HACH®

Be Right™

New Insights and Technologies for

Seawater Desalination

How Hach partnerships in your project

Consultancy, Service and Support

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Consultancy

Dedicated team specifically for desalination projects, supporting and providing the best solution and **consultancy** in each study and new plant project from the conceptual stages

Service

Customized Service programs for your **customized** project

Support

Dedicated backstage online **Techsupport** team providing fast response and excellence guidelines

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Partnership for excellence performance

- **Extended warranty options**
- **We adapt to your needs abroad**
  - Customized commissioning
  - Service management abroad
  - **Remote assistance**
- **Validation of applications**
- **Conditioned demo trials**
  - ✓ Trust on the quality of Hach. Try and confirm.
  - ✓ Key asset for your success
- **New available renting options**

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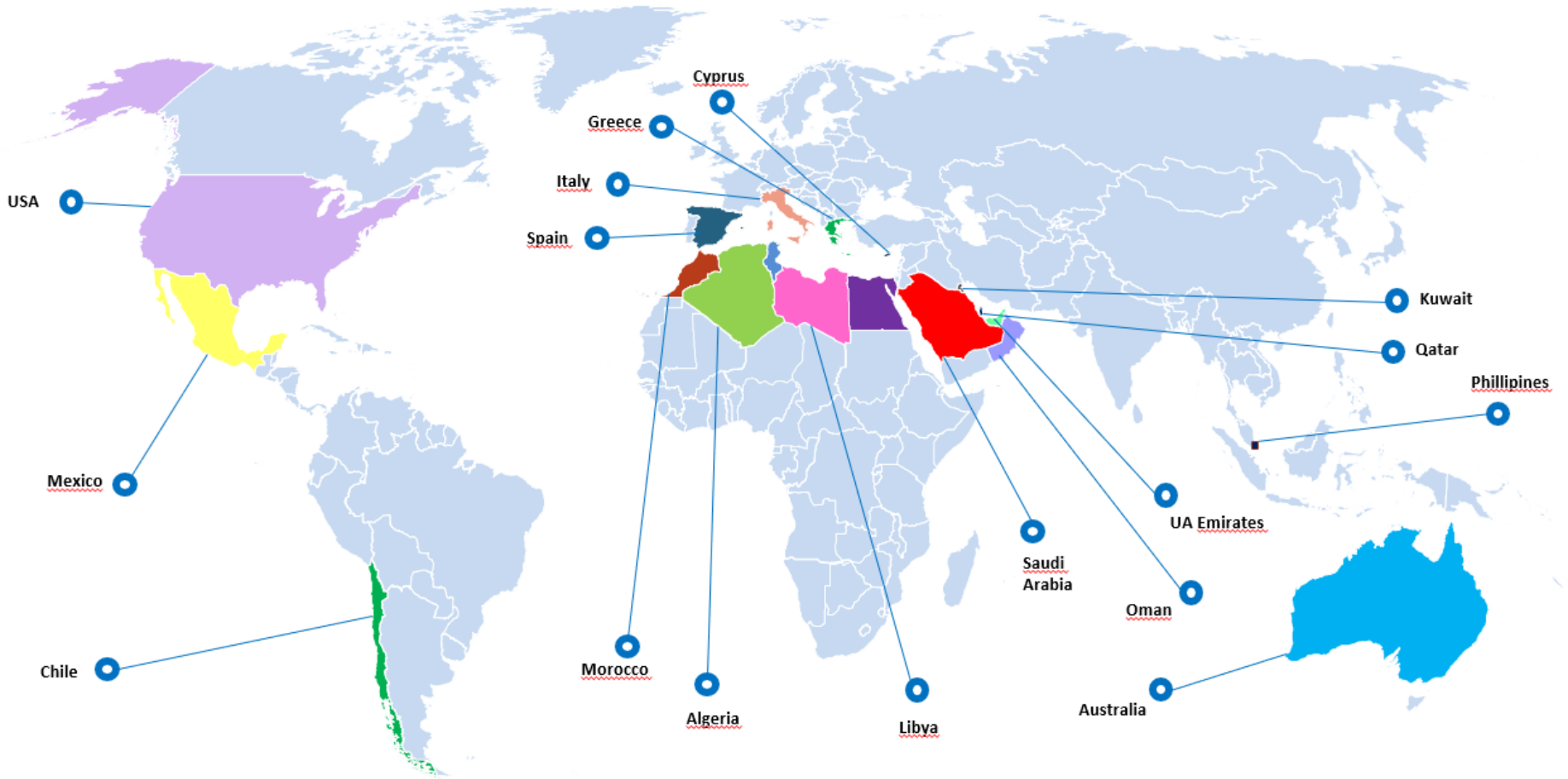
Hach global presence in Desalination Plants



100+ Site reference

Presence in 15+ Countries

Presence across 5 Continents

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Challenges in desalination

Feed water pretreatment is key to prevent scaling and membrane life and integrity issues

Keep normal energy use – Extended cleanings frequency – Longer life span

- Uncontrolled deposition and clogging by suspended solids, colloidal precipitates and mineral compounds

- Organic fouling, hydrocarbons fouling
- Bacterial growth - biofouling
- Membrane oxidation by chlorine

- Keep optimum and disinfected drinking water quality
- Need data and insights on a more frequent basis

- Instrument metadata integration to SCADA, DCS and DMS

More data = More visibility/Control

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How can Hach improve online measurement and monitoring of Seawater Desalination Plants?

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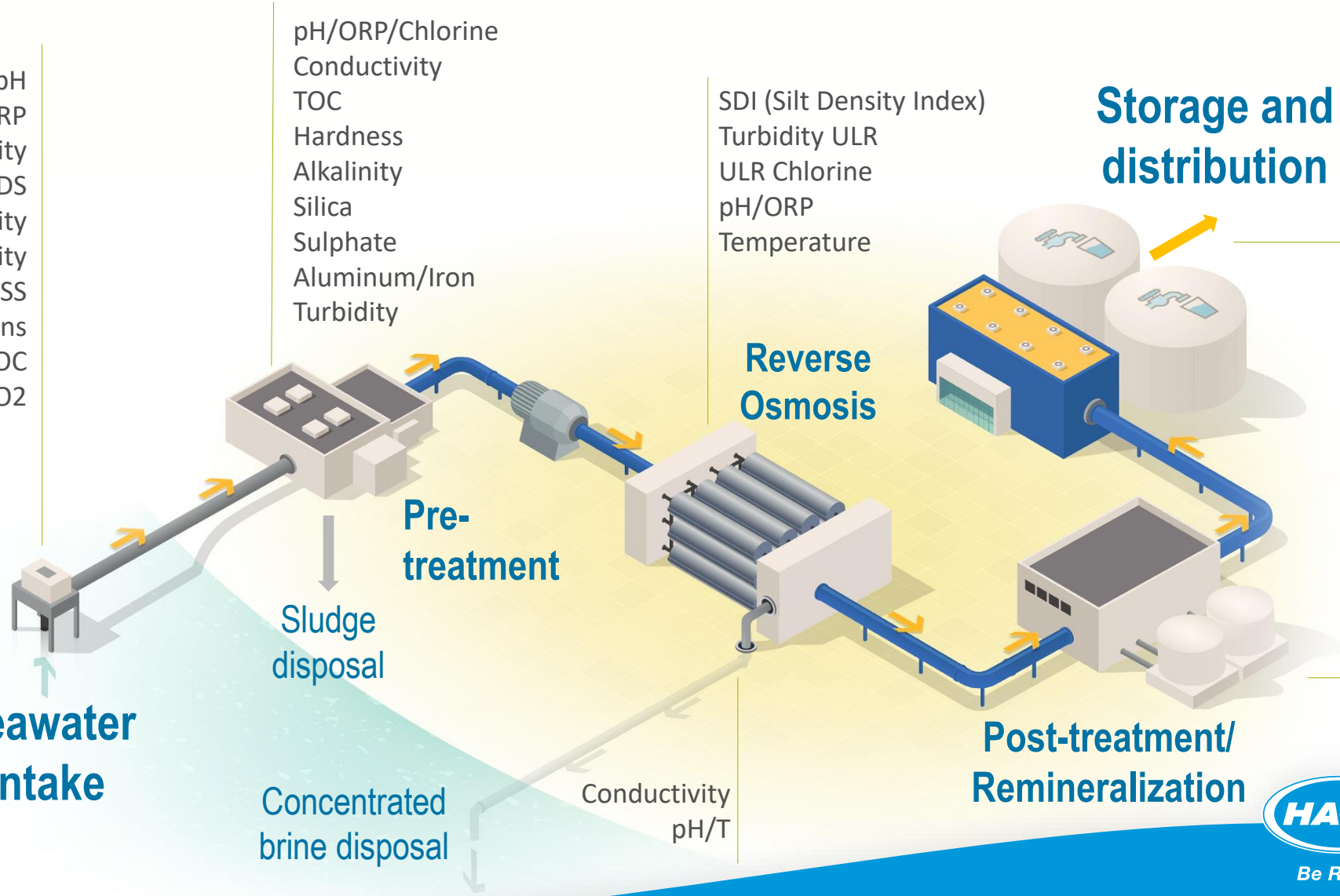
Key parameters in SWRO process



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Complete Monitoring Toolset for Desalination

Process solutions I

The new EZ Series

New

EZ1000/2000

Boron, Al, Fe, Mn, Cl2

EZ4000

Alkalinity, Hardness, Chloride

EZ5000

Alkalinity & Hardness in 1 analyzer

EZ7xxx TOC/COD/TP/TN

EZ3000 Fluoride, Chloride

EZ7300 ATP

TOC - Biotector

B7000

Intake/influent

B3500

Low and ultra low ranges

Permeate/DW

Disinfection

New **CL17sc and CL17 ULR**

(Cl2 colorimetric analyzers up to 10 ppb LOD)

Amperometry Chlorine probes

CL10, 9184 – Free chlorine analyzers

9185 and 9187 – Ozone and Chlor dioxide

Turbidity

Ultraturb

Seawater sc

Intake/Pretreatment

Salt resistant

up to 65 g/l

0-1000 NTU

TU53 sc

High precision 360º Laser turbidimeter

Permeate/drinking water

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Process solutions II

Suspended Solids/turbidity

Solitax sc family

Plastic and Stainless Steel

TSS sc family

Titanium and Stainless Steel

E-Chem

pH and ORP Differential

pHD/ORPD

Conductivity (inductive) - 37XX

Intake/brine/pretreatment

Conductivity (contacting) - 83XX

Permeate/Drinking water

Dissolved Oxygen (luminescent)

LDO seawater sc

Oil and hydrocarbons

PAH 500

(Marine applications)

Samplers

AWRS

(All Weather Resistant)

AS950

Bühler

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Lab/portable solutions

Wide LCK Cuvette tests and other Hach methods

Boron, phosphate, nitrate, phosphonates, chlorides, Fe, Mn, Al, True color, Free and Total chlorine, , NH4, TP, TN, TOC, COD, Barium, silica, etc.

Spectrophotometry

DR6000 – UV/VIS

DR3900 - VIS

DR1900 - VIS

SL1000 (Chemkeys)

Turbidity

2100Q portable

TL23

TU5200

HQ/HQd

pH, Conductivity, ORP, ISE

Portable IP67

Benchtop

AT1000 - titrators

Hardness
Alkalinity
LSI
Chorine

Photometry

DR300

DR900

New EZ Series Platform Overview

Voltammetry

Trace of metals and metalloids
Arsenic
Mercury
Cadmium

Titration

Alkalinity
Hardness
Ammonium
Sulfate

Ion-selective E.

Fluoride
Chloride
Sulfide
Ammonium

Colorimetry

Iron / Manganese
Silica
Boron
Orthophosphate

>100 Analyzer combinations

>50 parameter

Specialized Methods

- ATP Chemiluminescence for Microbiological Load
- Total Phosphorus / Nitrogen
- WWTP Influent Toxicity
- Volatile Fatty Acids

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EZ Series.
Sample preconditioning Panels:
Prefiltration & dilution

There is the appropriate EZ sample preconditioning panel for each case and type of water to be analyzed.

Complete EZ system customized panel

Universal filtration “EZ-Size”

EZ 9020

Heavy Duty = “EZ-Size AD”

EZ 9030

D particle máx. 100 µm / <100 mg/l / Turbidity <50 NTU
Pore size <1 µm up to 2 mm

Microfiltration = “MicroSize”

EZ 9200

“EZ-Dilute”

EZ 9700

Up to 100x-250x, allowing for measuring ranges > than 1000 mg/L

Panel Solutions Available for Your Projects

Size optimized and standard configurable panels for instruments

Turbidity, Chlorine, Echem (pH, ORP, DO, Conductivity), TSS, Spectrophotometric probes (Nitratax, etc.)

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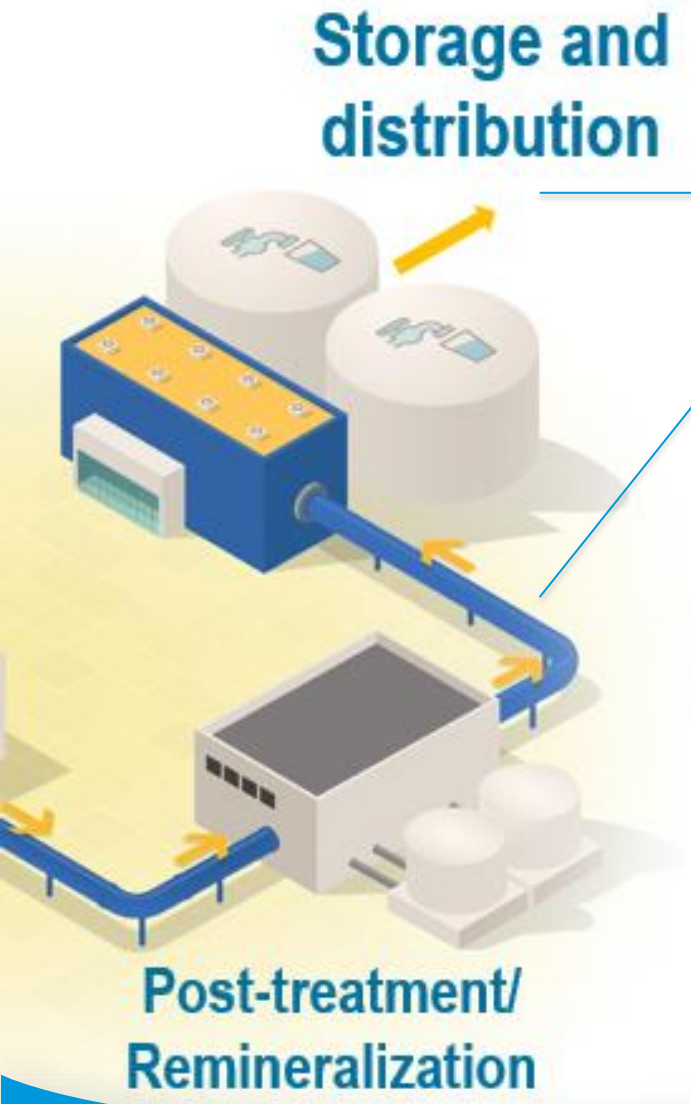
Hach in the Distribution Network



- Alkalinity
- Hardness
- pH (&T)
- Turbidity
- Conductivity
- Chlorine
- TOC
- Boron
- Others (Phosphate, etc.)

- LSI

- **Microbilogical Load**
  Adenosine Triphosphate (ATP)

EZ7300 ATP

Monitoring of the bacteria regrowth in the distribution network

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Online microbiology
EZ7300 Series ATP Analyzer

The first microbiology analyzer using the ATP firefly assay and complying with international standard method **ASTM D4012-81**

The on-line microbiology analyzer delivers operators:

- Fast results (7-10 minutes ≈ real-time data)
- Automation through industrial PC / controller
- Analytical performance
- Reliability for up to 8 streams to lower investment cost
  - Stream selection with modbus or digital input

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Hach
TOC Biotector

INDUSTRIAL BIOTECTOR SELECTION GUIDE

	B7000i	B3500e	B3500c	B3500ul
Applications	• Industrial Wastewater Treatment Plant Influent and Effluent • Process Water • Product Loss Control • Oil in Water	• Industrial Wastewater Treatment Plant Effluent • Discharge Control • Storm/River Water • Ground/Raw Surface Water	• Condensate Return • Cooling Water • Boiler Feed Water • Demineralized Water • Reverse Osmosis Water • Carbon Bed Absorber	• Pharma • Power • Electronics • Ultrapure Water
TOC Range	0 - 100 up to 0 - 20,000 ppm	0 - 250 or 1,000 ppm	0 - 25 or 100 ppm	0 - 5 ppm
TOC Mode	TIC/TOC, TC, VOC *	TIC/TOC, TC	TIC/TOC, TC, VOC	TIC/TOC, TC, VOC
Two-Stage Advanced Oxidation	Yes	Yes	Yes	Yes
Self Cleaning	Reactor & Sample Tubing	Reactor & Sample Tubing	Reactor	Reactor
Sample Characteristic	<2 mm articles Dirty Fat, oil, greases, sludge and salts pH swings	<100 µm particles Semi-Dirty Some fat, oil, greases, sludge Some pH swings	<100 µm particles Clean Free of fat, oil, greases, stable pH	No particles Very Clean Free of fat, oil, greases, stable pH
Number of Streams	6	1	2	2

**Configurations to measure TP/TN also available.*

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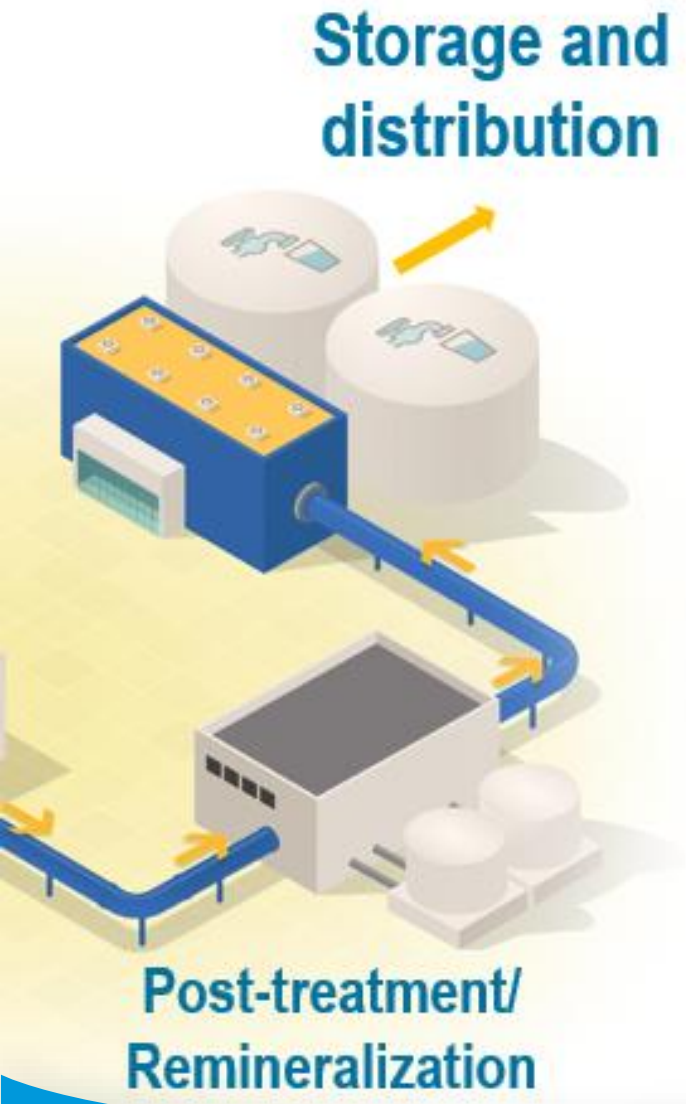
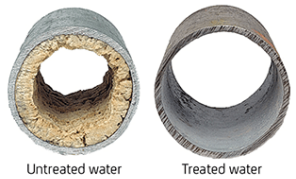
Langelier Saturation Index





LSI

SC1000 controller

Total & **Ca Hardness** + Total & Free Alkalinity

Conductivity (TDS)

pH/Temp

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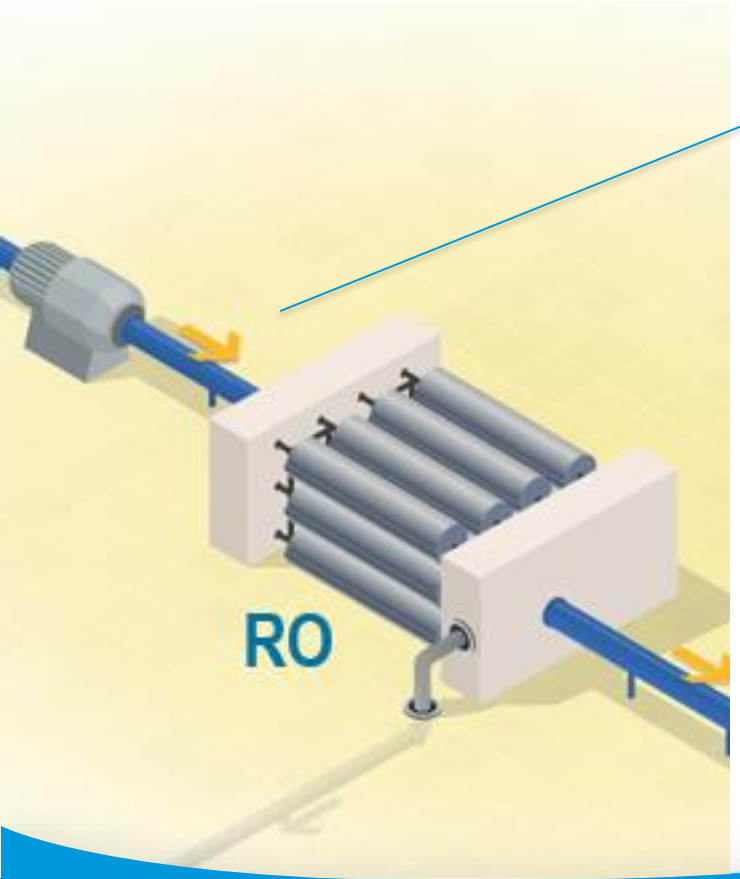
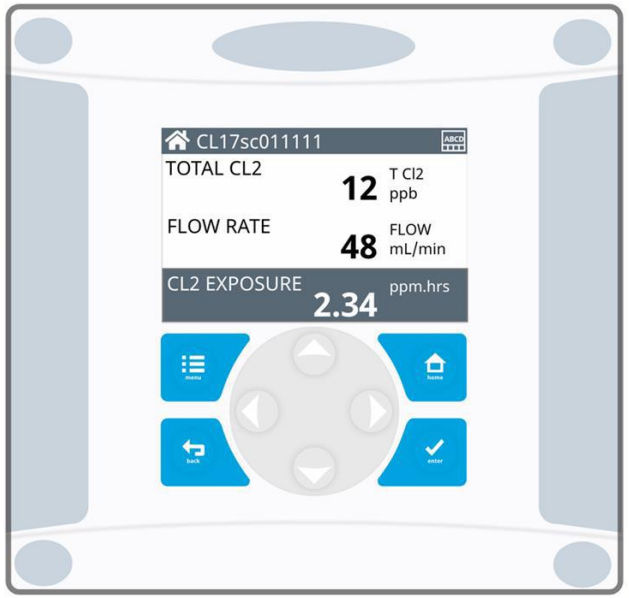
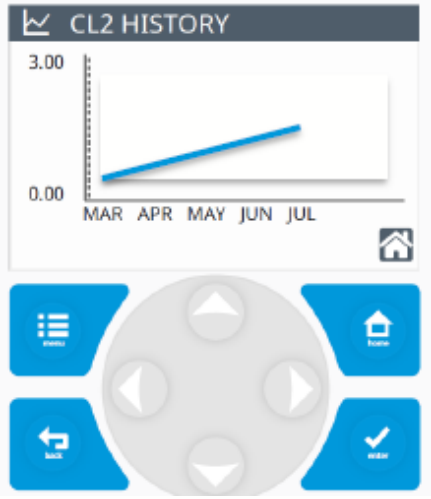
Chlorine analyzer CL17 sc ULR



Controller
SC200

Instrument
CL17 (version ULR – LOD 10 ppb)





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Digital Solutions & Smart Water by Hach

Claros

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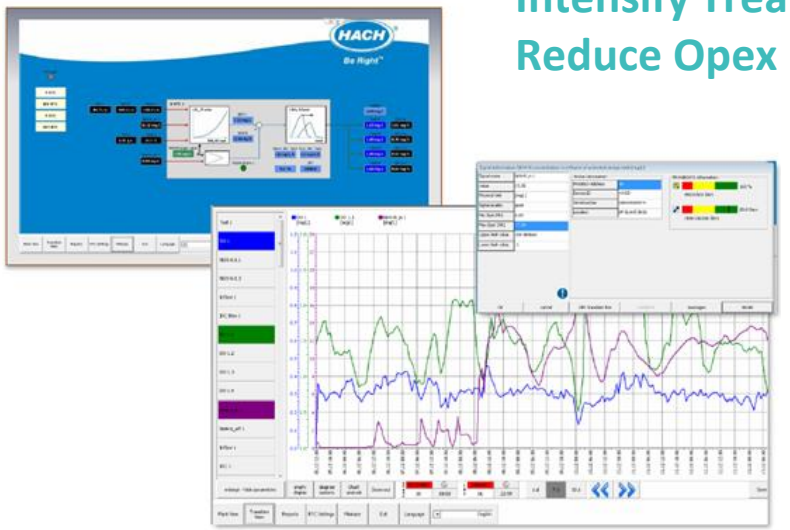
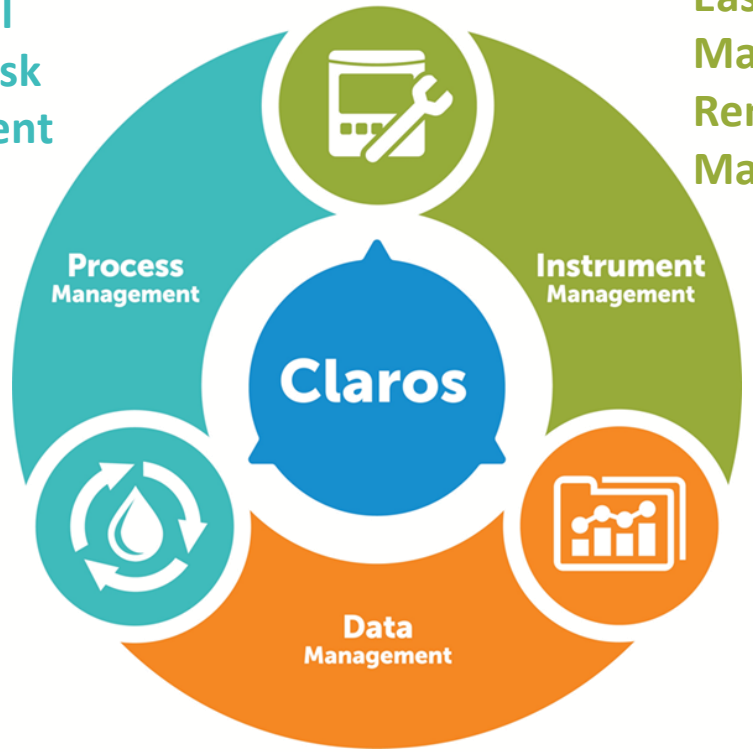
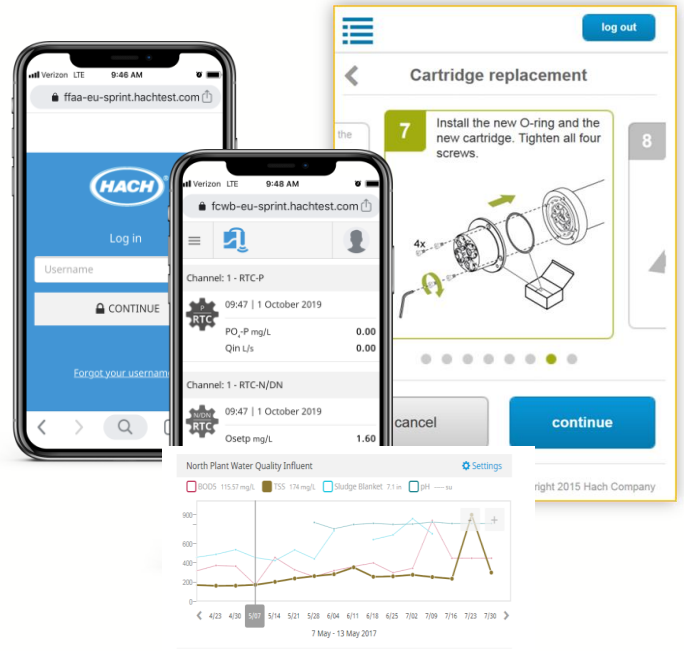
Digital solutions platform Claros

Real Time Control
Reduce Permit Risk
Intensify Treatment
Reduce Opex

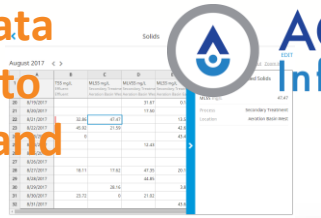




Easier Calibration / Maintenance
Maintenance Accountability
Remote access to data & Metadata
Maximise instrument up-time



Aggregation of data
= New insights into your permit risk and plant efficiency



AQUATIC Informatics

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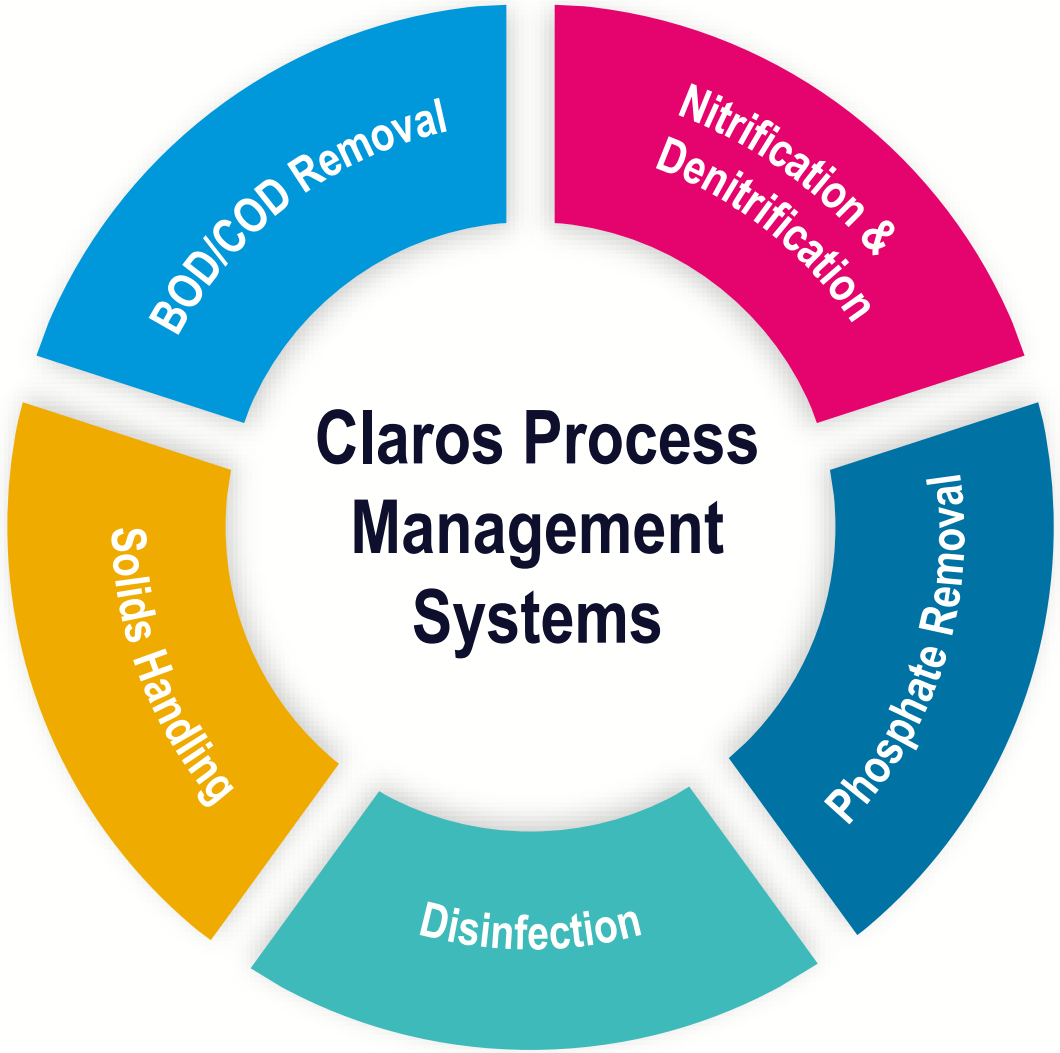
Process Management

1. Collect real-time data
2. Calculate dynamic set points
3. Treatment adjusted – chemical feeds or aeration
4. Manual and automated modes available



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Dissolved Oxygen Control

Ammonia Removal

Total Nitrogen Removal

Chemical Phosphorus Removal

Sludge Retention Time

RAS Control

Sludge Thickening

Sludge Dewatering

DAF Coagulant/Polymer Control

Chlorination / Dechlorination

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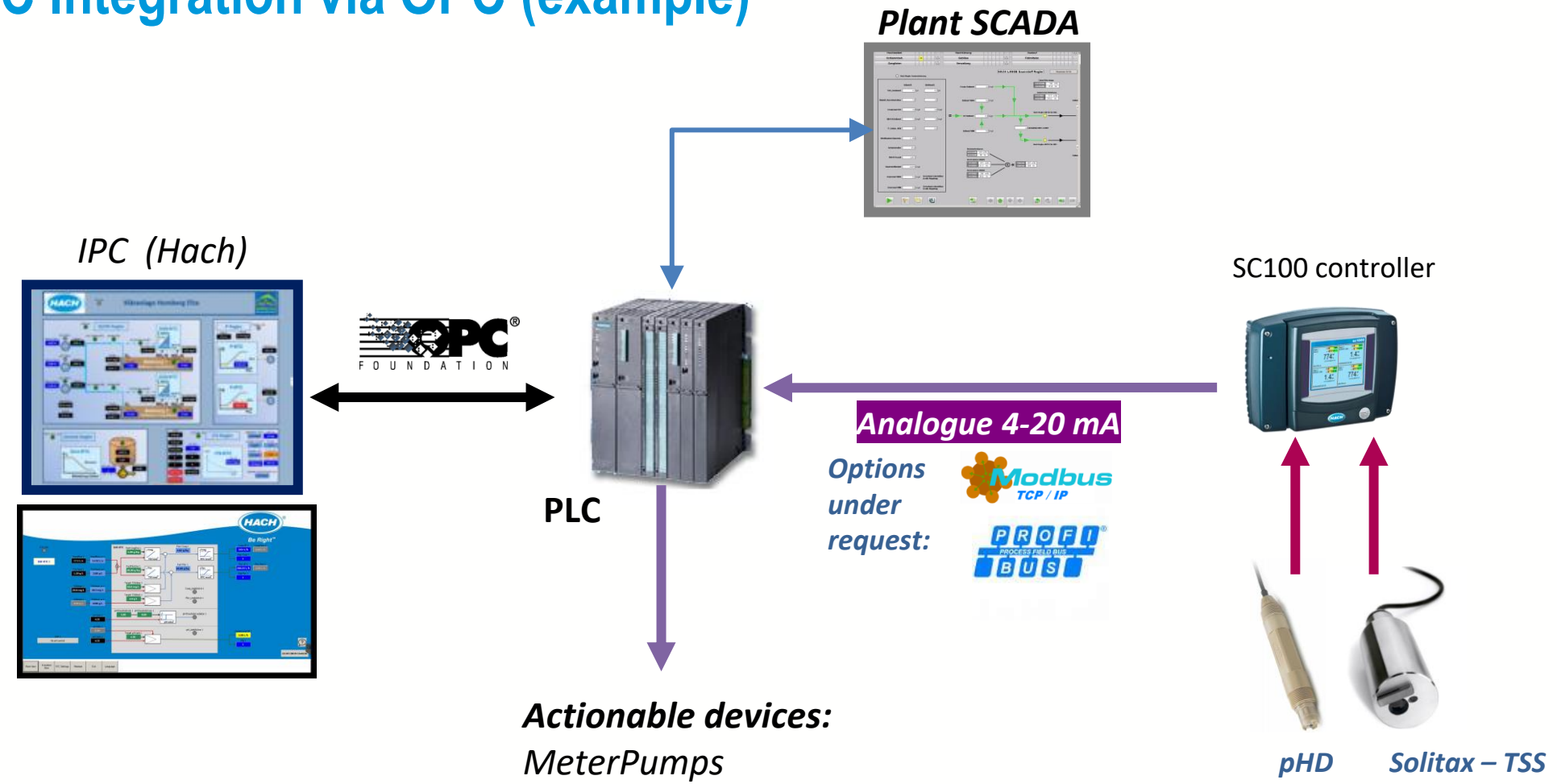
RTC Integration via OPC (example)



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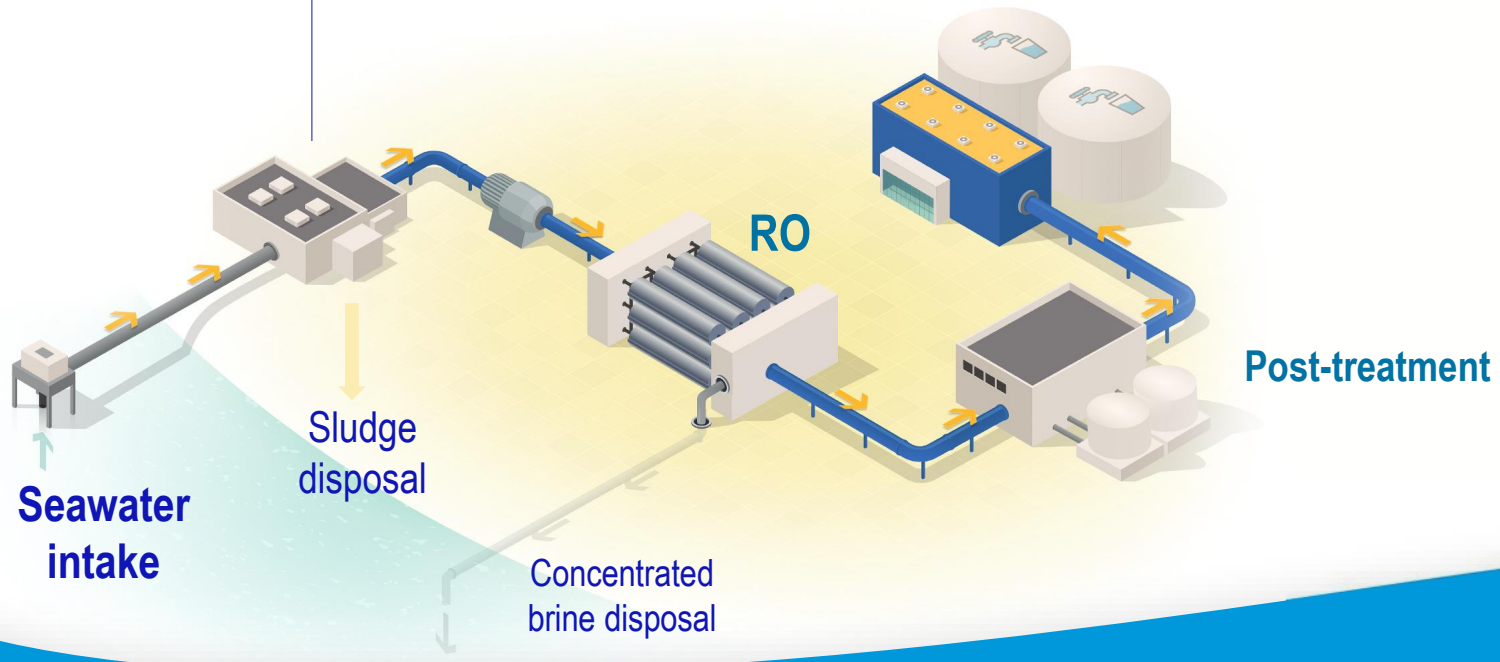
Claros – RTC in desalination

Pre-treatment

RTC Modules

- Dissolved Air Flotation (DAF)
- Chlor/Dechlor
- Chemical dosing



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Claros - Mobile Instrument Management (MSM)
Data anytime, anywhere

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MSM

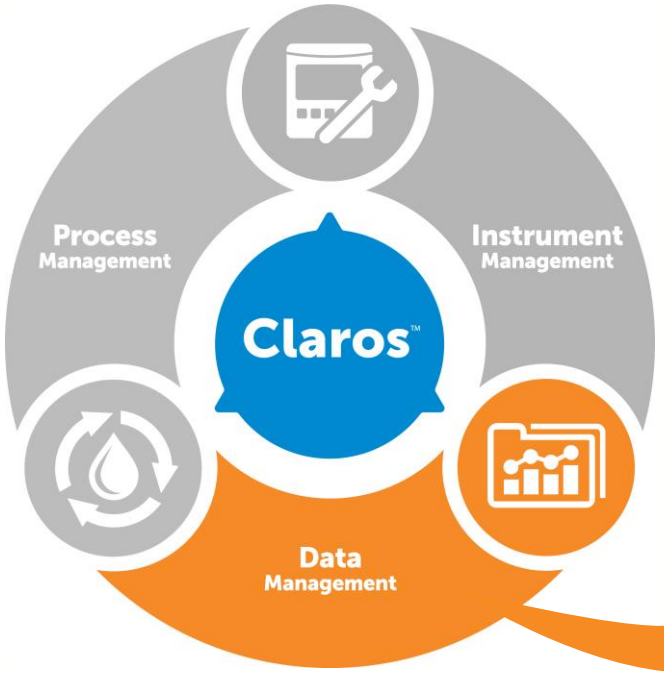
Mobile Sensor Management

- Access to the instrument from any device with internet connection (remote display)
- Web app that enables acces to Hach instrumentatio
- “Claros Enabled” controllers

Claros Enabled

- Measurement value
- Information about measurement quality
- Warnings, alarms, interactive support, graphics

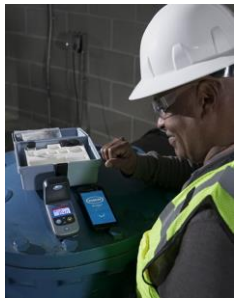
Claros Data Management (Collect)



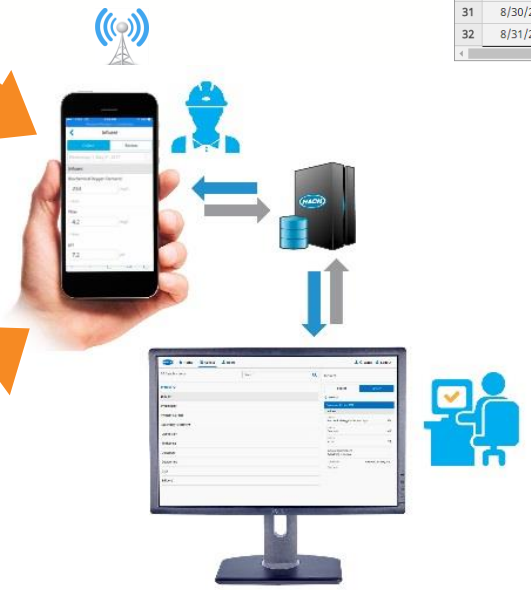
COLLECT

- **DR300** + Dongle
- User defined parameters (Flowrate, pressure, temperature, level, reagents, etc.)

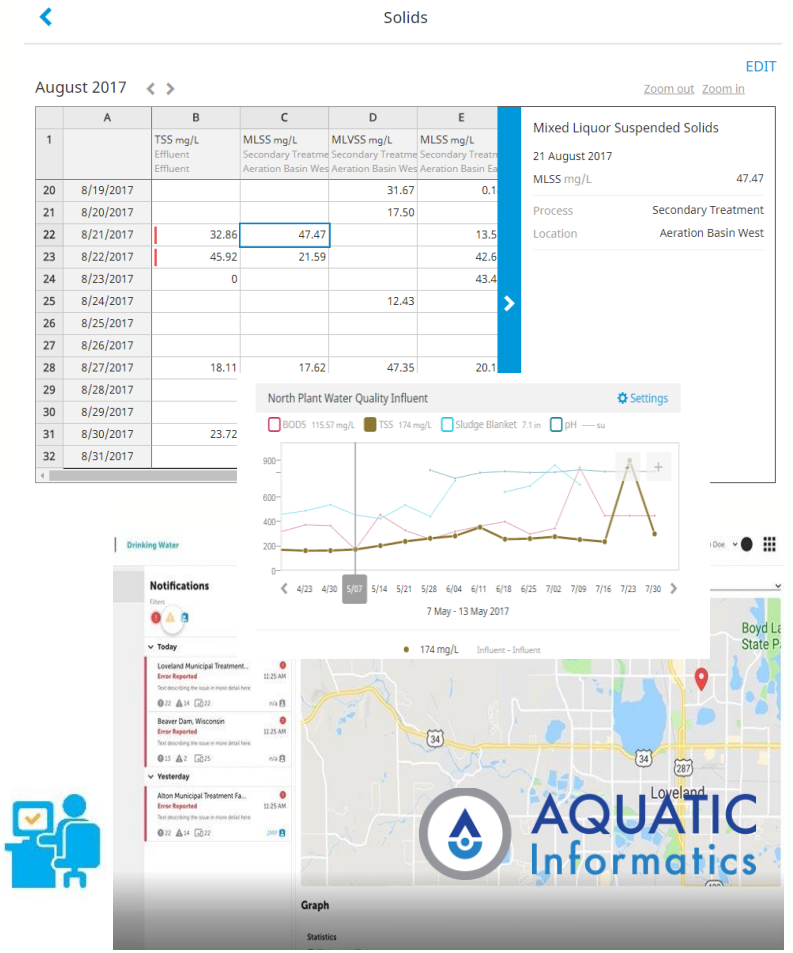
User



DR300



Claros Data Management interface



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