

Predictive Analytics for Reliable High Power Performance

Katy Cope & Sandeep Chugh

ECOLAB® | **NALCO** Water

WHO IS ECOLAB?

Ecolab is the global leader in water, hygiene and energy technologies and services

**PROVIDING AND
PROTECTING
WHAT IS VITAL**



CLEAN
WATER



SAFE
FOOD



ABUNDANT
ENERGY



HEALTHY
ENVIRONMENTS

**Every day, we work to make the world
cleaner, safer and healthier**

Core Capabilities Across All Industries



WATER MANAGEMENT

HYGIENE AND ANTIMICROBIAL TECHNOLOGIES

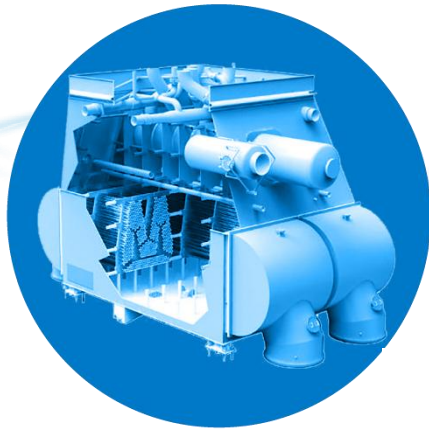
DISPENSING AND MONITORING

ADVANCED ANALYTICS

GLOBAL FIELD TEAMS

THE CHALLENGE

SURFACE CONDENSERS are the heart of your production efficiency



Keeping the CONDENSER at
design performance:



minimizes
fuel costs &
environmental impact

&



maximizes
profitability

1" of increased
condenser
backpressure

1% increase in
energy use
for combined
cycle plants

\$700K
per year in
fuel cost
savings

Enterprise-Wide Optimization

STRATEGIC Digital Transformation

Control → Prevent → Optimize

Optimized Performance of Cooling Tower

- 3D TRASAR™ Technology
- Remote monitoring
- Collecting data

UTILITY-FOCUSED

Optimized Performance of Production Asset

- Real-time interpretation
- Predictive analytics
Prevent upsets

Automated Optimization of Complete Water System

- Digital Twin
- Machine learning
- “Smart” control

PROCESS-FOCUSED

SUCCESS IMPERATIVES



Real-time
Monitoring



Secure
Networks



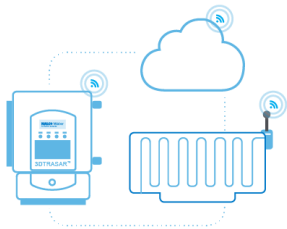
Predictive
Analytics



24/7
Response



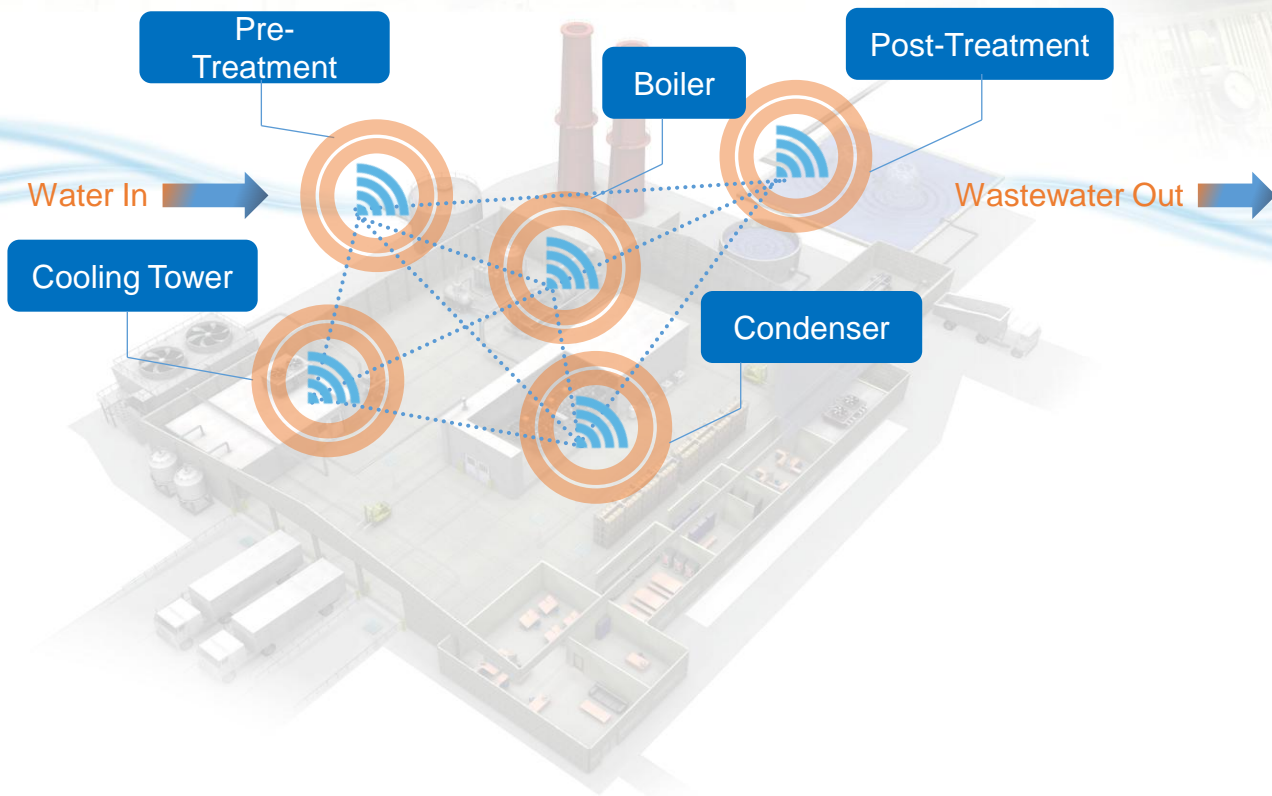
On-site
Expertise



Real-time
Monitoring

Connected Power

Leads to Reliable
High Performance

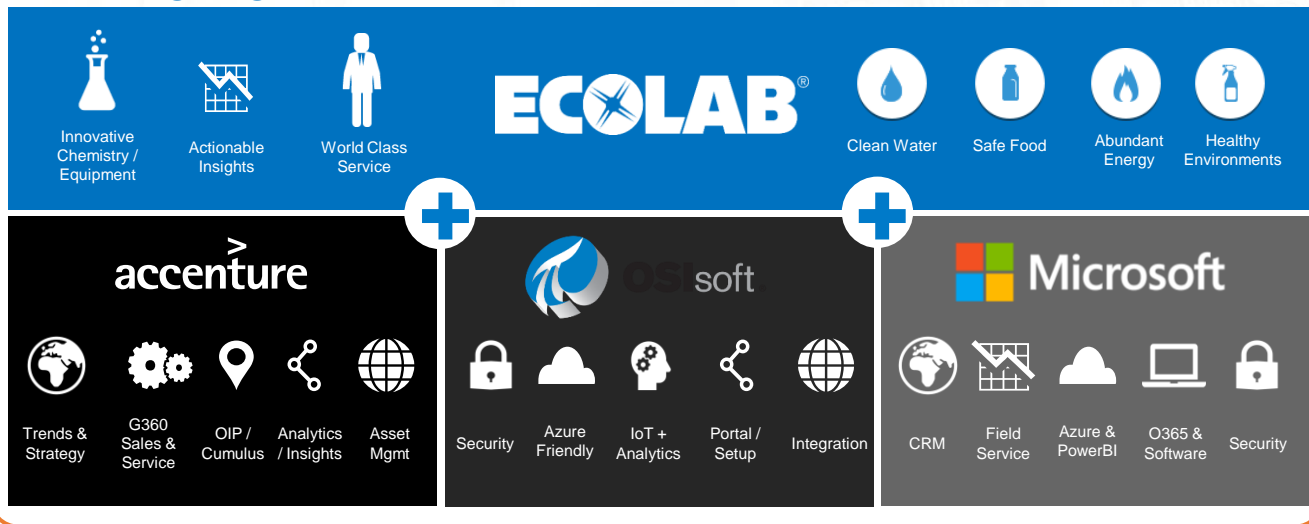




Secure
Networks

Built
through a
partnership
of global leaders

Working together



to deliver secure, intelligent and scalable
solutions to minimize water, maximize
results and optimize total cost of operations



Predictive
Analytics

OMNI Analytics

Predictive Indication of:

Scaling Conditions

Microbial Fouling

Identification of:

Air Inleakage

Macrofouling

Tube Leaks

Misc Issues:

Low CW Flow

- Sensor Error
- Operational Limits
- Rapid Trend Changes
- Design Limits

High CW Temp



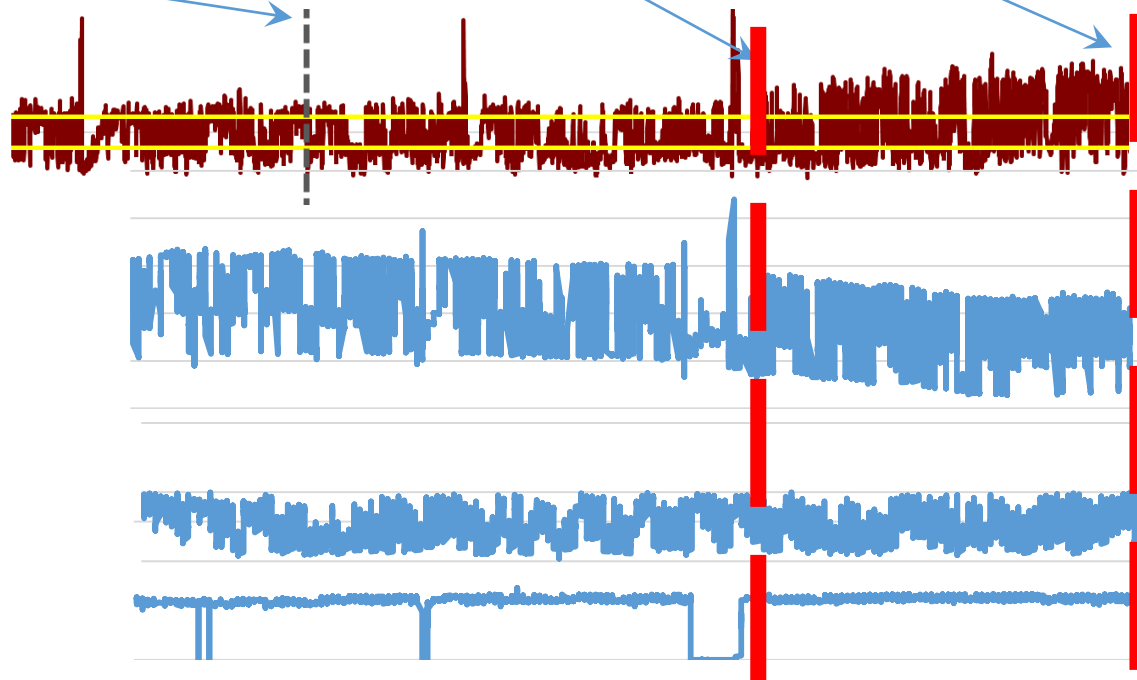
Predictive
Analytics

Predicting Scaling

March – Data modeling predicts formation of scaling in condenser

May – KPI analysis shows scale formation beginning in condenser

Aug – Scale formation discovered during customer inspection





24/7
Response

System Assurance Center





24/7
Response

Enterprise
Performance



ECOLAB3D Dashboard



24/7
Response

Site Performance



ECOLAB3D Dashboard



24/7
Response

Value
Delivered



ECOLAB3D Dashboard



On-site
Expertise

The Machine + Human Factor

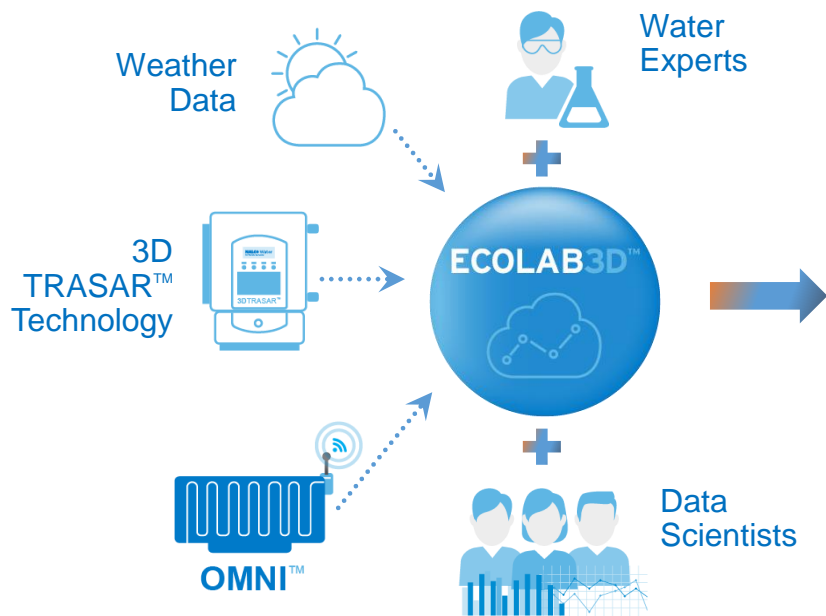
- Technology can bring “personalized service” to a whole new level
- Where technology “does the work” and where the human being provides “essential expertise”
- Data and AI are breadcrumbs that speed analysis
- Enables a better, faster, smarter field team



HOW OMNI ANALYTICS WORKS

OMNI™ CONDENSER PERFORMANCE

Combining chemistry, automation, sensors & data analytics

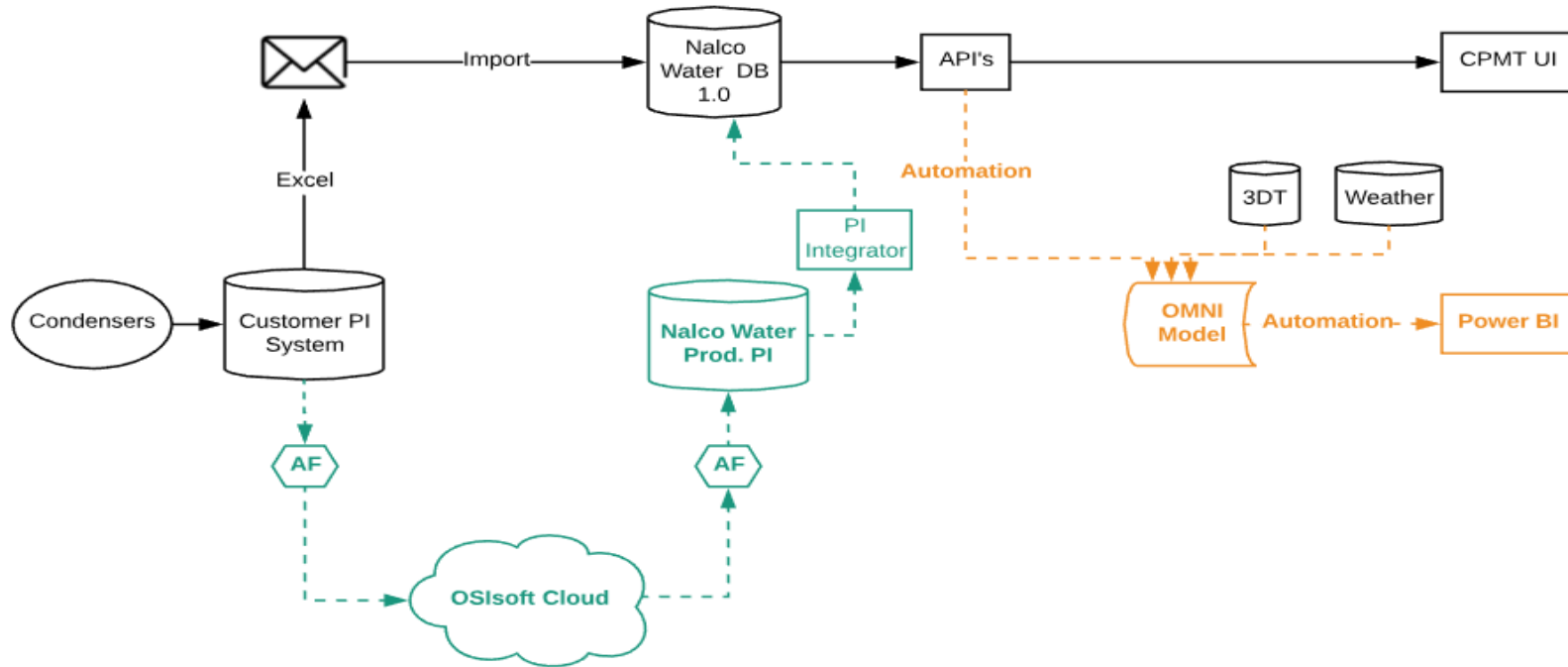


Predict performance of critical assets

Prevent unscheduled downtime & lost production

Prolong asset life & production runtime

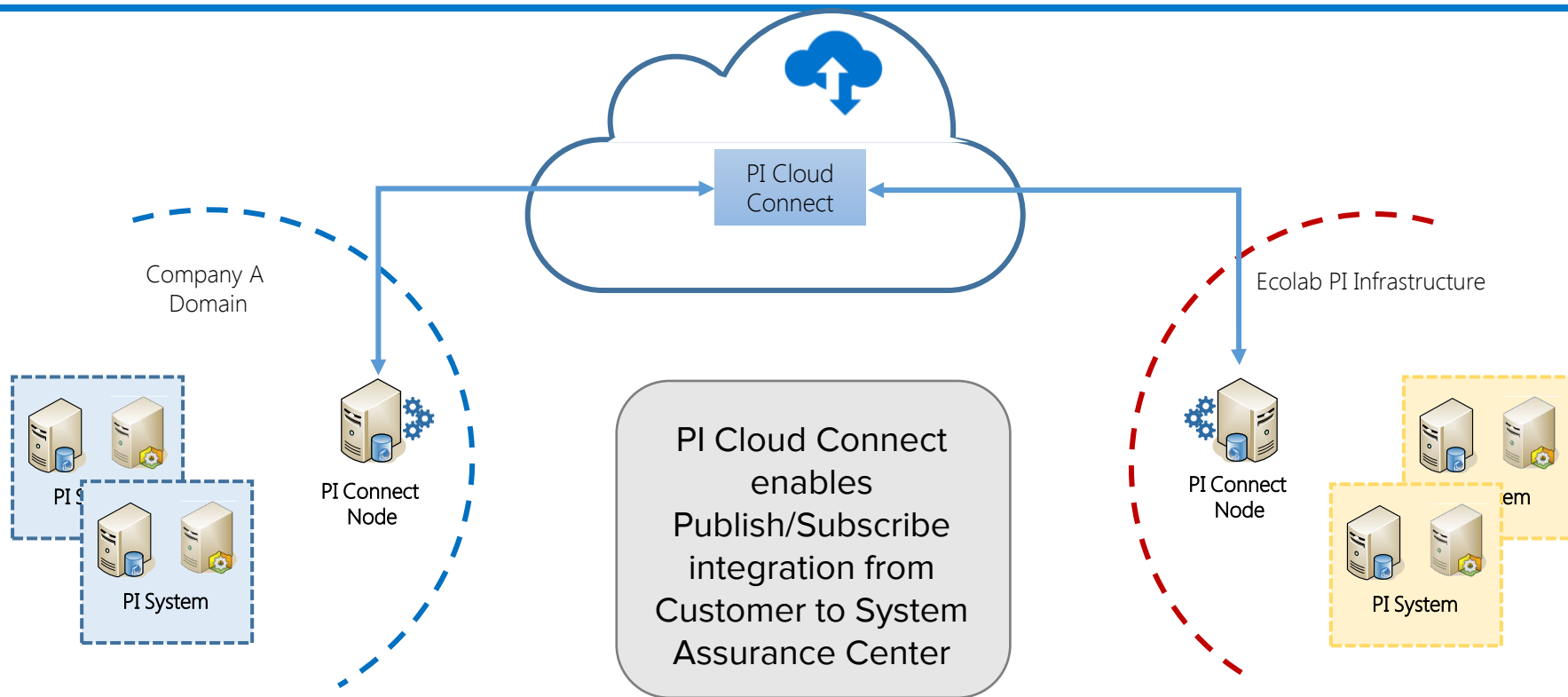
End to End Architecture



B2B Data Connections – Why PI Cloud Connect?

- **ENABLES** real-time data sharing for analytic models to be actionable
- **ACCELERATES** deployment delivering value to the customer
- **SECURED** data sharing without Virtual Private Networks (VPNs)
- **PREFERRED** method for customers with OSIsoft PI
- **EASY** to Install, Connect, Configure.
- **MANAGED** by OSIsoft with minimal On-premises footprint
- **SCALABLE** and reliable solution based on Microsoft Azure
- **WEB-BASED** portal for configuration and monitoring

PI Cloud Connect



Examples of Customer AF setup

File View Go Tools Help

Database Query Date Back Check In Refresh New Template New Attribute Template

library

- Nalco Water - OMNI - Turlock Irrigation District
 - Templates
 - Element Templates
 - Nalco Water - OMNI
 - Event Frame Templates
 - Model Templates
 - Transfer Templates
 - Enumeration Sets
 - Reference Types
 - Tables
 - Table Connections
 - Categories
 - Analysis Categories
 - Attribute Categories
 - Element Categories
 - Notification Rule Categories
 - Reference Type Categories
 - Table Categories

Nalco Water - OMNI


General Attribute Templates Ports Analysis Templates Notification Rule Templates

Filter

Name	Description	Default Value
Category: Config		
PI Server		p2
ShipTo		150085778
SoldTo		150085778
Unit Name		WEC
Category: Optional		
#1 Vacuum Pump Seal Water Temp f		0 K
#2 Vacuum Pump Seal Water Temp f		0 K
Ambient Temp		0 K
Circ Water Pump #1 Amps		0 W
Circ Water Pump #1 Discharge Pressure		0 Pa
Circ Water Pump #2 Amps		0 W
Circ Water Pump #2 Discharge Pressure		0 Pa
Circ Water Pump #3 Amps		0 W
Circ Water Pump #3 Discharge Pressure		0 Pa
Condensate Cation Conductivity		0 S/m
Condensate Sodium		0 ppb
Condenser / LP Exhaust Steam Temp #1		0 K
Condenser / LP Exhaust Steam Temp #2		0 K
Condenser / LP Exhaust Steam Temp #3		0 K
Condenser / LP Exhaust Steam Temp #4		0 K
Cooling Tower BD Rate		0 m3/s

Sample of PI Cloud Connect Setup

- Publish and Subscribe
- Wizard-based configuration

 **PI Cloud Connect**

Sandeep Chugh | *Ecolab (EcolabCDS)* | [Sign out](#)

Alarms

Activities Summary

Publications

Subscriptions

System

Subscriptions

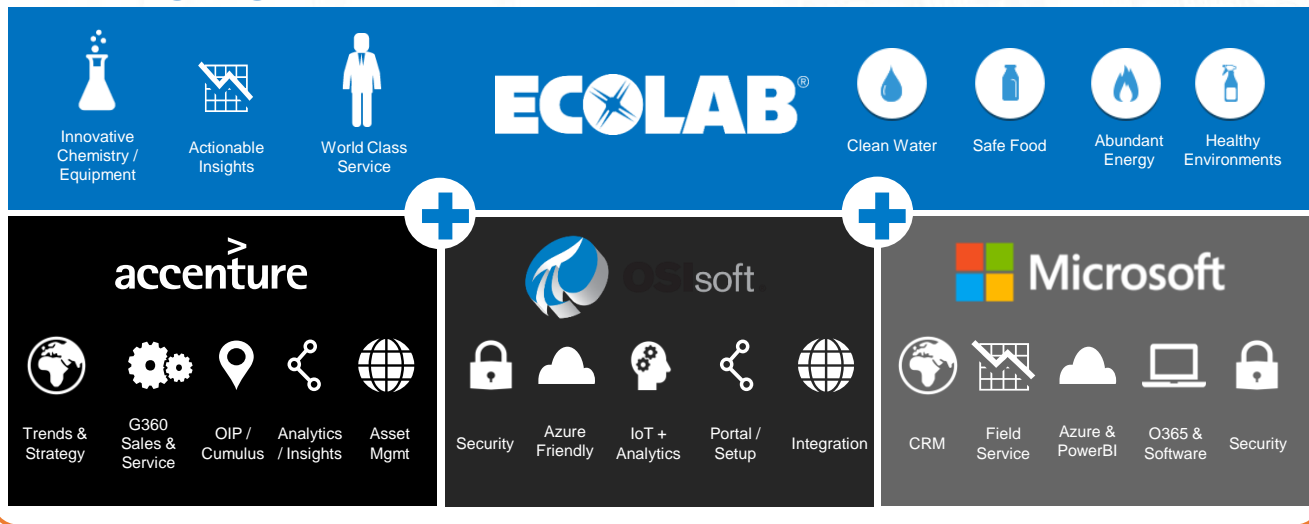
Status ▲	Subscription Name	Source Publication	Date Created	Receiving Progress
✓ Receiving	PICC-Dev-Subs-PP	✓ PICC-Dev-Publi-PP	20 Feb 19	100%
✓ Receiving	OMNITest	✓ Nalco Water - OMNI	12 Feb 19	100%



Secure
Networks

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Working together



to deliver secure, intelligent and scalable solutions to minimize water, maximize results and optimize total cost of operations

THE BENEFITS

OUTCOMES

Four 2x1 Combined Cycle Power Block

- Once through circ water system
- Elevated DO and cation conductivity in the condensate
- OMNI indicated air in-leakage correlated to “bravo” CD pump



ENERGY



Heat rate
penalty by **1%**
\$100,000/month



ASSETS

Reduced pump
maintenance
cost

OUTCOMES

Single Unit Coal-Fired Power Plant

- With titanium condenser
- Well water makeup
- Aluminum fouling observed in test rack
- OMNI confirmed condenser degradation



ENERGY

**> \$500,000
fuel savings**



ASSETS

**Improved asset
reliability**



OUTCOMES

2 Unit Nuclear Power Plant

- Uses brackish water for once through condenser cooling
- OMNI identified inlet tube sheet fouling leading to higher temperature rise and backpressure on the condenser



Reduced labor
costs for cleaning
\$100,000



\$3M Generating
revenue
restored



Reduced costs
to mitigate
reactivity control
risks





Questions?

Please wait for
the **microphone**

State your
name & company



Please remember

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APP, SEARCH
OSISOFT



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Google Play

