



A GUIDE TO MECHANIZING YOUR CLEANING

HOW MODERN FLOOR CLEANING TECHNOLOGIES ARE
DELIVERING POWERFUL COMPETITIVE ADVANTAGES.



“CLEAN” IS BUSINESS-CRITICAL

With expanding regulatory standards, growing public health concerns, and increasing customer expectations, cleanliness has shifted from a basic requirement to a defining factor of success for organizations across all segments. 64% of Americans have a great appreciation for businesses that keep their establishments clean¹. 1 in 4 consumers say cleaning and sanitation is the top factor in deciding where they do business². With smartphones in every pocket, a single cleanliness lapse can be captured and shared instantly, creating lasting damage to any business. A 2023 consumer data survey reported that retail store cleanliness had the highest amount of negative feedback, outranking both speed of service and customer service³.

1 IN 4

consumers say cleaning and sanitation is the top factor in deciding where they do business



CLEANLINESS

is the highest ranking customer complaint in retail stores

It's not just consumer culture driving change. Across industries, employers are recognizing that clean, healthy environments boost employee satisfaction, retention, and productivity. Regulatory requirements, such as OSHA and LEED compliance, require cleaning crews to focus on using technologies, products, and processes to meet established health and safety standards.

The brunt of these rising demands falls squarely on cleaning operations teams, responsible for delivering confidence-inspiring cleanliness that attracts people to businesses and facilities while helping to prevent illnesses and injuries that can do profound damage to an organization's reputation and bottom line. More specifically, these pressures are pushing a paradigm shift: Cleaning operations need to focus not only on higher standards of cleaning for appearance — but now also on the more complex challenges of cleaning to create and protect healthier, safer environments.

Fortunately, these rising pressures are opportunistically timed with significant advances that make mechanized cleaning technologies more cost-effective and easier to implement than ever before. By leveraging mechanized cleaning technologies, business leaders are achieving reliable results while unlocking significant operational and labor efficiencies. A new wave of practical, modernized floor cleaning technologies — including automatic ride-ons, walk-behind scrubbers, and robotic floor cleaners, are turning “clean” into a powerful competitive advantage that stands out to both customers and employees.

CHALLENGE

CONTROLLING LABOR COSTS WHILE BOOSTING PRODUCTIVITY

Labor drives both productivity and cost, making it a defining challenge for cleaning operations. It has long been one of the biggest expenses in most businesses, ranging from 60–80% of custodial cleaning budgets⁴. While labor pressure is nothing new, these issues are seeing acute increases. Rising wages⁵, combined with mounting challenges in hiring, training, and retaining staff⁶, are putting a strain on businesses across the industry.

As labor challenges grow, facility managers are constantly being tasked to do more with less. In fact, 63% of managers say that improving labor productivity is a key priority⁷. Deploying tools and technology can help employees complete cleaning tasks more effectively, ensuring consistent cleaning, boosting employee satisfaction, and mitigating rising labor costs.

63%

of managers say that improving labor productivity is a key priority

SOLUTION

LEVERAGE MECHANIZED CLEANING TO EMPOWER — NOT REPLACE — STAFF

As managers work to pack more cleaning tasks into a 24-hour day, effective mechanized cleaning equipment boosts productivity and helps control labor costs without sacrificing quality. Robotic floor cleaning machines don't replace your staff; they empower them. By automating the repetitive work, teams can focus on the high-value tasks only humans can deliver, like wipe-downs, disinfection, and higher-touch detail cleaning tasks.

Today's robotic cleaning machines are no longer limited by physical tracks or magnetic beacons. Instead, they use on-board AI to carry out complex cleaning tasks without compromising safety. According to a recent study, companies adopting AI automation reduce operational costs by 20–30% and improve efficiency by over 40%⁸. Tennant's robotic machines including the **X4 ROVR**, **X6 ROVR™**, **T380AMR**, **T7AMR**, and **T16AMR**, deliver the flexibility, convenience, and performance needed to keep facilities consistently clean.

Companies adopting AI automation reduce operational costs by

20–30%

and improve efficiency by over

40%



X4 ROVR, X6 ROVR™, T380AMR, T7AMR AND T16AMR

- + Highly maneuverable.
- + Easy to use.
- + Can safely operate around all visitors and users of a facility.

Small, tight spaces have traditionally been cleaned manually with a mop and bucket, as many machines are too large or cumbersome. Innovations such as the Tennant **CS16 micro-scrubber**, are designed specifically for these challenging areas. Their narrow scrub paths increase efficiency, freeing staff to focus on higher-value cleaning tasks.

CS16 MICRO-SCRUBBER

- + Narrow scrub path and adjustable handle that make it easy to use in small, tight spaces.
- + Cleans in both forward and reverse motion while ensuring nearly 100% water recovery.



Productivity isn't just speed, it's uptime. Investing in durable, easy-to-maintain machines like the Tennant **T260 Walk-Behind Floor Scrubber** and Tennant **T391 Walk-Behind Floor Scrubber** can help deliver greater efficiency with fewer interruptions.



T260 WALK-BEHIND FLOOR SCRUBBER

- + Pre-set cleaning options with no set-up.
- + Consistent cleaning results.
- + Maneuver small spaces with high visibility.
- + A large recovery tank opening enabling full access, visibility, and simple maintenance.
- + User-friendly design allows for easy routine maintenance while minimizing downtime.

T391 WALK-BEHIND FLOOR SCRUBBER

- + Intuitive controls and straightforward operation for faster training and easier use.
- + Low sound levels and consistent water recovery mean enabling reliable cleaning while reducing safety risks and boosting labor productivity.



Today, many employees and leaders view automation as a complementary tool. More than 90% of workers recently surveyed said automation solutions increased their productivity⁹. Additionally, clean work environments lead to companies reporting 20% higher job satisfaction¹⁰ — resulting in better retention and lower costs associated with turnover, hiring, and onboarding.

CHALLENGE

ENSURING CONSISTENCY AND QUALITY OF CLEAN

Many cleaning employees are finding it difficult to consistently achieve the higher standards of cleaning performance that businesses and the public demand. A report from ISSATM highlighted that 85% of consumers want to see visible proof of cleaning. Managers are increasingly focused on cleaning consistency challenges, from ensuring easily missed spaces are cleaned daily to addressing performance drops during overnight hours and more. To meet these demands, operational teams are collecting and using data on cleaning performance to evaluate and improve their operations.

85%

of consumers want to see visible proof of cleaning

SOLUTION

APPLY ADVANCED MECHANIZED CLEANING CAPABILITIES TO ENSURE THE BEST CLEAN, EVERY TIME

Consumers want to know (and see) that cleaning is being done. Mechanized floor scrubbers like the **T500 Walk-Behind**, **T581 Micro Ride-On Scrubber** and Tennant **i-mop® XL Plus**, not only improve efficiency, but offer a visually appealing alternative to the standard mop and bucket, signaling a higher level of care for customers and building visitors. These ongoing displays of cleanliness provide invaluable peace of mind, while routine floor maintenance helps create healthy, safe spaces and reduce public health risks.



T500 WALK-BEHIND & T581 MICRO RIDE-ON SCRUBBERS

- + Deliver predictable results and maintain the cleanliness and appearance of your floors, enhancing your facility's image.
- + Clean a wide range of hard surfaces — from light-duty applications to the most rigorous needs.
 - Retail aisles
 - Restrooms
 - Back-of-house food service operations
 - Corridors and Hallways

TENNANT i-mop® XL PLUS AND i-mop® XXL PLUS¹²

- + Deliver up to 90 percent cleaner surfaces compared to conventional mopping.
- + Remove up to 4x as much soil, compared to conventional wet-mop cleaning.
- + Energy-efficient lithium-ion battery technology that eliminates reliance on nonrenewable energy sources.



CHALLENGE

IMPROVING QUALITY IN THE AIR

A critical factor in large commercial and industrial spaces is improving healthy indoor air quality (IAQ). One of the major contributors to poor IAQ are Volatile Organic Compounds (VOCs). A recent survey shows that over one-quarter of Americans report chemical sensitivity to everyday products¹³, and 12–13% have been medically diagnosed with Multiple Chemical Sensitivity (MCS)¹⁴, a chronic intolerance to chemicals. The EPA notes that improving IAQ can increase worker productivity, reduce sick time, and prevent significant economic losses which costs the U.S. tens of billions of dollars annually in lost productivity and medical expenses¹⁵. While an additional report claims that poor air quality contributes to 13.8 million missed school days each year due to asthma¹⁶. These factors are driving more commercial and industrial facilities to adopt greener, environmentally preferable products that don't leave behind chemical residues that compromise air quality.

12–13%

have been medically
diagnosed with Multiple
Chemical Sensitivity

SOLUTION

UTILIZE MECHANIZED CLEANING TECHNOLOGIES TO DELIVER CLEANER SPACES AND CLEANER AIR.

There are numerous studies by the EPA and its Science Advisory Board (SAB), linking poor indoor air quality, which includes effects of airborne pollutants such as cleaning chemicals and mold, to side effects including coughing and wheezing, shortness of breath, sore throat, red (and itchy) eyes, headaches, nosebleeds, skin rashes, or even asthma. Better air filtration on vacuums like Tennant's **V-BP-6** and **V-BP-7** filters directly reduce airborne irritants and support good indoor air quality. Tennant's **ReadySpace® rapid-drying carpet cleaning technology**, for carpet cleaning, can reduce the potential for mold, while our **ec-H₂O NanoClean™ technology** minimizes the use of chemicals to reduce airborne irritants.



Our technology
applications can
reduce potential for
mold and minimizes
use of chemicals

TENNANT'S READYSPACE® RAPID-DRYING CARPET CLEANING TECHNOLOGY¹⁷

- + Faster drying that leaves carpets clean and ready for use in less than 30 minutes.
- + Reduces potential for mold and odors in carpet compared to deep extraction.
- + Uses 80% less water for cleaning applications.
- + Up to 90% less water in carpet compared to deep extraction.

TENNANT'S EC-H2O NANOCLEAN® TECHNOLOGY

- + Converts water into nanobubbles, creating a detergent-free cleaning solution.
- + Eliminates the need for purchasing, mixing, and storing conventional cleaning chemicals.

Choosing the right cleaning equipment for your space can help maintain good indoor air quality and contribute to productive environments for all. And that means that staff and other building visitors can breathe easier.

CHALLENGE

SAFETY ON THE FLOOR

Maintaining a clean facility also means maintaining a safe one. In commercial and industrial environments, both staff and visitors face hazards ranging from chemical exposure and slippery surfaces to heavy equipment operation and confined spaces. 55% of slip-and-fall accidents are caused by hazardous walking surfaces, including wet or cluttered floors¹⁸, costing an average of \$51,000 in workers' compensation cost per claim¹⁹. Mechanized cleaning technologies help mitigate these risks, improving safety while maintaining high cleaning standards.

55%

of slip-and-fall accidents
are caused by hazardous
walking surfaces

SOLUTION

EMPLOY MECHANIZED CLEANING TECHNOLOGY TO CREATE SAFER SPACES

Mechanized floor scrubbers greatly reduce slip-and-fall risk, allowing cleaning to occur during business hours, enabling businesses to show customers that they're continually cleaning and protecting the health and safety of their customers and staff. Floor scrubbers like the **T2 Walk-Behind**, **T16 Ride-On Scrubber**, and **Tennant i-mop®** series deliver nearly 100 percent water recovery and vastly faster drying times— not leaving large swaths of wet, slippery floors like mop-and-bucket cleaning.

CONCLUSION

A STAND OUT CLEAN— A SOLID BOTTOM LINE

For commercial and industrial cleaning operations, doing more with less has always been the demand and the goal. Today, rising cleanliness and regulatory standards, growing public health awareness, and heightened consumer expectations are making “clean” a business-critical priority for every organization. Staff are expected to complete more complex cleaning tasks more frequently, managers must consistently meet higher performance standards, and all of this must be achieved without destroying margins and profitability as labor costs rise.

Innovation in mechanized floor cleaning now makes cleaning technologies vastly easier to use, faster to deploy, and more cost-effective than ever before. From advanced walk-behind scrubbers, to micro-scrubbers, to sophisticated-yet-simple robotic cleaning machines, automated cleaning machines are powering next-generation cleaning strategies. They drive consistent, higher-quality cleaning that delivers safer surfaces and cleaner air, while unlocking productivity, and controlling labor costs.

By adopting mechanized floor cleaning technologies, organizations of all sizes and industries can quickly create a standout cleaning experience. Clean becomes a powerful competitive differentiator, building trust and loyalty with customers, while driving measurable top-line value. At the same time, these technologies improve efficiency, boost productivity, and enhance staff satisfaction — strengthening your bottom line.



ABOUT TENNANT

Tennant offers extensive expertise in creating clean and safe environments for employees and visitors, providing clear, industry-specific cleaning insights. Contact us to schedule a demonstration of our technologies, or visit [tennantco.com](https://www.tennantco.com) or call 1-800-553-8033 for more information.

NOTES

- 1 Steve Fink, StudyFinds, "Survey: Cleanliness more important than menu for restaurant diners," January 28, 2024, <https://studyfinds.org/what-do-people-care-about-at-restaurants-44-say-its-not-the-food/>
- 2 McKinsey & Company, "U.S. Consumer Sentiment During the Coronavirus Crisis," December 14, 2021, <https://www.mckinsey.com/capabilities/growth-marketing-and-sales/our-insights/survey-us-consumer-sentiment-during-the-coronavirus-crisis>
- 3 Miika Mäkitalo, Chain Store Age, "Expert Opinion: Cleanliness is key to customer satisfaction, retail success," June 24, 2024, <https://chainstoreage.com/expert-opinion-cleanliness-key-customer-satisfaction-retail-success>
- 4 Phil Clark, Vanguard Cleaning Systems of the Ozarks, "The Cost of Commercial Cleaning Services: What to Expect," June 14, 2025, <https://www.vanguardozarks.com/2025/06/the-cost-of-commercial-cleaning-services-what-to-expect/#:~:text=Labor%3A%20The%20Largest%20Expense>
- 5 U.S. Bureau of Labor Statistics, "Janitors and Building Cleaners, Occupational Outlook Handbook," April 18, 2025, <https://www.bls.gov/ooh/building-and-grounds-cleaning/janitors-and-building-cleaners.htm#:~:text=The%20median%20hourly%20wage%20for,58>
- 6 Kathleen Misovic, Cleaning & Maintenance Management (CMM), "2025 CMM In-House Facility Management Benchmarking Survey Report," March 21, 2025, <https://cmmonline.com/articles/2025-cmm-in-house-facility-management-benchmarking-survey-report>
- 7 Kathleen Misovic, Cleaning & Maintenance Management (CMM), "2025 CMM In-House Facility Management Benchmarking Survey Report," March 21, 2025, <https://cmmonline.com/articles/2025-cmm-in-house-facility-management-benchmarking-survey-report>
- 8 ARDEM Incorporated, "AI Cost Reduction with Business Process Automation in 2025," March 6, 2025, <https://ardem.com/bpo/ai-cost-reduction-with-business-process-automation/#:~:text=AI%20cost%20reduction%20has%20become,improve%20efficiency%20by%20over%2040>
- 9 Juan Perez, Harvard Business Review, "How Automation Drives Business Growth and Efficiency," April 12, 2023, <https://hbr.org/sponsored/2023/04/how-automation-drives-business-growth-and-efficiency>
- 10 Three Sixty Safety, "Preventing Slips, Trips, and Falls with Good Housekeeping," April 21, 2025, <https://threesixtysafety.com/preventing-slips-trips-and-falls-with-good-housekeeping/>
- 11 Chase Carlson, ISSA, "Cleanliness is Top of Mind: Meeting the Concerns of Consumers and Facility Managers," March 9, 2022, <https://www.issa.com/articles/cleanliness-is-top-of-mind-meeting-the-concerns-of-consumers-and-facility-managers/>
- 12 Tennant, "Meet the i-mop®", n.d., <https://www.tennantco.com/content/dam/tennant/tennantco/products/machines/scrubber%20walk-behinds/i-mop/i-mop-hc-flyer-en-noam.pdf>
- 13 Joseph G. Allen et al., Preventing Chronic Disease (CDC / National Center for Chronic Disease Prevention and Health Promotion), "National Prevalence and Effects of Workplace Health Problems," March 2018, <https://pmc.ncbi.nlm.nih.gov/articles/PMC5865484/#:~:text=National%20Prevalence%20and%20Effects%20of,health%20problems%2C%20such%20as>
- 14 Joseph G. Allen et al., Preventing Chronic Disease (CDC / National Center for Chronic Disease Prevention and Health Promotion), "National Prevalence and Effects of Workplace Health Problems," March 2018, <https://pmc.ncbi.nlm.nih.gov/articles/PMC5865484/#:~:text=National%20Prevalence%20and%20Effects%20of,health%20problems%2C%20such%20as>
- 15 U.S. Environmental Protection Agency (EPA), "An Office Building Occupant's Guide to Indoor Air Quality," April 9, 2025, <https://www.epa.gov/indoor-air-quality-iaq/office-building-occupants-guide-indoor-air-quality#:~:text=An%20Office%20Building%20Occupant%27s%20Guide,lost%20productivity%20and%20medical%20care>
- 16 Asthma and Allergy Foundation of America (AAFA) Community, "National Healthy Schools Day Highlights the Need for Better School Environments for Children with Asthma," April 9, 2024, <https://community.aafa.org/blog/national-healthy-schools-day-highlights-the-need-for-better-school-environments-for-children-with-asthma>
- 17 Tennant Company Blog, "Breathe Easier: The Importance of Indoor Air Quality," January 16, 2019, https://www.tennantco.com/en_us/blog/breathe-easier.html
- 18 Three Sixty Safety, "Preventing Slips, Trips, and Falls with Good Housekeeping," April 21, 2025, <https://threesixtysafety.com/preventing-slips-trips-and-falls-with-good-housekeeping/>
- 19 National Safety Council (NSC), "Workers' Compensation Costs, Injury Facts," 2024, <https://injuryfacts.nsc.org/work/costs/workers-compensation-costs/#:~:text=According%20to%20NCCI%20data%2C%20the,46%2C902>