THE INSIDE STORY: HOW CHEMICAL PROCESSING PLANTS ARE IMPROVING SUSTAINABILITY, SAVINGS AND SAFETY

What's their secret?

How have some chemical processing plants saved millions of gallons of water, dramatically curtailed their energy use, enhanced worker safety and reduced both maintenance and downtime?

The answer is inside their tanks.

This is a real-world story of improved sustainability, savings and safety. It will demonstrate point-by-point how automated tank cleaning realizes all four objectives for chemical processing plants.

More importantly, you will see how a necessary maintenance function can be transformed into a proven efficiency driver across your plant. You will also learn how the inherent inefficiencies and risks of manual tank cleaning can be eliminated.

This is the inside story of automated tank cleaning and the substantial benefits and measurable ROI it is delivering every day at chemical plants around the world.

INSIDE THE CHALLENGES: ISSUES WITH MANUAL CLEANING

For many chemical plants, tank cleaning is a manual process. They rely on workers with hoses and scrub brushes, or the fill and drain method. These options are time consuming, wasteful, difficult and potentially dangerous.

Major manual tank cleaning challenges

- Loss of production
- Cross-contamination, rework and waste
- Less consistent and effective cleaning
- Excessive maintenance time
- Significant labor
- Unnecessary safety risks
- Extensive water use

Automated tank cleaning eliminates all of these issues. For that reason alone, it is well worth implementing. However, this method achieves much greater long-term benefits, and it all starts with sustainability.

INSIDE SUSTAINABILITY:
EFFICIENCIES AND EFFECTIVENESS

To be considered truly successful, sustainability efforts must pass three critical benchmarks.

Successful sustainability efforts must:

1. Deliver enhanced, ongoing environmental efficiencies
2. Improve safety, or social sustainability
3. Maintain effectiveness without compromises

With the right equipment and guidance, automated tank cleaning provides an easy way to ensure all three benchmarks are met.

EFFICIENCIES ON EVERY LEVEL

Saving water and energy are two primary drivers for any sustainability initiative. Automated tank cleaning excels in both areas. It also allows for a significant reduction in cleaning chemical use. Here is a brief description of how these savings can materialize.

REDUCING WATER, CHEMICAL AND ENERGY USE

The big picture

Let's start with reduced water use. Automated tank cleaning offers the potential to save millions of gallons of water every year, dependent on cleaning requirements. This includes the number and size of tanks, totes, vessels, reactors, drums and mixing equipment in the plant.

Reduced chemical use occurs in tandem with water savings because these fluids are pumped into the tank simultaneously.

Saving water also contributes to reduced energy use. If water is heated for cleaning, using less water reduces the amount of heating required. Plants that use less water also reduce the energy required for pump operation.

Maximizing your savings

Factors such as impact, spray distance, flow rate, pressure, rotation speed and coverage all contribute to the equation. A tank cleaning specialist can analyze your needs and help realize the maximum amount of water, chemical and energy savings for your plant's specific applications.

One more point

Automated tank cleaning makes every drop count. That natural resource reduction is a big positive for the plant, environment, community, and your bottom line.

30-SECOND CASE STUDY

CHEMICAL MANUFACTURING PLANT CUTS WATER USAGE IN HALF

Problem

A large chemical manufacturing plant had six tanks that required thorough cleaning during shutdowns. These tanks were cleaned by fill/drain cycles, followed by rigorous manual labor. This produced inconsistent results and wasted significant water and energy.

Solution

Automated tank cleaners were installed to clean all tank interiors.

Result

Cleaning time was cut in half, water use was reduced by thousands of gallons, manual labor and downtime were virtually eliminated, and tanks were consistently and optimally cleaned. The manufacturer is saving about US$36,000 per year and the automated tank cleaning provided payback in about seven months.

Read the full case study

PUT THE IDEAS FROM THIS WHITE PAPER INTO PRACTICE AT YOUR PLANT

Learn more about a Spraying Systems Co. Sustainability Assessment at

spray.com/Services/Sustainability-Assessment

EFFECTIVENESS WITHOUT COMPROMISES

There's another form of sustainability with automated tank cleaning that chemical plants should consider: sustained effectiveness. The consistent, reliable, repeatable cleaning of tanks, totes, vessels, reactors, drums and mixing equipment is a good way to ensure savings and productivity gains year after year.

Manual tank cleaning falls far short of automated tank cleaning in both sustainability and results. Here are four compelling reasons why automated tank cleaning is vastly superior.

1. DRAMATICALLY BETTER CLEANING

Automated tank cleaning equipment optimizes the cleaning process. It is designed for higher impact and better coverage than manual tank cleaning.

2. REPEATABILITY

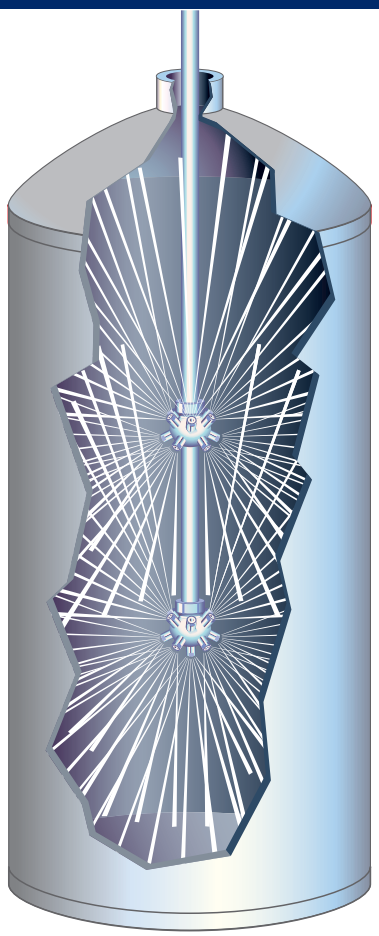
Optimal, consistent cleaning is the goal. Automated tank cleaning is performance-built to accomplish this end. Humans cannot. Human cleaning simply will not produce the same repeatability that automated cleaning ensures.

3. DEPENDABILITY

An automated tank cleaning system never has a bad day or an off shift. The mistakes that are unavoidable in manual cleaning reduce productivity, weaken results and risk wasted product. Automated tank cleaning is dependable, reliable and ready every time.

4. INCREASED UPTIME

Automated tank cleaning dramatically reduces cleaning time while still delivering superior results. Some manufacturers report reductions in cleaning time up to 90%. That gets the tank back into service faster for more uptime, productivity and increased profits.



30-SECOND CASE STUDY

SPECIALTY CHEMICAL MANUFACTURER REDUCES CLEANING TIME BY 75%

Problem

A manufacturer of specialty chemicals needed to thoroughly clean the interior surfaces of stainless steel shipping totes before reuse. The totes sometimes sat empty for months or even years before washing. This resulted in hardened, difficult-to-remove residues. Wash cycles for each tote lasted up to 45 minutes and were often repeated for complete residue removal.

Solution

An automated tank cleaner and fluid delivery system were installed to provide powerful, high-impact cleaning in a fraction of the time.

Result

Cleaning time was reduced by more than 75%. Increased impact resulted in cycle times of just 10 minutes—even for extremely difficult residues. All totes are now cleaned in-house, for a monthly savings of US$30,000 which was previously paid to a cleaning contractor. The total system cost was recouped in less than one month.

Read the full case study

INSIDE SAVINGS:
REDUCING OPERATING COSTS

Sustainability initiatives are good for the environment and a company's image. But how do they impact profits?

In the case of automated tank cleaning, the response is that sustainability pays significant dividends in the form of ongoing and predictable savings.

CONTROLLING AND REDUCING EXPENSES

The necessary costs of doing business in chemical processing are undeniable. Energy consumption, maintenance and labor are essential. Spending too much on them is not.

ENERGY CONSUMPTION

As previously discussed, one of the largest single operating expenses in chemical processing is energy.

Serious savings: Saving water translates into saving energy and extended pump wear life.

MAINTENANCE

The cost of downtime for equipment maintenance is another ongoing expense. However, delaying maintenance can lead to equipment failures, early replacement and lost production.

Serious savings: With automated tank cleaning maintenance is streamlined and improved. Costs are reduced through decreased downtime and cleaning consistency.

LABOR

Worker productivity is in lockstep with plant profits. Manual tank cleaning is a costly, laborious, and time consuming process.

Serious savings: Automated tank cleaning reduces labor costs immediately and keeps the savings flowing each time tanks, totes, vessels, reactors, drums and mixing equipment are cleaned.

30-SECOND CASE STUDY

CHANGE IN CLEANING EQUIPMENT SAVES 1.32 MILLION GALLONS OF WATER AND A US$1 MILLION BOILER INVESTMENT

Problem

A large manufacturer was looking for ways to reduce water use – especially heated water. Automated cleaning equipment was already being used and the manufacturer was skeptical that different equipment could make a dramatic difference.

Solution

New automated tank cleaners were installed in 14 large mixing tanks.

Result

The new tank cleaning equipment enabled the manufacturer to reduce water use by 1.32 million gallons annually, and natural gas consumption by 21%. The decrease in the water use has extended the life of the manufacturer's complete system and eliminated the need to make a US$1 million investment in a new boiler. The dependability of the new tank cleaners has reduced maintenance downtime and eliminated approximately US$20,000 per year in repairs.

Read the full case study

INSIDE SAFETY:
PROTECTING YOUR WORKERS

Worker safety is always a top priority in chemical processing. The struggle to maintain productivity levels and ensure safe procedures is a delicate balancing act.

IDENTIFYING THE DANGERS

Manual tank cleaning needlessly exposes workers to a number of inherent safety risks, as this brief list of potential hazards indicates.

- Harsh or dangerous chemicals
- Extremely hot water
- High-pressure hoses
- Risk of explosion in some instances
- PPE requirements, often involving clumsy full-body suits
- Confined spaces
- Slippery, hazardous work environments
- Lengthy cleaning times, which means increased risk exposures

ELIMINATING THE RISKS

It only takes one serious accident to shut a plant down. Manual cleaning exposes workers to hazards and environments that can be avoided.

Automated tank cleaning helps safeguard your workers, your plant and your reputation against the risks posed by manual cleaning. In addition, your workers can have increased productivity and job satisfaction. They can be deployed into other, more rewarding tasks.

30-SECOND CASE STUDY

CHEMICAL COMPANY REDUCES CLEANING TIME BY 80%; EQUIPMENT COST OFFSET IN TWO WEEKS

Problem

A chemical company needed an alternative cleaning method for two processing tanks. The cleaning was previously done using spray balls but the process consumed too much water and took too long. The company needed to reduce water use and downtime while maintaining the high standard for cleanliness required.

Solution

Automated TankJet® tank cleaners were installed.

Result

The volume of water needed has been reduced from 528 gal (2m3) to 118 gal (0.45m3) per wash cycle. Cleaning time has also been reduced from 1 hour to 12 minutes even with stubborn residue. These process improvements are saving more than US$64,500 per month. The cost of the new tank cleaning equipment was recouped in approximately two weeks. The goal of decreasing water use and downtime without compromising tank cleanliness has been achieved. In fact, water sample analyses determined that tanks were significantly cleaner after the change.

Read the full case study

SUMMARY

Chemical plants can transform a necessary maintenance function into a proven efficiency driver with automated tank cleaning.

This cleaning method reduces water, chemical and energy use and improves sustainability. It saves significantly on ongoing maintenance expenses, greatly reduces labor costs and returns tanks into service much more quickly. Automated tank cleaning also protects workers against the unnecessary risks posed by manual cleaning.

For more information on operating more sustainably and profitably, visit spray.com/company/sustainability

GET YOUR OWN INSIDE STORY:
SCHEDULE AN EXPERT SUSTAINABILITY ASSESSMENT FOR YOUR PLANT

Put the ideas from this white paper into practice. Learn proven sustainability and risk reduction methods with a complimentary Spraying Systems Co. Sustainability Assessment.*

This program brings cleaning sustainability specialists into your plant to uncover ways to:

- Reduce water, energy and chemical use
- Minimize waste and scrap
- Improve safety

After the assessment, you will receive a comprehensive report including recommendations to reduce waste, improve safety, ROI projections and an implementation plan.

Schedule your assessment at spray.com/Services/Sustainability-Assessment

*Sustainability Assessment is complimentary except travel reimbursement and nominal daily fee for assessment team.

ABOUT SPRAYING SYSTEMS CO.

We help companies around the world reduce water, energy and material use, decrease waste, minimize environmental impact and improve worker safety. Let our spray technology advance your sustainability initiatives.

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Experts in Spray Technology

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