IMPLEMENTATION OF SMART DISTRIBUTION & CONTROL OF WATER NETWORKS

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# Content

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1 Smart water distribution network

A smart water network is a fully integrated set of products, solutions and systems that enable water utilities to:

- Remotely & continuously monitor and diagnose problems
- Remotely control and optimize all aspects of the water distribution network
- Comply transparently and confidently with regulatory requirements on water quality & conservation
- Provide customers with the information and tools to make informed choices about their behaviors & water usage patterns
Current challenges in water distribution

- Vast geographical spread
- Increasing Demand
- Aging or inefficient distribution network
- Intermittent supply
- Variable maturity level between BUs
- Reactivity mode
- Leakage rate

Smart technologies can be leveraged to help address water challenges
Advancements in technology that deliver enhanced data make that possible today
NWC has prioritized the application of technology and smart solutions to enhance customers service, operational efficiency, and cost optimization
3. NWC strategy for smart distribution network

- Unification of practices & standards & strategy across the country
- Assessments of gaps of all BUs against best practices
- Partner with technology & solutions providers
- Develop action plan for each city, with strategic projects to implement Smart Distribution
Launched smart distribution programs & initiatives

The following is highlights of major actions and programs:

- Smart operation dept
- Smart metering program
- Smart zones pilots
- Smart distribution zones
- Smart Hajj
Launched smart distribution programs & initiatives

Smart operation dept

NWC recognized the need and significance of Smart Distribution Network, through creating a Smart Operation Department at HQ.

Each City Business Unit has a corresponding Smart Operation dept. to implement Smart Solutions.

This function will enhance and unify the implementation of Smart networks & technologies, to enhance customers service & operational efficiency.
Launched smart distribution programs & initiatives

Smart metering program

- Aggressive program to replace 2 million customers meters with smart non-mechanical meters & AMR/AMI system
- Utilize smart metering for smart applications (NRW, consumption monitoring, network efficiency, alarms)
- Rigorous qualification process to select the most accurate & resilient meters for local conditions
4 Launched smart distribution programs & initiatives

Smart zones pilots

- NWC is collaborating with technology providers to pilot their smart technologies in multiple cities, by sharing data, providing zones of the network, implementing recommendations.
- Piloting allows NWC to test technology applicability, and the providers to understand needs and customize solutions.
- Ongoing pilots in Jeddah, Madinah, Riyadh, Eastern region.

Achieved benefits after implementing Smart Zone pilot:

- NRW: <15 %
- No. of Leaks: 50 %
- Total demand: 15 %
- Shortage Complaints: 60 %
- Savings per Connection: 1000SR
4 Launched smart distribution programs & initiatives

Smart distribution zones

- Design and execution ongoing for multiple cities, including hydraulic modeling, infrastructure works, instrumentation, and SCADA connections
- Enhanced monitoring and control of water distribution
- Automatic pressure control to control leakage and meet demand
- Taif is the 1st city to complete implementation, ready to be “Smart Water City”
- Limited interaction from operators
- Improved NRW management
- Program launched in multiple cities across the country

Jeddah Distribution Zones

Taif Distribution Zones

Riyadh Distribution Zones
Launched smart distribution programs & initiatives

Water management system

SCADA & Remote monitoring & Control

Integration of various systems for optimal operational tool (GIS, SCADA, LIMS, CC&B, AMR, Hydraulic model, Pressure & flow sensors, Water Quality monitors)
4 Launched smart distribution programs & initiatives

Smart Hajj

Integration of various systems for optimal operational tool (GIS, SCADA, LIMS, CC&B, AMR, Hydraulic model, Pressure & flow sensors, Water Quality monitors, EAM maintenance, fleet)
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