V-ELIN d.o.o.

ISO 9001:2008
No. 022015

BUSINESS PORTFOLIO

V-ELIN d.o.o. Preloška 25, 40 000 ČAKOVEC; OIB: 87790528199
Tel. +385 (0)40 364 136, fax. +385 (0)40 365 116; www.v-elin.hr; e-mail: info@v-elin.hr
Upisan kod Trgovačkog suda u Varaždinu: Tt-05/815-2; MBS:070006085; Temeljni kapital:700.000,00 kn uplaćen u cijelosti
Član uprave: Gordan Vrbanec

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ABOUT US

How we started

Company V-ELIN d.o.o. Electronics and Informatics Ltd. started its work in 1992.

In 2001 the company moved to a new location in Preloška 25 in Čakovec.

From the beginning, the main activities are focused on its own development and design of industrial electronics products with a focus on systems of measurement, control, management and remote control.

In 2001 The company intends to move to their own business premises at Preloška 25 in Čakovec.

Quality standards ISO 9001 applies since 2004.

Today, the company has successfully produced a number of products industrial electronics based on its own development and design. Pay special attention to innovation and following the latest technologies in the world of electronics.

What we strive for

In the next period, our main goal is further growth of production and services in accordance with customers' needs and market requirements, employment of young, highly educated people, and development of our own products.

Development as a constant

V-ELIN d.o.o. has been successfully operating in domestic and foreign markets for twenty years with a wide range of products and services. We are constantly evolving, and gradually expanding our activities.

Product and service quality is ensured by the installation of excellent and controlled components and spare parts, as well as years of experience and our knowledge.

The company is active in various industrial sectors; electrical and metal industry, food industry and others.

Employees of companies actively involved in the work of professional associations such as CIGRE - International Council on Large Electric Systems, Electrotechnical Society Zagreb, Varaždin Company energy experts and others. Many meetings were published works of our experts, and since 2013 we have become an honorary member of the Electrotechnical Society Zagreb.

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PRODUCTS

More info: www.v-elin.hr

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❖ DIGITAL PROBE FOR MEASURING LIQUID LEVEL

- Piezosnsitive measuring element
- Outbound communication RS-485, Modbus RTU protocol, 9600 bps
- Maximum length from waters 1200 m
- Measurement accuracy ≤ 0.1%
- Measuring range: 0...1 m, 0...5 m, 0...10 m, 0...20 m or by request
- Measuring liquids temperature
- Standard measured value change damping is 250 ms or by request
- Power supply 9-24V / 30mA
- Protection against reversal of polarity
- Output cable with integrated capillaries for pressure equalization
- Standard cable length: measuring range + 2m
- Built-in surge protection
- Permitted pH value of measured liquid- pH5...pH9
- Inox enclosure IP68
- Compactness and robustness

ADDITIONAL ELEMENTS:

Accessories for hanging

Galvanic coupling

Wireless or optical modems - for direct connection of probes to the modem without additional hardware

COMPUTATIONAL UNIT (communication with max. 30 probes on the same bus, inspection and measurement system configuration, process control, RS-232 communication with external process or computer, analog outputs of measuring values...)

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❖ ANALOG PROBE FOR MEASURING LIQUID LEVEL

- Piezosensitive measuring element
- Measuring range: 0…5m, 0…10m, 0…20m, 0…100m
- Measurement accuracy < 0.1% or <0.25%
- Power supply 12-30V
- Output 4-20mA
- Two-wire splicing
- Stainless steel body
- Venting tube in cable
- Standard measured value change damping is 250 ms
- IP68 protection
- Medium temperature -10°C…+60°C

ADDITIONAL ELEMENTS:

Accessories for hanging

Galvanic coupling

Wireless or optical modems - for direct connection of probes to the modem without additional hardware

COMPUTATIONAL UNIT (communication with max. 30 probes on the same bus, inspection and measurement system configuration, process control, RS-232 communication with external process or computer, analog outputs of measuring values...)

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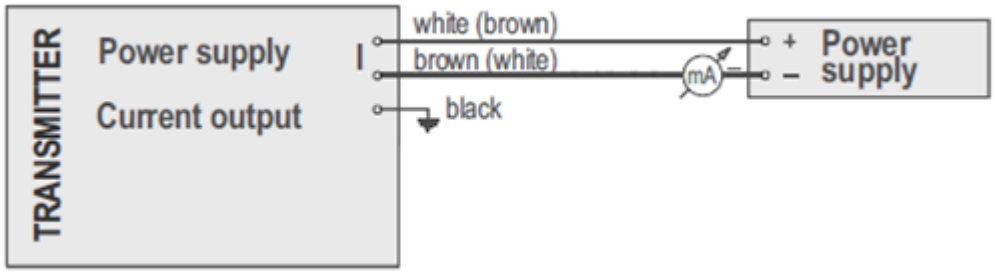
❖ ULTRASONIC PROBE FOR LIQUIDS

- Non-contact level measurement
- Narrow 5° beam angle
- Measurement range 0.25…6m, 0.35…10m. 0.45…15m
- 2-wire integrated transmitter
- IP68 protection
- Medium temperature -30°C…+60°C
- Output 4…20mA
- Power supply 12-30V
- Measurement accuracy < 0.2%



connecting probe

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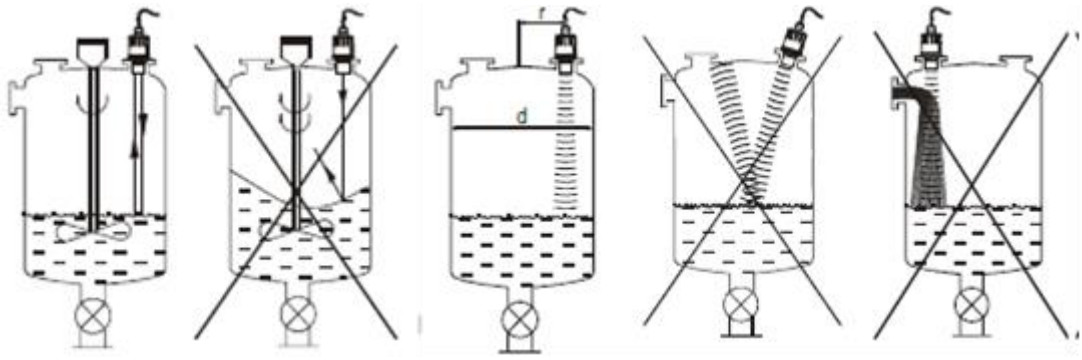
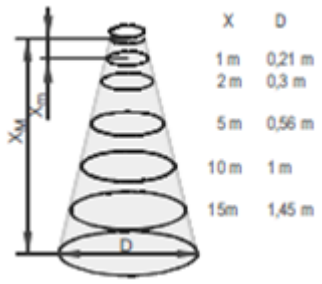


Mode installation in sealed container



The ratio of the width of the beam as a function of distance

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❖ GALVANIC COUPLING

- overvoltage protection communication and power supply
- for RS485 half duplex
- Power supply 24V / 30mA
- voltage on the secondary side 12 V / 2 W

Galvanic coupling

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❖ VEMOGS – computational unit

The VEMOGS – COMPUTATIONAL UNIT is designed for measuring and processing physical quantities. Measurements are locally displayed on the LCD screen, and the analog output is intended for display at a remote location.

Advanced processor setup is possible with the help of the PSConf user program. While offsets can be set up locally via the keyboard on the processor itself.

The computational unit consists central unit and modules connected together:

- Central unit
- Relay output unit (number of channels optional)
- Analogue output unit (number of channels optional)
- RS485 Modbus RTU (Optional)

The core part of the process station is a central unit which has a communication port (RS485) through which it collects data from the probe, and sends data to other units.

The analogue output unit which is connected to the central unit serves to converting measured value into a standard analogue output (4 - 20mA).

The number of analog outputs is determined according to the order.

Technical specifications for computational unit:

Power supply 18 – 36 VDC
Power consumption 24 VDC < 5 W
Communication ports 1 x RS485
Screen LCD 128x64 (57x28)
Keyboard 4 keys

Technical specifications for digital output:

Relay output
Maximum voltage < 60 VDC, < 60 VAC
Maximum stream < 0,5 A

Technical specifications for analogue output:

Power supply 18 – 36 VDC
Power output 4 – 20 mA
Final resistance < 500 □

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❖ VEMOGS - remote station

The remote station has the primary function of collecting and sending metering data and managing via GSM / GPRS communication. This unit has a battery charging regulator installed in the FN module.

With metering data, the remote station collects and transmits data on battery voltage and voltage to the FN collector.

The remote station is energy-compliant so that the minimum energy consumption is continually transferred to the server.

The GSM station has a GSM number that is connected to a SIM card.

The communication protocol is designed that an optimum data transfer rate is achieved.

TECHNICAL CHARACTERISTICS OF EQUIPMENT

- Power supply voltage 12 or 24 VDC
- Power consumption 0.7 W
- Maximum charging power 6.3 A
- Communication port RS485, 9600 8n2, modbus RTU master
- Analog input 3 x 4...20 mA or 0...10 V
- Digital input 2 x <60 V (AC / DC)
- Digital output 1 x <60 V (AC / DC)
- Operating temperature from -20° C to 60° C
- IP protection IP 66

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❖ TEMPERATURE REGULATOR

- for Infrared heaters – IGU

IGU is a programmable temperature regulator designed for controlling of "ambient" temperature in an industrial environment using infrared heaters. Overview of measurement data and program parameters is provided on the display, and the assignment of program parameters is provided over a small keyboard. IGU measures ambient temperature via its own temperature sensor.

IGU

It comes in four variants:

- **IG-U -** The simplest controller for a single heater
- **IG-U1-T -** Controller for a single heater with weekly programming clock
- **IG-U1-S -** Controller for a single heater for operation in a network (slave) without programming clock
- **IG-U1-MT -** Controller for a single heater for operation in a network (master) with the programming clock

Technical specifications

- power supply 230 V (+/- 10%) 50 Hz / 10 mA
- temperature range min. -20˚C to max.80˚C / +-1˚C
- allowed relative humidity 0% to 90%
- thermal sensor semiconducting – internal
- relay output for burner/heater operation 250 VAC/3 A max.
- display of program parameters LCD – 2×16 characters
- input of program parameters 4 buttons + reset

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❖ ELECTRICAL SHEPHERD

Electric Shepherd is the power source for the electric fence keeping livestock size goats to cattle and safe to property protected from predators.

ELECTRICAL SHEPHERD EP1 is powered by standard voltage 220V, 50Hz. Voltage on the fence is 10kV, pulse frequency is 1Hz, dimensions are 160x120x80mm, mass of 1.6 kg.

ELECTRICAL SHEPHERD EP2 is powered by a single polarity 12V (battery voltage). Device has a built-in power control. Voltage on the fence is 10kV, pulse frequency is 1Hz, dimensions are 190x145x70mm.

ELECTRICAL SHEPHERD EP2.2 is powered by a single polarity 12V (+ battery voltage power from solar photovoltaic modules). Device has a built-in charging regulator for solar systems and power control. Voltage on the fence is 10kV, pulse frequency is 1Hz, dimensions are 190x145x70mm.

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❖ MEASURING ROD FOR OF WATER LEVEL

Measuring rod of water level shows height of water level above sea level- altitude.

Rod is made of an aluminium base dimensions 100x20 mm tube.

On it is a calibrated scale that is resistant to corrosion, chemicals and other external conditions.

Rod is attached to a pole, diameter of 2“ or 60 mm.

It can be made in few dimensions:

100 cm;

110 cm;

150 cm;

160 cm.

The difference in height of 10 centimetres is in the numbers that indicate the altitude in meters. We deliver the numbers for altitude separately.

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PROJECT SOLUTIONS

More info: www.v-elin.hr

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❖ SYSTEM FOR REMOTE WATER LEVEL MEASUREMENT

Measurement station

Measurement of the water levels consists of many measuring points.

Measurement is carried out with hydrostatic probes and a remote unit of our in-house production. The system is powered by PV modules and the data transfer is conducted via GSM/GPRS mobile network. The measuring system is combined of many remote units.

Functioning of the entire system is defined by system parameters. Parameters are adjustable.

The remote processing unit has a primary function of collecting and transmitting data from the probe through GMS/GPRS communication. The unit has an integrated battery charging regulator through the PV module and an alarm that indicates when the unit's metal cabinet door is open.

Quick view app

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Along with the data on water level and temperature, the remote computational unit collects and transmits the data on battery voltage and alarm when the unit's metal cabinet door is open.

Graphic chart displaying continuing measurement

Mjerenje vodostaja HE Gojak

Rd.br.	Naziv signala	Datum i vrijeme	Vrijednost
1.	Razina vode Pećina, apslutna kota	2014-05-18 12:06:08	326,01 [m.n.m.]
2.	Temperatura vode Pećina	2014-05-18 12:06:08	10,12 [°C]
3.	Napon baterije Pećina	2014-05-18 12:06:08	13,00 [V]
4.	Alarm Pećina	2014-05-18 12:06:08	0,00 []
5.	Razina vode Pećina, relativna kota	2014-05-18 12:06:08	0,00 [cm]
6.	Razina vode Bistrec, apsolutna kota	2014-05-18 12:07:14	320,46 [m.n.m.]
7.	Temperatura vode Bistrec	2014-05-18 12:07:14	9,07 [°C]
8.	Napon baterije Bistrec	2014-05-18 12:07:14	13,00 [V]
9.	Alarm Bistrec	2014-05-18 12:07:14	0,00 []
10.	Razina vode Bistrec, relativna kota	2014-05-18 12:07:14	109,10 [cm]

The remote processing unit is built in a way that energy consumption is minimal for the continuous transmission of data to the server.

Quick view of current data is adapted for smartphone display.

Extended Quick view app

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❖ SYSTEM FOR REMOTE WATER QUALITY MEASUREMENT

Water quality remote measurement system is implemented with digital probes for on-line water analysis and VEMOGS remote station. The system is powered from photovoltaic modules, and the data is continuously transmitted to the GSM / GPRS public communications network. The measuring system can consist of an unlimited number of independent and independent metering points.

The remote station has the primary function of collecting and transmitting data from the probe via GSM / GPRS communication. This unit has a battery charging regulator installed in the FN module.

With the metering data, the remote station collects and transmits data on battery voltage and alarm when the closet door was open.

The system supports various water quality measurements such as free oxygen measurement in water, quantities of hydrocarbons in water, pH value, etc.

These measurements are used to control water quality in rivers and lakes.

The remote station is energy-compliant so that the minimum energy consumption is continually transferred to the server.

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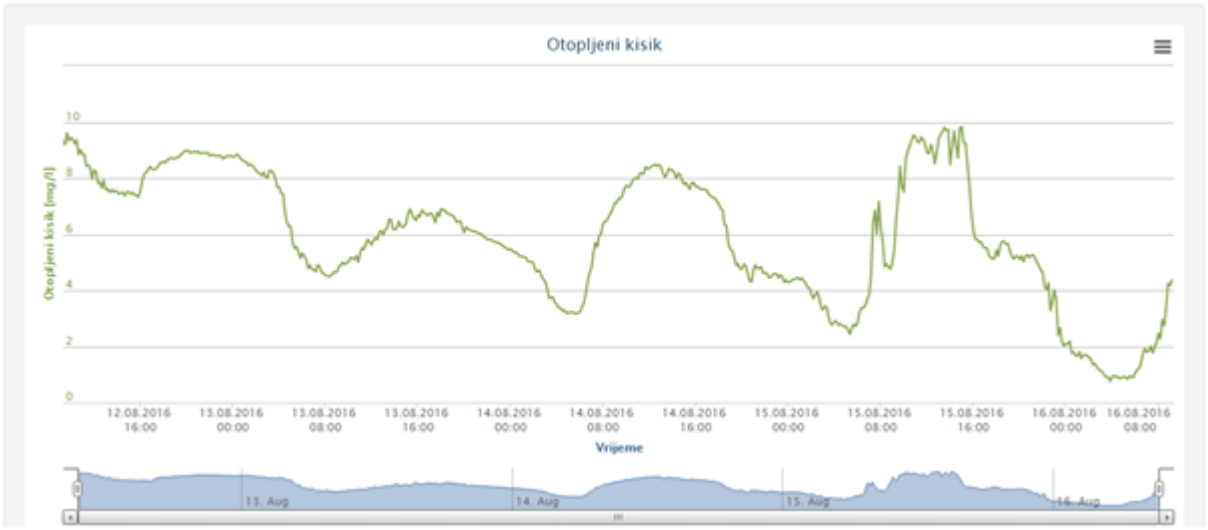
Quick view app

System supports a variety of measurements of water quality measurements such as free oxygen in the water, the quantity of hydrocarbons in the water, pH value...



Graphical representation of continuous measurement

Remote processing unit is made up so that the energy consumption for continuous data transfer to the server is minimal.

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❖ FLOW MEASURING IN OPEN CHANNELS

Measuring the flow of wastewater is frequent in places with difficult working conditions. Wastewater characteristics, such as sediment, mechanical impurities, aggressive chemicals, etc., are causing difficulties while measuring wastewaters. Measurement of water flow in open channel has a fundamental advantage that possible contaminations can easily be removed and installation and maintenance of the measuring system are much simpler than the measurement in closed conduits.

The system of flow measurement in open channels consists of three basic units:

- Hydromechanical profile
- Fluid level measuring system
- Processing unit for calculating the flow.

Parshall flume is delivered completed and made of chemically and mechanically highly resistant plastic material. The material is also of very high quality, which prevents the accumulation of dirt on the channel walls which gives high accuracy over a long period and requires no special maintenance.

This ready- made flume has to be installed correctly on the bottom of the channel, usually in a manhole.

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The probe accuracy class is 0.2, 1 cm resolution. Beam width is 5 °. The probe is in IP68 housing, and if necessary, can be washed with tap water. In case of emergency and if the probe is submerged, the measuring will stop at that moment, but as soon as the situation normalizes the measuring will continue normally and the probe will remain valid.

Process unit is a central part of the system where data on the level is stored and measurement sizes are processed and calculated. The measured values are locally displayed on the LCD screen. VEMOGS process unit is made in SMD technology and is designed for industrial applications. Based on the known geometry of Parshall flume and water level, the unit calculates the flow through the Parshall flume.

Move keys left / right to pass through the screens on the display:

- Current water level
- Current water flow
- Cumulative flow rate 1
- Cumulative flow rate 2.

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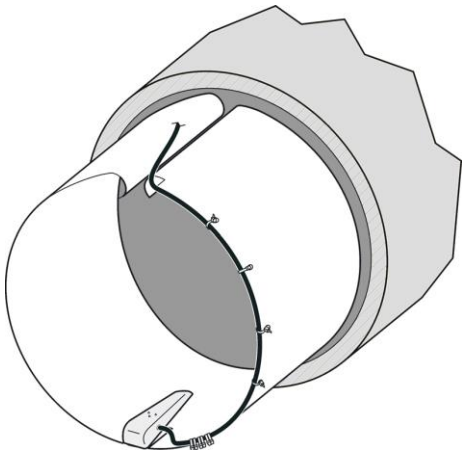
❖ FLOW MEASUREMENT IN OPEN CHANNELS WITH SUBMERSIBLE ULTRASONIC PROBE

Measurement of flow in open channels and incomplete pipes is possible by submersible ultrasonic probe.

The probe is mounted on the bottom of the channel or pipeline.



The probe measures flow rate with ultrasound and the level of water with a pressure sensor that measures hydrostatic pressure.

The system is easy to install in a pipeline or channel.

SUBMERSIBLE ULTRASONIC PROBE

- power supply 12 VDC
- consumption 1.5 W
- level measuring range 25.4 mm to 4.5 m
- level measuring accuracy of + 0.25%
- speed measuring range 0.03 m/s to 6.2 m/sec (in the opposite direction to -1.5 m/sec)
- speed accuracy + 2%
- automatic temperature compensation
- sensor cable length 7.5 m
- probe protection IP68

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❖ FLOW MEASUREMENT IN OPEN CHANNELS WITH RADAR SYSTEM

Flow measurements at places with severe operating conditions can be measured by a combination of radar and ultrasonic probe. The measurement is non-contact, so there is no possibility of damage to the measuring equipment. The flow measurement system on open channels consists of three basic units:

- Radar system for speed measurement in both directions
- Ultrasonic probe for fluid level measurement
- Flow calculation unit

Measurement of flow in open channels is based on the principle of measuring water level and speed. Based on the known geometry and measured data it is possible to accurately calculate the flow in the open channel.

RADAR

- non-contact fluid measurement with radar
- type K-band radar 24.125GHz / 24.200GHz, Doppler radar 27 dBm EIRP
- maximum distance measured surface 50 m
- measuring range 15 cm/s to + 15 m/s
- accuracy of + 0.5% + 2 cm/s
- resolution 0,1 cm/s
- power 9-27 VDC
- consumption <1,35 W (standard 1,0 W)
- maximum electricity <250 mA
- medium temperature of action: -40° C to + 85° C
- cabinet dimensions 100x90x50 mm
- cabinet IP68
- cable length 20m
- mounting

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THE ULTRASONIC PROBE

- non-contact measuring media level
- measurement range 0,25-6 m
- accuracy of + 1%
- resolution 1 mm
- power 12-36 VDC
- consumption <0.8 W
- medium temperature of action: -30° C to + 80° C
- cabinet IP68
- cable length 20m
- mounting

VEMOGS - COMPUTATIONAL UNIT

- Power supply 9-36V DC
- consumption of <5W

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❖ PUMP STATION CONTROL SYSTEM

Pump station management system is applied in water supply and sewerage systems. The electrical appliance consists of a control cabinet with an energy component of the equipment, a logic unit with control logic and a remote communication unit (optional). Pump management is possible locally or remotely, automatically or manually. The automatic mode depends on the input parameters, which can be the level of fluid, flow rate in the pipeline, pressure in the pipe or pressure vessel or some other automatic control parameters depending on the pumping station's use.
The power section may have a power outlet from two or more supply lines with an automatic power supply selection system.
The pumps are included directly, by a star / triangle system or via a soft-start device (depending on the customer's wishes and the size of the pump).

On the control panel there is process signaling for the basic operating parameters of the system, as well as measuring instruments for the electricity or the customer's wishes.

Each pump also has a mode selection switch.

The mode can be MANUAL - 0 - AUTOMATIC.

The unit also has a communication unit via the GSM / GPRS communication interface (optional). In this case, the user is required to provide the SIM card for the data transfer and the location on the server. All relevant pump operation information is transmitted in real-time to the server and can be tracked from any computer or smartphone that has approved access through the access password.

An authorized user can remotely control the pumps.
The capacity and number of pumps is variable and depends on the user requirements.

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❖ REMOTE MONITORING AND MANAGING IN WATER SUPPLY SEWAGE SYSTEMS

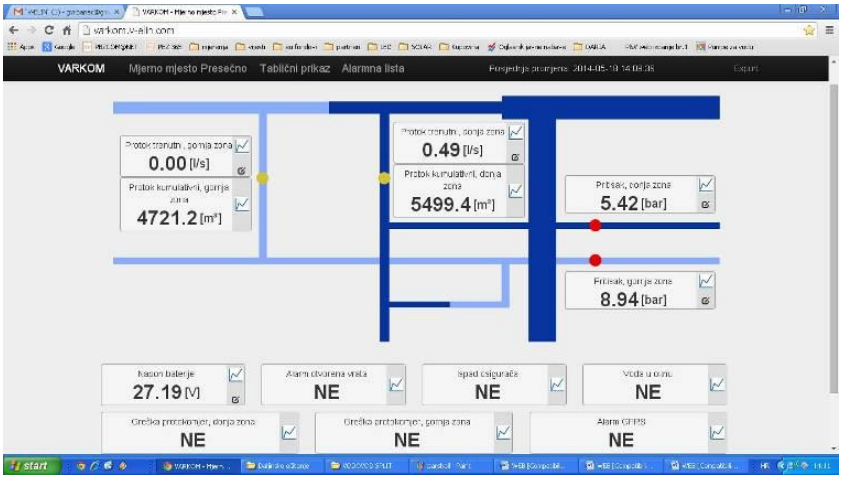
The measurement of water flow is performed with two flow meters, two pressure gauges and VEMS remote station of our own production. Data is transmitted via GSM / GPRS mobile network.

The system is powered by an independent PV system and battery designed for stationary systems. Functioning of the entire system is defined by system parameters, which can be changed if necessary to enable better system functioning.

VEMS GSM-RS remote station has the primary function of collecting, processing and transmitting data via GSM / GPRS communication. Along with the information on flow and pressure, remote processing unit also collects and transmits information on the battery voltage.

Remote station is designed to have minimal power consumption while transmitting the data to a web server.

All data is available online via computer or smart phone. A login password is provided to access the data.



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❖ DC POWER SYSTEM

Battery charger and distribution system is designed for uninterruptible power supply coverage in industrial plants. The system is designed to work in very difficult industrial conditions.

The power supply is 230 V, 50 Hz and the output voltage is 24 VDC +10%.

Power charger cabinet

The system is designed to have two groups of batteries and each group can operate independently of the other group.

System of battery charger and distribution of 24 VDC consists of:

- power supply unit 230 VAC
- control unit for battery charging
- under voltage relay
- rectifier diodes
- circuit breaker
- signalling
- instruments for measuring current and voltage

VE-PSU 400-24 is a high quality high-performance industrial power supply. The power supply is designed to work reliably in very difficult industrial conditions. It is designed as a DC voltage source for industrial devices. In combination with the battery charging control unit VE-REG, it is not necessary to regulate the output voltage since it adjusts on the VE-REG unit.

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❖ DRILLING SET MONITORING USING

One of the key demands of today's industry is the monitoring of a process, in particular of its parameters. Measurement of various process parameters is commonly used for automatic control and is often used for making various reports during or after completion of process cycles. In addition to local monitoring of various process parameters, there is a prevalent need for data to be available online, independent of the place of collection. Online availability becomes an additional problem for remote measurement sites and at industrial installations that are not stationary.

Remote unit

One example of such a plant is a drilling station, where the plant is in one location but the people who operate the drilling are often in an office at a completely different location. Furthermore, drilling sites are usually situated outside of populated areas, where only wireless communication is possible. For these reasons the system

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for remote monitoring and management was implemented on one of the drilling sets of Petrol Geoterm in Slovenia.

System is designed to measure, display, and store and to transmit measured data to the server that is on another location. Data transfer can be achieved through public GSM / GPRS network or over Wi-Fi or WLAN communication for the local connection to a computer.

Metering system includes parameters which are grouped into so-called Master Log:

- time & date
- depth [m]
- the progress of the drilling [m/min]
- load on the hook [t]
- load on the chisel [t]
- pressure mud pumps [bar]
- capacity mud pump 1 [l/min]
- capacity mud pump 2 [l/min]
- Speed desk [rev/min]
- torsion [%]

Master Log display

The system of measurement, processing, storing and transmitting is controlled by hardware circuitry that enables all actions to be executed simultaneously. The transfer to the local portable computer and a remote computer takes place independently of each other, thus avoiding data in the transmission process due to a power failure or some other problem in the system.

Remote monitoring system of drill sets is applied at Nafta Geoterm Company in Slovenia, where it is used to measure the depth of drilling, drilling progress, the load on the chisel, desk speed, pump capacity, pump pressure and torsion.

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