SUEZ's Smart and Environmental Solutions

Enabling the low-carbon transition in Asia

suez

Smart Resource Management
plays a key role
in the ecological transition

Building resource–rich cities with municipal and industrial partners

SUEZ, a key player in the environmental services industry, for more than 160 years, SUEZ has been acting to deliver essential services that protect and improve the quality of life. SUEZ enables its customers to provide access to water and waste services, with resilient and innovative solutions, and to optimize resource management and improve environmental and economic performance of municipalities and industries through "smart" city programmes.

As a long-standing partner of city authorities, a leading player in the circular economy, and a driver of the digital revolution, SUEZ believes that the city of the future must be resourceful, smart, circular, resilient, collaborative, and inclusive – a city capable of drawing on its own resources to guarantee its future and meet the aspirations of its inhabitants.

By 2050 there will be 9.6 billion people sharing our planet, with the majority concentrated in cities. High levels of urbanisation, combined with the effect of climate change, is placing increased pressure on resources, water, raw materials, and energy. The principles of the circular economy and digital technologies are powerful accelerators for reinventing cities and shaping their future.

66
million

drinking water service population

8.3
TWh

renewable energy produced

33.7
million

sanitation service population

3.8M
tons

CO_2 avoided on behalf of the Group's customers

Smart and Environmental Solutions Enabling the green, low-carbon transition of governments and businesses

—

The global economy and society are developing rapidly thanks to continuous innovation in information technology such as the Internet of Things, big data, and artificial intelligence. Smart infrastructure has become the key to the core competitiveness of enterprises, industries, regions, and countries.

Recognised the global climate challenge, Asian countries have proposed carbon neutrality targets; "digitalisation" and "going green" are the two main drivers of countries' decarbonisation efforts. Smart and environmental solutions can provide an advantage on the journey to achieve national ambitions.

In China, the demand for a better ecological environment is becoming stronger. With the launch of the 14th Five-Year Plan, local governments are taking a tougher stance on pollution, carbon emissions, and resource waste. This has motivated governments and businesses to seek innovative digital solutions to improve resource management. SUEZ, with its extensive experience in the environmental sector, has developed customised and smart solutions to help governments and other clients optimise resource management and improve operational performance, helping to pivot society and the economy from high-speed growth to high-quality development and the green transition.

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SUEZ's Smart and Environmental Solutions

Main Businesses

Digital & Decentralised Solutions	Asset Performance Management	Environmental Quality Monitoring (EQM) & Smart Agriculture	Air & Climate	Smart Cities & Consulting

SUEZ's Smart and Environmental Solutions
Strengths and Presence in Asia

Shenyang

Beijing

Tianjing

Shijiazhuang

Qingdao

Nanjing

Wuhan

Chongqing

Shanghai

SES Asia HQ and
China Delivery Centre

Guangzhou
Zhongshan

Singapore

SEA Delivery Centre

★ HQ and Delivery Centre

⚠ EQM lab / office

Digital Solutions
Smart, Real-time Water Management Systems

AQUADVANCED® Software Suite

In Western countries, aging infrastructure often results in a loss of 20% of tap water. SUEZ has solved this problem through the AQUADVANCED® digital solutions suite. With this software suite, water and wastewater treatment plants have been able to digitally transform and continuously optimise the management of their pipe networks.

AQUADVANCED®
Waterways

AQUADVANCED®
Plant

AQUADVANCED®
Well Watch

AQUADVANCED®
Energy
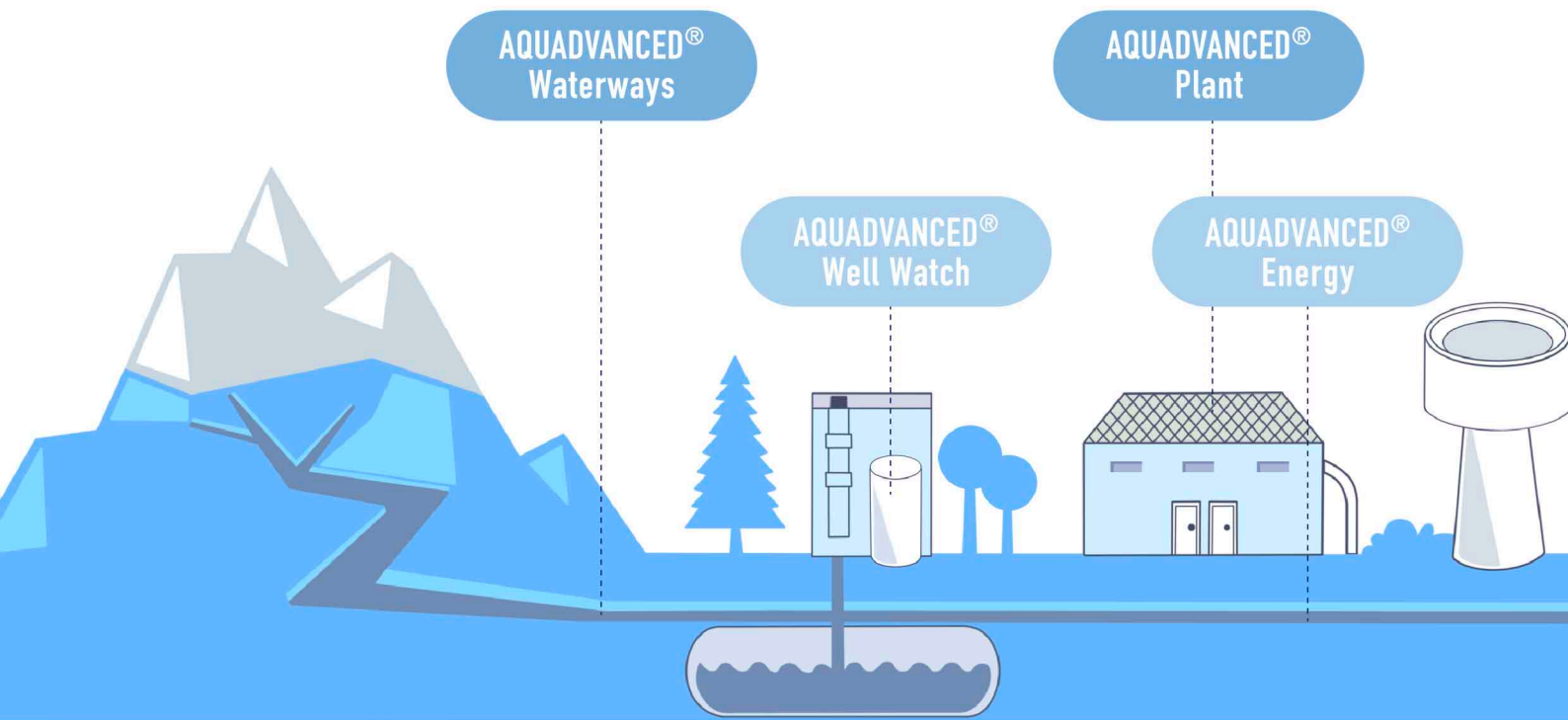
Resource

Pumping

Drinking Water
Treatment &
Production

Transport &
Storage

The suite can help our clients tackle the following challenges:

Combatting losses due to leaks

Reducing the operating costs of infrastructure

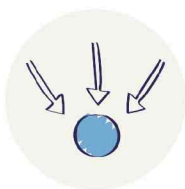Guaranteeing and optimising the operation of facilities

Producing transparent operations data

The AQUADVANCED® Software Suite is powered by intelligent optimisation models and can be integrated with legacy systems.

AQUADVANCED®
Water Networks

AQUADVANCED®
Urban Drainage

AQUADVANCED®
Plant

AQUADVANCED®
Waterways
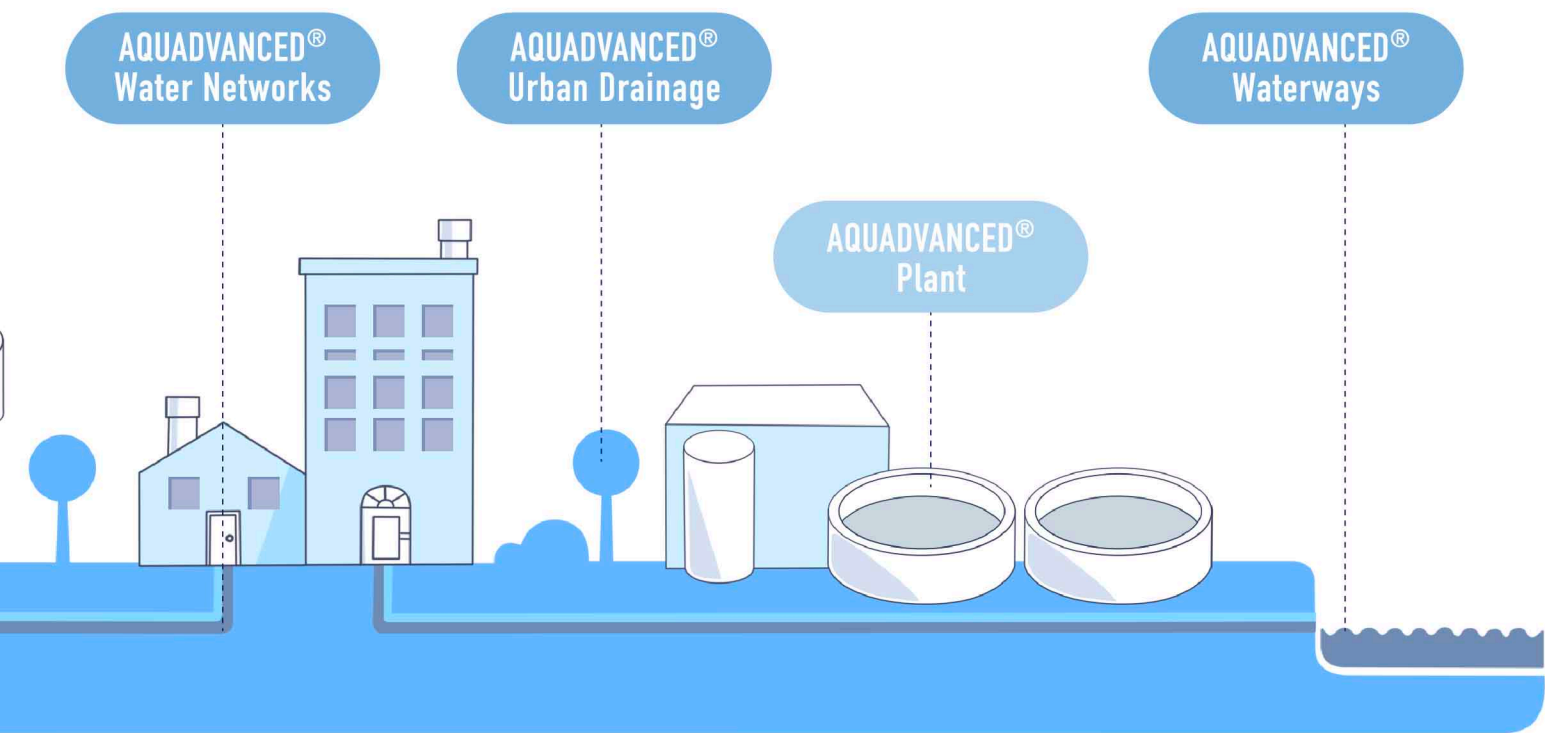
Distribution

Collection

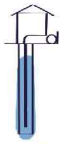Wastewater & Rainwater Treatment

Discharge into the Environment

AQUADVANCED® software suite
for water cycle management

Solutions for
DRINKING WATER

AQUADVANCED® Well Watch

Real-time performance of wells

AQUADVANCED® Energy

Real-time energy management system for water distribution

AQUADVANCED® Water Networks

Real-time performance of drinking water distribution networks

AQUADVANCED®
Well Watch
First Real-Time Well
Performance Monitoring
Solution

AQUADVANCED®
Energy
Real-time Energy Management
& Operations Optimization Software
for Water Distribution Networks

AQUADVANCED®
Water Networks
Integrated Management
Software for Drinking Water
Networks
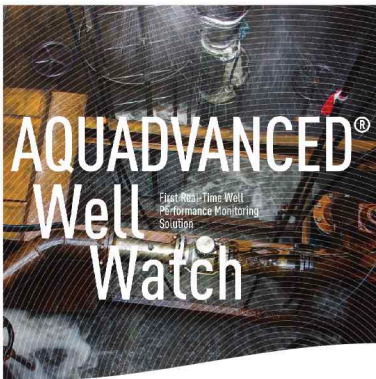
Monitor and optimise the performance of wells and their pumps

- Comprehensive monitoring of ground water wells
- Real-time performance evaluation of wells and pumps
- Real-time surveillance on aquifer level variation
- Supervise and predict aging and performance degradation of wells and pumps
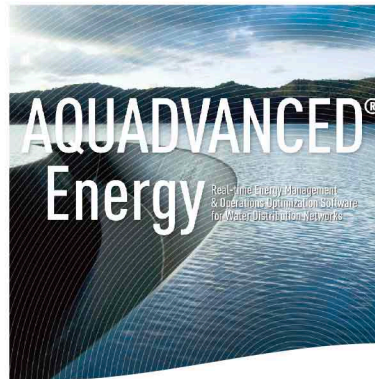
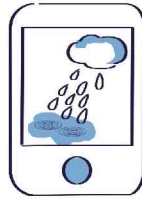**Optimise the drinking water supply system with real-time management**

- Water demand forecasts
- Adjust operating strategy based on peak and through electricity prices
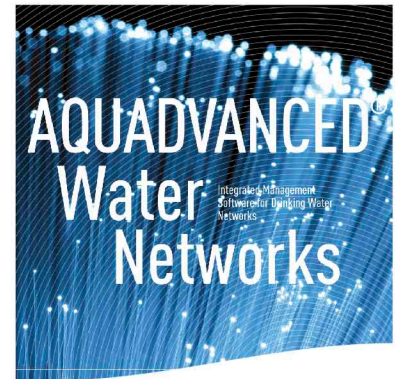
Optimise operational management of drinking water networks

- Monitor the network on a daily basis and in real-time
- Reduce water losses (Non-Revenue Water or "NRW")
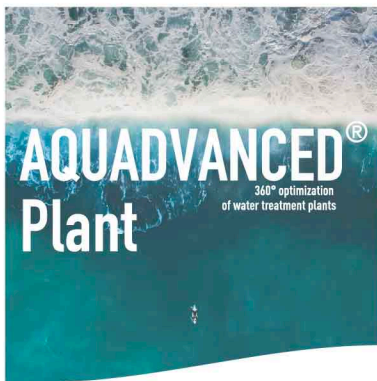- Monitor water quality

Solutions for
WASTEWATER & STORMWATER

AQUADVANCED® Plant

360° optimisation of water treatment plants

AQUADVANCED® Plant

360° optimization of water treatment plants

Optimise in real-time, with 360° control of water and sanitation plant performance

- Effectiveness of interventions, operating costs, and treatment process efficiency
- Predictive maintenance

AQUADVANCED® Urban Drainage

Real-time management of sewage and stormwater systems

AQUADVANCED® Urban Drainage

Integrated Sewer & Stormwater System Management Software
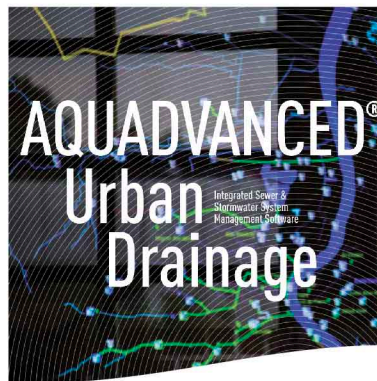
Optimise wastewater systems with real-time management

- Real-time monitoring of drainage systems
- Integrated on-line, short-term accurate weather forecasts
- Real-time flood and pollution risk predictions and warnings
- Real-time, dynamic, and automatic control for a proactive response to floods and pollution risks

AQUADVANCED® Waterways

Real-time hydrological and environmental management solution for surface waters

AQUADVANCED® Waterways
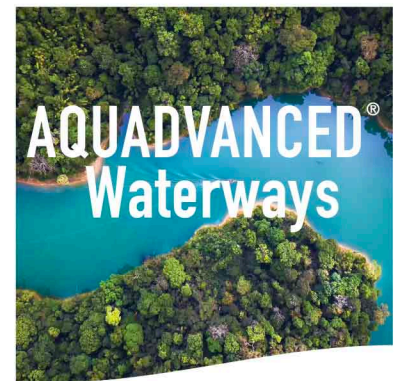
A modular solution adapted to the specific needs of local authorities and their territories

- Real-time monitoring of surface water pollution risks
- Flood risk anticipation and low-water management
- Economic and operational performance

AQUADVANCED® PLANT

Wastewater Treatment Plant Decision Support System

Assists shanwei east water treatment plant to achieve digital twin and energy saving and improved efficiency

Mission

- Shanwei East Water Purification Plant, the first phase of the project has a treatment scale of 100,000 m3/d. It adopts the form of a fully underground water purification plant plus a covered landscape park
- The effluent index implements the "quasi-IV water" standard, and adopts a three-stage treatment process of pretreatment + biochemical treatment + advanced treatment
- Through the construction of the smart operation management and control platform of the smart water plant project, with the industry's advanced technology as the benchmark, build an advanced industry information platform, and comprehensively improve the production management efficiency and operation level

Solution

- Deploy an expert intelligent decision-making system for water plants to realize real-time simulation and dynamic prediction of process flow and operating conditions
- With the goal of meeting water quality standards and saving energy and reducing consumption, provide optimization suggestions for various operating parameters: such as aeration volume, dosing volume, reflux ratio, etc.
- The simulation system can flexibly adjust process operating parameters to form simulations of various working conditions, comparison of optimal solutions, etc., to provide powerful decision-making support for operation management

Achievements

- Truly realize the process twin of the sewage plant. Realize the visualization of water quality, energy consumption, process simulation data and the construction goal of cloud digital virtual water plant
- Based on the optimization control function of process simulation, the optimal control strategy under various working conditions is recommended in real time, reducing aeration and chemical dosage, saving energy and increasing efficiency
- Predict the impact of shock loads and process adjustments to improve operational stability and safety

AQUADVANCED® PLANT

Wastewater Treatment Plant Advance Control System

Assists kaifu wastewater treatment plant to achieve aeration optimization and energy saving

Mission

- Changsha Kaifu WWTP is located on the bank of Liuyang River, and the treatment capacity of the third phase project is 100,000 m^3/d
- The effluent index implements the surface water "quasi-IV water" standard, and adopts the treatment process of pretreatment + biochemical treatment + MBR
- Effectively realize the stability and intelligent control of the aeration process in the biochemical aeration tank, reduce energy consumption costs, and achieve the goal of stable process compliance and refined operation

Solution

- Deploy a smart and precise aeration control system to optimize the dissolved oxygen concentration setting of the system in real time based on process understanding
- Blower Group and Valve Opening Optimization Control
- Historical operation data storage analysis and model automatic calibration to improve the long-term stability of the system

Achievements

- The dissolved oxygen concentration in the aeration tank is intelligently and accurately controlled, and it is controlled within ±0.5 mg/L of the target set value for 85% of the time
- The power consumption of the blower per unit of water volume can be saved by more than 7%
- The treatment process runs stably, and the effluent quality reaches the standard

AQUADVANCED® WATER NETWORKS

The first China's industrial park

Combining artificial intelligence and hydraulic modelling for sophisticated water and wastewater management

Mission

- Dynamic network performance KPI
- Online hydraulic model simulation for network operations support
- Network incident detection via machine learning

Solution

- Basic platform deployment and real-time data connection for dynamic KPI calculations and network event management
- Online hydraulic model integration and optional module implementation
- 1-year implementation + 5 years of maintenance

Results

- 100% data collection for dynamic monitoring
- Real-time hydraulic modelling data to ensure safe and stable operations of the water network
- Single platform that centrally manages multiple types of pipe networks to improve management efficiency and reduce operating expenses

AQUADVANCED® ENERGY

Helping Macao's water plants achieve fully automated control

Real-time tuning of energy algorithms to achieve fully automated control of pumping stations and valves in water plants

Mission

- Ensure operational efficiency and water delivery, maintaining 24/7 operations through an automated system
- Reduce energy costs while maximising operational performance
- Reduce both carbon emissions and energy bills as water demand grows

Solution

- Deployed smart energy management system covering 37 water pumps, 15 clear water reservoirs, 7 valves, and 4 treatment plants
- Actual data (updated every 10 minutes) + water demand forecasts (updated every 30 minutes) + computation models = optimisation schedules
- Reduced energy cost through optimising pump combinations, filling tanks when electricity prices are lower, optimising hydraulic paths, etc.

Results

- The system deployed in 2017 has led to nearly 7% savings on annual energy bills
- Real-time optimisation of pumping schedules to respond swiftly to changes ranging from maintenance to water demand
- Fully-automatic operations with optimised set-points, pump controls, and production plans sent directly to the SCADA

AQUADVANCED® URBAN DRAINAGE

A national sponge city pilot

Urban drainage system customised for chongqing to manage flood risks
One of the first pilot projects

Mission

- One of the first 16 National Sponge City pilot projects
- Full scale monitoring of stormwater system and sponge facilities
- Evaluate and monitor sponge city KPIs
- Early warning of urban flooding

Solution

- Deployed the AQUADVANCED® Urban Drainage system, a customised development in line with sponge city management objectives
- Completed and commissioned Phase I construction in January 2018, covering an area of 18.76 km^2
- Integrated an on-line 2D model and radar forecast to anticipate flooding

Results

- Chongqing became the first city with a smart system for managing stormwater and flooding
- Achieved real-time monitoring of sewage and rainwater network systems
- Integrated rainfall feature analysis to detect weather anomalies
- 2-hour real-time waterlogging alert

AQUADVANCED® WELL WATCH

All-round online monitoring

Helping Baoding achieve intelligent operations and management of groundwater source wells
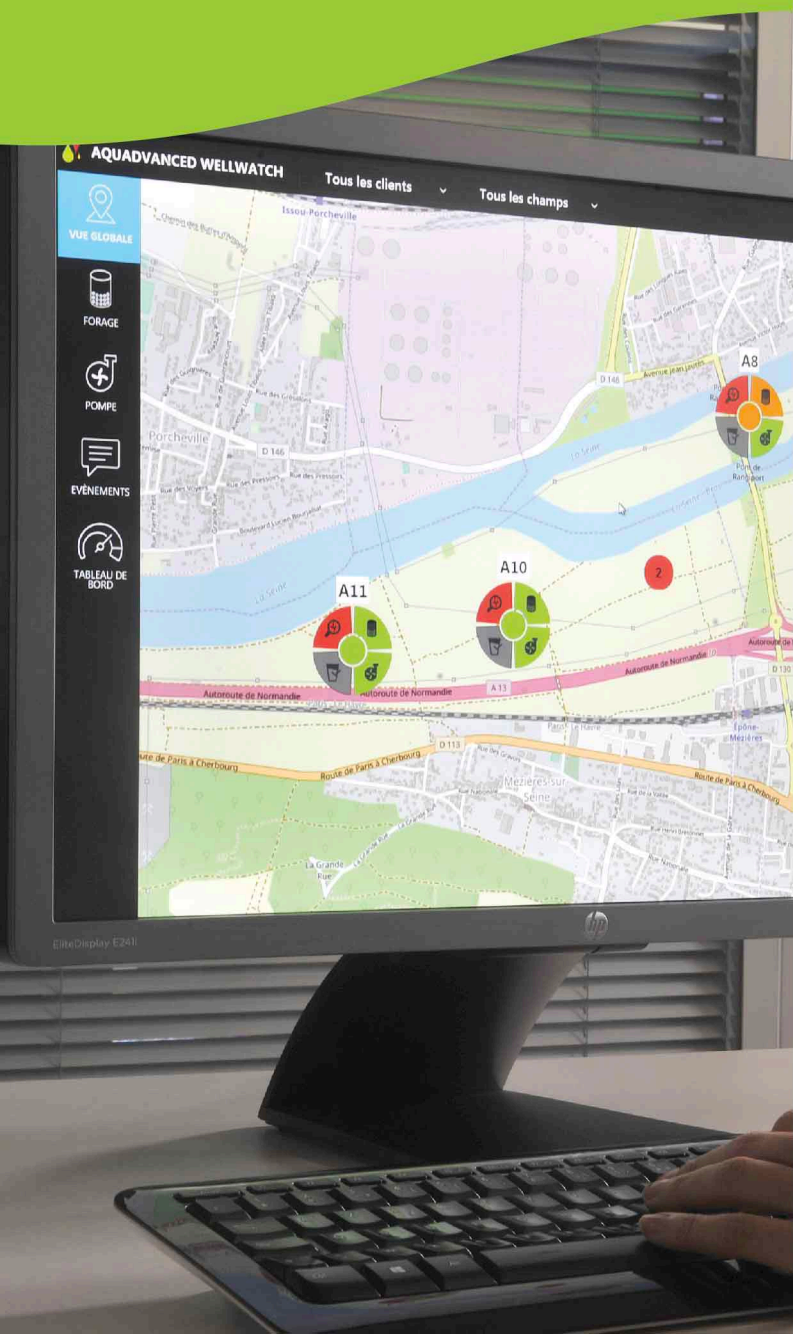
Mission

- Deploy smart solutions to gain visibility on a full range of real-time, panoramic information
- Analysis of operational data from groundwater wells
- Evaluate and monitor status of wells (clogging, corrosion, etc.)
- Evaluate and monitor pump performance and efficiency

Solution

- Deployed the AQUADVANCED® Well Watch Smart Monitoring System for groundwater source wells for the Baoding Water Company in early 2019
- Integrated water source well online monitoring data
- Real-time monitoring of water source well operations in all dimensions
- Real-time evaluation and tracking of multiple specialised KPIs
- Online trend alerts, including water supply capacity, power consumption, and efficiency changes, etc.

Results

- Comprehensive operational data monitoring of Baoding's water source wells
- Help local water company scientifically assess the working conditions and health of water source wells and pumps
- Timely detection of anomalies and incidents that directly affect water supply security, energy savings, and emissions reductions – such as declining water availability and elevated energy consumption from water extraction at source water wells
- Identified room for improvement in pump selection, corresponding to 10-20% power savings
- Automatic detection of water inlet clogging at the water source well that affects water supply availability

16

AQUADVANCED® PLANT

Real-time precision dosing for large water plants worldwide

Initial application of the smart plant management system in chongqing

Mission

- Reduce coagulant consumption and annual operational cost
- Improve operations by real-time process monitoring
- Integrate process control module into the company's "Smart Plant" project

Solution

- Implement AQUADVANCED® Plant predictive module through close cooperation between SUEZ and Chongqing Yuelai WTP
- Module implementation reduced coagulant dosing and, in turn, operating expenses
- Implemented monitoring of clarifier sludge reflux ratio to manage water quality changes
- Reduced backwashing frequency by improving the backwashing effectiveness of sand filters

Results

- Module implementation from January to July 2018, 6 months in total
- Approximately 20% savings on coagulant dosing, estimated value of RMB 1M/year
- Optimised filtration process and reduced non-revenue water costs within the plant by 40%
- 10x sludge concentration uplift in the high density clarifier

AQUADVANCED® PLANT

Supporting wastewater management companies to improve both quality and efficiency

Optimising energy management for the chaoyang wwtp

Mission

- Support the Chaoyang Wastewater Treatment Plant in improving quality and efficiency
- Help the plant achieve stable operations, energy savings, and unmanned operations

Solution

- A control strategy that prioritises the deployment of the aeration control module and the phosphorus removal optimisation module based on an integrated analysis of the WWTP's conditions
  - Nitrification and denitrification cycle control
  - Dynamic dissolved oxygen setting
  - Maximum valve opening strategy
  - Smart blower control
  - Precision dosing
  - Comprehensive optimisation of denitrification and phosphorus removal efficiency to improve system's operational stability

Results

- Improved effluent quality, including 44.1% and 10.1% reductions in effluent ammonia nitrogen and total nitrogen, respectively (mean values for the three months after the system went online vs. the annual mean values before system deployment)
- 27.1% reduction in electricity bills per ton of water (trial run period vs. commissioning period)
- Up to 13.1% reduction in chemical dosage per ton of water (trial run period vs. commissioning period)

AQUADVANCED® URBAN DRAINAGE

Supporting drainage system operations

Decision support system for the operations of the marina barrage in singapore
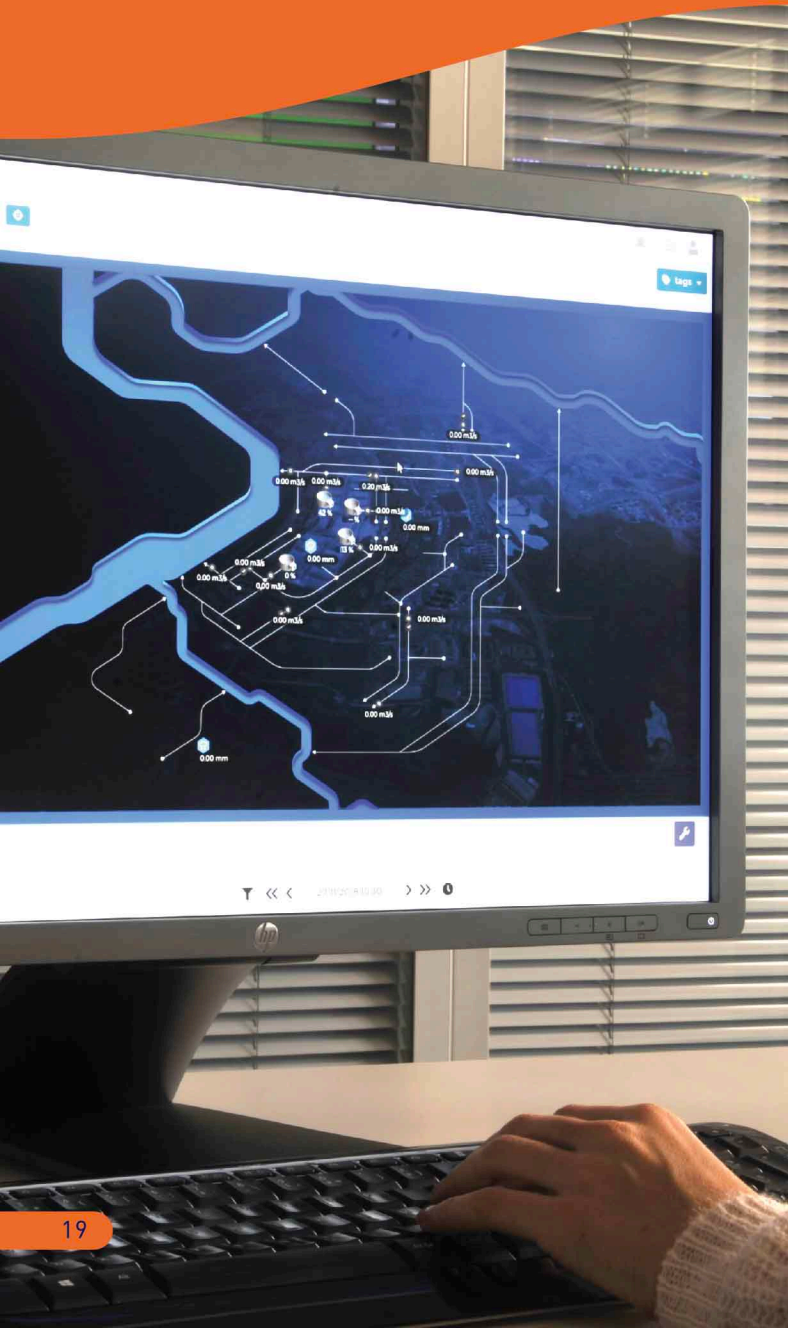
Mission

- SUEZ and PUB collaborated in 2015 to develop a digital platform to optimise water resource management
- Decision support for operators to manage drainage system and tidal gates
- Monitor water quality and reservoir operations and enhance response to flash floods
- Following its successful initial pilot in the Marina Catchment, the platform is now being applied in other catchment areas

Solution

- The solution was deployed in catchment areas and waterway operation systems across Singapore to address challenges at three levels: monitoring, anticipation, and dynamic control
- The system provides operators with real-time situational awareness based on weather forecasts and data collected by field sensors installed along the route
- The system anticipates water levels and flows within the stormwater network and provides decision support to PUB

Results

- Offers meaningful insights on flash floods and assists users in the optimisation of water storage within reservoirs
- The system improves on a continuous basis with the incorporation of user feedback and additional innovative features such as water quality forecasting
- PUB has rolled out the Catchment and Waterways Operations System (CWOS) based on the AQUADVANCED® Urban Drainage system to enhance its water and flood management capabilities

ADVANCED METERING
INFRASTRUCTURE (AMI)

Using smart metering data to nudge clients to save water

Mission

- To boost water conservation efforts in Singapore and meet the vision of a Smart Nation, where technology empowers people to improve their quality of life
- To gain a deeper understanding of households' water usage patterns and habits and the motivations behind water-saving behaviors to design and implement more targeted water saving programmes

Solution

- Pilot projects of remote smart metering and smart water technologies since 2015
- Smart meters fitted with VHF transmitters were deployed in residential and commercial/industrial locations
- Collection of hourly household consumption data through the smart metering solution for data analysis
- With the data collected, a gamified mobile application was created to motivate and increase awareness of residents' water usage

Results

- The programme provides residents with real-time information on water consumption and use patterns and improves water usage management awareness through an innovative mobile application
- Provides information on maintenance and operations of remote water meters and involves customers in customising strategies to save water through internal metering data analysis tools
- The project has been extended to include commercial and industrial customers
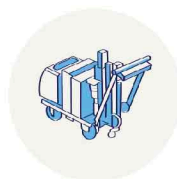
Asset Performance Management

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With increasing demands for better operational performance and results, the future of the water services business will shift from a methods-driven to a results-driven approach. SUEZ's asset performance management solutions integrate 160 years of profound water operations experience, intelligent operation management tools, digital solutions, and other cutting-edge technologies to provide customers with tailored, integrated network operation management services based on performance results.

With the help of intelligent tools and a mature network operations management system, SUEZ provides clients with professional operations and maintenance management services for drinking water supply and wastewater networks. SUEZ helps clients greatly improve operational performance in the following ways:

- Reducing non-revenue water and network leaks
- Guaranteeing water quality of the water supply network
- Avoiding inflows, infiltration, and pipe network misconnections
- Reducing dry season overflows and flooding events
- Improving the performance of network assets
- Ensuring the operational efficiency of network assets
- Optimising capital use efficiency
- Reducing operational costs

Ice Pigging™   idroloc   Galia   SewerBall

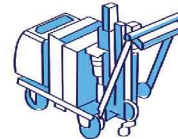# Asset Performance Management Solutions
for drinking water supply

Ice Pigging™

Ice pigging is a breakthrough technique for cleaning the insides of pipes using slurry ice, resulting in better customer service and lower operational costs.

- No excavation, no extra pumping costs
- Can be completed in 2-3 hours
- Water consumption is reduced

idroloc

This technique can easily and accurately locate leaks on various water pipelines and is suitable for working conditions where other leak detection methods are ineffective, particularly large-diameter pipes, plastic pipes, and low-pressure pipes.

Asset Performance Management Solutions
for wastewater networks

Galia

This is a smart modular wastewater network maintenance management system, designed specifically for the day-to-day management of wastewater network maintenance and based on the network operation methodology.

- Intelligently assesses the risk level of each pipe section
- Integrates and maximises use of various kinds of network-related data (such as GIS, CCTV, historical maintenance data, etc.)
- Generates optimised plan for network maintenance and cleaning
- Realises close-loop and transparent management of maintenance activities on the wastewater network
- Drastically reduces emergency impacts and episodes such as flooding, overflows, etc.

SewerBall

SewerBall is a dynamic sewer network inspection tool that identifies and localises non-sewage water, a groundbreaking solution in environmental protection.

- Analysis of 4 physical-chemical parameters
- Exclusive, patented intelligent algorithm
- A fast, secure, and cost-effective pre-diagnosis to improve knowledge of the networks
- Allows for stormwater risk identification and avoids overflows into the natural environment

IDROLOC

Using an innovative leakage testing method

To reduce physical losses, a major contributor to nrw

Mission

- Reduce physical losses, a major contributor to NRW
- Use of an advanced technology for on-site detection: helium gas
- Applicable to difficult sectors where conventional methods fail

Solution

- Selected sectors with suspected leakage as pilots with Chongqing Sino French Water Supply Company
- Estimated helium gas injection time based on the water pipeline length in the community
- Avoided disruption to household water usage or impact on water quality throughout the gas injection process
- Performance-Based Scheme: Fixed entrance fee (lump-sum) + service fee based on performance (upper limit)
- Also possible: Mere demo (minimum lump-sum fee = 1-week operation)

Results

- Operation completed within 2 weeks, 5-16 August 2019
- In total, 7 leaks have been localised and repaired
- Identified 4 communities with suspected leaks
- The total detected leaking volume of 123 m³/h

ICE PIGGING™

Adopting breakthrough pipe-cleaning technology

To improve water network quality and customer satisfaction

Mission

- Clear the aged water distribution pipelines in the small and densely populated areas of Taipei and New Taipei (Many of these pipes had been in service for 40 years)
- Improve network water quality and customer satisfaction by removing sediments, biofilm, Fe/Mn, etc.
- Compared to traditional cleaning methods, Ice Pigging™ offers lower risk, uses less water, and is highly efficient

Solution

- Pipe cleaning plan was made after ample communication with the client and an onsite investigation
- SUEZ sent technicians and a 5-tonne Ice Pigging™ tanker to conduct onsite work
- Completed cleaning service within 2 months for 20 kilometers of DIP and HDPE water pipelines, with diameters ranging from 100mm to 300mm

Results

- Following the successful implementation of the project in 2019, the ice pigging service contract with the Taipei Water Department was renewed in 2020 for 30 kilometers of drinking water pipelines
- Approximately 50km of pipes have been cleaned
- Pipe diameters range from 100mm to 300mm, and include material such as DIP, HDPE, etc.

SUEZ Environmental Quality Monitoring
Pioneer and Leader
of China's Third-party Environmental Testing

Environmental quality testing and monitoring are essential for environmental management and governance assessment, helping to improve environmental quality and the outcomes of environmental cleanup. SUEZ has further extended its business ecosystem and value chain by completing the acquisition of a 100% stake in the environmental testing laboratory business of ALS China in 2019, establishing SUEZ Environmental Quality Monitoring (EQM).In 2020, SUEZ cooperated with Zhongshan Public Utilities Group to acquire Zhongshan Zhongneng Testing Center. In 2021, SUEZ cooperated with Pujin Environmental Engineering (Hainan) Co., Ltd. to build a new environmental testing laboratory in Hainan, continuing to support SUEZ's domestic environmental testing/ Monitoring services.

Through synergies and resource sharing with other SUEZ business lines, SUEZ EQM has comprehensively improved its capacity for technological innovation and market competitiveness in its principal activities and enhanced the quality and efficiency of services for research institutes, universities, governments, solid and hazardous waste disposal facilities, risk assessment and remediation companies, industrial firms of all kinds around the world, resource and energy companies, and Chinese clients. It has played an active role in the protection of the ecological environment and smart city initiatives and has become a practitioner of environmental progress and smart city development.

EQM Services

Environmental standards
and compliance monitoring
(soil, sediment, water, air,
and noise)

Site investigation
and site risk assessment,
detection, and analysis

Contaminated site
remediation and remediation
acceptance effect analysis

Monitoring of groundwater,
surface water, drinking water,
wastewater, seawater, and other
types of water

Monitoring of ambient
air, exhaust gas, workplace
air, indoor air, noise, wipe
samples, etc.

Solid waste, hazardous
waste, and leaching toxicity
analysis

Analysis of farmland,
agricultural products,
and various plant samples

SUEZ Environmental Quality Monitoring

As the earliest third-party testing agency in China engaged in environmental testing such as investigation, assessment, and acceptance of polluted sites, SUEZ EQM is the pioneer and leader of third-party environmental testing services in China. Headquartered in Pudong New District, Shanghai, EQM has developed for nearly 20 years in China and has provided environmental testing technical services and technical consultation for hundreds of cities in 34 provincial-level administrative regions. Having accumulated rich practical experience in the industry for many years, EQM has become the best service provider for environmental testing such as site investigation, risk assessment, risk control and restoration, and effect assessment. The company has always pursued the quality policy of "scientific and fair, accurate and reliable, high-quality service, and customer satisfaction" and adhered to the service tenet of "quality first, customer first". It has won the support, trust and recognition of customers, and enjoys a good reputation in the industry. The advanced management system, excellent team, spirit of continuous innovation and the concept of high-quality service have enabled the company to make continuous progress, establish a good corporate image, and establish long-term strategic partnerships with many customers.

Key Data

5 **7**
5 labs + 7 offices

Nearly **10,000**
square meters of laboratory area

Business in
more than 100 cities

80% of the number of people with bachelor degree or above

Over **300**
total employees

95%
of the staff with chemical environment professional background and related working experience

20 years
of experience

4,000+
total number of testable items

10,000+
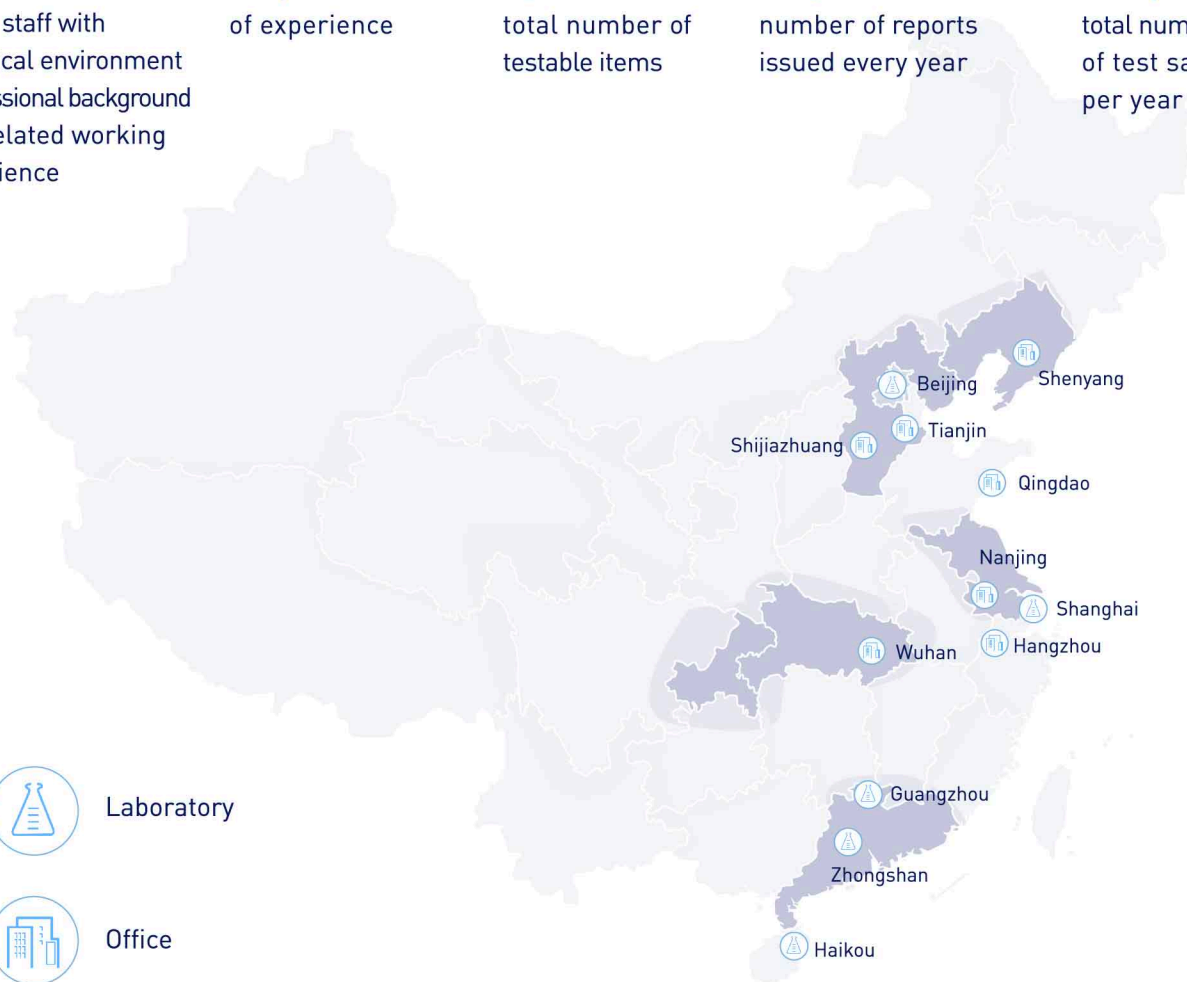number of reports issued every year

110,000+
total number of test samples per year

Beijing
Shenyang
Shijiazhuang
Tianjin
Qingdao
Nanjing
Shanghai
Wuhan
Hangzhou
Guangzhou
Zhongshan
Haikou

Laboratory

Office

Air & Climate Management

As a preferred global partner for the environmental services industry, SUEZ not only provides water and waste management solutions to municipalities and industrial and commercial clients, but also pioneers circular air treatment solutions through its active investments in air and climate management technologies.

1

DATA COLLECTION

- Collects large amounts of data in real-time
- Combines data with external data sources
- Data verification and calibration standardisation
- Big data storage/cloud service

2

DATA REPORTING

- Real-time data visualisation in GIS
- Integrates data with indicators (e.g. air quality index)
- Offers data display interface
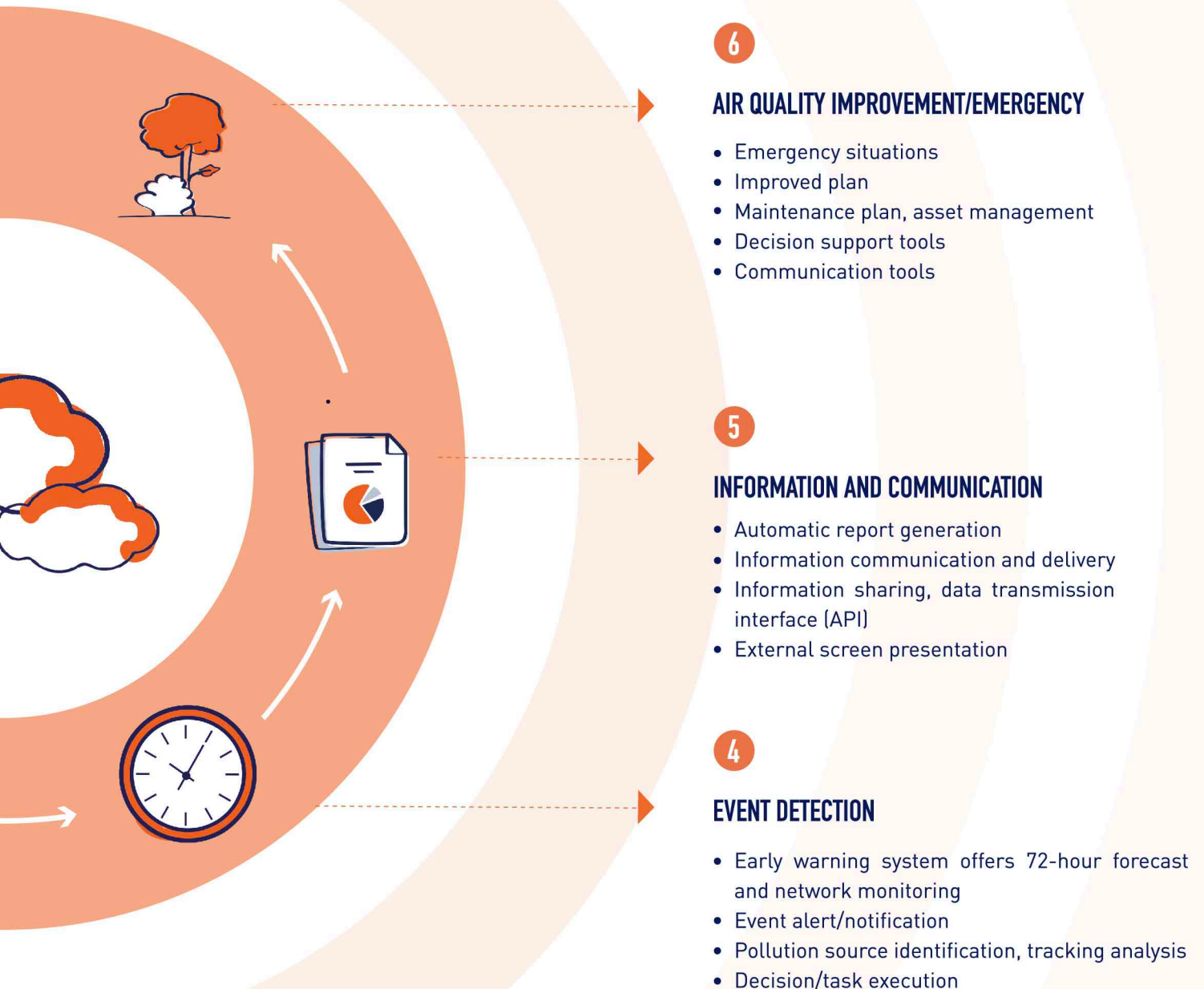- Allows clients to view information on mobile devices

3

ADVANCED ANALYSIS

- Spatial-temporal trends graph
- Statistical analysis, R voice development programme (open source)
- Variable correction (traffic information, weather information, etc.)
- Interpolated data analysis
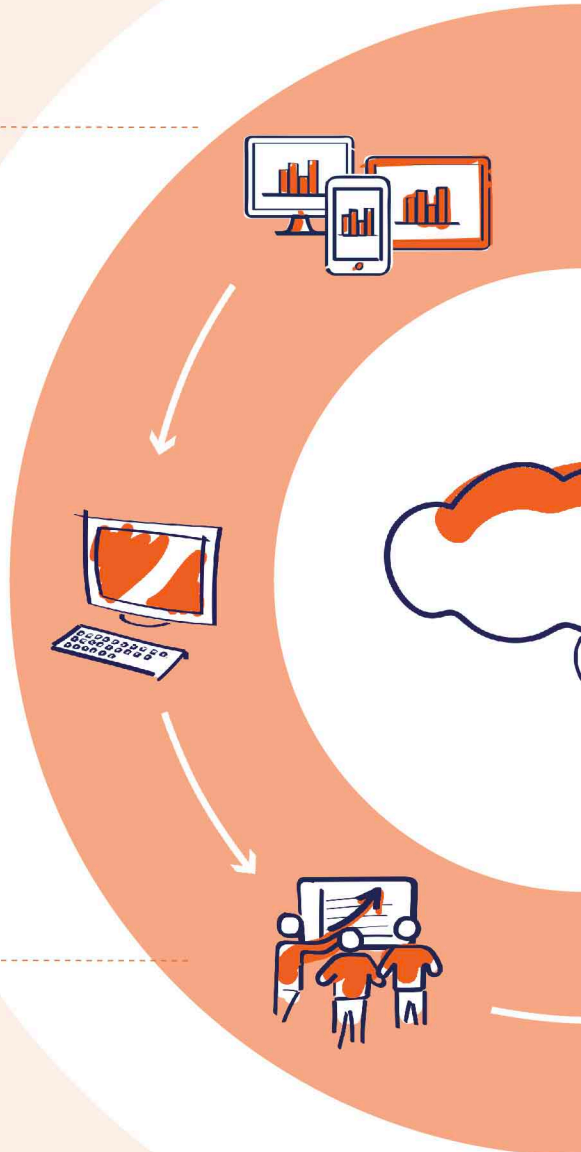
SUEZ Smart and Environmental Solutions combined artificial intelligence and digital solutions to develop the AirAdvanced® Digital Platform, which is an advanced data platform for the real-time management of air quality and environmental emissions data. Based on real-time air quality monitoring in a given area, the system provides decision-makers with customised alerts and management functions.

6

AIR QUALITY IMPROVEMENT/EMERGENCY

- Emergency situations
- Improved plan
- Maintenance plan, asset management
- Decision support tools
- Communication tools

5

INFORMATION AND COMMUNICATION

- Automatic report generation
- Information communication and delivery
- Information sharing, data transmission interface (API)
- External screen presentation

4

EVENT DETECTION

- Early warning system offers 72-hour forecast and network monitoring
- Event alert/notification
- Pollution source identification, tracking analysis
- Decision/task execution

Consulting

—

CAPABILITIES

- Hydraulics modelling
- Civil & electrical engineering
- Energy
- Environmental & regulatory studies
- Urban planning & eco-district design
- Data management, digital platform design & development
- Public finance

ACTIVITIES

Strategic studies

Planning
(ex-master plans,
climate strategy)

Supervision
(infrastructure design
work supervision)

Project
management

Technical
assistance

Training &
capacity building

Due diligence

ECO-WETLAND

First project in a Chinese industrial park

To make integrated use of the zone libellule® technology to treat wastewater

Mission

- Achieve comprehensive improvements to ecological protection, water purification, and landscape function
- Further improve the water quality of industrial wastewater treatment, meet the ecological water demand for SCIP's internal water system, and assist in achieving the goal of "near-zero emissions"
- Transform and upgrade wetland management mode through advanced management platform

Solution

- Provide Zone Libellule® technology: wetland design experience based on industrial wastewater environment characteristics and wetland self-purification capacity
- Apply wetland digital management platform: automatic control of various hydraulic facilities based on real-time data and simulations

Results

- Effective water quality improvement: stable key pollutants removal rate (TN removal rate ~60%, TP and ammonia ~50%, and COD ~20%)
- Stably treat 10,000 m³/d of industrial wastewater and 15,000 m³/d of river water, assisting in the promotion of the green circular economy
- Pronounced improvement in wetland biodiversity; helping SCIP become an industry leader in terms of regional habitat conditions

SCIP BIC

Environmental steward programme

Helping scip transform towards a best-in-class industrial park

Mission

- SCIP & SUEZ created a JV to transform SCIP towards a best-in-class industrial park based on four pillars:
  - Institutional organisation and management
  - Efficient and circular use of resources
  - Low-carbon growth
  - Asset protection

Solution

- Assess status quo from environmental performance and operational efficiency
- Set KPIs covering water, waste, flood management, energy and carbon, mobility, resilience, air quality, innovation, and digitalisation to identify opportunities and priorities
- Establish a short, middle, and long-term transformation roadmap

Results

- Smart Operation Centre for real-time monitoring, scheduling, operations, early warning, back tracing, etc.
- Innovation as market leader, growth enabler, and game changer that attracts and retains talent while improving operational efficiency

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