



INDUSTRY Manufacturing

CUSTOMER Toothpaste Manufacturing Company

LOCATION Michigan, USA

PROBLEMS TO SOLVE Despite brief, daily washdowns, dried-on toothpaste was a serious issue for one Michigan-based toothpaste manufacturer. Cleaning the crusty mess of silica that clung to the exterior of the stainless steel mixing tanks was a six-hour process that required two people, a half-gallon of caustic cleaner and a scissor lift—every 90 days. The cost in terms of labor and production downtime exceeded \$10,000 annually.

SOLUTION After exploring other nano-type processes, the Armstrong Nanobubble Generator was selected because unlike other processes, it did not require the introduction of new chemicals. The company's process technician led a four-month study to improve this cleaning procedure, installing an Armstrong Nanobubble Generator (1"x2") on the washdown system used to clean the toothpaste tanks.



"We've looked into other nano-type processes but they all use chemicals. With Armstrong, we don't have to introduce new chemicals and that's why our QA lab got 100% behind this process."

— COMPANY'S PROCESS TECHNICIAN

“After using water from the generator, we immediately noticed that we didn’t need to scrub as hard and the stainless steel surface became easier to clean. Eventually, and to our surprise, we were able to stop using chemicals all together and still see the same results. We’ve found that it cleans even better than the naked eye can see.”

— COMPANY’S PROCESS TECHNICIAN

SIGNIFICANT RESULTS

Shortly after installation of the Armstrong Nanobubble Generator, the technician noticed that less scrubbing was required and the stainless steel surface was easier to clean. Although a mixture of cleaning agent and nanobubble water was used initially, chemical use was steadily decreased until the improved cleaning results were achieved without using any chemicals. Instead of the former six-hour scrubbing ritual, tank exteriors are sprayed with nanobubble water from the washdown system during a 15-minute daily cleaning. The new process does not interrupt production and is conducted at floor level, so the scissor lift and accompanying safety gear are no longer needed. The result is a safer facility, less downtime and increased production.

The company’s Quality Assurance team noticed other impressive benefits attributed to the negative charge in nanobubble water. They stated that because the toothpaste residue is positively charged, less residue remains on even the interior of the tanks after each batch. With less residue, each subsequent batch is easier to clean, creating a compounding effect and reducing downtime between every toothpaste batch.

NEXT STEPS

The company’s QA team is exploring potential applications and plans to include Armstrong Nanobubble Generators in other water piping locations to prevent buildup on the inside of piping. This will result in better heat transfer and longer equipment life, which translates to further savings on energy and maintenance costs.