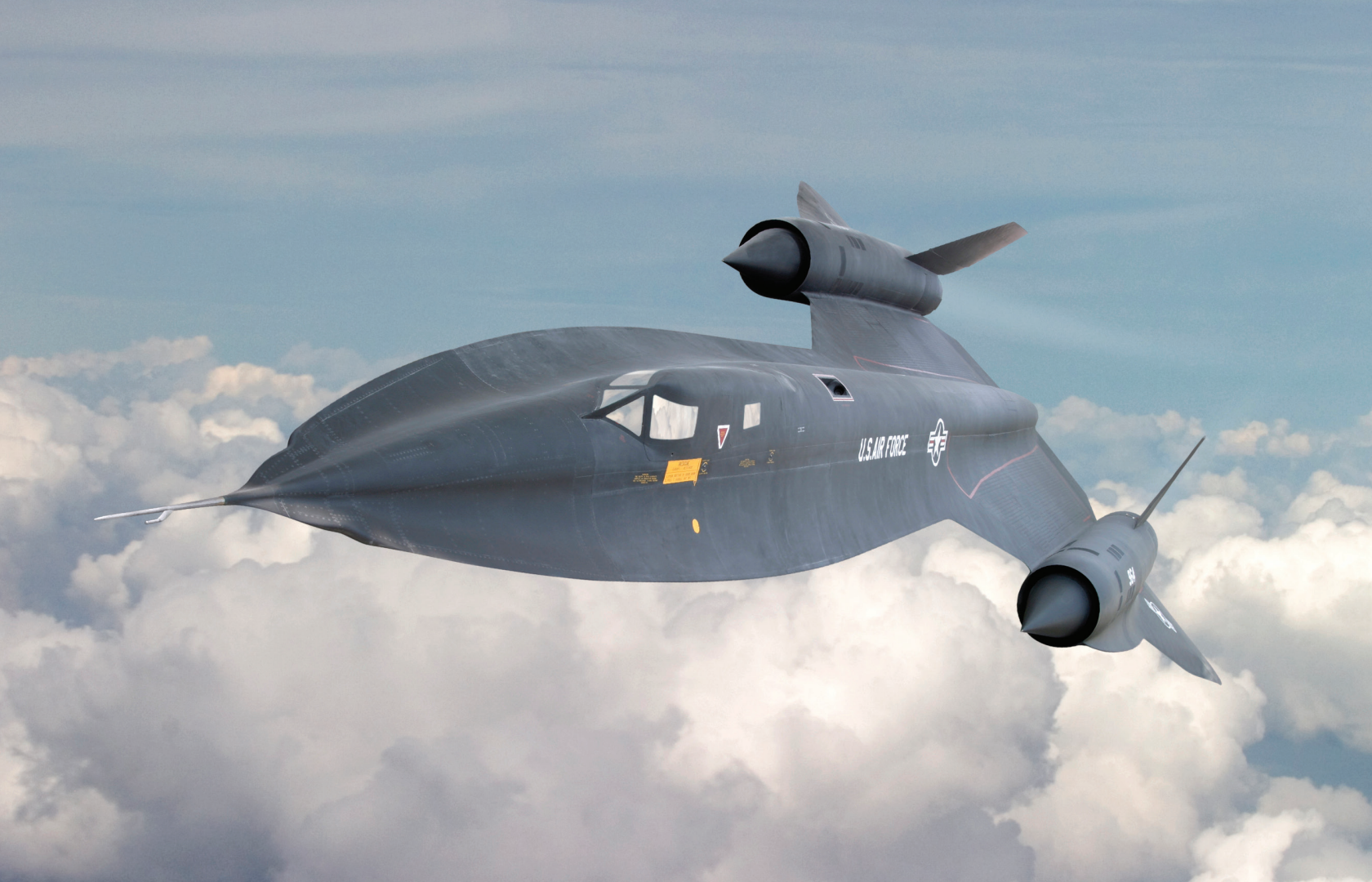




Nalco Water 4D Air™ Program

Nalco Water 4D Air is a new program designed to minimize the detrimental effects of entrained air and surface foam in the virgin and recycled carton and container board market. The 4D Air Program includes specially formulated chemistries combined with the PARETO™ delivery system, entrained air on-line monitoring and application knowledge to deliver drainage and improved machine efficiency.

The four dimensions of this program can result in the following benefits:

- ▲ Enhanced Sheet Quality
- ▲ Increased Productivity
- ▲ Reduced Cost
- ▲ Improved Wet End Stability
- ▲ Improved Delivery and Control

Nalco Water 4D Air™ Program

The 4D Air Program can reduce our customers' Total Cost of Operation, positively impact profitability and drive asset utilization through:

Enhanced sheet quality

- ❑ Decrease downgraded/culled tons by reducing deposits caused by surface foam
- ❑ Optimize entrained air for better formation and strength
- ❑ Enable fiber substitution by better wet end stability

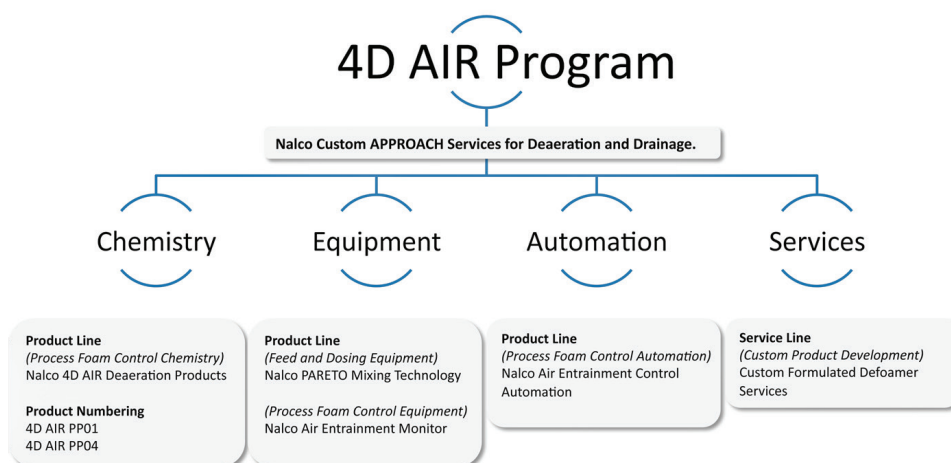
Increased productivity

- ❑ Enhance dewatering for improved line speed and increased throughput by reducing entrained air
- ❑ Maximize drainage for decreased steam consumption = energy savings
- ❑ Increase production by eliminating entrained air (improved pump throughput, eliminate pump cavitation)
- ❑ Improve on machine efficiency (OME)

Improved wet end stability and cost reduction

- ❑ Entrained Air Monitor to optimize product dosage
- ❑ PARETO Mixing Technology to improve efficiency of chemistry
- ❑ Industry expertise to improve delivery and control of tailor-made chemistry

The Nalco Water 4D Air technology package now provides measurable profit benefits to the Board & Packaging customer segment. These benefits have resulted in improved paper mill performance and profitability resulting from improved drainage, increased production, lower energy costs, enhanced finished board quality, and flexibility in fiber utilization.



Nalco Water, an Ecolab Company

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

Europe: Richtstrasse 7 • 8304 Wallisellen • Switzerland

Asia Pacific: 2 International Business Park • #02-20 The Strategy Tower 2 • Singapore 609930

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

Latin America: Av. Francisco Matarazzo • n° 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

ecolab.com/nalco-water

PARETO, Ecolab, Nalco Water and the logos are Trademarks of Ecolab USA Inc.
 ©2012, 2014, 2016, 2019 Ecolab USA Inc. All Rights Reserved 07/19 B-1260

NALCO Water
 An Ecolab Company