Water & Wastewater Technologies
As a leading provider of automation engineering technology, INDAS design and build customized facilities for drinking water production and wastewater treatment.

In managing all water stages from water production, distribution and waste water treatment, INDAS ensures reliable monitoring, telemetry and control of complete technological process providing:

- consulting, technical support and expertise, supervision, project management
- electrical, mechanical/hydraulic, technological and construction design and planning
- design of electrical automation and data communications networks
- supply and delivery of high quality equipment
- design and development PLC / HMI / SCADA / DCS / communication software
- panel building (fully tested and checked before shipment, with FAT)
- on site installation, connection, start-up and adjustment, in field run with SAT
- commissioning (completely tested design of the equipment and system fully checked)
- customer training, as-built documentation, after sales support and maintenance

INDAS enables to the customer to optimally deploy and maintain its system by providing integrated management of a complete system of water supply and waste water treatment.
Water production
Water distribution
Wells and raw water sources automation
Pump and booster station automation
Reservoir monitoring and control
Measurements, control and water supply zoning
Water production plant automation
Wastewater distribution and treatment
Pump station for wastewater
Wastewater treatment plant automation

Water distribution
3. Pump and booster station automation
4. Reservoir monitoring and control
5. Measurements, control and water supply zoning
Applications • Water production

Water & Wastewater Technologies
WATER PRODUCTION

WELLS AND RAW WATER SOURCES AUTOMATION

For optimal working performance of water source wells, it is necessary to provide flow control according to dynamically changing consumption. At the same time, continuously monitoring and controlling of the pressure should be provided. Furthermore, system has to be protected from over pumping, so maintaining the level of water is required.

INDAS has designed and developed its own dedicated cascade flow / pressure / level controller with the main purpose to ensure that flow rate of each well contributes to optimal usage of complete water source. If the pressure, of complete water source, exceed the predefined pressure range, the pressure controller takes the main control and system pressure is maintained. Main control can be overtaken by level controller in case of level in the well reaches minimum predefined value.

Depending of the default parameter settings and water production facility’s needs, software provides the measurement, setting and maintenance of desired process values such as flow rate - Q (l/s), pressure – P (bar) or level – L (m).

Besides optimal control of whole water source, software also provides: dry run protection, protection from the over-exploitation, balanced pump operation and extends the life of the well, reduce production and maintenance costs and saves energy.

During operation, software is constantly collecting measured process values and calculating the following system parameters:

- depression level in the well \( S(m) = S\text{stat}(m) - S\text{dyn}(m) \)
- specific yield wells \( q = \text{l/s}/\text{m} \)
- electricity consumption: \( P \text{ (kW)}, Q \text{ (kVAr)}, S \text{ (kVA)}, \cos \phi \)
- specific consumption of electric energy wells \( \eta = \text{kW/m}^3 \)

This improved way of control provides to the customer minimum energy consumption per m³ of pumped water, reliable informations (yield of the well, notification for well’s regeneration...) and all other standard status information from the system (run time, alarms...).
Applications • Water production
WATER PRODUCTION PLANT AUTOMATION

INDAS has realized automation of high demanding facilities for treatment of well water and raw water including the following technological parts:

- aeration unit
- sand/GAC and Caligan filter station
- purification – sedimentation
- flocculation/coagulation
- pre-ozonation/ozonation plant
- compressor station and pumping
- station for filter back-wash
- drinking water reservoir
- chlorination station
- pumping station for drinking (potable) water

INDAS has designed and developed universal solution for filters control – SCF, that provides optimal control of water level in filters. Optimal control of valve positioners causes minimum of valve actions and flow changes and therefore a better quality of filtered water. Solution has performed its advantages in water treatment plant with sand filters, as well with GAC or Caligan filters.

Solution for controlling filters SCF enables improved filtration and backwash control features for continuous and reliable operation without need for the operator to take action.

INDAS also has implemented software for water treatment plant automation – SWTPA, that enables the automatic control of the complete plant.

Our SWTPA software for monitoring and control is able to provide complete automatic operation from in the raw water intake through complete water treatment to the pumping of drinking water into the distribution network – to customers.

Within the all water production phases, system continuously monitors all the important technological parameters of water quality: turbidity, residual chlorine, temperature, level, pressure and flow rate.

SCF and SWTPA solutions are preparing all data for SCADA advanced visualization. Based on these data, SCADA application software provides reports with balances of energy consumption during the water treatment process, quantity of well water (m³), quantity of water for filter back washing (m³), electricity consumption, consumption of chemicals in the production process, production of drinking water (m³).
Applications • Water distribution
WATER DISTRIBUTION

PUMP AND BOOSTER STATION AUTOMATION

Controlling of pumping station should provide consumers with required water quantity and system pressure, while using necessary minimum energy and minimizing total distribution costs. This is an essential goal, since every m³ of water that passes through the water supply system represents a significant energy cost, a cost that is magnified by every m³ lost to leaks.

INDAS has developed its own dedicated pump controller software PCS that provides a combined control which depends on the customer’s requirement for saving water or saving electrical power.

While the flow rate is below limit value, PCS software maintains required (predefined set value) pressure in the water supply system. When the flow rate reaches a limit flow rate, PCS software continues to maintain flow rate on this limit until pressure set point is reached.

PCS software prevents dry run and overflow of pump, provides balanced pump operation and optimal control with reduced production and maintenance costs and energy savings. According to dynamically changing consumption in the water supply system, PCS software enables measurement, settings and maintenance of predefined process values: inlet or outlet pressure P (bar), flow rate Q (l/s) or level in reservoir L (m).

PCS software is designed to provide the following functionality:

- pipe fill to prevent overflow and water hammering
- no flow detection, dry run protection
- low power detection, extremely low flow rate
- end of curve detection, too large flow rate – if there is a leakage in the pipe
- staging / destaging
- lead pump alternation
- sleep mode
- different criteria for start/stop of the next pump by: defined order, running time, number of switching on, downtime

PCS software makes the best use of two valuables, limited resources: water and energy.
Applications - Water distribution
RESERVOIR MONITORING AND CONTROL

INDAS has developed its own dedicated software for reservoir control - SRC, that provides monitoring and full control of reservoir equipment: level switches and measurement devices, inlet and outlet flow meters, inlet and outlet valves.

Based on data received from the software for reservoir control - SRC, SCADA software calculates and provides following system informations related to reservoirs inlet/outlet for selected period of time: total water flow (m³), average water flow (l/s), minimum water flow (l/s), maximum water flow (l/s).

This modern software platform of SCR and SCADA provides customer the following additional important information:

- available water capacity (m³)
- percentage of available water reserves in the water supply system (%)  
- available water reserves in reservoirs according average consumption of water (h)

Software for reservoir control – SRC saves water, energy, time and money while improving system performance. Some of many benefits includes:

- save energy costs by scheduling reservoir filling to coincide with low electricity rates and low demand
- different charging modes: maximal water consumption and exchangeability of water in reservoir (quantity of storaged water)
- greatly reduced needs for service personnel to visit sites for inspection, data collection and adjustment

Software for reservoir control – SRC ensures optimal management of stored water in reservoir according periodically changing consumption in the water supply system (day/night, summer/winter...) and provides consumers continuous water supply.
MEASUREMENT, CONTROL AND WATER SUPPLY ZONING

INDAS has developed its own dedicated universal solution for distribution network control SDNC that provides real-time monitoring, and control of distributed water system.

This solution enables monitoring and full control of distributed network equipment: on/off valves or level/pressure/flow regulation valves.

SDNC provides measurement of following parameters: flow rate, pressure, residual chlorine Cl2, turbidity. SDNC and SCADA software provides customer the following information for each measured values (table form or trend diagram):

- real time measured value
- minimum, maximum, average value in selected time interval (for example 15 minutes)
- cumulative – total flow value

Based on these data from different zones within distribution network, SCADA software also calculates and gives balance reports which are the platform for locating leaks and water loss.

SDNC and SCADA software enables control and decision making to accomplish highest level of distribution network performance.
Applications - Wastewater distribution and treatment
WASTEWATER DISTRIBUTION
AND TREATMENT

WASTEWATER PUMP STATION AUTOMATION

Controlling of pumping station should provide continuous discharge of wastewater and enable appropriate reaction to rapidly changing inflow of wastewater.

INDAS has developed its own dedicated wastewater pump controller software - WWPCS in order to handle large amount of wastewater.

Based on level measurement or open channel flow measurement, WWPCS detects a quicker than normal raise of water level and starts pumping before level reaches preset value, thereby preventing flooding.

WWPCS reduces energy costs by running pumps using off-peak electricity. The start/stop setting on the energy time setting function allows the pump to start and empty the pump station during lower-cost energy periods.

WWPCS software is designed to provide the following functionality:

- no flow detection, dry run protection
- low power detection, extremely low flow rate
- lead pump alternation
- different criteria for start/stop of the next pump by: defined order, running time, number of switching on, downtime

WWPCS software also provides a short-term pump activation to prevent blockage of impeller, notification of unexpected position of level switches, reduced risk of interruption, reduced breakdown costs and many more advanced features to minimize the costs in the pumping station throughout the whole life cycle.

WWPCS software ensures your pump station is working to its optimum performance, monitoring, recording and alerting you to any potential issues.
Applications - Wastewater distribution and treatment
WASTEWATER TREATMENT PLANT AUTOMATION

INDAS has implemented solution that provides monitoring and control for standard and SBR wastewater treatment plants. Software for wastewater treatment plant automation SWWTPA includes proven solution for specific technological stages of wastewater treatment:

- primary treatment
- secondary treatment
- tertiary treatment
- sludge treatment
- disinfection and effluent discharge

Special advantage of SWWTPA software reduces treatment costs with better treatment efficiencies in wastewater.

SWWTPA software also monitors and controls following treatment process in:

- sludge thickener (sucking sludge from the bioreactor by sludge pumps)
- pool with mixer for homogenization of sludge
- basin for reception of concentrated sludge
- compactor where its dehydration takes place
- purification, while the sludge is taken to the landfill

SWWTPA software significantly reduces the impact of pollution to the environment and treats wastewater to be clean and reused.
Applications
INDAS in cooperation with EWT, Austria’s market leader in water metering, provides custom made calibration test benches for domestic water meters DN15-DN40 and industrial water meters DN50-DN200. All calibration test benches are designed to test water meters metrological class A, B and C for cold water, according to DIN-ISO 4064 part 3 and comply the European directives 75/33EC with possible adaption to MID R50-R160 norm in the future.

We also manufacture automated fast regulation device for domestic water meters DN15-DN40.

All mechanical and electrical parts are in compliance with European safety standards and have to be approved by the relevant local authorities.

Upon request, we are designing and producing automation pressure increase unit, integrated in calibration test bench for domestic water meters and in fast regulation device. For extensive flow rates testing, up to 400m3/h, we are manufacturing it as separate unit.

We are making calibration test bench for manual and full automatic operation according to user’s specific requirements. Full automatic operation is supported with software for hand held device and PC protocoling software which enables:

- water meter serial number input
- input test data results
- transmission of tested data to PC
- calculation of measurement error
- printing out test results
- storage of all test results in data base

INDAS improves calibration and testing process, providing following benefits for customer:

- reduced test time
- increased testing capacity
- testing of multiple meters at the same time
- highly accurate measurement results
- recirculation system reduces the water usage for the meter testing
REMOTE CONTROL SYSTEMS

INDAS has implemented most advanced, reliable, and proven communication technologies for remote monitoring/control and telemetry solutions for wide area networks for SCADA systems, Industrial control and distribution automation.

Our inControl concept includes various hardware (inCom-communication and RTU equipment) and software products (inView Web SCADA and inView OPC server) designed to operate in high demanding applications.

This concept of fully automated control systems provide monitoring/control of remote equipment of entire sites, or complexes of systems spread out over large areas in real-time applications using: LAN, WAN, WLAN, VSAT, GPRS and RADIO networks.

Highly efficient proprietary protocols with data compression and encryption are developed to ensure optimal data transfer and maximum data security.

All our inCom communication products implements local, onboard logging to avoid data loss during communication breakdown, even communication channel redundancy is supported.

All data available through inView OPC server can be accessed with any SCADA system.

With our own inView - Web SCADA solution, system does not require client software, but only internet browser of any kind, which makes field operational data available anywhere where internet connection is accessible, using PC, tablet or smart phone as client.

inView - Web SCADA also supports hierarchical, distributed architecture and could be run as cloud service.

All gathered data stored in standard SQL database can be used for further analysis and planning using third-party specialized software.

Our inControl concept solution provides following benefits: significantly reduced operating costs, increased reliability, improved functionality…
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