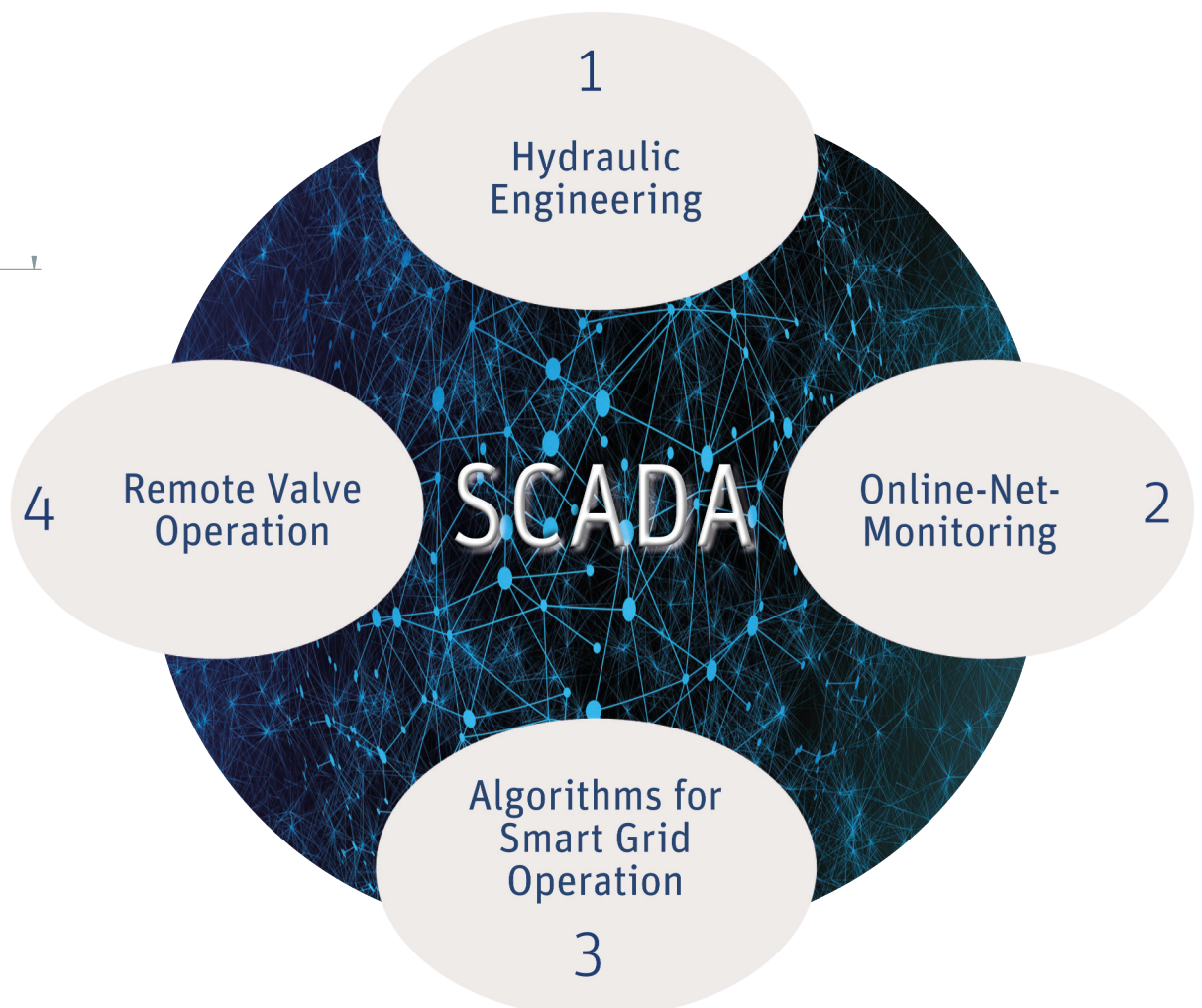


> 3SmartX

Intelligent Network Automation For Drinking Water Distribution Networks

Pipe networks of urban drinking water supply have been operated mainly manually. 3S Consult GmbH and 3S Antriebe GmbH present with **3SmartX** a solution for the transition of existing drinking water networks to smart, more efficient systems. The solution consists of a bundle of hardware and software components.



1. Hydraulic Engineering:

- Optimal and flexible sectorization of the pipe network into DMAs (District Metering Areas)
- Optimal positioning of sensors and actuators
- Water hammer calculation

2. Hydraulic (flow, pressure) and quality measurement sensors for online net-monitoring

3. Algorithms for smart grid operation:

- Automatic valve switching procedures
- Leak Detection based on minimum night flow observations in flexible DMAs
- Automatic allocation of water losses within flexible DMAs and automatic isolation of leaks (Leakage Localization)
- Advanced pressure and flow management – reduction of pumping cost and reduction of water losses
- Self-cleaning pipes by temporarily increased flow velocities
- Redundancy and resilience: flexible combination of pressure zones and DMAs in case of increased demands (firefighting, bottle necks during pipe repairs)
- Protection of critical Infrastructures – efficient and immediate response to contamination events by allocation of contamination source, forecast of spread of contamination and isolation

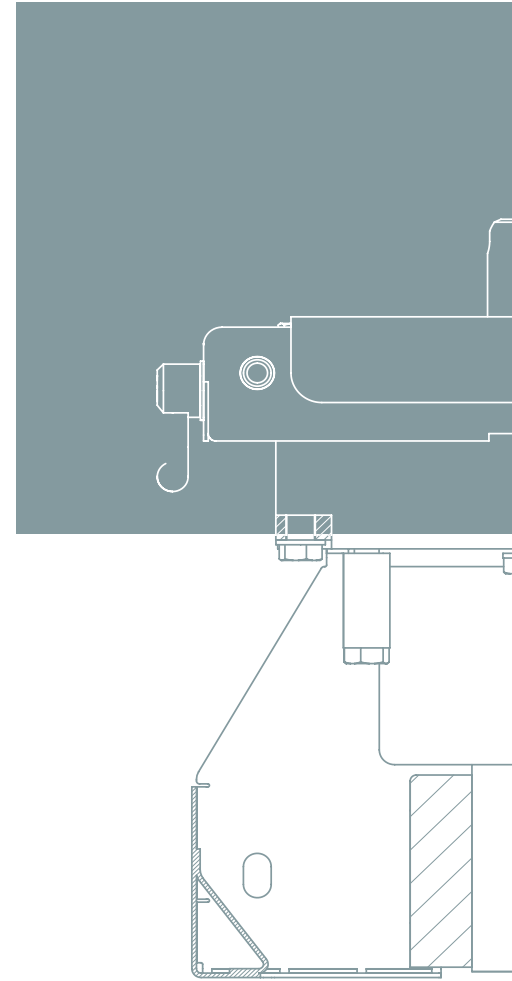
4. Remote controlled isolation valves

3S Consult GmbH is delivering the offline Hydraulic Engineering and the online server algorithms.

3S Antriebe GmbH is responsible for the remote valve operation (actuators) and the net-monitoring (sensors).

3S Antriebe GmbH is a Berlin (Germany) based company, specialized in automation technology for valves in supply networks. The unique 3S actuators can be installed without a chamber directly in the ground. They can be supplied by a rechargeable battery and quipped with a mobile communication. With 3S actuators, existing valves can be retrofitted without interruption of supply and without infrastructure – allowing valve operation remotely from the control centre economically.

3S Consult GmbH The German company 3S Consult delivers high-quality hydraulic engineering based on realistic models with its own software product SIR 3S. 3S Consult provides solutions for GIS integrated network calculations, SCADA integrated online simulations and training simulators. For gas and liquid pipeline systems and for gas/water/district heating distribution networks. For 33 years, 3S Consult has been successfully working in the field of safe and optimal transient system operation.



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