier gas is needed for analysis. The heated analytical cell with programmable heating modes and monitoring of the atomization process ensures full control over the sample analysis.



It provides direct analysis of hydrocarbon gases. The attachment significantly simplifies sampling and enables analyses both form the gas stream and from gas containers (Tedlar® bags etc.)



It is a compact light –weight instrument for workplace monitoring and mercury spill clean-up verification. As compared to RA-915, it is equipped with a shortest analytical cell and similar interface and is intended for measuring higher mercury concentrations.



It is designed for the continuous mercury concentration measuring in ambient and indoor air, in hydrocarbon and process gases. This stand-alone monitor has the highest sensitivity and selectivity and is optimized for unattempted continuous measurements.

It operates in automatic mode, including automatic zero drift and span drift correction, automatic recalculation to standard conditions, auto control and preventive maintenance function.



It is portable mercury CEM (with speciation option) based on the analytical approach of the thermal catalytic conversion and Atomic Absorption Spertrometry for detection of mercury with Zeeman background correction. Designed as an instrumental replacement for Ontario Hydro method, it is a good tools for testing certification of stationary CEMMs and on-site performance evaluation of mercury Control technologies.



Gas Sampling Components



Sample Probe - Without Heating



Self regulated heating Probe



Heated sample line



Gas sampling - Dilution unit





Diaph. sample pump - compact



Diaph. sample pump - heated



Cond. removal peristaltic pump









Universal condensate separator





Process Refractometer

Chemical Plant Application – Acid Concentration Measurement



Measurement The MPR E-Scan has numerous applications within the chemical industry. Some of the most common are listed below. In general, the MPR E-Scan can measure the strength of a chemical when diluted with water (or another chemical). If there is a concern with optical coating, a hand-operated brush cleaner is normally the preferred method. Various material alloys are available for wetted parts and Teflon® coating is available for non-wetted parts.

Measures concentration of chemicals

- Sulphuric Acid
- Hydrochloric Acid
- Phosphoric Acid
- DMAC
- Sodium Hydroxide
- Sodium Carbonate Urea
- Oleum
 Glycol
 Ethanol
 PVA
 Ammonia
 Acetic Acid

PVOH

Citric Acid Chlorine Dioxide

Brine

- Formaldehyde
- Glycerin
- Hydrazine
- Lactic Acid
- Magnesium Chloride
- Methanol
- Nitric Acid
- Potassium Carbonate
- Sode Ash
- Sodium Sulphate
 Sulphur Diovide
 - Sulphur Dioxide

Pulp & Paper Plant Application – % Solid Measurement

Black Liquor Solid Measurement

The Electron Machine Corporation pioneered the use of refractometers to accurately measure black liquor dissolved solids nearly 50 years ago. Our long history with this application has resulted in numerous design features that specifically address problems associated with this harsh process measurement.

Green Liquor Solid Measurement in Pulp & Paper Industries

The Electron Machine Corporation has been accurately measuring green liquor solids in the paper industry for more than 30 years using refractometers. An optical coating problem associated with green liquor has been an ongoing problem resulting in the adaptation of several different cleaning methods.





MDS Monitor Divert System

- BLRBAC compliant for firing Black Liquor
- Monitors black liquor solids to the chemical recovery boiler and automatically diverts should concentration fall below preset point
- System includes two MPR E-Scan hybrid-digital refractometers and a microprocessor monitor
- Features: easy menu operation, intelligent purge functions, divert trend data
- Options: S/S console w/ vortex cooler, remote status panel

Food Industry Application – %Brix & %Solids Measurement

Sugar Plant: The MPR E-Scan is perfectly suited for sugar applications. The refractometer directly measures dissolved solids, which can be easily converted to BRIX. In sugar refineries, the MPR E-Scan can be used to monitor and control BRIX measurement from the beginning of the evaporation stages up to the seed point of crystallization

Dairy (Milk Product): The MPR E-Scan accurately measures dissolved milk solids very well. Usually installed with one of our sanitary adapters that are manufactured to comply with industry standards for sanitary applications. If coatings are an issue, a steam port can also be added to the adapter to allow the prism to be steam cleaned at specific intervals.





ONE SERIES Safety Transmitter Pressure and Temperature Transmitter - Switch





Features

Digitalprocess displayProgrammableset point and deadbandSelf-diagnosticsolid-state digital electronicsPlug port detectionAdjustable nuisance trip dampeningConfigurable IAW® self-diagnosticsMin/Max process values memory3-year warrantyProvide a SFF = 98.5

- Improve Availability with reduced nuisance trips
- Improve Uptime with safety diagnostis
- Improve Safety with SRO to ensure safety function
- Meet Regulatory Requirements with SIL2 IEC 61508
 certification
- Lower Inventory a transmitter, switch and gauge in one
- Ease Selection Process with universal drop-in replacement in safety PLCs
- Reduce Purchasing, Commissioning and Maintenance cost with simple innovation
- Simplify Complex Safety Systems with SFF = 98.5%
 Reduce Migration Costs with backward and forward compatibility

Pressure, Temperature & Differential Pressure Switch

Upgrading your Plant Instrumentation and Field Instruments? Concerned about costs, safety and reliability?



When upgrading plant instrumentation and control systems, UE's innovative One Series enables customers to improve the Reliability of discrete field inputs, replacing mechanical pressure and temperature switches while retaining existing wiring and control schemes. With solid-state reliability, self-diagnostics, and minimal power requirements, the One Series is the cost-effective solution to increased reliability for critical on/off alarm and shutdown protection. Select from:

Why the One Series is the

Best choice for plant upgrades:

- Self-diagnostics and continuous health status, eliminating the "blind" mechanical switch issue.
- 0.1% repeatability; temperature compensated.
- Programmable Set point & Deadband adjustment 0 100% of range for precise switching.
- All solid-state for extended life and reliability.
- Meets Zone 1/Div 1 and Zone 2/Div 2 cUL, ATEX, IECEx and GOST hazardous location requirement.
- Temperature range from -300 to 1,000°F with field replaceable, local and remote sensor options.
- Ideal for SIL1 and SIL2 applications FMEDA and SIL verification reports available upon request.

Warranty 3 YEARS



One Series vs.

Transmitter

Self-diagnostics

Response Time

Local Display

Plug Port Detection

Instrument Cost

PLC Input

Programming

Total Cost

Starting at about 1/2 the

Installed cost of a process transmitter

Installed Cost Analysis

One Series

2W

Yes

60 mS

Yes

Yes

Х

NIL

NIL

Process

Transmitter

Limited

300 mS

Optional

No

2X

Х

2X

5X



Photo Gallery

























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