

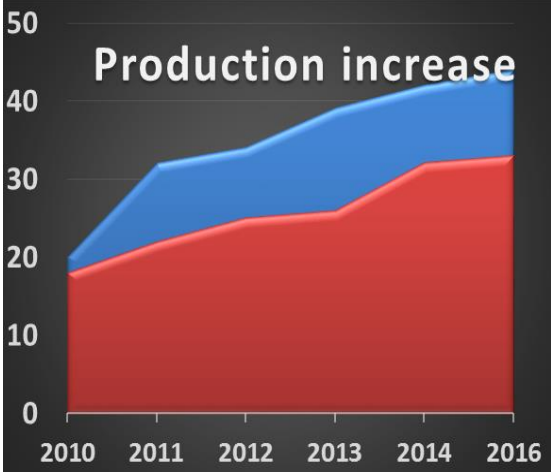
RO water treatment and reuse

Arla Foods Rødkærsbro case story



Billund-DK | 19 April- 2016 | Bhupendra Poudel

Water issues at Industries



License to operate



Sustainable water supply



Higher cost



Environmental & Social Responsibility

Solving water issue- BioBooster way

Solution:

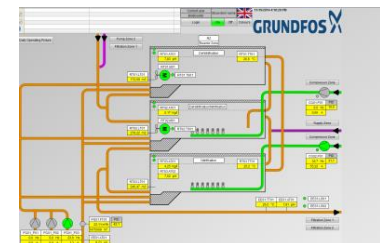
Decentralization

Industrialization

Ease in installation

Robustness in operation

- Decentralized treatment and reuse
- Factory manufactured modular plant
- Reduced onsite work
(*Installation and Commissioning*)
- Advanced and automated process control



Arla Foods – Rødkærsbro



The situation:

- Increased production of Mozzarella
- Increased RO Concentrate DM
- Existing WWTP at max. capacity

Alternatives:

- Extend WWTP
- Discharge to municipal WWTP
- Separate treatment of RO Water and re-use in dairy or discharge to river

RO water reuse- Theory to practice



Pilot test



Cooling tower re-use



Background studies



Lab test

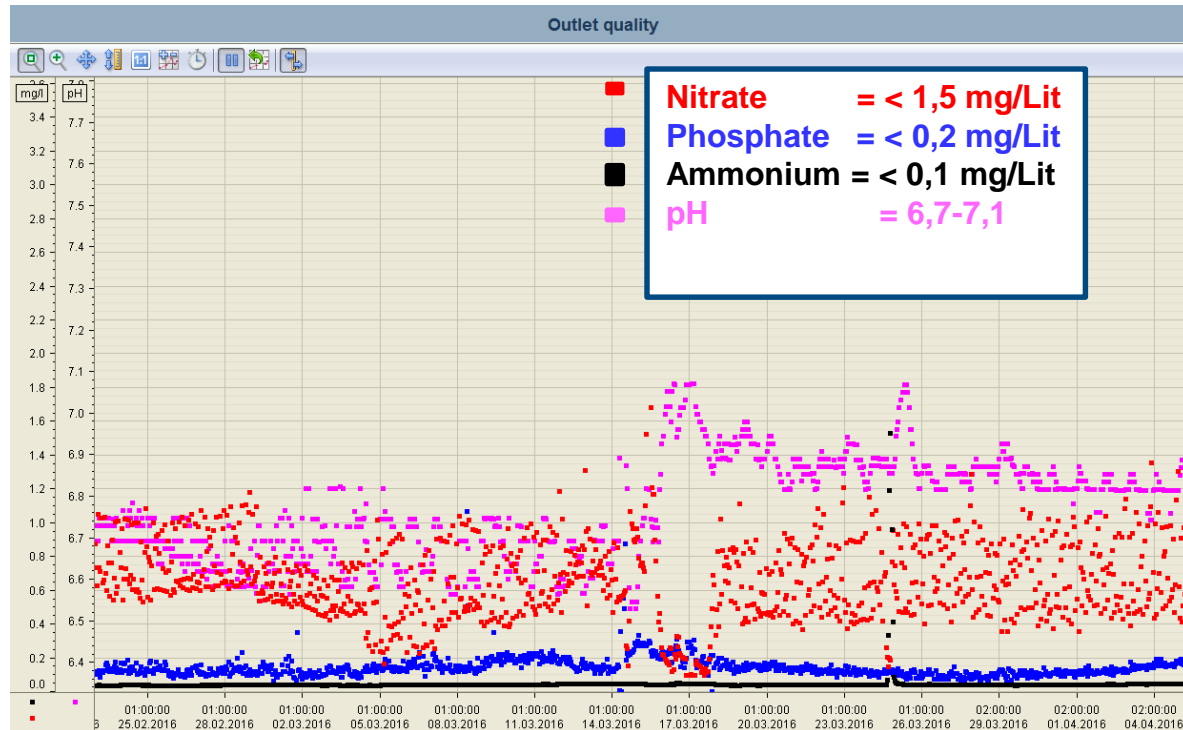


Full installation

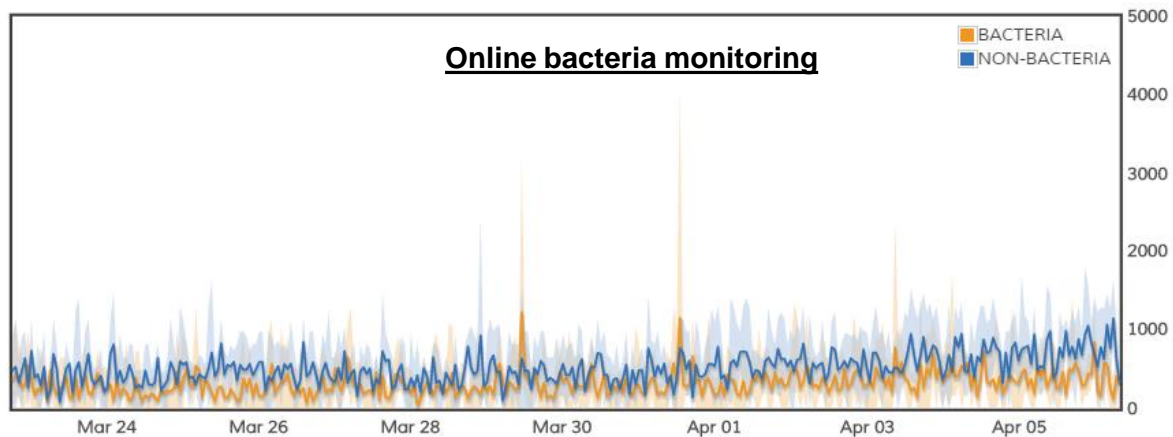
Other re-use opportunities

..\\.\Desktop\BioBooster_Arla_FINAL_DK-SUB.mp4
(Video)

Stable treatment operation – The key factor



➤ Automated process control ensures stable chemical quality in treated water



➤ Robust membrane ensures safe water

High quality treated water- Reuse opportunities

Parameters	Treated water Avg.	Unit
Total COD	4,11	mg/Lit
Total Nitrogen	2,3	mg/Lit
Total phosphorus	0,16	mg/Lit

Parameters	Avg. value	Unit
Suspended solid	< 1	mg/Lit
pH	6,9	pH
Conductivity	561	μS/cm
Total Hardness	0,6	dH
Total Alkalinity	3,8	m mol/Lit
Water Color	4	mg Pt/Lit

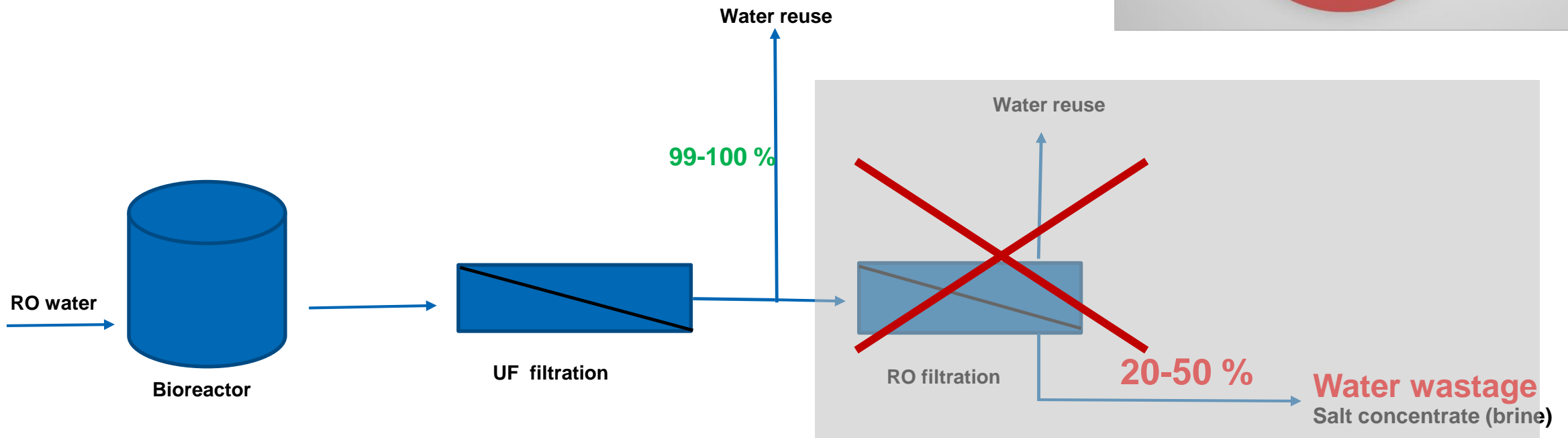
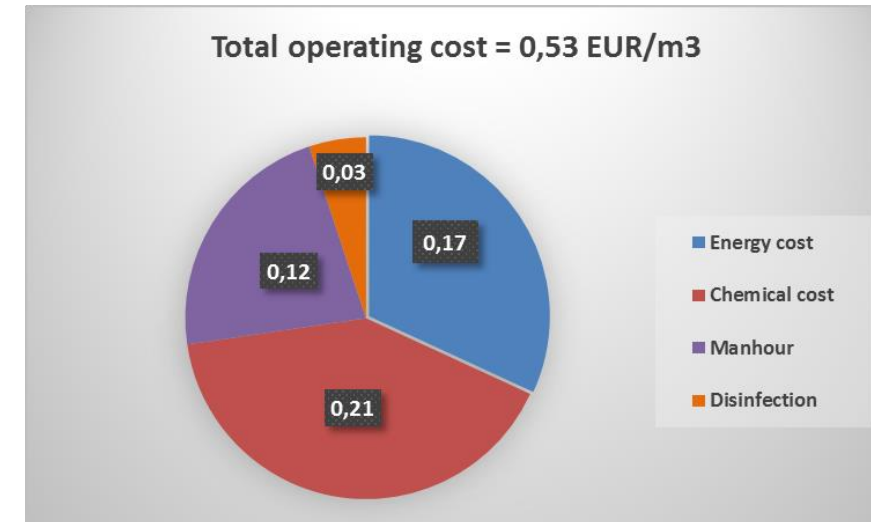
Parameters	Avg. value	Unit
Bacterial count , 37 °	16	CFU/ml
Bacterial count , 22 °	23	CFU/ml
E Coli	< 1	CFU/ 100 ml
Coliform	< 1	CFU/ 100 ml

- **Meet the drinking water quality requirement**
- **Low conductivity and hardness -ideal for water reuse**
- **No pathogenic bacteria –high hygiene level**

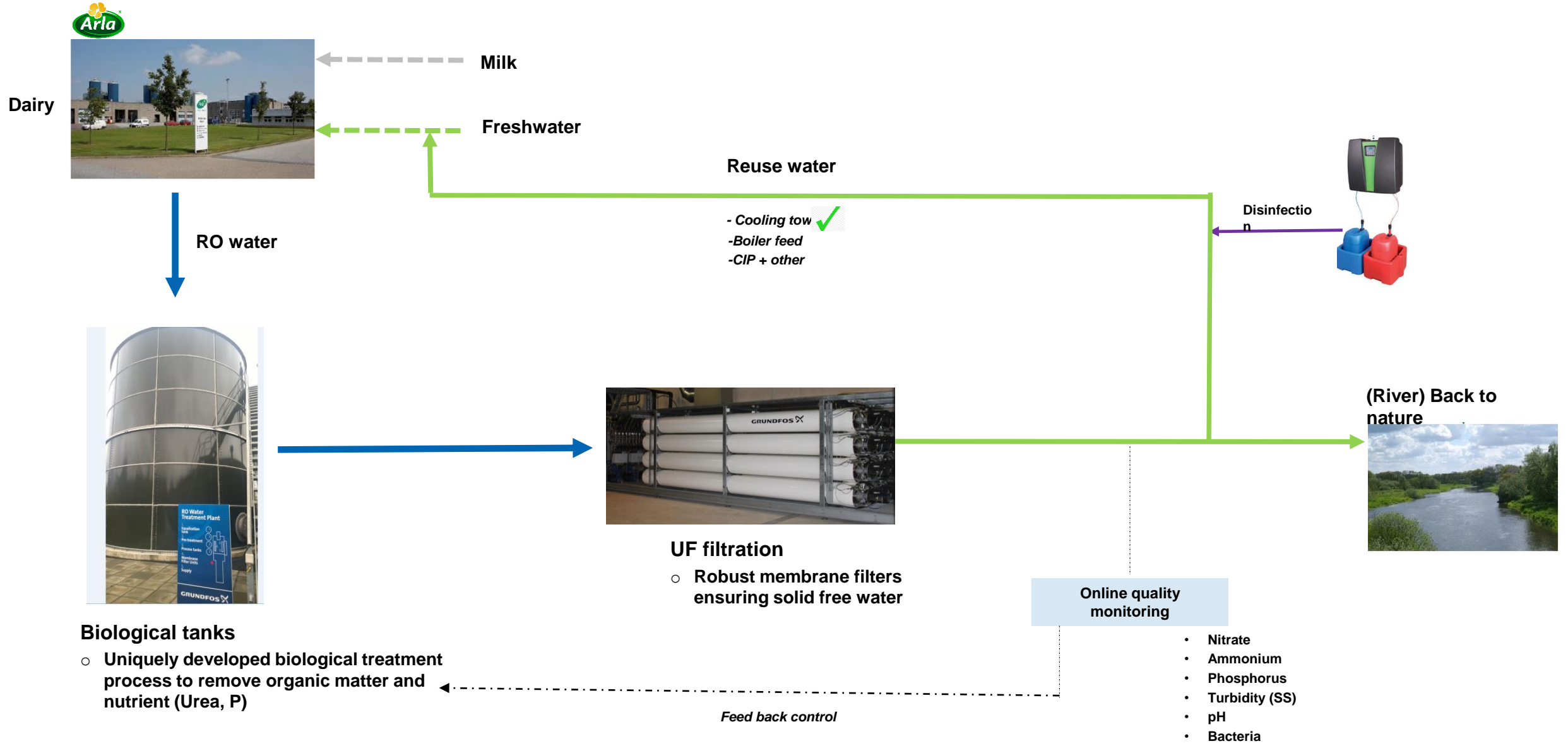
1 year operational experience

- **Reduced operational man-hour**
(daily inspection, chemical refilling , sensor calibration ..)
- **Improvement and optimization of plant**
- **Water reuse operation**

- **Sludge cost is very small**
- **No issue of salt concentrate (Brine)**



RO water reuse at Arla Rødkærsbro



Thank you for your attention

Questions ?



Poudel

Bhupendra

3D TRASAR CIP

European Application Specialist Finn S. Jensen
ECOLAB

3DTRASAR[®] CIP

Optimizing your CIP System

Maintaining performance

Protecting your Brand

The next level of CIP technology

Partnership on the leading edge

3D TRASAR CIP

A new integrated service offering that combines Expert Analysis and specialized software to transform raw CIP data into savings and increased operational efficiency for your facility.

Detect by Data Transformation

24/7 CIP monitoring to transform disparate CIP data into integrated, actionable information you can use to measure plant performance

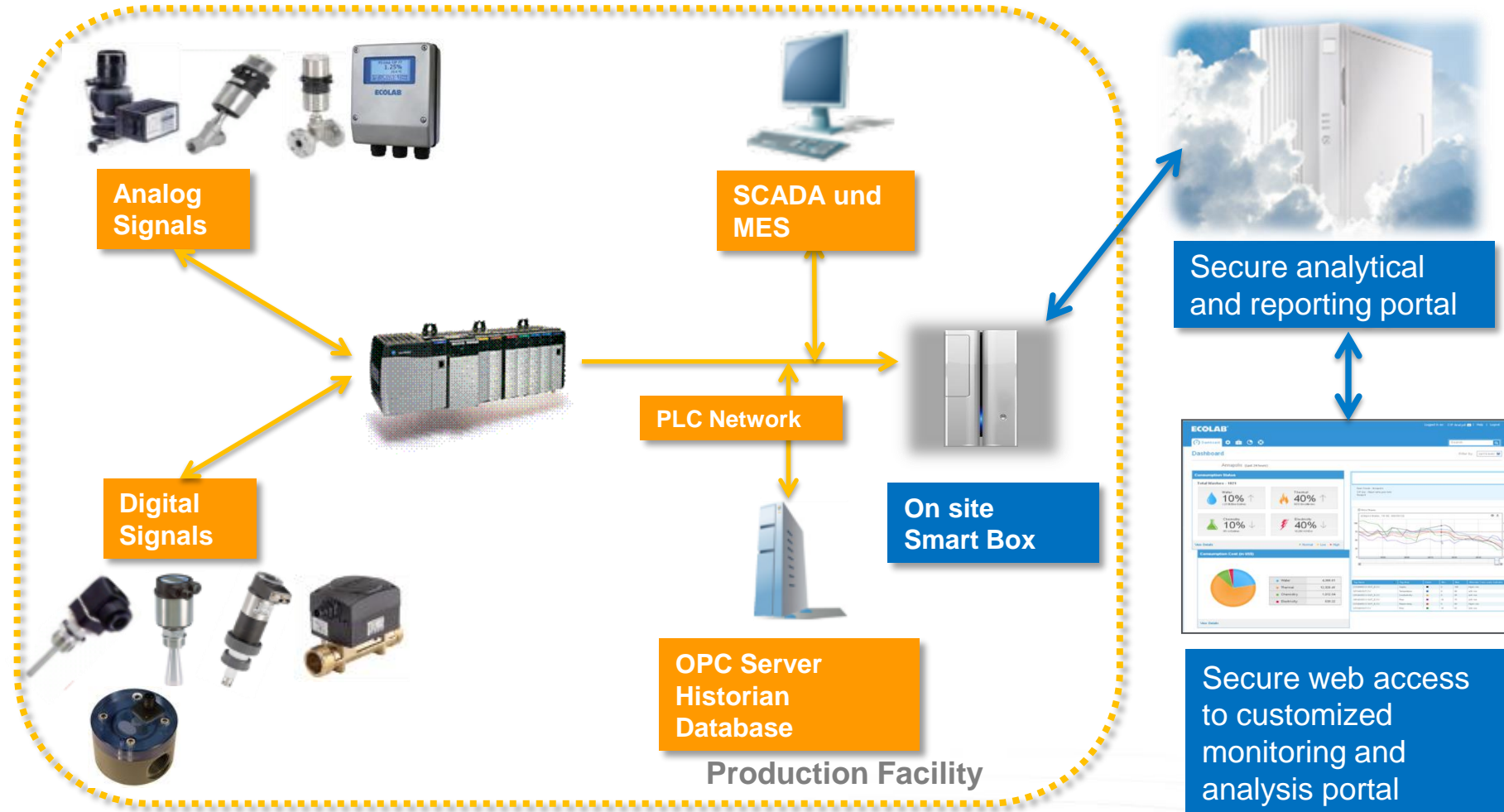
Determine through Expert Analysis

Ecolab CIP experts will uncover hidden savings and identify opportunities to improve your plants

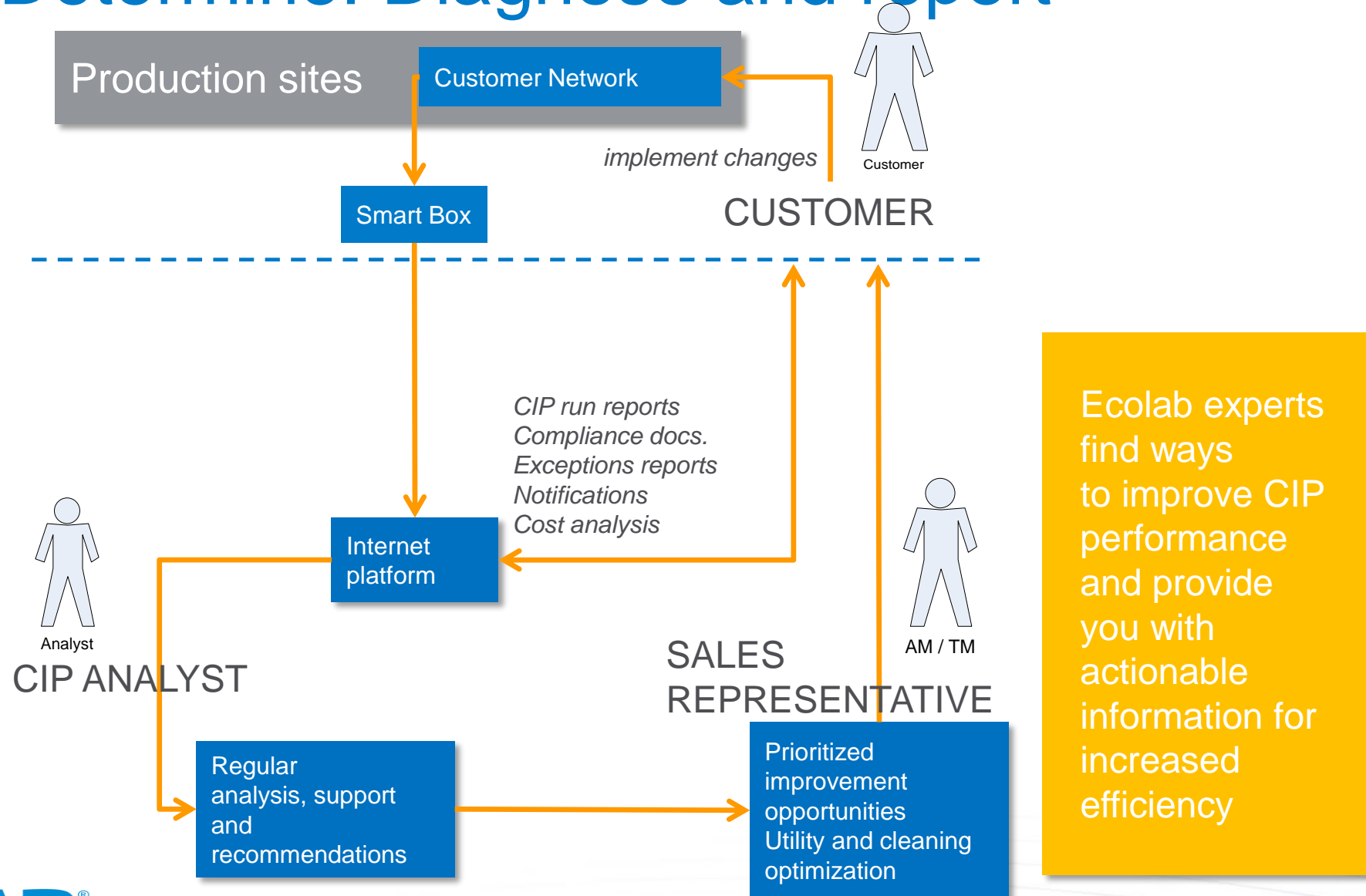
Deliver with Recommendations for Action

Prioritized expert recommendations, diagnostic reporting, and the ongoing support of Ecolab's World Class Service

Detect: Transfer data into structured context



Determine: Diagnose and report



Deliver: Against plant drivers

Plant level customization to meet corporate performance goals



How am I doing on my water targets?



Which circuits are driving costs up?



What CIP deviation is impacting quality?



Where do I focus my resources



Program Benefits

Creating value beyond CIP

Operational Efficiency

- ✓ Enhance throughput
- ✓ Enhance the asset utilization
- ✓ Preventative Maintenance
- ✓ Visibility of all cost elements of CIP
- ✓ Lower the total cost of operation with clear investment recommendations
- ✓ Avoiding cost for laborious data interpretation
- ✓ Efficient training and operator awareness of TCO

Food Safety & Quality

- ✓ Validate the CIP process
- ✓ Verify CIP performance
- ✓ Drive food safety /quality enhancements
- ✓ Protect your brand
- ✓ Compliance documentation
- ✓ Compare and establish standards and benchmarks

Sustainability

- ✓ Contribute to corporate sustainability goals
- ✓ Tracking water and energy consumptions and time across plants and sites

Thank you
and now a Live Demo

14.30 - 15.30 B2B Session

15.30 - 16.30 Social Profit Crossing Borders, Danish Dairy Technology without Borders & Engineers without Borders

