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Software Solution

— for large geographically spread design

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PVSS[®] — More than SCADA!
by ETM

- PVSS 行业应用介绍
- PVSS Appliation in focus branch

Peter Wirzel – ETM Business Development

PVSS SCADA in traffic & transport projects

- ETM experience in traffic projects since foundation of company
- First PVSS projects were tunnel solutions
- PVSS-concepts are based on the special requirements of this branch
- In the meantime more than 130 tunnels & big control centers with PVSS
- Partners & systemintegrators in various countries with worldwide projects



Highway Traffic Control



Operating Control Center



Tunnel



Parking



Rail Tunnel



Transport Rail



Transport Metro



Water Roads



Airports

Traffic management systems

Interurban

- Warning of traffic congestion
- Warning in front of foggy areas
- Warning of wet and icy road surface
- Increasing the capacity of highways through harmonizing of speed
- Reduction of pollution due to less traffic jams
- Increasing of safety!!



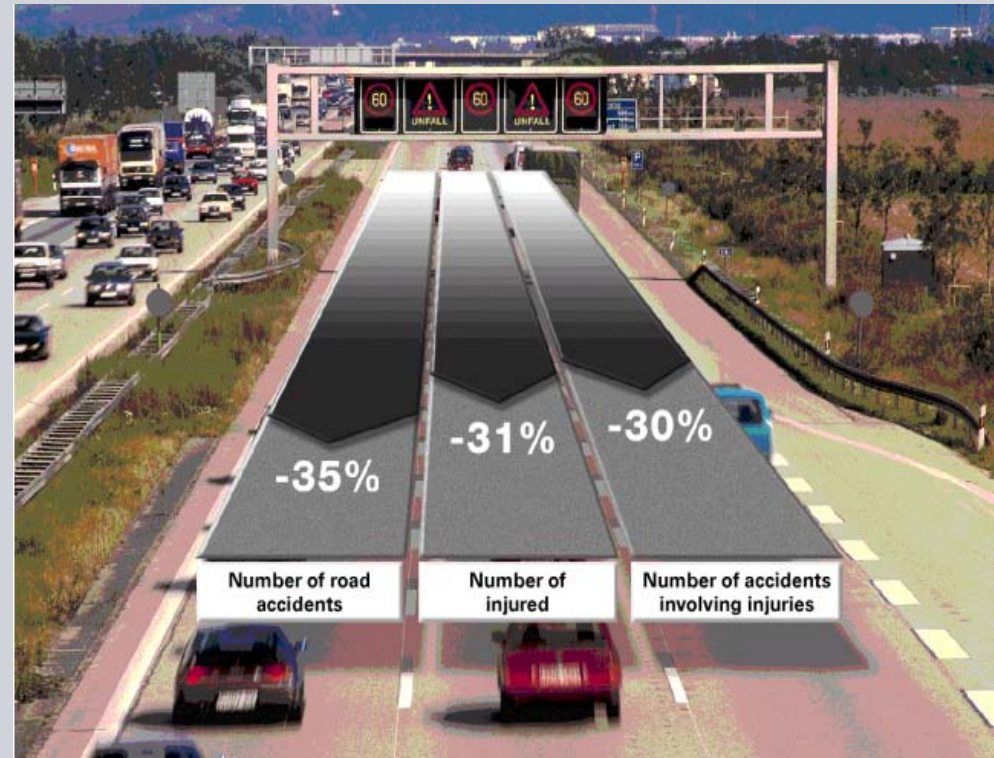
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Dramatic accident reduction through intelligent traffic control systems

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Statistics show:

- reduced number of accidents
- reduced number of injuries
- less follow on accidents
- less traffic jams
- better 'synchronized' traffic and more capacity during peak hours



Accident statistics from Highway authority of South Bavaria

Tunnel Urban & Interurban solutions

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- **Controlling & supervising of the electro-mechanical installations in a tunnel (lighting, ventilation, ...)**
- **Management of communication systems (emergency calls, tunnel radio, etc.)**
- **Traffic management (traffic signalisation, counting vehicles, etc.)**
- **Videomanagement (operating of cameras, access to video storage, alarm handling via videowall, etc.)**
- **In case of fire, accidents, etc. blue light organisations are alarmed**
- **Increasing of safety!!**



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Partners in Traffic & Transport

ascom

HERESCHWERKE
the automation group

logica

ticos
ENGINEERING AND SOFTWARE

Balfour Beatty

SIEMENS

NORCON
WWW.TRATECGROUP.COM

LUCEBIT



Cegelec

OSMO

ASFINAG

Imtech
Infra
Imtech Infratechnik

PEEK traffic solutions

ATG

SIPRIN

PKE

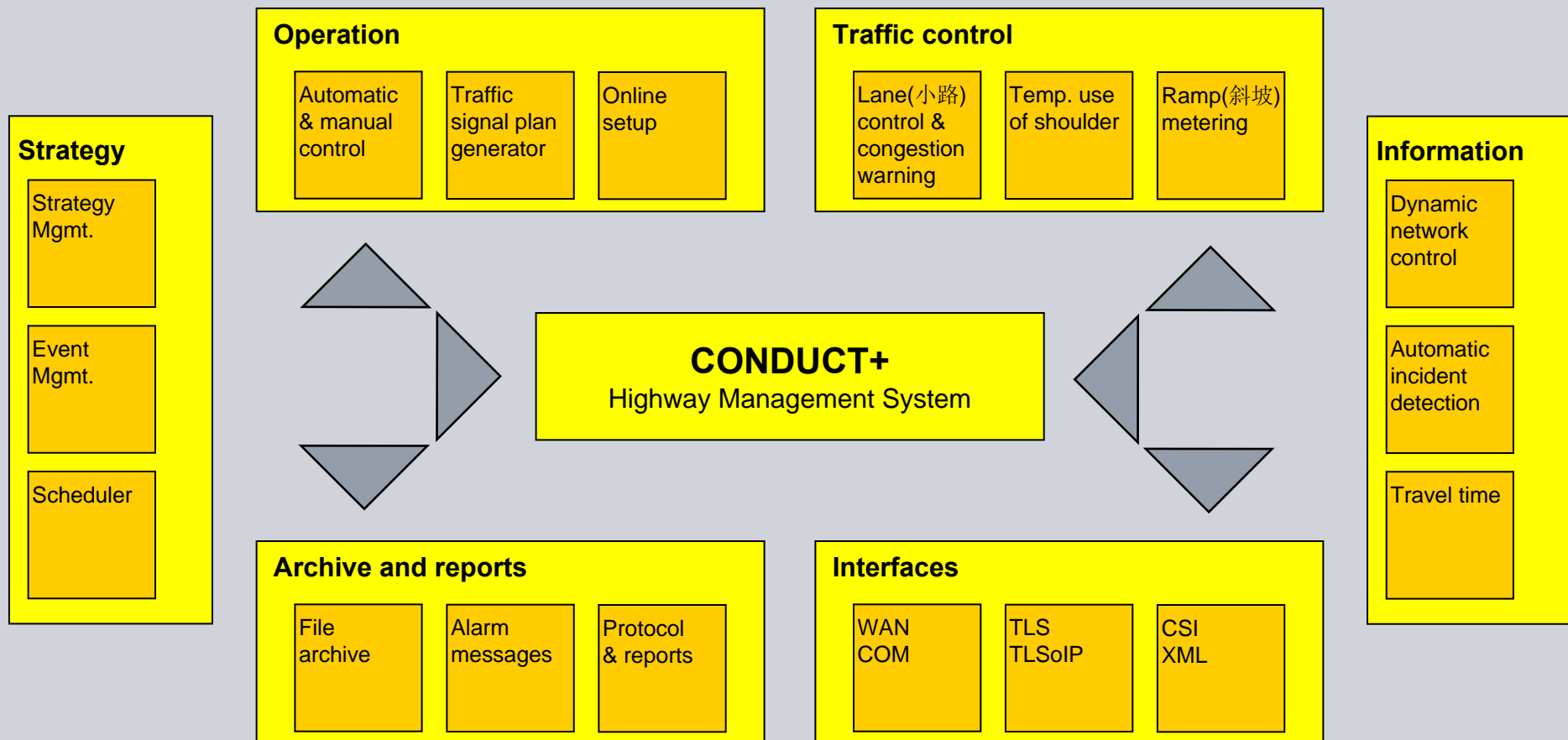
Selection References Tunnel & Interurban

- ➔ Cross Harbour Tunnel (Hong Kong)
- ➔ Adana - control center for tunnel chain (Turkey)
- ➔ Moscow - 3. ring innercity highway
- ➔ Ramindra (Thailand)
- ➔ Sitina Tunnel (Slovakia)
- ➔ Espiye Sarp Tunnel chain (Turkey)
- ➔ Fast Lane Tel Aviv (Israel)
- ➔ Zurich – Traffic control center
- ➔ Belchen tunnel
- ➔ Midfield tunnel - Zurich Airport
- ➔ St. Gallen - overall control center
- ➔ Giwil tunnel
- ➔ Opfikon tunnel - lighting control center
- ➔ Schmerikon - highway
- ➔ St. Gotthard Route overall system (~25 tunnels)
- ➔ St. Gotthard tunnel – Lighting system
- ➔ Basel – overall system
- ➔ Zug – overall system
- ➔ Königshainer Mountains
- Rennsteig tunnel - traffic control center
- Bonn-Bad Godesberg - control center
- Heidelberg tunnel
- Weiltal tunnel
- Munich: Brudermühl, Candit, Middle Ring East, Petuel Ring
- Walberg/Hopfenberg tunnel A44
- Munich North - traffic system control center
- Vienna/Kaisermühlen – control center (4 tunnels)
- Vorarlberg Hohenems - control center (6 tunnels)
- Tirol St. Jakob - control center (14 tunnels)
- Styria Austria Central Control Room (22 tunnels)
- Ofenauer-Hiefler tunnel - traffic control center
- Fog warning system A2 highway
- Felbertauern tunnel - control center
- Plabutsch tunnel Graz - control center (1 tunnel with 10 km)
- Bruck/Glocknerstraße - control center (5 tunnels)
- Gräbern tunnel - control center

Siemens CONDUCT+ is the state of the art solution for highway management

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The system architecture of traffic management

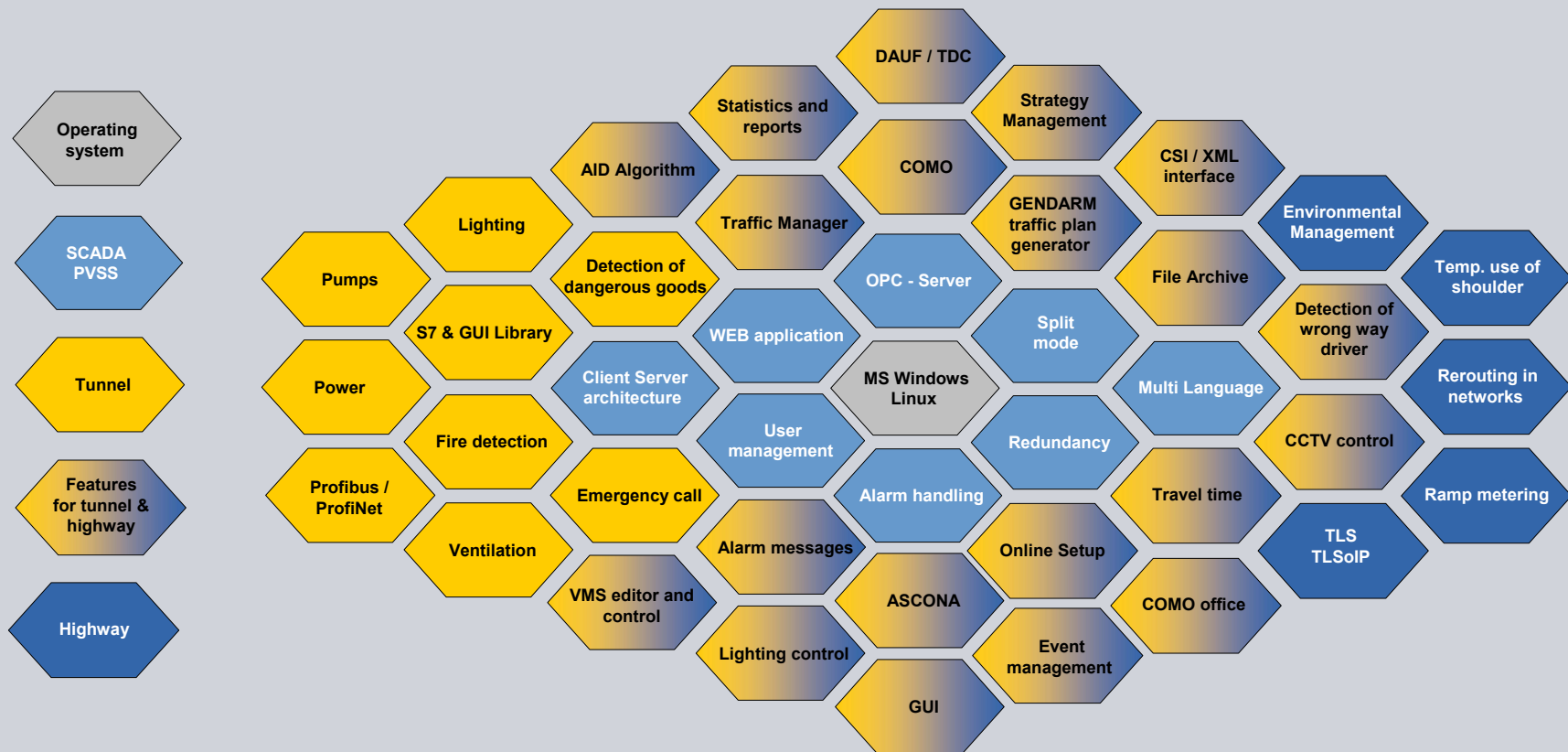


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The modular design allows a smooth migration with new functionalities

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The system architecture of traffic management



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300 km highway route along the Black Sea covering 29 tunnels

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Segment: **Tunnel**

End user: **Karayolları Genel Müdürlüğü**

System integrator: **Siemens**

Realization date: **2009**

Karayolları Genel Müdürlüğü is the general directorate of highways in Ankara, Turkey.

Siemens has developed an own labeled product based on PVSS called "ITCC" - International Tunnel Control Center

Requirements:

- New traffic management and control system with several control centers on different sites
- Integration of traffic system and all infrastructure sub systems
- Hot-Standby Redundancy

Solution:

- 1 Master Control Center with 7 geographically distributed control centers
- Automatic video detection system
- AMS – Advanced Maintenance Suite
- Central data handling

Benefits:

- AMS for planning, scheduling and coordinating of related maintenance work
- Traffic specific software components are easily integrated via PVSS API
- Reliable and scalable Control and Monitoring system for the complete tunnel stretch



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Tunnel Control System for the New Gotthard Base Tunnel

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Segment: **Rail tunnel**

End user: **AlpTransit Gotthard AG**

System integrator: **Siemens Switzerland**

Realization date: **2008 – ongoing (2017)**

Requirements:

- Guaranteed availability of the entire system
- Covering telecontrol and monitoring function of all relevant data points of the electro-mechanical installations
- Uniform operation

Solution:

- PVSS Disaster Recovery System for high reliability and availability
- Error-Handling-Tool for error checklist administration
- Configuration- and integration management with PVSS ETool
- Standardized communication (OPC UA) and consistent tag schema

Benefits:

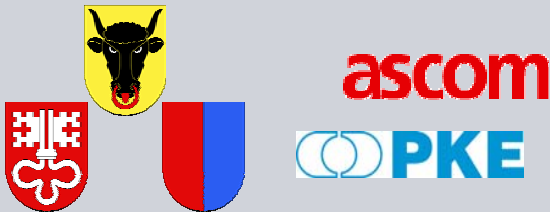
- In case of a breakdown of Control Center South automatic switch to CC North
- All sub-systems are supervised by the Tunnel Control System PVSS

The world's longest rail tunnel of 56.8 km is being constructed between Erstfeld and Bodio, Switzerland. Pilot operations of the western section between Faido and Bodio are scheduled for 2013. Project completion is planned for summer 2016

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Operating Control System for Swiss National Highways A2/A4

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Segment: **Tunnel**

End user: **Canton Uri, Nidwalden and Tessin**

System integrator: **Consortium Ascom & PKE**

Realization date: **2005**

This section includes Switzerland's two longest road tunnels, namely the Gotthard Tunnel, which is 17 km in length and possesses two lanes and the Seelisberg Tunnel – with a length of 9 km and four lanes.

The monitored Gotthard section is altogether roughly 70 motorway km in length.

Requirements:

- User-supported operation of all different electro-mechanical installations, i.e. lighting control, systems, traffic guidance, systems, ventilation control systems and video systems
- Control system must possess 99.99 % availability, which is the equivalent of a breakdown time for the entire system of roughly one hour per year

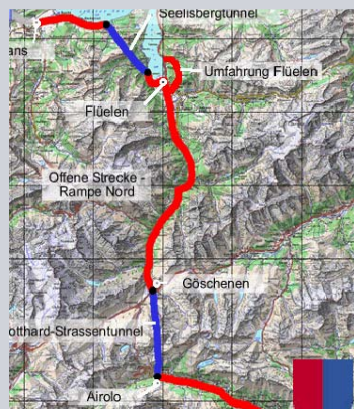
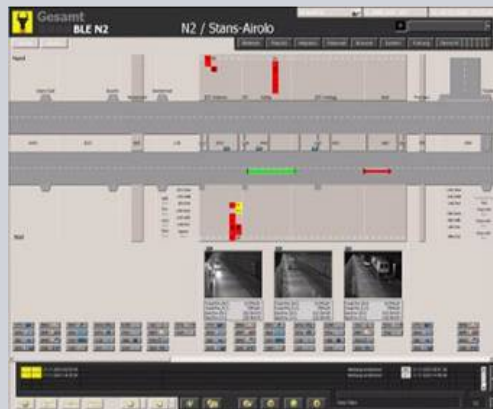
Solution:

- 2x2 Hot-Standby Redundancy with PVSS Disaster Recovery System
- Large distributed System over 70km highway
- Central data storage and handling with Oracle database
- Centralized parameterization tool for all installed systems

Benefits:

- Cost efficient enhancements and maintenance for the next 10 – 15 years is ensured
- Online integration of new systems – no breakdown time!

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Industry Sector

Water level regulation in Delfland region, Netherlands

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Segment: **Water regulation**

End user: **Hoogheemraadschap van Delfland**

System integrator: **HUMIQ**

Realization date: **2009**

Requirements:

- Perfect overview of all field stations
- Easy control of water level management devices
- Combine geographical information with process data

Solution:

- PVSS GIS Viewer – the combination of SCADA functionalities with geographical information (GIS)
- 220 field stations connected via ADSL and/or UMTS
- Over 100 SMS level measurement devices in the field

Benefits:

- Precise and fast fault navigation due to alarm signalization on the map
- Easy control of pumping stations and monitoring of water levels

Delfland is one of Netherland's water authorities. 1,4 million people live there and 40.000 companies are located in the 41.000ha large Delfland area.

Because it is located far below sea level, many pumping stations and water inlets are used to regulate the water level to react on rainfall and dry periods.

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PVSS OEM Partner in water supply, hydroelectric plants and environmental technology

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rittmeyer



Segment: **Water supply, hydroelectric plants and environmental technology**

Systemintegrator: **Rittmeyer AG**
(PVSS OEM Partner)

Rittmeyer supplies modern measuring and control technology in Europe and measuring systems worldwide.

Rittmeyer is a company of the BRUGG group, with around 1500 employees, 30 companies in 9 countries and offices in all major industrialized countries.

Requirements:

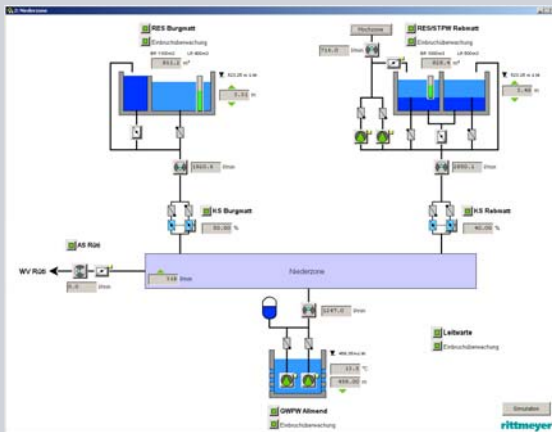
- Complete graphical visualization
- Object oriented process control
- Extensive process logging (message panel, operating hours, login/out log)
- Comprehensive alarm processing/process data archive

Solution:

- Rittmeyer's visualization system RITOP is entirely based on PVSS

Benefits:

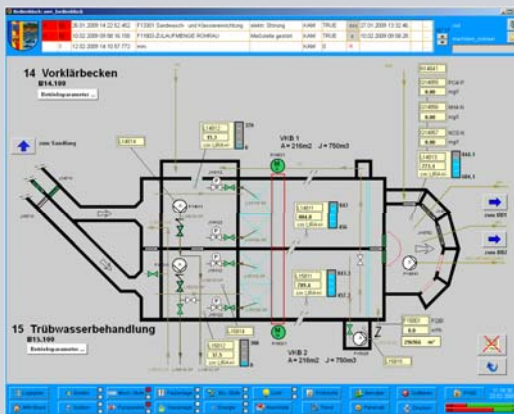
- A combination of Rittmeyer's sector expertise with the SCADA development competence of ETM
- More than 1000 PVSS licenses since 1999 confirm the successful partnership



Modernization of the automation system of the waste water authority “Bruck/Leitha-Neusiedl/See”

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Segment: **Waste water**

End user: **Water authority**
“Bruck/Leitha-Neusiedl/See”

System integrator: **Siemens**

Requirements:

- Hot-Standby Redundancy
- Reporting compliant with national legal requirements

Solution:

- Communication via OPC SINAUT and OPC FMS
- Multiscreening control room workstations
- Control of 26 pumping stations via telecontrol engineering

Benefits:

- Well-engineered algorithm ensure the best possible water quality

The waste water plant is construed to serve 175,000 inhabitants. Its special task is to protect the highly sensitive nature reserve and world famous Lake Neusiedl by applying modern methods of wastewater treatment.

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Replacement of telemetry system for water distribution network

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Segment: **Water distribution networks**

End user: **United Utilities**

System integrator: **Capula Ltd.**

Realization date: **2009**

Requirements:

- Replace the existing telemetry system with using existing RTU (~4000)
- Integration of existing functionalities into new system and extension of new features
- Development and implementation of customised features

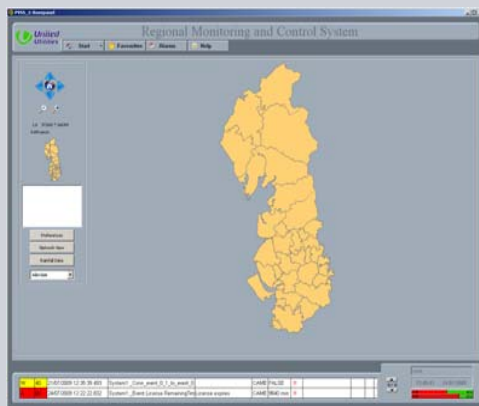
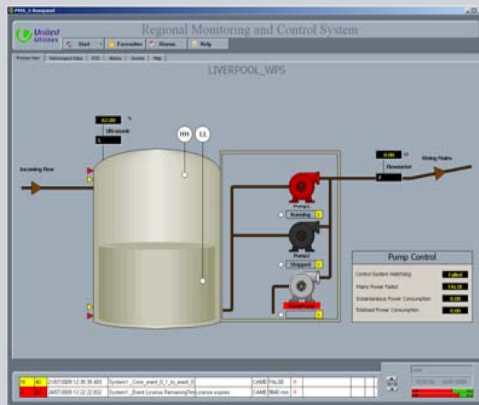
Solution:

- Development of security management drivers, Dynamic Logic, SES, SNMP, Europlex Signet, Guardall PX, Janus and Stentofon
- PVSS Video is used for control and monitor live and recorded video streams
- PVSS server and Oracle server run on SUN Solaris

Benefits:

- PVSS is ready for future demands
- Capability of ETM to develop special customized functionalities
- The customized features can be implemented into the standard product, so it remains an off-the-shelf software package

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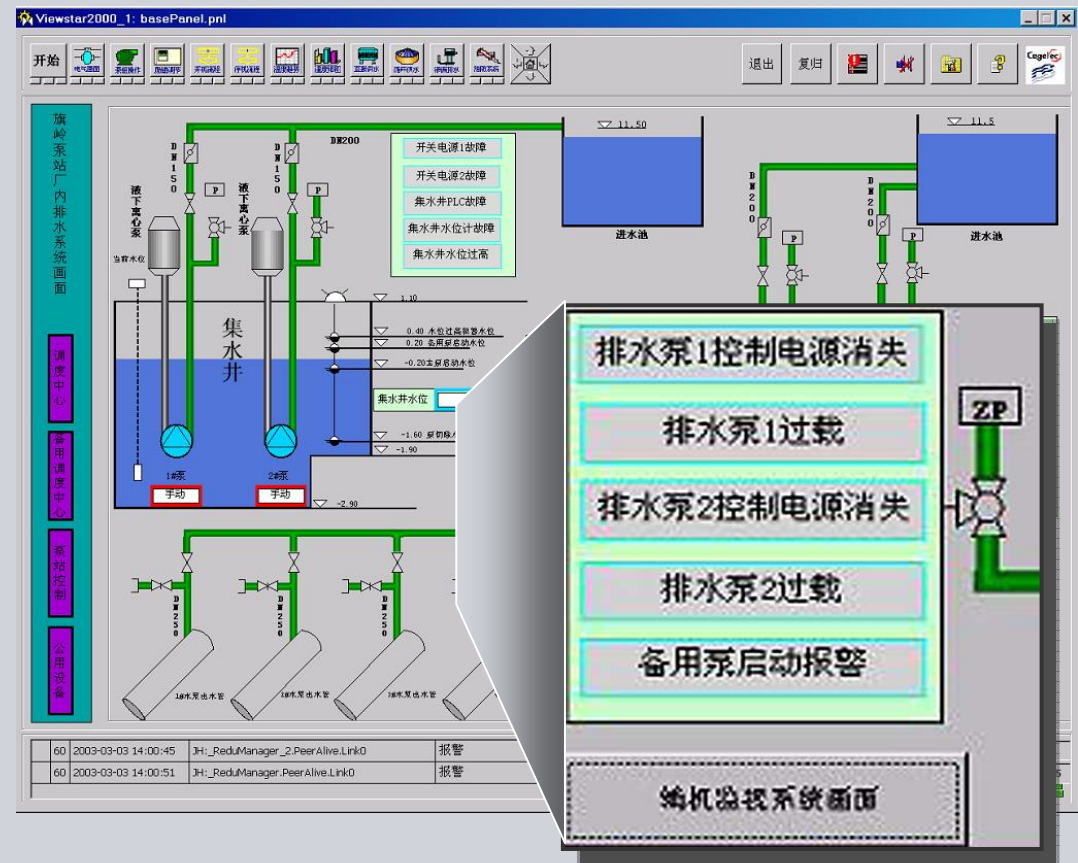
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Industry Sector

United Utilities is the UK's largest listed water company. They own, operate and maintain utility assets, including water, wastewater, electricity and gas. United Utilities is a FTSE 100 company with a turnover of £2 billion and is the UK's market leader in utility outsourcing. United Utilities Water Operations operates over 3.500 water and wastewater assets, which are monitored and in some cases, controlled by the monitoring and control telemetry system.

PVSS - Multi language support

- Online language change
- Up to 32 languages simultaneously
- Every UI individual
- Asian sign languages
- Unicode display



Thank you for your attention!

ZhongShi

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