Tank cleaning equipment for North America

The complete line

Distributed by:

MGNewell

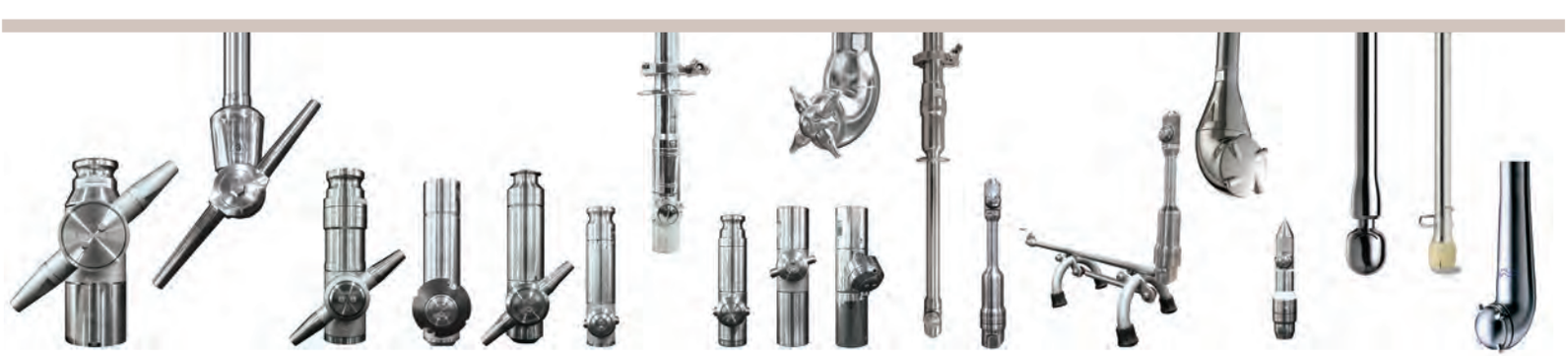
Who we are

- Alfa Laval is a leading global provider of specialized products and engineering solutions, based on its key technologies of heat transfer, separation and fluid handling.
- The combined portfolio of Gamajet and Toftejorg tank cleaning machines enables Alfa Laval to provide the most comprehensive product line in the industry.
- Every device is custom selected for optimal cleaning and provides a solution for every tank, tote and vessel, regardless of shape, size or internal obstructions.
- Alfa Laval tank cleaning devices use patented technology to save companies billions of gallons of water and chemicals, millions of hours, and facilitate massive increases in plant productivity and worker safety, all over the world.

Industries we serve

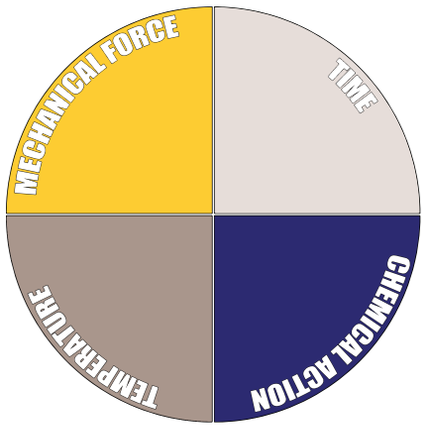
Hygienic
Beverage
Brewing
Cosmetic
Dairy
Distilling
Food
Home care
Personal care
Pharmaceutical
Wine

Industrial
Biorefining
Chemical
Ethanol
Fuel storage
Germination
Marine
Municipal
Paints and coatings
Petroleum
Portable sanitation
Pulp and paper
Steel
Transportation
Wastewater



Determining the effectiveness of your cleaning method

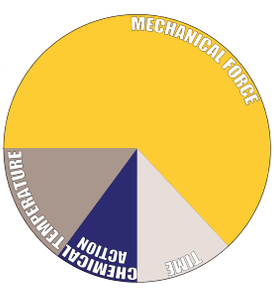
There are four factors that can be manipulated in any cleaning scenario: temperature, chemical reaction, time and mechanical force. When the effectiveness of any factor is increased, it will result in a decrease of one or multiple other factors.



Tank cleaning technologies

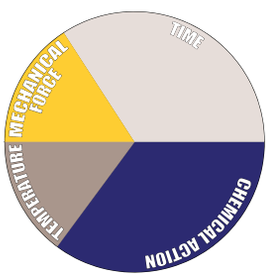
Rotary jet head:
High-impact/impingement

These devices use patented technology that combines pressure and flow to create high-impact cleaning jets. Cleaning occurs not just where the concentrated stream impacts the surface, but also through the tangential force that radiates from that point. The water jets blast contaminants from the surface, scouring the tank interior. The high-impact cleaning jets are delivered in a precise, repeatable and reliable, 360° pattern.



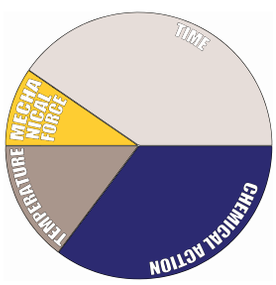
Rotary spray head:
Moderate-impact

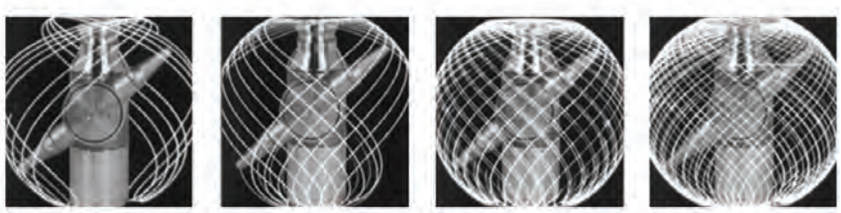
These devices deliver optimum tank coverage, using a revolving flat fan spray that delivers moderate-level impact in a repeatable pattern to penetrate films and dislodge soils on the interior walls of the tank.



Static spray ball:
Low-impact/rinse

The method of choice for low-impact cleaning of water soluble products such as powders and other easy-to-clean residues, static spray balls are the least expensive but consume the most resources.





The 360° indexing pattern of a rotary jet head

A technology shift pay-off

Rotary jet heads may have a comparably higher cost than static spray balls, but they typically offer a much better return on investment. Rotary jet heads provide substantial long-term savings that continue to accrue after realizing a full return on investment—which often occurs within less than a year—and in some cases, less than one week!

The dynamic movement and focused impact of the jets cut the costs associated with water and chemical usage by up to 80%. This leads to less tank downtime, more production time and higher yields. See page 12 and 13 to read how companies just like yours saved millions by shifting their tank cleaning technology.

When tank cleaning devices are in place, it's often hard to imagine making a switch. But there are compelling reasons to upgrade from traditional static spray balls, especially when there are little to no conversion costs.

Benefits:

- Clean up to 85% faster and experience less tank downtime
- Reduce water and chemical usage by up to 80%
- Increase productivity by up to 20%
- Eliminate manual cleaning and the need for confined space entry
- Prevent build-up of debris, cross-contamination of product and recalls.
- Cost-effectively meet industry and government standards for cleanliness
- Preserve product quality

Devices for large tanks

Large tanks typically range from 3-30 meters (10-100 ft.) in diameter with capacities of 19,000-5.7 million liters (5,000-1.5 million gallons).

The products listed on the following pages are built for ergonomics and durability, even in the toughest environments.

Industrial design for rugged applications:

Alfa Laval GJ 4
Pressure*: 4-14 bar (50-200 psi)
Flow rate: 4-67 m³/hr (17-300 gpm)
Cycle time: 10-25 mins.
This rotary jet head was designed to clean tanks with diameters of over 4.5 meters (15 ft.) for industrial applications.

Alfa Laval GJ 8
Pressure*: 4-20 bar (50-300 psi)
Flow rate: 6-30 m³/hr (25-135 gpm)
Cycle time: 8-12 mins.
Weighing in at only 5 kg (11 lbs.), this rotary jet head is one of the most versatile on the market and the easiest to handle.

Alfa Laval GJ 10
Pressure*: 4-19 bar (50-270 psi)
Flow rate: 4.5-17 m³/hr (20-75 gpm)
Cycle time: 10-28 mins.
This low-profile, high-flow rotary jet head fits through a 10 cm (4") pipe for safe and easy cleaning of fuel storage tanks.

Alfa Laval TJ TZ74
Pressure*: 5-6.5 bar (72-94 psi)
Flow rate: 11-34 m³/hr (50-150 gpm)
Cycle time: 10-25 mins
This rotary jet head is suitable for processing, storage and transportation tanks and vessels in a wide variety of industries.

Sanitary design for hygienic applications:

Alfa Laval SaniMega
Pressure*: 3 bar (44 psi)
Constructed of stainless steel or a slide-bearing PEEK design (3-A compliant), this rotary spray head is available in 360° and 270° up and provides liquid impact at a low flow rate and low pressure.

Alfa Laval GJ PF
Pressure*: 4-20 bar (50-300 psi)
Flow rate: 3.5-19 m³/hr (15-84 gpm)
Cycle time: 8-20 mins.
This versatile rotary jet head was designed for cleaning tanks with capacities between 19,000-95,000 liters (5,000-25,000 gal) in a wide variety of industries.

Alfa Laval GJ A1
Pressure*: 1-5 bar (20-80 psi)
Flow rate: 5-16 m³/hr (20-70 gpm)
Cycle time: 3-6 mins.
The first and only rotary jet head to meet the requirements of 3-A Sanitary Standard 78-01.

Alfa Laval GJ A8
Pressure*: 4-20 bar (50-300 psi)
Flow rate: 8-31 m³/hr (25-135 gpm)
Cycle time: 8-12 mins.
A hygienic version of the Alfa Laval GJ 8, this device minimizes physical effort while maximizing cleanliness and efficiency.

**Recommended pressure*

Devices for mid-sized tanks and containers

Mid-sized tanks typically range from .75-3 meters (2.5-10 ft.) in diameter and have capacities of 1,000-18,000 liters (275-5,000 gallons).

Industrial design for rugged applications:

Alfa Laval GJ 5
Pressure*: 4-40 bar (50-600 psi)
Flow rate: 1.7-6 m³/hr (7.5-25 gpm)
Cycle time: 8-11 mins. This rotary jet head readily passes through an 8 cm (3") opening making it ideal for cleaning mid-sized tanks, vats and vessels.

Alfa Laval GJ 9
Pressure*: 4-40 bar (50-600 psi)
Flow rate: 1-8 m³/hr (4-35 gpm)
Cycle time: 4-12 mins. This rotary jet head was originally created for cleaning totes/IBCs and bulk containers but its versatile design enables cleaning of many small to mid-sized tanks.

Alfa Laval GJ 9.2
Pressure*: 4-10 bar (60-150 psi)
Flow rate: 1-5 m³/hr (6-20 gpm)
Cycle time: 4-20 mins.
Designed to clean above and underground fuel storage tanks under 4,700 L (1,250 gal), this rotary jet head is capable of running diesel fuel as the cleaning agent.

Alfa Laval GJ A6
Pressure*: 2-10 bar (30-150 psi)
Flow rate: 2.4-7.3 m³/hr (10.5-32 gpm)
Cycle time: 10-14 mins.
Designed for permanent installation, this rotary jet head easily fits through an 8 cm (3") opening.

Sanitary design for hygienic applications:

Alfa Laval SaniMagnum
Pressure*: 2 bar (29 psi)
Constructed of stainless steel or a slide-bearing PEEK design, this rotary spray head is available in 360° and 270° up and provides liquid impact at a low flow rate and low pressure.

Alfa Laval TJ SaniJet20
Pressure*: 3-10 bar (45-150 psi)
Flow rate: 2-8 m³/hr (10-35 gpm)
Cycle time: 5-10 mins.
This rotary jet head cleans highly viscous debris from the interiors of sanitary tanks between 500-30,000 L (130-8,000 gal) for ultra pure applications.

Alfa Laval TJ TJ20 G
Pressure*: 3-8 bar (45-115 psi)
Flow rate: 6-15 m³/hr (25-65 gpm)
Cycle time: 6-10 mins.
This rotary jet head was developed to meet the highest standards of efficiency, reliability and hygiene within sanitary processing industries.

Alfa Laval GJ A2
Pressure*: 4-10 bar (60-150 psi)
Flow rate: 0.2-5.4 m³/hr (1-24 gpm)
Cycle time: 4-20 mins.
Created as a direct result of a major pharmaceutical customer's request, this hygienic rotary jet head fits through a 5 cm (2") opening.

**Recommended pressure*

Devices for small tanks, barrels and drums

Small tanks range up to 0.75 meters (2.5 ft) in diameter and typically have capacities of up to 1,000 liters (275 gallons).

Alfa Laval GJ 7
Pressure*: 6-55 bar (80-800 psi)
Flow rate: 0.5-2 m³/hr (2-8 gpm)
Cycle time: 2-5 mins.
A rotary jet head ideal for cleaning all types of barrels, drums and small vessels. This device offers one-step, one-insertion cleaning.

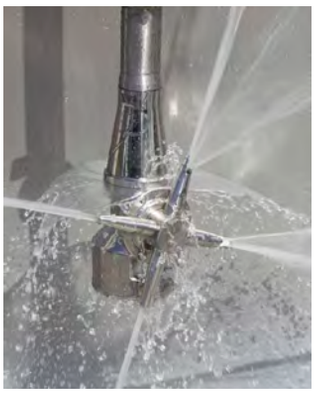
Alfa Laval SaniMidget
Pressure*: 2 bar (29 psi)
Constructed of stainless steel or a slide-bearing PEEK design, this rotary spray head is available in 360°, 270° up, and 180° down and provides liquid impact at a low flow rate and low pressure.

Alfa Laval GJ BB
Pressure*: 6-55 bar (80-800 psi)
Flow rate: 1-2 m³/hr (4-6 gpm)
Cycle time: 1-2 mins.
This easy-to-handle rotary jet head provides optimal impact for wine barrel cleaning without damaging the barrel, extending its shelf-life by 1-2 years.

Alfa Laval SaniMicro
Pressure*: 2 bar (29 psi)
Constructed of stainless steel, this rotary spray head is available in 360°, 270° up, and 180° down and provides liquid impact at a low flow rate and low pressure.

**Recommended pressure*

Burst cleaning: Combine impingement and chemical action



The new Alfa Laval BurstClean+ tank cleaning process uses the rotary spray head concept to soften stubborn residues, followed by the impingement technology of a rotary jet head to quickly remove those residues.

Features and benefits

- Pre-rinses are essentially eliminated
- Drastically reduce time spent cleaning and water usage
- Caustic and sanitizing steps are reduced significantly

Directional cleaning: Aim the cleaning power where you need it

Avoid excessive water usage and increase cleaning power with our downward directional devices. Perfect for open-top tanks, trailers, and vats, our directional line uses the same patented technology as our 360° rotary devices.

Many of our popular models are available as directionals, including the Alfa Laval GJ 4, GJ 8, GJ 5, and all of the rotary spray heads.

Alfa Laval BladeClean: Clean the underside of tank agitators

Cleaning processing tanks with center agitators can be tricky, costly, and time-consuming. However, with the new Alfa Laval BladeClean, it doesn't have to be. This retractable device is installed into the bottom of the tank and when activated, causes a cone of water jets to spray upward at the underside of the tank agitator blades.

Systems

No pump? No problem! We offer a wide range of mobile clean-in-place (CIP) systems customized to fit your individual needs, specifications and application.

Toteblast Station: In-house tote cleaning

Clean your entire tote/IBC (including the hard-to-reach top corners), regardless of residue, in-house and under four minutes. Experience a quick return on investment with this innovative system.

GobyJet: Remote portable tank cleaning

Use one or multiple rotary jet heads to clean whenever and wherever with this diesel-powered, high-pressure pump system. Keep your tanks clean and your crew safe!

MCIP: Mobile clean-in-place

Our standardized portable systems provide optimal tank cleaning without a costly plant overhaul. With a straightforward design, these cost-effective systems provide the optimal operating conditions to clean a variety of applications.

Accessories

We believe in application-specific tank cleaning machines, not “one size fits all,” off-the-shelf solutions because we know every processing company is unique. That’s why we provide equipment to supplement your Alfa Laval tank cleaning device and deliver maximum results.

Manway Adapter

Designed for the transportation industry, this adapter speeds up the tanker cleaning process and creates a safer environment by eliminating splashing. The cone shape fits a wide range of manway sizes and allows for easy placement.

Sidewinder

Designed for trailers, railcars and horizontal tanks, the Sidewinder enables your rotary jet head to be placed on its side. Cleaning in this position increases the number of hits to the bulk head, cleaning the tank in half the time.

Bipod

Designed for fast and easy placement of the Alfa Laval GJ BB within a wine barrel. This accessory provides maximum clearance and stability.

Portable Cart

For temporary mobile mounting, this cart is compatible with the Alfa Laval GJ 4, GJ 8, and GJ PF devices.

Alfa Laval Rotacheck

This device is designed to validate the rotary jet head cleaning process inside sanitary tanks.

For more systems and accessories, visit **www.gamajet.com/products**

Case studies

Oilfield services

A treatment, recovery and disposal plant was designing a new tanker wash for their facility. They would handle a large number of trailers and tanks used to transport a wide range of oilfield chemicals, drilling fluids and waste, then process all received materials down to clean water, recovered hydrocarbons and class 1 and 2 landfill. A key design objective was for the cleaning process to be efficient, reliable and eliminate confined space entry. The facility also handles a large quanitity of 400 bbl tanks and the common manual cleaning method was not viable.

Solution: Implement an Alfa Laval rotary jet head configured for 10 bar (150 psi) at 19 m^3/h (85 gpm) with a 20 minute cycle time. A custom cleaning rig was built to position the 400 bbl tank over a recovery pit. After cleaning, the effluent was cycled through de-sludging and filtering process and the cleaning water was reused.

Results:

90% less time spent cleaning
90% less water usage
Maintenance performed on-site
Confined space entry eliminated

Ethanol

A major ethanol plant operating 24 hours a day, seven days a week, was using a competitor's rotary jet head to clean four fermentation tanks with capacities of 1.9 million liters (500,000 gallons). After realizing the major benefits of an Alfa Laval rotary jet head, they decided to make the switch.

Before:
Batches per year: 1,000
etOH yield: 12%
Cleaning time per batch: 90 minutes
Cleaning time per year: 1,500 hours
Gallons of ethanol produced: 60 mgpy

After
Batches per year: 1,022
etOH yield: 14%
Cleaning time per batch: 45 minutes
Cleaning time per year: 766 hours
Gallons of ethanol produced: 71.5 mgpy

Results:

2% higher etOH yields
50% faster cleaning time
20% increase in production

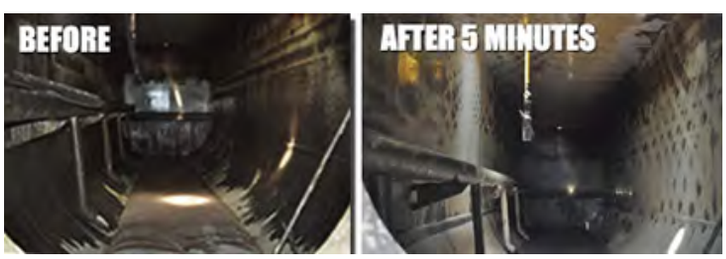
Brewing

A major U.S. brewery needed to automate tank cleaning in large horizontal fermentation tanks to increase productivity and reduce costs. The initial method combined confined space entry and three outdated tank cleaning machines on portable carts. The carts were hooked in series and fed through the manway located on the front of the tanks. The procedure took approximately two hours. The confined space entry and physical requirements made the process lengthy, cumbersome and dangerous.

Solution: Two Alfa Laval rotary jet heads permanently suspended from the ceiling of each fermenter. By choosing dual nozzle units with larger orifices instead of their previous triple nozzle units with smaller orifices, the flow per cleaning jet was drastically increased. This additional impact allowed the brewery to use two rotary jet heads instead of three.

Results:

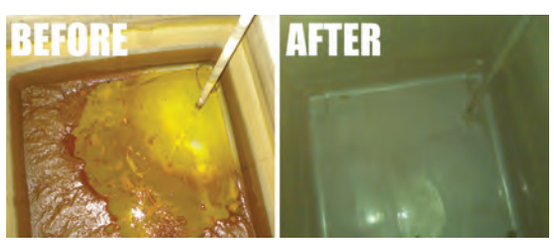
33% reduction of flow rate
70% less time spent cleaning
12.1 million liters of water savings per year (3.2 million gallons)



Mud tank cleaning after 5 minutes

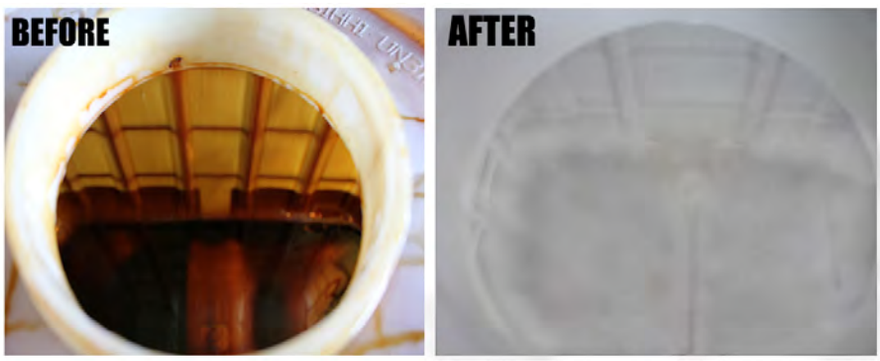
Oilfield services industry

Chemical tank

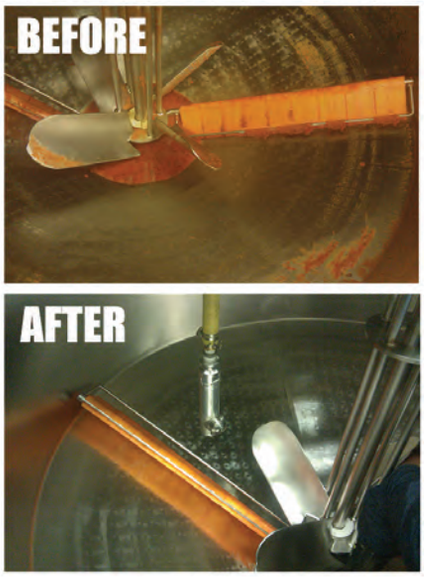


Home care industry: tote cleaning

Personal care industry: toothpaste tank after 6 minutes of rotary jet head wash cycle.



Petroleum industry: tote cleaning application



Food processing tank with center agitator

Dairy

A cheese manufacturing company was using static spray balls to clean their cooling baths and was frustrated with this slow, inefficient process.

Before:
Number of static spray balls: 5
Water usage per wash cycle: 13,000 liters (3,432 gallons)
Cost of cleaning/wash cycle: $723 USD
Cost of cleaning/year: $260,193 USD
Time spent cleaning/cycle: 42 minutes
Time spent cleaning/year: 251 hours
Number of batches produced/year: 1,007

After using Alfa Laval rotary spray heads:
Number of rotary spray heads 3
Water usage per wash cycle: 1,049 liters (277 gallons)
Cost of cleaning/wash cycle: $59 USD
Cost of cleaning/year: $21,144 USD
Time spent cleaning/cycle: 28 minutes
Time spent cleaning/year: 167 hours
Number of batches produced/year: 1,035

Results:

92% reduction in water usage
92% reduction in total cost per clean
33.3% reduction in time spent cleaning
3% increase in production

Pharmaceutical

A company manufacturing a wide range of active pharmaceutical ingredients was experiencing significant revenue loss due to their tank cleaning procedure and was under pressure to provide a more validatable clean and eliminate confined space entry for cleaning. Three process tanks with center agitators were costing $27,000 for every hour of downtime. The cleaning procedure included five hours of manual cleaning every three days. In addition, a 20 hour manual cleaning process was performed once per quarter.

Solution: Implement Alfa Laval rotary jet heads powered by a custom designed mobile system from Alfa Laval. Cleaning included a 15 minute pre-rinse to remove the bulk of the residue, a 30 minute re-circulated wash with a 2% caustic concentrate and a final 15 minute un-circulated wash.

Results:

71% water and chemical savings
82% reduction in cleaning time
$1 million+ USD recovered in revenue
Confined space entry eliminated

Food processing

Tank type: Four ribbon blenders
Tank residue: Processed meats
Procedure: Blenders are filled with hot water and agitators are turned on, followed by manual cleaning, totaling four hours per tank, per day.
Tank cleaning downtime: 5,840 hours/year
Water usage: 99.5 million liters/year (26.2 million gal/yr)

Solution: Implement Alfa Laval rotary jet heads operating at 3.4 m^3/h (15 gpm) per device. Cleaning includes a five minute pre-rinse, 10 minute wash and a final five minute rinse, totaling 20 minutes per tank.

Tank downtime due to cleaning: 486 hrs/yr
Water Usage: 8.3 million liters/year (2,190,000 gallons/year)
Water Savings: 91.2 million liters/year (24,090,000 gallons) for a total of $112,000 USD ($.00469 per gallon)

Results:

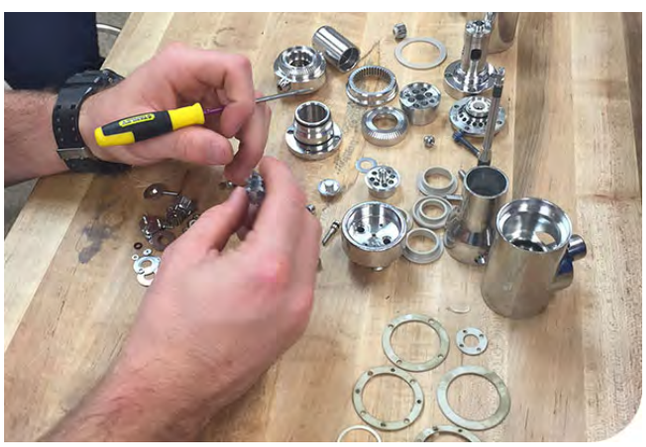
92% less water and chemicals
88% less time spent cleaning
$112K USD recovered in water savings

Service you can count on

Although our tank and tote cleaning devices are designed for durability, periodic maintenance keeps our products performing at their peak. For an extended shelf life of your Alfa Laval rotary jet head, preventative maintenance every 800-1,000 hours is advised.

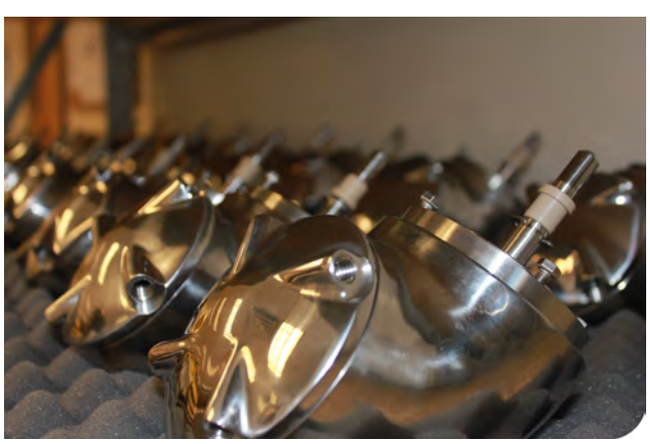
Service and repair

For best results, send your tank cleaning device to our Exton, PA facility for expert servicing. We guarantee a 24-48* hour turnaround on all service and repairs so you don't have to worry about unnecessary tank downtime. Take advantage of our best-in-class service and repair program today and your machine will be thoroughly inspected as part of the most comprehensive program in the industry.



Process

To initiate the maintenance of your rotary jet head and receive a renewed warranty on your device, visit *www.gamajet.com/serviceandrepair.php* and click on the link to download the Machine Service & Repair Form. Complete the form and send in a copy with your device. Please use the mailing label provided. All devices are repaired and shipped within 24-48* hours after customer approval.



Support

Working with Alfa Laval means that you are never alone. Each machine is field-serviceable and comes with a comprehensive owner's manual so our customers can repair their own machines on-site. Spare parts and rebuild kits are readily available. Our service team is just a phone call away for support.

*24-48 hour turnaround is guaranteed for the entire range of Alfa Laval Gamajet devices and the following Alfa Laval Toftejorg machines: TJ 20G, TZ66, TZ67, TZ68, TZ74, TZ75, TZ79, and TZ82.

Customer testimonials

"As manager of a railcar repair and cleaning facility, it is vital to our operations that all equipment is of highest quality, and built to last. The Alfa Laval system is just that, a leader in its field. Not only that, but the 24-hour turnaround time from their service technicians is just as vital to our operations. They do a quality job every time.

Railcar repair manager

"We have been using the Alfa Laval GJ 5 and GJ 8 jet heads for numerous years and they have proven reliable under continuous and strenuous use when exposed to cleaning solvents. The company's service program (repairing clogged heads rather than replacing them) saves our company money by quickly refurbishing equipment in an efficient and cost saving manner. Alfa Laval associates are both helpful and knowledgeable on their products and possible applications.

Plant Manager | Paint and chemical company

"We have dealt with Alfa Laval since 2010. Our experience with the service team proves to be exceptional. They always call first to see if they can troubleshoot the problem over the phone to avoid having you ship the machine to their location. There are no surprises; we are always provided with a quote which entails the complete parts breakdown and labor costs for review/approval prior to the service/repair on the unit. The cost is always true to the quote. A Birth Certificate is provided with repair for our records. It's also our experience that the company stands behind their warranty. Lastly, the turnaround time is remarkable; as a manufacturing company, their rotary jet heads are critical to our day-to-day operation.

Kindest Regards, a trusted industrial customer

Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuff, starch, pharmaceuticals and more.

Our worldwide organization works closely with customers in almost 100 countries to help them achieve their goals.

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