



Ecolab[®] Air Separation IQ[™]

Predict Performance | Prolong Asset Life | Optimize Total Cost of Operations

Main air compressors are crucial to industrial gas production and require tremendous electric energy to compress inlet air, resulting in over 80% cost of an air separation unit.

Ecolab® Air Separation IQ™ focuses on production efficiency of the main air compressor to optimize energy and water consumption. If there is inefficiency, a main air compressor can impact profitability and challenge Environmental, Social, and Governance (ESG) goals.

Factors affecting production efficiency:

- Seasonality
- Load Fluctuation
- Cooling Water Flow Fluctuation
- Intercoolers Scaling/Fouling

Main air compressor efficiency determines air separation yield

POTENTIAL IMPACTS OF INEFFICIENCY

\$100K per event

energy cost increase
& lost production

2-3% loss in performance

due to inter/aftercooler
fouling & corrosion

1-2% increase in electricity

equivalent to
1,700 metric tons
of CO₂ emission/year

Keeping Main Air Compressors at Peak Performance

The Nalco Water Approach

PREDICT. PREVENT. MAINTAIN.



MINIMIZE
operating costs
& downtime



MAXIMIZE
profitability



ACHIEVE
ESG goals

- Reduce carbon emissions
- Optimize water consumption

Ecolab® Air Separation IQ™

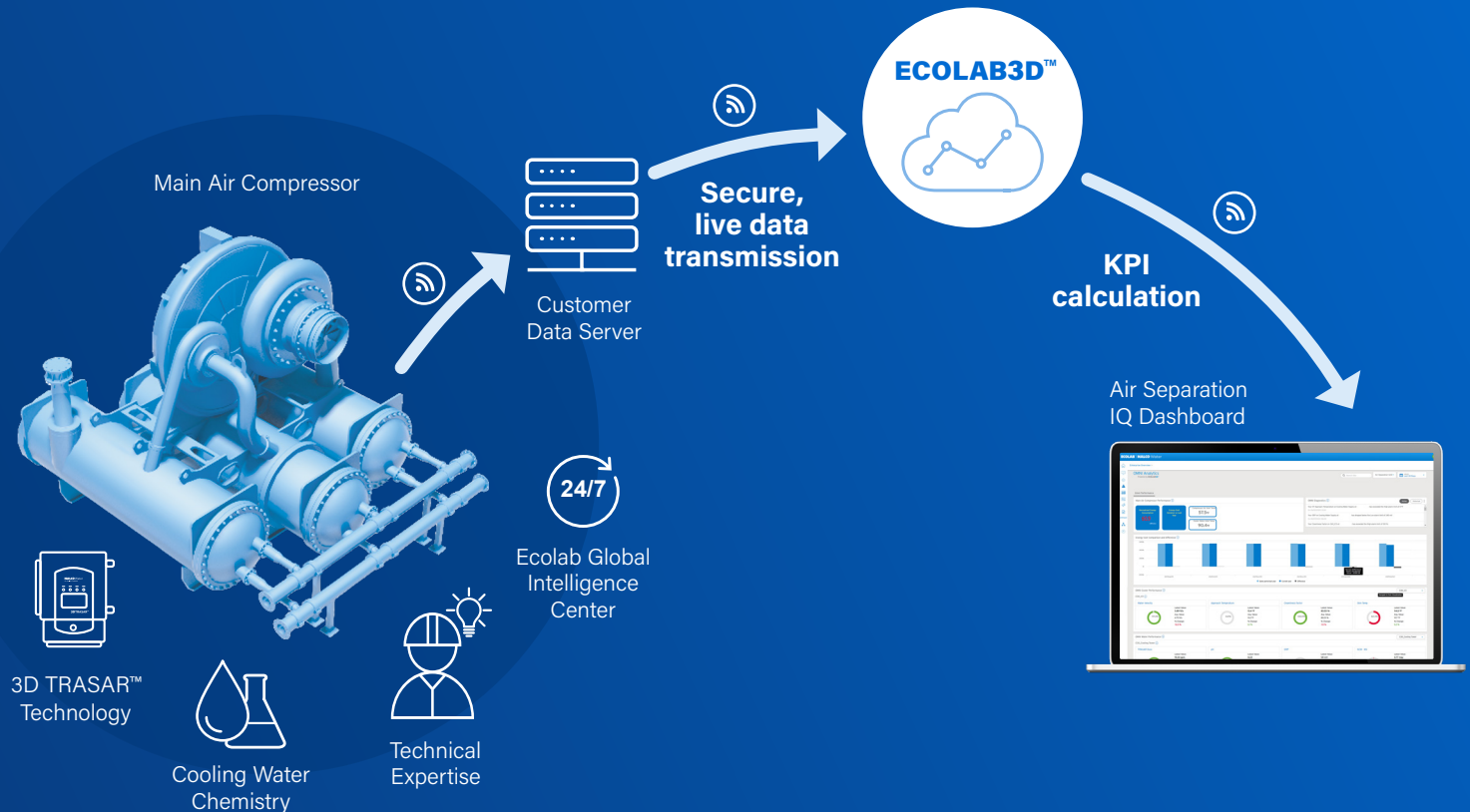
Leverage Cooling
Water Chemistry
& Process Data



Optimize Energy &
Water Consumption



Improve Main
Air Compressor
Reliability



**Nalco Water
digital solution
provides:**

- Real-Time Monitoring
- Secure Networks
- Predictive Analytics
- 24/7 Response
- On-Site Expertise

REDUCING ENERGY CONSUMPTION

CHALLENGE

\$200K/yr increase in electrical consumption on main air compressor

INSIGHTS

- Main air compressor's power consumption up 3% over two years
- Cooling tower's approach temperature 8°C above design
- Performance deteriorating on two intercooler units

ACTIONS

- Map water flow and optimize flow of intercoolers
- Improve cooling tower efficiency by mechanical or chemical cleaning

CHALLENGE

\$140K/yr increase in electrical consumption on main air compressor and inability to perform off-line cleaning

INSIGHTS

- Specific correlations between electrical consumption and operations events
- Holistic asset view and data analytics in one place
- Inconsistent microbiological treatment significantly impacting main air compressor performance

ACTIONS

- Address biocide system reliability
- Low cost and feasible organic online cleaning
- Transition from bleach to Nalco Water stabilizer ST70

VALUE	ENERGY	GREENHOUSE GASES	COSTS
	~1% savings	~1,100 metric tons CO ₂ emissions reduced	\$65K/yr savings (USD)

VALUE	ENERGY	GREENHOUSE GASES	COSTS
	2.5% savings	811 metric tons CO ₂ emissions reduced	\$96K/yr savings (USD)

Nalco Water, an Ecolab Company

North America: 1601 West Diehl Road • Naperville, Illinois 60563 • USA

Europe: Richtstrasse 7 • 8304 Wallisellen • Switzerland

Asia Pacific: 52 Jurong Gateway Road • #16-01 Jem Office Tower • Singapore • 608550

Greater China: 18G • Lane 168 • Da Du He Road • Shanghai China • 200062

Latin America: Av. Francisco Matarazzo • nº 1350 • Sao Paulo – SP Brazil • CEP: 05001-100

Middle East and Africa: Street 1010 • Near Container Terminal 3 • Jebel Ali Free Zone • PO BOX 262015 • Dubai UAE

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