Presentation Shenzhen Water Group (SZWG)

- Shenzhen: 1st Special Economic Zone & innovation hub in China.
- PPP in 18 other cities (20 M people).
- First water company with customer satisfaction certif. (ISO10002).
- R&D: 35 patents & 43 utility models & Innovation platform.
- Smart water initiatives since 2006 – NRW 13% (2016).
- 8.4 M m³/d (82 water treatment plants) & 3.5 M m³/d (28 sewage treatment plants)
## SZWG approach to Smart Water (2006-18)

### Planning and Management

| Hydraulic & WQ modeling linked to SCADA & GIS |
| Business intelligence & big data analysis. |
| ERP with key real-time operational data |

### O&M

- Real-time leak detection algorithms.
- Preemptive, data-driven ASM.
- Advanced equipment and patents.
- Portable apps for O&M.

### Customer care

- Cloud-based CMS.
- Social network data analysis
- Smart meters linked to end-user apps.
- Real-time urban flood warning systems.

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**Image**: Diagram illustrating the SZWG approach to Smart Water (2006-18) with key components such as Planning and Management, O&M, and Customer care. Each component is linked to specific technologies and methodologies, such as real-time leak detection, cloud-based CMS, and social network data analysis.
Updated GIS (2016) for the networks linked to database (static & dynamic information)

- Characteristics pipes, valves
- Water consumption (nodes)
- Real-time network data (pressure, flows, etc.) over 12,000 km WS network & WW/Drainage
Hydraulic modeling

Hydraulic modeling (quantity and quality):
- Planning: Networks’ expansions, modifications, operational and contingency plans, …
- Operations: Repair, leak-detection, installation of new sensors, etc.

Models calibrated with field data are the backbone for:
- Leak detection algorithms
- Active pressure-management
- Real-time demand forecasting.
Smart Operational Tools

O&M MOBILE APP FOR TREATMENT PLANTS

- Standardized, paperless, mobile-assisted inspection work at the treatment plants.
- Improved efficiency: time-out inspection or non-patrol.
- Incidence reporting and fast response in O&M.
Advanced Equipment and Patents

Smart Fire Hydrants (8,000 units)

Module
- Micro motion Sensor
- Pressure Monitor
- Anti collision
- RFID
- Communication

Functions
- Real time Monitor
- Data Analysis
- Authorized staff ID
- GIS Location
- Alert Message

Real-time Toxicity Bio-monitoring (40 sets)

Functions
- Biological indicators
- Temperature: 0-40°C
- Accuracy: 0.05 - 0.1 TU
- Alert: 5 mins

Smart Fire Hydrants (8,000 units)

Real-time Toxicity Bio-monitoring (40 sets)
Customer service and smart meters

CUSTOMER SERVICE SYSTEM

Based on 8 components

SZWG partnership with ICT firms to develop technological solutions for smart metering based on NB-IoT
SZWG smart approach to Sponge Cities

- Government Sponge City Initiative => Game-changer in Urban Development

- SZWG = Leader Sponge Cities: => Pilot projects Shenzhen, Chizhou, …

- Smart Water = KSF Sponge Cities: => Performance indicators with accurate real-time measurements hydro-climatic & system variables.
Other smart water initiatives in focus

Planned initiatives in SZWG for the next 3 years:

• Develop ICT Platform: Flood control with Citizens’ feedback.
• Develop ICT tools to move swiftly to on-line customer care.
• Apply Building Information Modeling technology for projects.
• Develop unmanned water and wastewater treatment plants.
• Develop optimization and big data tools to improve operations and planning of W3 network extensions.
Expansion plans: crossing the river…

+ • Experience in more than 35 PPP projects outside Shenzhen.
  • Proximity and direct access to the leading IT companies in China.
  • World-class public & private stakeholders supporting expansion plans.
  • Modular & replicable business processes: Operations in growing market.
  • Support from ADB (Ongoing NSO) & other leading financial partners.

- • Low margins due to political restriction in water pricing
  • Growing competition & Cooling down PPP in China.
  • Difficulty in reaping the benefits of economies of scale.
THANK YOU!

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