

NANOBUBBLES: A NEW TOOL FOR AN OLD SCALE PROBLEM

By Valley Technical Sales NJ | Part 1 of 2

Scale has been a mechanical-system problem for as long as engineers have been heating and circulating water. Mineral deposits can accumulate on heat-transfer surfaces and within piping, reducing efficiency, increasing maintenance requirements and eventually affecting equipment performance.

Traditionally, engineers and operators have addressed this problem through water chemistry, periodic cleaning, equipment maintenance or some combination of the three. Nanobubble technology gives engineers another option to evaluate.



WHY THE ENGINEERING COMMUNITY SHOULD CARE

Scale on a heat-transfer surface acts as an insulating layer. A system can continue to satisfy load while gradually requiring more operating effort or maintenance. That shifts scale from a housekeeping problem to an efficiency, reliability, and lifecycle-performance issue.

WHAT IS A NANOBUBBLE?

Nanobubbles are gas bubbles measured on the nanometer scale. Armstrong positions the ANG as a static device that generates nanobubbles from gases already present in water.

"The better question is not only how to clean scale - but how to reduce the conditions that let it accumulate."

The Armstrong Nanobubble Generator is installed in a flowing water system. Water passing through the device creates the conditions used to generate nanobubbles. The device itself has no moving parts, no dedicated electrical input and no chemical addition.

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NANOBUBBLES: WHERE THE TECHNOLOGY FITS

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DOMESTIC HOT WATER

Recurring mineral deposition can undermine heat-transfer performance and increase cleaning frequency.

OPEN CONDENSER WATER

Scale on heat-transfer surfaces can contribute to declining cooling-system performance.

CLOSED HYDRONIC SYSTEMS

Closed heating and cooling loops may present application opportunities depending on system conditions.

ENGINEERED APPLICATION REVIEW

Flow, piping, water chemistry, materials, and owner objectives all matter before specifying the device.

NO SINGLE DEVICE REPLACES GOOD ENGINEERING.

Water chemistry, biological control, corrosion control, material compatibility and sound operating practices remain application-specific considerations. ANG should be evaluated as another scale-management tool within a complete system strategy.



VTS provides local application support and access to Armstrong resources for project review.



**THE GOAL IS NOT TO REPLACE ENGINEERING.
IT IS TO GIVE ENGINEERS BETTER TOOLS.**

EDITORIAL SOURCE NOTE Standard application categories follow current Armstrong ANG positioning; final suitability is application-specific.