

Water Sustainable Solution

3D TRASAR™ Premium PLUS

Technology

TNChE Asia 2025

May 20th – 22nd, 2025

ECOLAB®

NALCO Water





“THERE IS NO NEW WATER. ALL WE HAVE IS HERE.”

- *National Geographic*

Regional Industrial Trends & Challenges

Water Shortage

- Seasonal
- Resource constrain

Expanding with
limited resource &
limited manpower

Discharge
Limits: Low Zn,
Low PO₄

Corporate Goal?

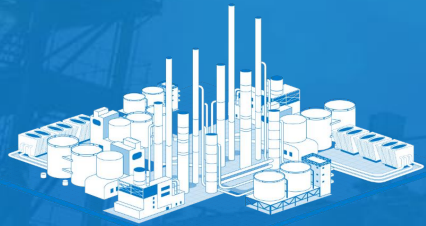
From 5 to 7 yrs
continuous
operation

- Water & Energy Getting More Expensive
- Strong external Competition: cost pressure

New Rules to
Follow?
CO₂ Footprint
No-P, Low Zn



How to achieve more with less in sustainable way?



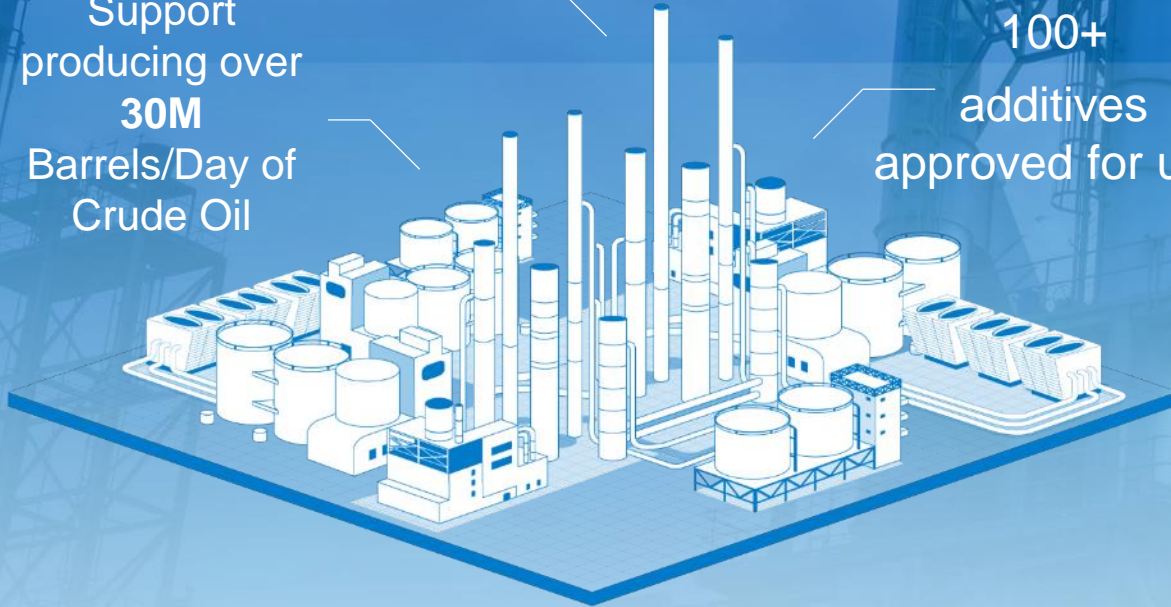
REFINERIES

+350
Refinery
Sites

Support
producing over
30M
Barrels/Day of
Crude Oil

100+
Patents

100+
additives
approved for use



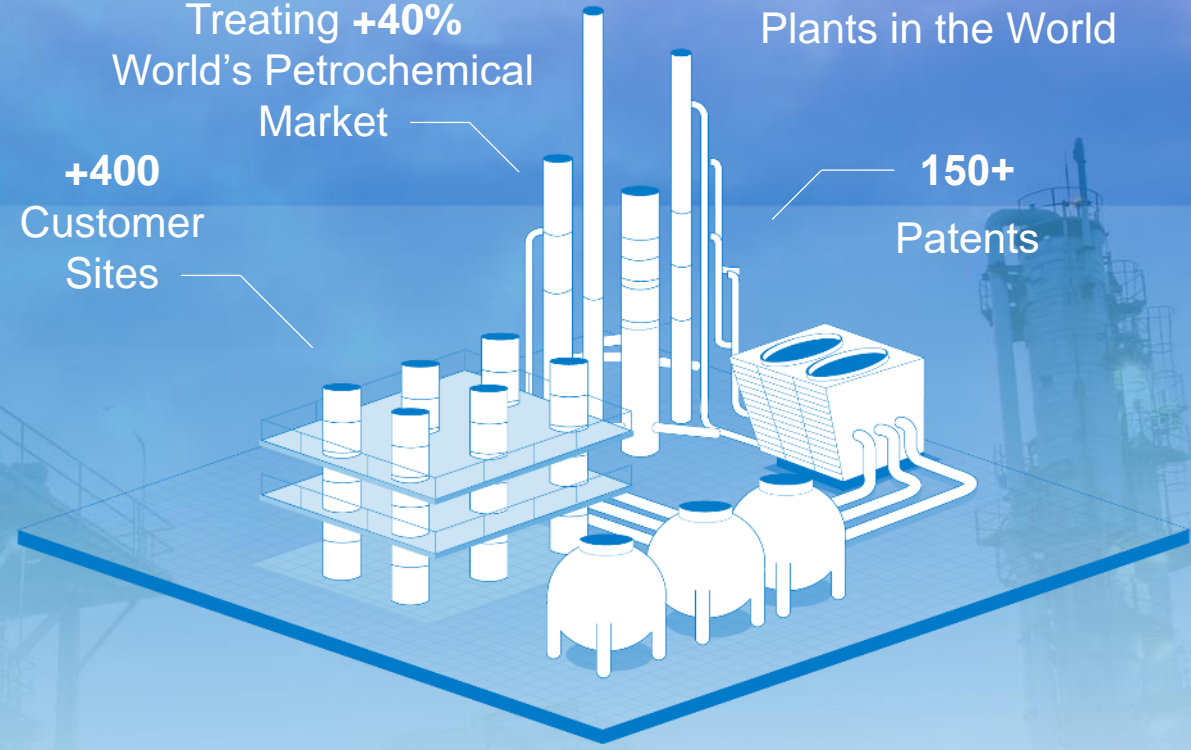
PETROCHEMICAL

Treating +40%
World's Petrochemical
Market

+400
Customer
Sites

Supporting
+70% of Ethylene
Plants in the World

150+
Patents



Performance-Based Solutions Built On:

Connected Chemistry

Reliability Management

Sustainable Innovation

Automation & Digital Solutions



Nalco Sustainable Water solutions

**DIGITALLY
CONNECTED
SOLUTIONS**

**ONSITE
EXPERTISE**



**AUTOMATION
& CONTROL**



CHEMISTRY



**DATA &
PERFORMANCE
MANAGEMENT**



**REMOTE
MONITORING
SERVICE**



Innovative Chemical Treatment

Targeted Corrosion Inhibition

- AZ-Lite Treatment Program
- Non-toxic copper protection
- Non-P programs
- Non-P Plus for Soften Water

Scale Inhibition

- Tagged High Charge Polymer

Microbiological Control:

- Purate® Chlorine Dioxide on-site generation Technology

Automation and Digital Technologies

3D TRASAR™ Technology

- On-Line Cycle Controls
- Real-Time Leak Detection
- Ecolab 3D

Oxidant Controller

Cooling Water Optimizer

OMNI Analyzer:

- PO4 and Ca Monitoring

Cooling Water Reliability Management Program

BPGA System Audit & on-ling Monitoring

- BPGA Audit
- OMNI HX technology
- Tracks heat exchanger stress indicators

Inspection and Maintenance Predictability

- Maximizes the system's reliability and production
- Optimizes maintenance and TA costs

3D TRASAR Premium Plus

The World's most comprehensive and advanced water performance system

OUR 3D TRASAR TECHNOLOGY OVERVIEW:



**3D TRASAR
Ecosystem**



**3D TRASAR
Process**



*At Nalco Water,
we are always there
when we're needed.*

3D TRASAR Ecosystem

Designed to support your unique water needs, 3D TRASAR uses a linked ecosystem of smart technology, connected chemistry, extensive expertise and actionable insights to further optimize your operation.



Smart Technology



Connected Chemistry



Extensive Expertise

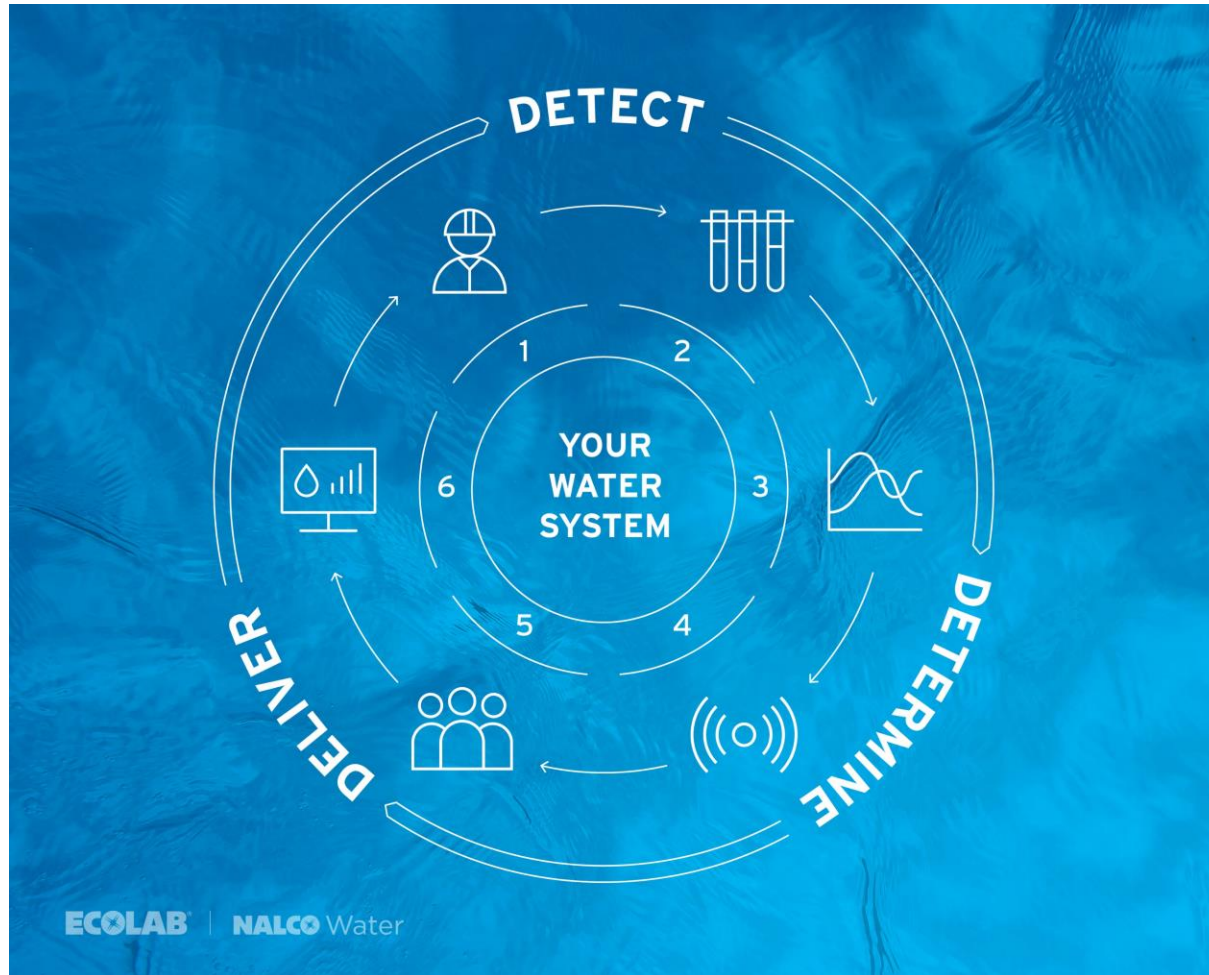


Actionable Insights

POWERED BY ECOLAB3D™

3D TRASAR™ Program Process

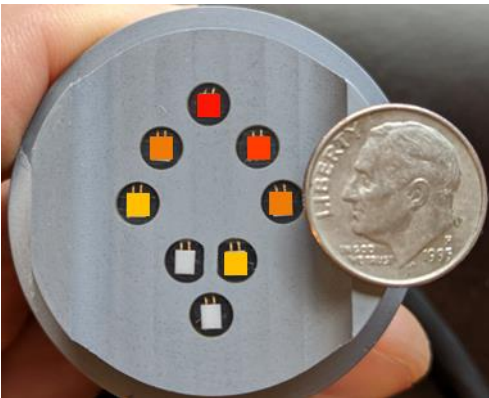
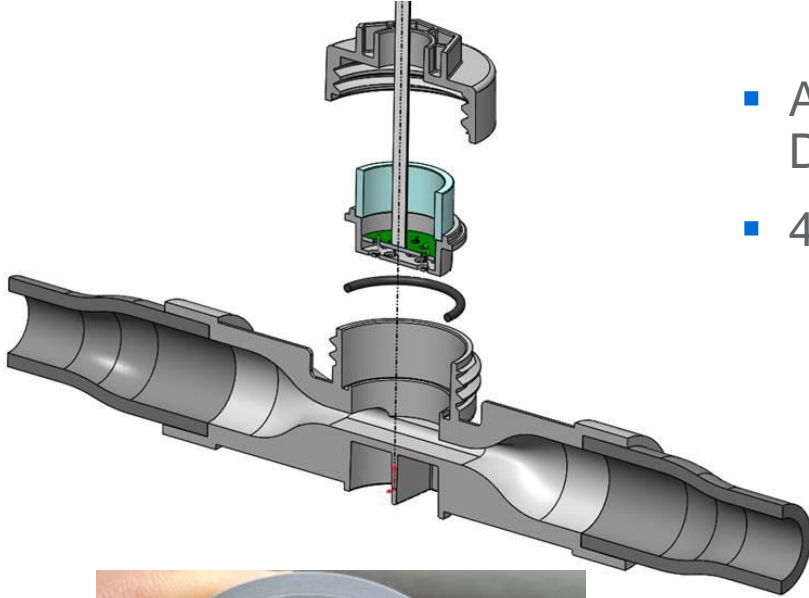
Real-Time Insight → Swift, Targeted Action → Better Customer Outcomes



- 1 On-Site Technical Services & Expertise
- 2 Connected Chemistry
- 3 Modeling & Optimization
- 4 Best-in-Class Automation
- 5 Ecolab Global Intelligence Center
- 6 Actionable Insights Powered by ECOLAB3D™

Deposit Sensor

Novel, production ready, deposit sensor using thermal decay



- Array of 8 Resistance Temperature Devices
- 4 Different Temperatures
 - Provides ability to **differentiate** types of deposit
 - **Predictive** indicator of scale formation
 - Bracket **Critical** Conditions
 - Allow for **redundancy** and averaging

Patents

US Patent 10,295,489

US Patent Appl. 20180245865

US Prov. Patent Appl. 62/818681

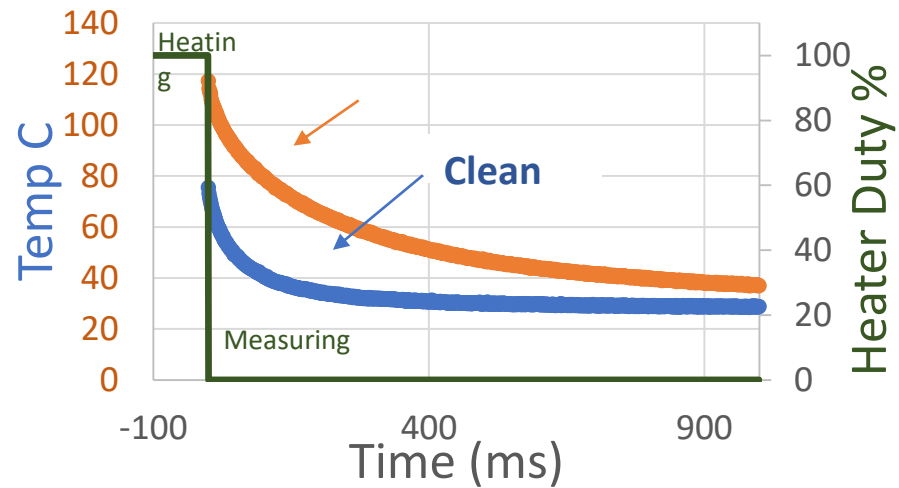


Deposit Sensor

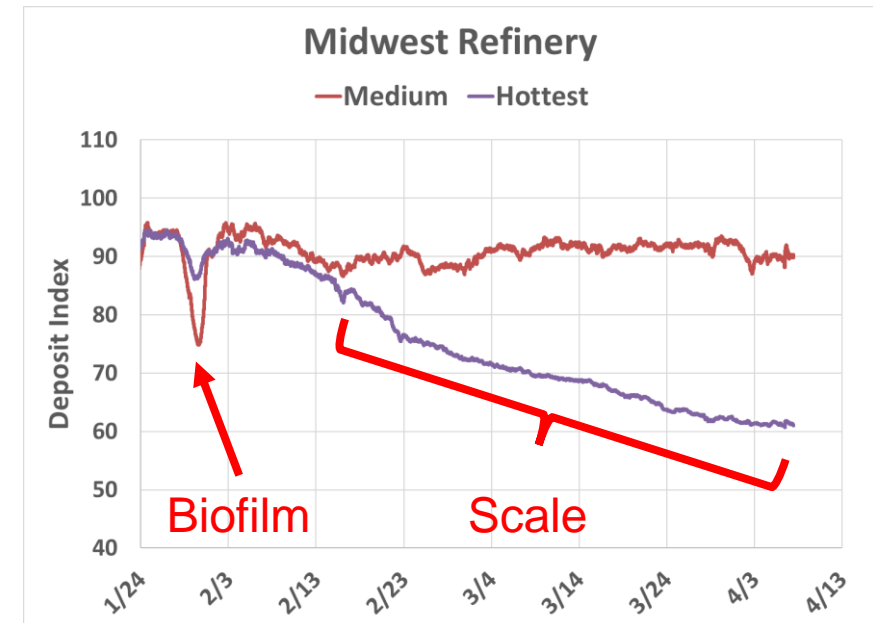
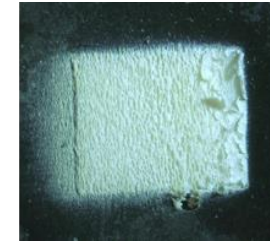
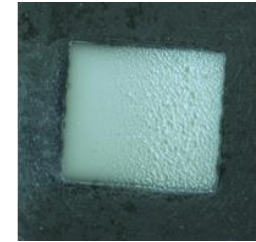
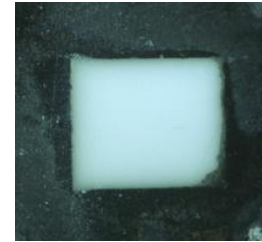
Technology

Reason to Believe

Principle of Operation

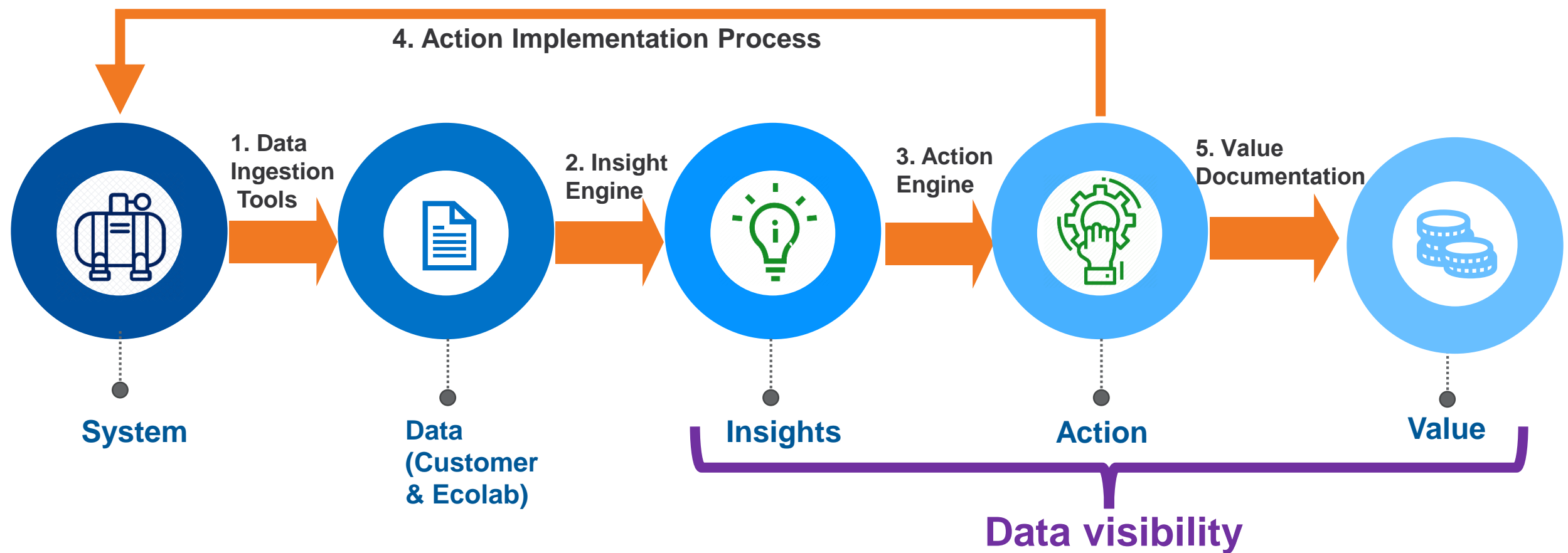


- Measures Temperature Decay
- Similar Process in Heat Exchanger
- Deposits respond to Surface Temperature
 - Scale (High temperature)
 - Sediment (all temperature)
 - Biofilm (Goldilocks)



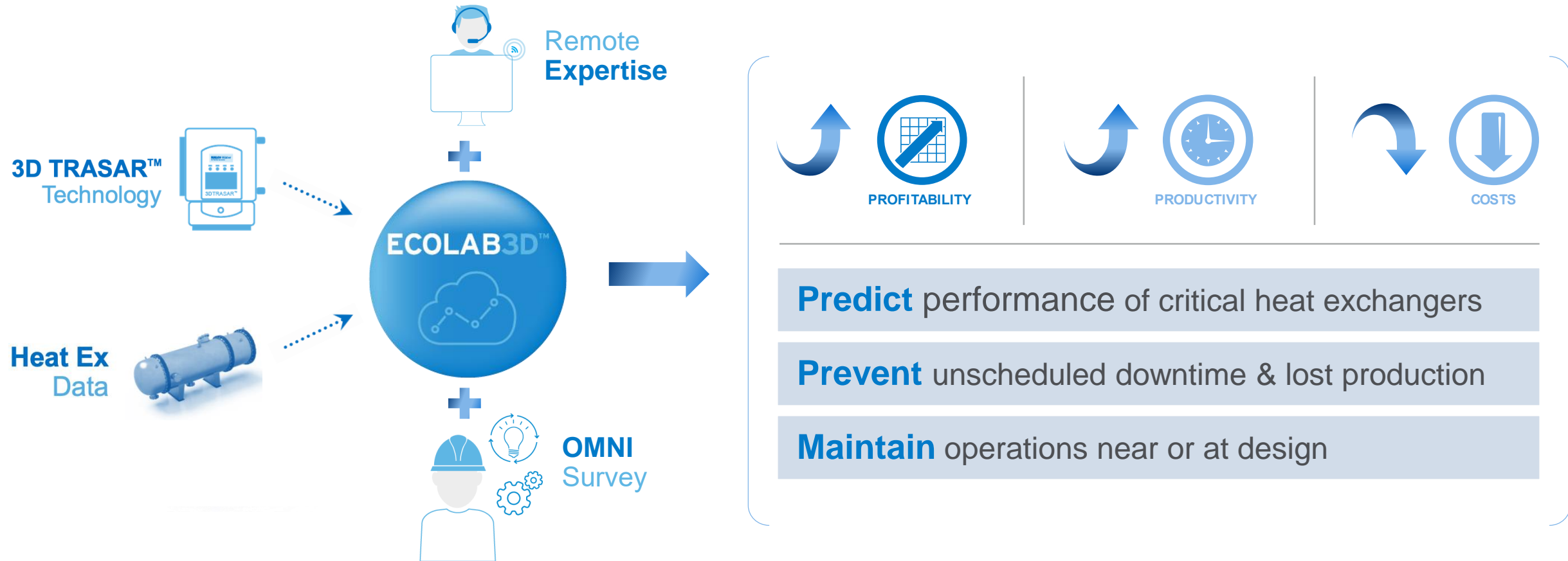
Digital Offering Applied to Deposit Sensor

Control Loop Technology

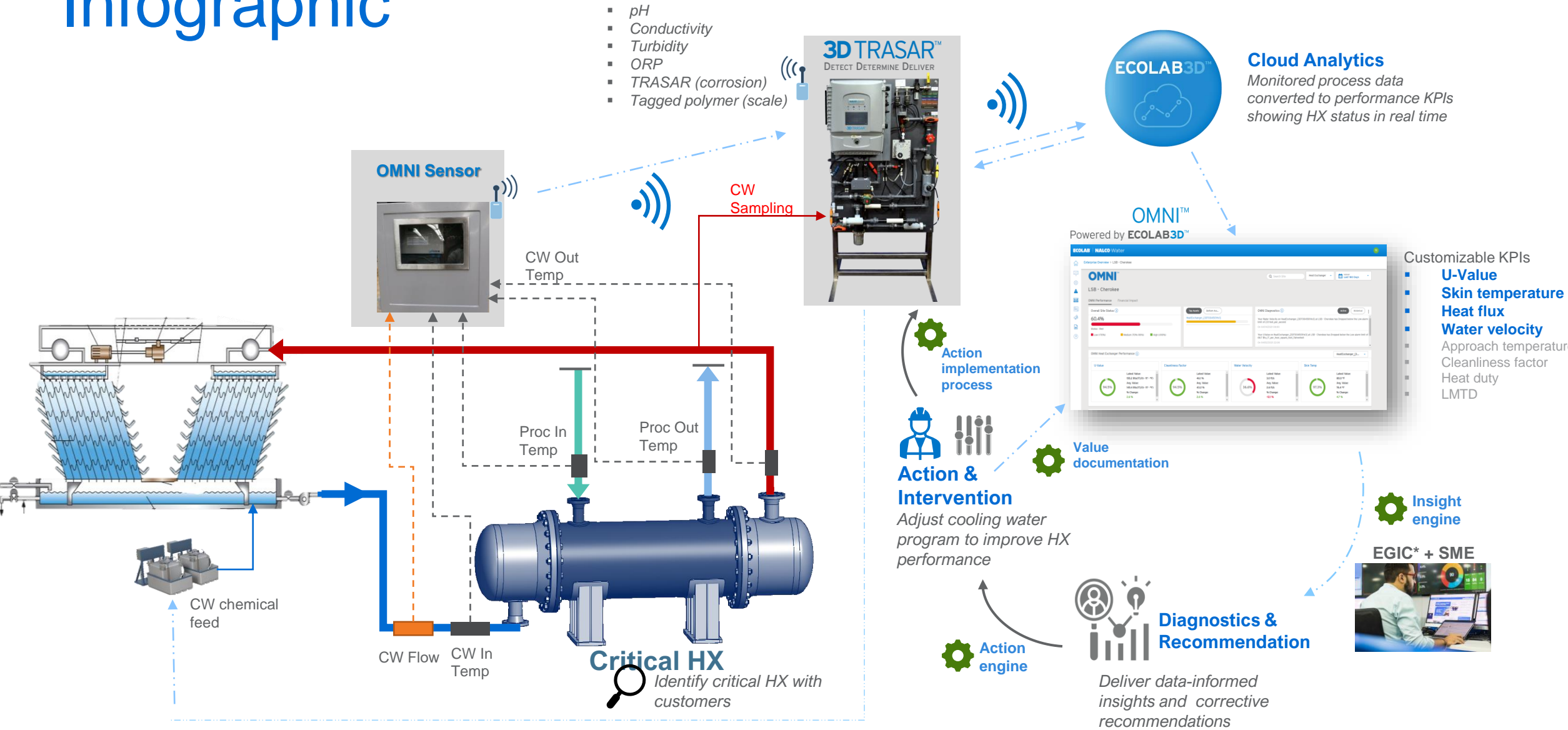


OMNI™ Heat Exchanger Reliability

Combining Chemistry, automation, sensors & data analytics



Infographic





24/7
Response

Ecolab Global Intelligence Center

- Dedicated team of chemical engineers who monitor all OMNI HXR systems 24/7/365
- Identify and analyze deviations from norm
- Generate weekly and monthly reports that highlight performance deviations and suggest improvement opportunities



Peace of Mind for Cooling Water Systems in Sustainable Way

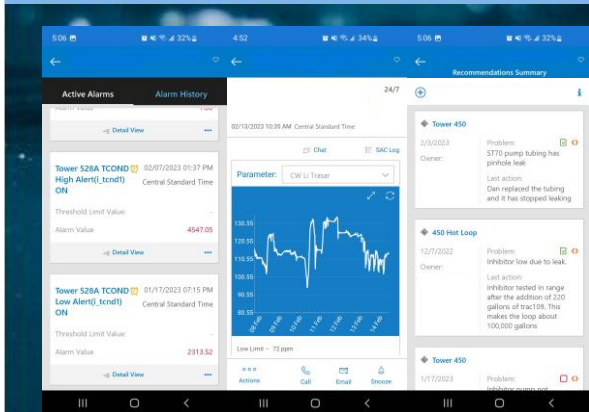
Manage your cooling system confidently with 3D TRASAR™ Technology for Cooling Water.

3D TRASAR Technology for Cooling Water delivers the deep insights and operational assistance you need to manage your cooling water systems and protect valuable equipment assets with confidence. This is achieved through a combination of:

SMART EQUIPMENT



REAL-TIME INSIGHTS



ENHANCED SERVICE



EXTENDED SUPPORT



THANK YOU!

ECOLAB®



NALCO Water

