



## Toftejorg Adds Gravy to the Bottom Line

Efficient cleaning reduces CIP solution and wastewater

Case Story



A major food processor in Iowa was considering upgrades to their tank cleaning system. Their current cleaning operation started at the kitchen and continued through the filling line. It was a labor intensive system which adsorbed an entire shift each operating day, used large crews to clean multiple vessels (80), and generated large quantities of wastewater. Furthermore, it was supplemented by a clean-in-place system primarily used in the larger vessels that followed cook kettles in the kitchens.

To help find an upgrade solution, a 1,200 gallon mixing and holding vessel used to mix various gravies and sauces (see

illustration) was selected for prototype testing. Alfa Laval rotating jet head equipment performance in the vessel was then compared to the existing CIP procedures and manual cleaning. If successful, Toftejorg technology would be implemented for all vessels of similar size or larger (>50% of plant vessels) throughout the plant.

Two types of Alfa Laval tank cleaning devices were tested in field, the TZ-89 and SaniJet 20. The goals for the testing were to support the selection of a tank cleaning device to upgrade the cleaning performance in the vessels, evaluate the compatibility of the proposed devices with the existing CIP

systems, and to reduce the total resource cost of vessel cleaning. Two tests were performed, one on each device in the hold tank shown below. All the test conditions were then duplicated in Alfa Laval's TRAX computer model (see below).

Prior to testing, operators of the CIP system were instructed to operate the supply system on hot (190 F) water only to minimize safety hazards. Traditionally, caustic and acid solutions are part of the cleaning recipe. Testing began with machines supplied by the hot (190 F) water at a target pressure of 60 PSIG. The resulting supply flow rate also matched the target rate for the TZ-89s used in the first test. The tank walls and surfaces heated very quickly compared to the standard procedure and were hot to the touch after half a pattern was completed by the TZ-89s (5 minutes, 30 seconds). Over 99% of the internal surfaces were also visually clean after half a pattern. Plant personnel signed-off on the results as having met the cleaning goal conventionally applied to cleaning these tanks after a complete pattern operating time was completed (12 minutes, 15 seconds).

The SaniJet 20s were installed that following day for the second test after processing was completed in the same holding tank. The CIP supply system was energized and the pressure gauge indicated a supply pressure of 80 PSIG. The unregulated pressure in the system, combined with the two-nozzle SaniJet 20 acting as an effective flow restrictor, resulted in an increased system pressure better suited for the SaniJet 20s.

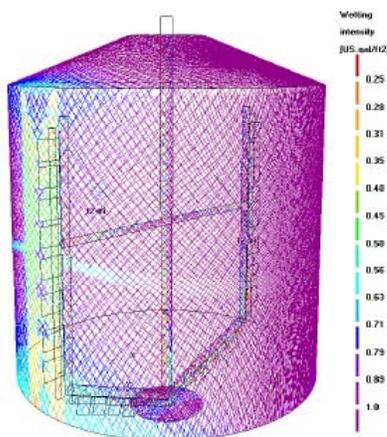
The tank was essentially cleaned in 3 minutes, 30 seconds or half of the designed operating time. The tank surfaces were also extremely hot to the touch in less than 2 minutes, similar to the earlier TZ-89s testing. The machines were then run to a total time of 7 minutes, 30 seconds. A series of swab tests were collected from the tank internal surfaces for indicator bacteria. Multiple samples were taken (≈15) and cultured and no failures were detected. The results of the field testing indicated that the low speed version of the two-nozzle SaniJet 20, with 3.8mm nozzles, installed at a depth of 700mm was recommended by Alfa Laval application engineers.

The customer was extremely satisfied with these results. As a result, they permanently installed two SaniJet 20 machines in the vessel and have been operating for approximately a year without further intervention or adjustments.

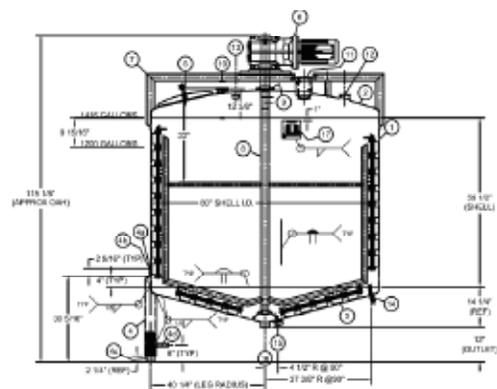
Installing the SaniJet 20 had a significant impact on wastewater water reduction and manual cleaning. The wastewater volume for this vessel per cleaning cycle has been reduced by 75% to 80% and the manual intervention during cleaning has been eliminated. This customer also has a safer tank cleaning system as caustic and acid solutions are no longer used when cleaning this vessel. The results are clear. The vessel is cleaned of viscous food product, including its agitator and internals, and sanitized using only hot water at a flow rate and pressure of 30 USGPM @ 80 PSIG in 6 to 10 minutes (180 to 300 USG) compared to hours of manual labor/cleaning with chemicals.



**Toftejorg SaniJet 20  
Rotary Jet Head**



**TRAX simulation of gravy – sauce holding tank/vessel**



**Diagram of gravy – sauce holding tank/vessel**

**How to contact Alfa Laval**

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