Sustainability
Efficiency
Resilience

Optimizing Energy / Process Efficiency in Enabling Sustainable Water Management

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Schneider Electric Global

Key figures for 2022

5% of revenues devoted to R&D

€34 billion

2022 revenues

43%

of revenues in new economies

128,000+

employees in over 100 countries

Schneider Electric in Thailand

Established in **1978**

1,500+ employees

1 office in **Bangkok** and 1 branch in **Rayong**

1 manufacturing facility

in Bangpoo Industrial Estate

certified with ISO50001 Energy Management

1 local distribution center

with critical safety stock

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Schneider Electric | +40 Years in Thailand

Leading the digital transformation of energy management and automation in homes, buildings, data centers, infrastructure, and industries

Schneider Electric
Thailand Headquarters

Established in 1978

ESCO company since 2007

1,600+ in territory employees

41% gender balance (IO)

45% millennials or younger

HQ → **Bangkok**

Branch office → **Rayong**

Factory → **Bangpoo**

- Corporate offices : Bangkok and Rayong
- Solar Service Centers : Phitsanulok and Ubon
- Manufacturing facility

Schneider Electric Bangpoo
Smart Factory & World Class Manufacturing
795 Kwp. On grid solar + microgrid

- 22% of total annual consumption covered, 60% in daytime
- 686 tones of CO2 saved
- 1.6 ME savings over 25 years

- Grown from a small operation established in 1990 for the local market to a global plant
- Delivering more than 70% of the production to worldwide market
- The largest circuit breaker manufacturing in Thailand

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Today's Water & Wastewater industry trends and challenges...

Climate Change

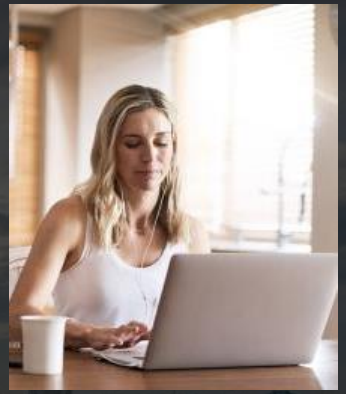
- Decarbonization, Net zero emissions
- Need of alternative water and energy sources
- Create resilient water supply and sanitation

Water Resources Management

- Protect agriculture and ecosystems
- Improve water conservation: leakage and Net zero pollution

Water Circularity

- Reduce water consumption & waste: Zero Liquid Discharge, recovery of resources
- Develop links to other sectors, new business



Consumer-Centric Business

- Demands driven from empowered consumer
- More services from utilities
- Microbiology and quality parameters

Digital Revolution

- Cybersecurity vulnerabilities
- New business models

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…call for a step further: from Efficiency to Sustainability in WWW

Move towards progress & a sustainable future

Decarbonization

- Energy efficiency
- Renewables
- GHG emissions (wastewater treatment)

Resource efficiency

- Water
- Chemicals
- Recover, Recycle/ Reuse

Environmental impact

- Pollution reduction
- Risk management
- Resilient infrastructure and operations

Sustainability

The equation for the future

Digital + Electric ▶ Sustainable

For Efficiency

Eliminates waste, drives efficiency and optimizes from plant to plug

For Decarbonization

Most efficient energy and the best vector of decarbonization

Smart & Green

Internal

Sustainability & Resilience in Water Industry

Julien ARNAUD
Global Vice President Business Development & Sales,
Water and Waste Water Segment
Schneider Electric

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Water Industry Snapshot – Sustainability & resilience

Water is critical

Global water use has increased by **a factor of six** over the past 100 years and continues to grow steadily at a rate of **about 1% per year** Global warming is accelerating the access to water issue : **4B people in the world are affected by water shortage at lest 1 month /year**

By 2030, we will only have **60%** of the water supply we need

With clear customer challenges

Customers face challenges of **water resource conservation** (water basin, desalination , water leakage) **sustainability commitments** (energy efficiency, carbon footprint)**; lack of data strategy to face** Water & Energy nexus, increasing regulation; extreme weather events

Sustainability : 1/3 of operating cost is energy and 3-10% of GHG emissions have water origin
Digital : only 27% of utilities are leveraging data collection.
driving both more **Advanced services**

Investments in Digital

Beyond massive governmental fundings, 2021-2025 global spend on digital water technologies and services (incl. cybersecurity) is projected at +14% CAGR

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Sustainability has become a key play for the water industry

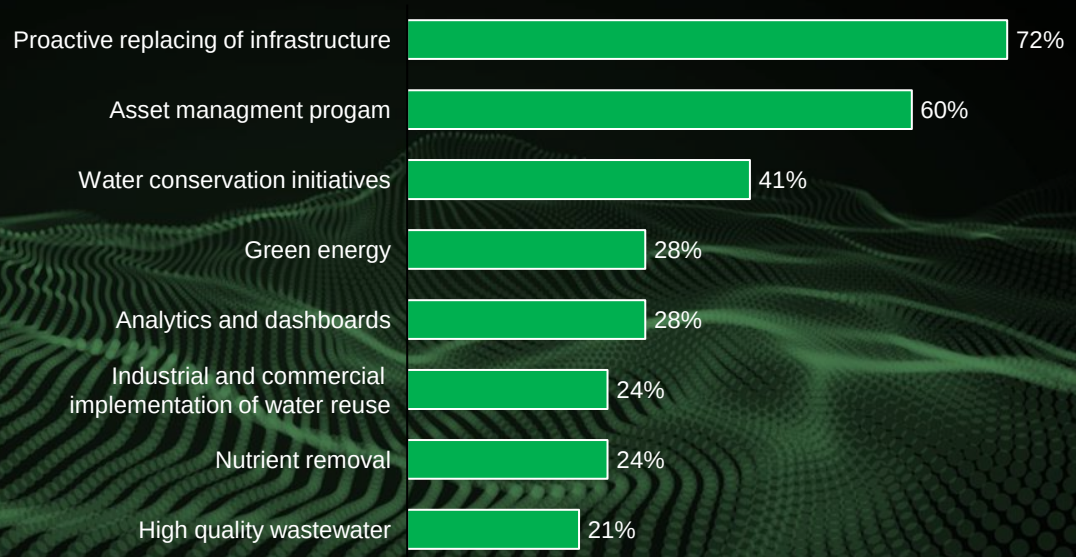
3.5% to 4%
of the world's electrical energy is consumed by the WWW segment

3-10%
of global GHG emissions by WWW industry[1]

15% reduction
in energy consumption in the water sector can be achieved by 2040 if the right energy efficiency and energy recovery measures were adopted[2]

~67% of utilities
Have selected water loss management as primary sustainability strategy
& water circularity (zero waste, water reuse)

Efforts to enhance sustainability
Survey of over 300 U.S. water industry stakeholders



1. 10% of global emissions (7-10% of the world's methane emissions and at least 6% of nitrous oxide emissions)
2. Several technologies available - The most notable of which are variable speed drives
Source: IEA World Energy Outlook; Water-Energy Nexus, World Energy Outlook Special Report; Black & Veatch Report

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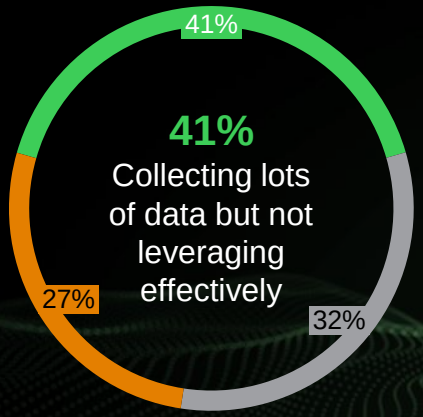
Digitalization plays a key role, from data to analytics

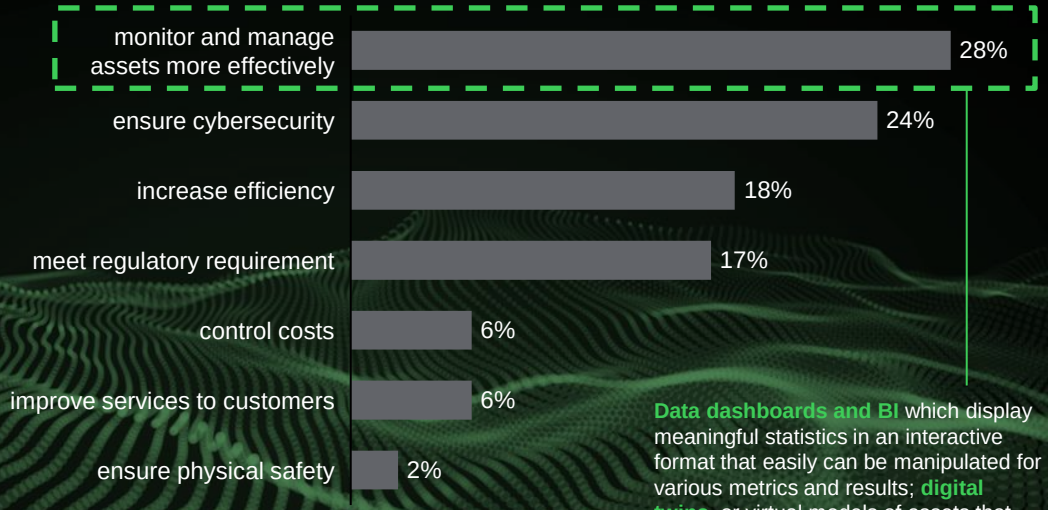


27%
Collecting data that is leveraged effectively

32%
Collecting some data

Technologies that water utilities emphasize most

Survey of over 300 U.S. water industry stakeholders



Data dashboards and BI which display meaningful statistics in an interactive format that easily can be manipulated for various metrics and results; **digital twins**, or virtual models of assets that can run simulations of various potential scenarios to determine outcomes and mitigation strategies

Source: Black & Veatch Report

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Unified Operations Center - Enterprise Visualization

Converge and contextualize for end-to-end enterprise visibility

Create context-driven actionable information

Make faster, more informed decisions and speed crisis response

Minimize risk to people, assets, and operations

Reduce energy and operational costs

Optimize performance and reliability of services

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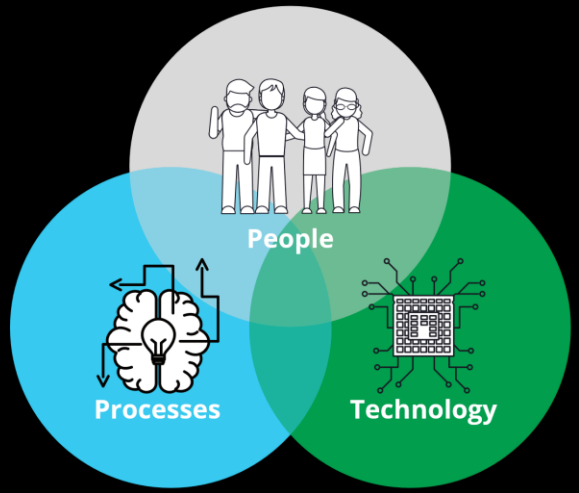
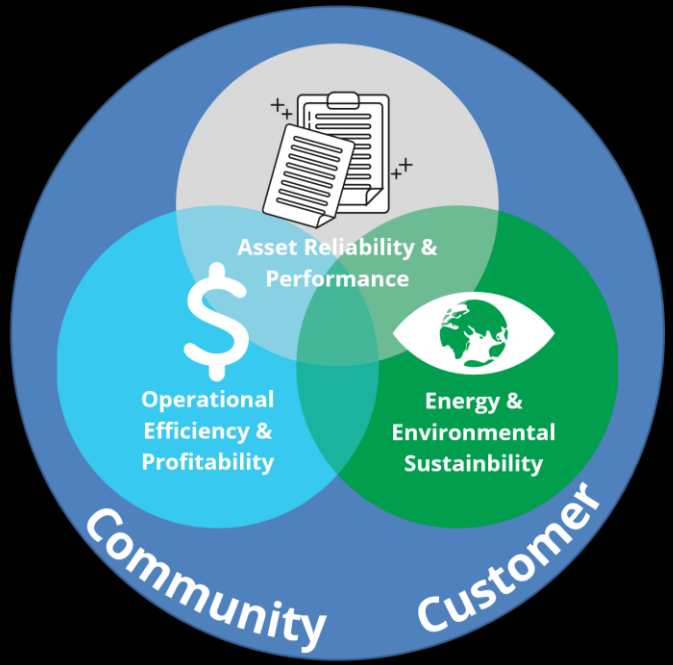
Your digital transformation journey

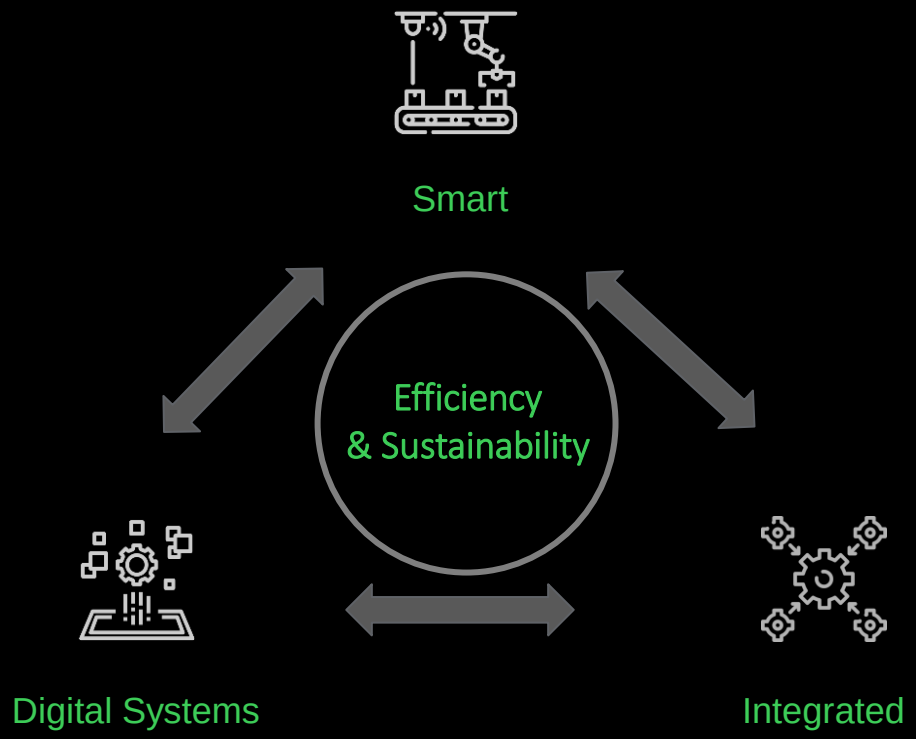
towards Smart Operations

Co-create an efficient and sustainable future through holistic business transformation





Be thoughtful about your journey



From value identification to value realization

People, Process, Business Value & Business Objectives

Collaborate & Understand

Design to meet desired outcomes

Engineer the Solution

Value Creation

Our mission is to be

your digital partner for Sustainability and Efficiency

We help preserve the water resource and boost efficiency and climate resilience of the wet infrastructure by digital technologies and services across the water cycle

End to end approach to unlock the sustainability potential of Digital Transformation

We **partner** with market leaders to provide cybersecure digital continuity and smart water applications across the asset lifecycle, from site to enterprise

Save water by **10%, energy by 15%,** reduce pollution events by **35%,** increase asset availability and efficiency with **digitization**

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The Digital Transformation Journey

It all starts with the right strategy and the right partners…

Initiating

Siloed management

Basic connectivity & integration

- Instrumentation
- Automation
- Digital tools & data

Impacting

Advanced management

Site-based / multi-system

- Process optimization
- Asset management
- Planning, commercial, financial…

Leading

Enterprise management

System of systems OT/IT Convergence

- Contextualization
- End-to-end visibility
- Business optimization

Supported by an integrated and connected digital platform

Subsegments for Water & Wastewater

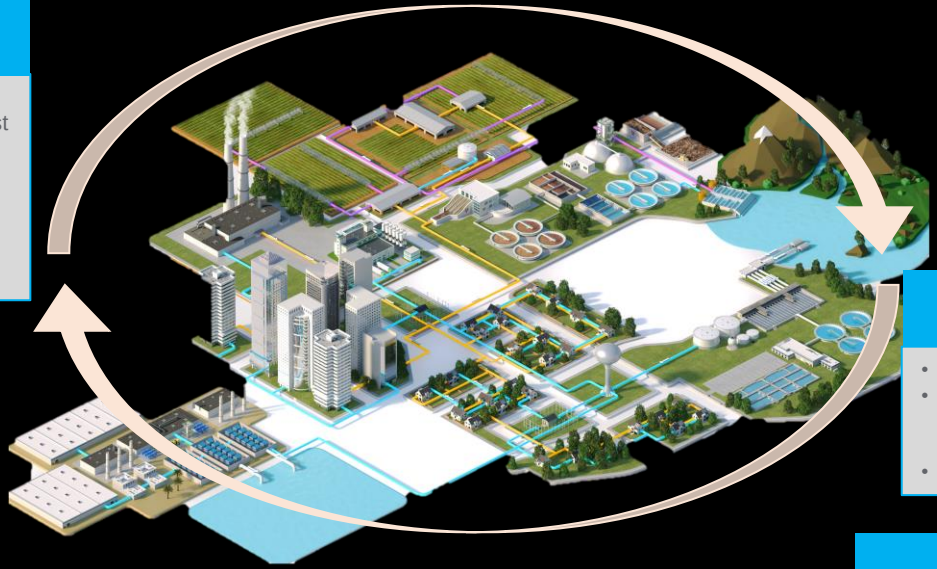
EcoStruxure Water Advisor: Complete Water Cycle Management

Wastewater Treatment
EcoStruxure Treatment Plant

- Efficient **process control**
- Reduce **energy** costs – one of the largest bills for a WWTP
- Predictive **management of assets**
- Improved **reporting** for quality and regulatory compliance
- Greater **monitoring** for managing Storm water challenges

Wastewater Network
EcoStruxure Urban Drainage

- Greater **monitoring**
- Reduce spill events (**pollution**)
- Efficient and effective **pump control**
- Dealing with blockages
- Managing flood risk



Water Resource
EcoStruxure Water Resource / EcoStruxure Well Watch

- Greater **monitoring**
- Proactive **management** of remote assets

Desalination
EcoStruxure Treatment Plant

- Efficient **process control**
- Reduce costs associated with Desalination process from the **energy** consumption and **design**
- Predictive **management of assets**

Water Treatment
EcoStruxure Treatment Plant

- Efficient **process control**
- Reduce **energy** costs
- Predictive **management of assets**
- Improved **reporting** for quality and regulatory compliance

Water Distribution Network
EcoStruxure Water Networks / EcoStruxure Water Simulation / EcoStruxure Water Loss / EcoStruxure Pump Performance

- Greater **monitoring**
- Reduce **Non-Revenue Water** (NRW)
- Efficient **water network management** – pressure, quality, service impact, …
- Efficient and effective **pump control**

Water Transmission Network
EcoStruxure Energy / EcoStruxure Water Simulation

- Greater **monitoring**
- Reduce **leaks and bursts**
- Efficient **water network management** – pressure, quality, service impact, …
- Efficient and effective **pump control**
- Reduce **energy** costs

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SUMMARIZED

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Converge and contextualize for end-to-end enterprise visibility

Enhanced layer of intelligence that ensures data works in service of organizational goals

Unified Operations Center
Business Intelligence throughout Water Utilities

Quantity
- Water Balance
- Source/Plants/Reservoirs/Transmission/Distribution
  - Leak/Loss/NRW
- WW | Sewage | Recycle
  - Various Parameters

Quality
Lab/Online/Hydraulic Model
- Water Raw-Treated Distributed
  - Source/Plant/Reservoir
  - Transmission/Distribution
  - Chlorination | Pollutants
- WW | Sewage
  - Source/Plant/Reservoir
  - Collection Network
  - Govt. Regulations

Consumptions
- Electrical Power
  - Source/Reservoirs
  - Transmission/Distribution
- Chemicals
  - Source
  - Transmission-Distribution

Assets
- Pump-Motors Performance
  - Source
  - Transmission/Distribution
- Valves, Instruments…
  - Source
  - Transmission-Distribution
- Pipes
  - Source
  - Transmission-Distribution

Predictive Scenarios
- Plants & Network
- Assets | Power

KPI | KOP

Hierarchical Data-Infocom Management

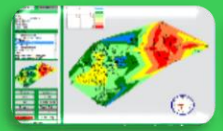
CEO

COO | CMO

Operator | Manager | Engineer

Unified Applications

Operations & Energy Optimization | Assets Maintenance



Energy, Pump & Reservoir Optimization

Water Network Management & Optimization

Energy & Asset Performance

Performance Dashboards

Unified Platform

Historian | HMI | Workflow | Intelligence | Surveillance | Customization
SW Drivers for Multi Vendor HW-SW

SCADA | IIOT-Edge
Various Control Rooms
Control & Data Acquisition)

Third party system
- Other Hydraulic Model
- Quality: LIMS
- SCADA | GIS | Billing | NRW | ERP | BMS

Confid

ขอบคุณครับ

Merci

谢谢

Bedankt

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