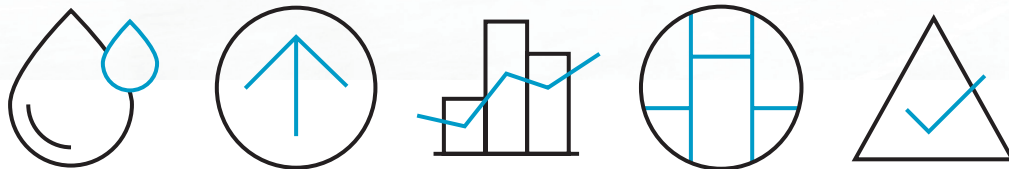




The dirt on floor care for large facilities



**A manager's guide to efficient,
cost-effective facility maintenance**



Table of Contents

EXECUTIVE SUMMARY

Keeping it clean	3
------------------------	---

CHAPTER 1

Where health, safety, and cleaning intersect	4
--	---

CHAPTER 2

Show them the money	8
---------------------------	---

CHAPTER 3

The importance of a site needs analysis	10
---	----

CHAPTER 4

Indoor and outdoor cleaning solutions	12
---	----

CHAPTER 5

Partnering for success	16
------------------------------	----

GETTING STARTED

Explore your options	18
----------------------------	----

Keeping it clean

Why facility maintenance matters

The health and safety of employees and guests, in addition to a productive, efficient and trained workforce are key priorities for managers of large facilities.



Health and safety

The cleanliness of your facility affects your employees' health and productivity—and your bottom line. Maintaining a clean, safe facility can increase productivity, not just by reducing time lost to sickness and injury, but also by improving workforce morale.

More than **6.8 million people** were treated in emergency rooms for fall-related injuries in 2020 and over **200,000** were injured badly enough to require days off of work, according to the National Safety Council.¹



Productivity and efficiency

Manual processes, poor machine performance and ongoing maintenance issues are productivity killers. You can avoid these hurdles and increase efficiency by using well-designed, top-performing machinery.

One of the easiest ways to keep your operations running smoothly is with user-friendly equipment. Intuitive machinery and smart design features help minimize the amount of training your staff has to undergo, effectively improving efficiency and productivity.



Evaluation and solutions

Whether you decide to buy, lease or rent, finding the right equipment for your needs allows your employees to be more efficient with their time and enjoy their work.

Creating a long-term strategy for maintenance will help you save time, manage your budget and avoid the frustrations that result from unexpected down time.

A safe workspace helps reduce employee absences and worker compensation claims, and may boost morale.

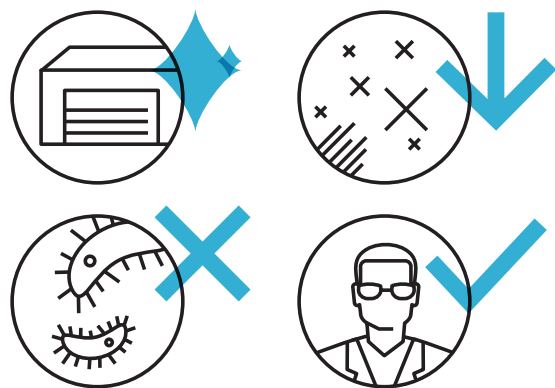
Where health, safety, and cleaning intersect

Good for people, productivity, and profits

Over the past several years, there's been a drastic shift in attitudes around cleaning. Where cleaning was once for appearance and aesthetics, the global pandemic made it clear that cleaning for health is just as important for the safety of employees and visitors. Facility managers take notice of infectious diseases and contaminants that **raise flags for health care professionals and public officials.**

BENEFITS OF CLEANING FOR HEALTH

Cleaning for health produces noticeably cleaner buildings that customers, employees and visitors typically equate with a well-managed business. But the real impact of cleaning for health comes from reducing dust, chemical residues and bacteria from the surfaces we encounter every day.





IMPROVING INDOOR AIR QUALITY

We spend as much as 90 percent of our time indoors, often in poor indoor air quality (IAQ) environments.

Over the past 30 years, manufacturers of carpeting, flooring, paints and building materials have reduced the gases their products emit into indoor environments. In addition, most buildings are now smoke-free, which has certainly improved IAQ. The JanSan industry has also played a vital role in further reducing IAQ problems by using cleaning products with fewer harsh chemicals.

According to OSHA, poor IAQ has been tied to symptoms like headaches, fatigue, trouble concentrating, and irritation of the eyes, nose, throat and lungs.³

The most common causes of IAQ problems in buildings are:

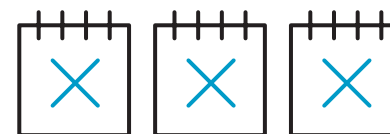
- Not enough ventilation, lack of fresh outdoor air or contaminated air being brought into the building
- Poor upkeep of ventilation, heating and air-conditioning systems
- Dampness and moisture damage due to leaks, flooding or high humidity
- Occupant activities, such as construction or remodeling
- Indoor and outdoor contaminated air³

Environmentally preferable products

We can expect more JanSan manufacturers to produce more sustainable cleaning chemicals in the future as a way to help minimize their environmental impact.

What to look for when selecting sustainable cleaning products:

- Engineered water products like hydrogen peroxide, ozone, and other on-site [generated solutions](#)
- Products with low or no odors or fragrances
- Water-based (not solvent-based) cleaning chemicals
- Telemetry on equipment, providing actionable data for improving energy efficiency
- [Autonomous floor care](#) or robots that maximize productivity, increase efficiency and optimize safety



The EPA estimates that poor indoor air quality (IAQ) affects 33% to 50% of commercial buildings in the USA and is responsible for over 125 million lost school days and 10 million lost workdays each year.²



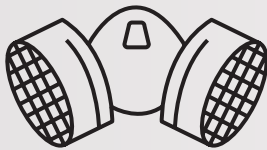
Reducing exposure to volatile organic compounds

Volatile Organic Compounds (VOCs), including fragrances often found in cleaning products, can contribute to poor indoor air quality and can irritate individuals with chemical sensitivities or asthma.

To limit VOC exposure in your facility:

- Check your daily use cleaning chemicals and choose products without added fragrances
- Avoid using air fresheners or other products that use artificial fragrances to mask unpleasant odors
- Minimize the use of solvent-based cleaners – save them for tasks where gentler cleaners aren't effective, and make sure any area they're used in is well ventilated

Using products with fewer harsh or volatile ingredients is definitely a step in the right direction, but ultimately, it's the cleaning process that has the biggest impact on the health of a building and its occupants.



OSHA RULE ON SILICA DUST

In 2018, OSHA outlined new rules on silica dust exposure in construction and other industries where employees may be exposed. This ruling helps prevent thousands of deaths from silicosis, lung cancer and other respiratory diseases.

[Learn more >](#)



CLEANING PROCESSES AND INDOOR AIR QUALITY

In addition to using safer products, thorough cleaning practices and modern equipment, facility managers should monitor indoor air quality on a regular basis by:

- Documenting all problems with indoor air quality
- Documenting and responding to all visitor and employee complaints and recommendations
- Checking air quality regularly and keeping records up-to-date
- Encouraging building owners, occupants and employees to participate in maintaining healthy indoor environments

IMPROVING FACILITY SAFETY

Toxins and airborne dust aren't the only health hazards facility managers face.

According to the Centers for Disease Control and Prevention, falls are among the leading causes of unintentional injuries in the United States, accounting for approximately **7 million emergency visits annually**.⁴

Tips to Reduce the Risk of Slip and Falls

- Make sure your crew doesn't leave any standing water behind when cleaning
- Use machines with powerful water recovery systems to reduce the chance of slip and falls
- Use chemical-free agents to avoid excess chemical buildup, which can make floors slippery



Use floor-cleaning equipment and products certified by the National Floor Safety Institute (NFSI) as “high-traction” to make floors safer for employees.





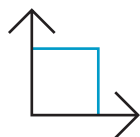
Show them the money

Managing cleaning costs of large spaces

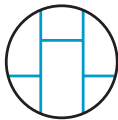
Managing costs is one of the biggest challenges facility managers face. Not only are you responsible for monitoring equipment and service costs, but you're also tasked with overseeing the cost of labor and training.

KNOW YOUR SPACE

Understanding the challenges and requirements of your facility is key to managing maintenance costs. Before you invest in new equipment and tools, you'll want to consider the:



Size and layout of your facility



Type of floor surfaces and coatings

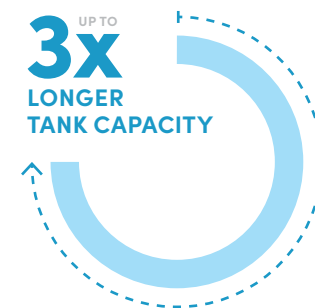
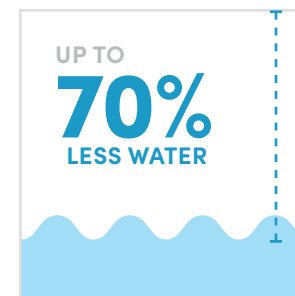


Type of debris, dust, dirt and soils you're dealing with

LIMIT WATER AND CHEMICAL USE

Reducing the amount of water and chemicals needed for cleaning can support your facility's sustainability initiatives, reduce operating costs and improve productivity. Technologies that electrically convert water, for example, can clean many soils without adding conventional daily-use cleaning chemicals.

Some of these systems, such as Tennant's [ec-H2O™ technology](#), use up to **70 percent less water** than conventional chemicals in floor cleaning equipment, which means that crews can work up to three times longer without having to stop to dump and refill the tank.⁵





WAYS TO LOWER LABOR COSTS

If you're looking for ways to trim labor costs, consider the following actions:

Invest in training

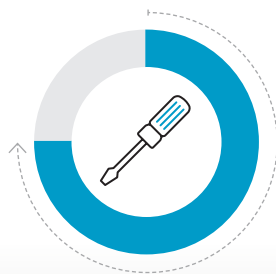
A well-trained workforce boosts productivity and efficiency. Establish a training plan for employees that includes both initial and ongoing training to make sure your crew stays current.

Consolidate products and streamline your fleet

Simplify training, improve worker efficiency and reduce labor costs by choosing machines and products from the same brand, so operators don't have to learn multiple different systems. Buying larger quantities from a single supplier can also help reduce cost.

Upgrade your equipment

Equipment that automatically mixes chemicals and water is more efficient and safer than mixing by hand. You can also improve worker efficiency with battery-powered machines that can operate for an entire shift on a single charge. Machines with a pre-set option allow crews to begin cleaning immediately and consistently across shifts. Finally, consider investing in equipment with built-in maintenance features so your team can spend less time making repairs.



Labor and labor related costs account for nearly 75% of the total budget for cleaning a facility.⁶

PROTECT YOUR CAPITAL INVESTMENT

Your equipment represents a significant investment for your company. These tips can help you extend the life and performance of your machines:

Practice proactive maintenance

Create a maintenance and [service schedule](#) so you can address issues as they occur, rather than deal with large, expensive repairs in the future.

Inspect equipment after each use

Inspect your equipment thoroughly after each use to look for leaks, wear and tear, or anything that could be a sign of trouble.

Make a service checklist

Develop a step-by-step service checklist that identifies routine service needs, creates operator accountability, and keeps machines in good working condition.

Maximize machine performance

Observe your operators in action to make sure they're handling machines properly. This will help keep your equipment from breaking down prematurely.

The importance of a site needs analysis

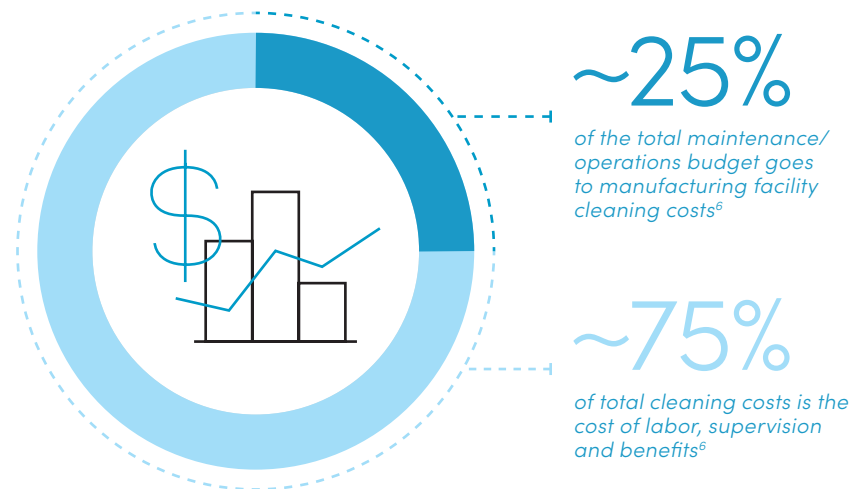
Putting the numbers to work

Once you understand the fundamentals and tools involved in conducting a site needs analysis, you'll be able to get more out of your workforce.

Facility managers need to be prepared to justify staffing needs. This includes having accurate answers to the following questions:

- How long does it take to complete a task?
- How does adjusting the frequency of the task affect cost and outcome?
- How would a change in square footage affect the budget?
- How would a change in wages affect the budget?
- What's the best practice for completing a task at the lowest possible cost, without affecting the outcome?

The process of workloading answers these questions by establishing a scope of work, staffing levels and what it costs to perform the work. Once you understand the fundamentals and tools involved in conducting a site needs analysis, also called "workloading," you'll be able to get more out of your workforce.





THE WORKLOADING PROCESS

Guessing how many hours or employees it takes to clean an area or building is neither reliable nor accurate. Even if your estimates appear correct, they can't be verified or defended. This four-step workloading process allows you to do both.

STEP 1

Take inventory of your space

- Determine the total amount of cleanable space in your facility using architectural drawings or a laser measuring device
- Categorize each area to determine the square footage of each cleanable surface (for example, 50,000 square feet of manufacturing space)
- Make note of cleanable objects—manufacturing stations, storage areas, trash barrels, or restroom fixtures—in each space

STEP 2

Create a scope of work

- Define the tasks needed in each area type
- Calculate the number of times each task needs to be performed per year

STEP 3

Calculate labor hours

- Determine how many hours of labor it takes to clean each area by conducting your own time-motion studies or consulting associations, such as ISSA's 612 Cleaning Times (see example)

STEP 4

Determine labor costs

- Multiply the total annual hours by the wage rate
- Consider including a percentage for taxes, insurance and benefits
- Final cost includes equipment depreciation; miscellaneous expenses like background checks, drug testing, mobile phones and uniforms; plus overhead and administrative costs
- Determine where you're over- or understaffed and reallocate workers to improve outcomes and reduce total labor hours

STREAMLINE THE PROCESS

We recommend using a software tool that calculates everything automatically, while taking into account high-traffic areas and the types of equipment you use. Many of these platforms also track supplies and equipment, capture employee training time, work history and can even schedule cleaning tasks.

Workloading is verified by the Cleaning Industry Management Standard (CIMS-GB) as a mandatory element for quality-focused cleaning organizations. The documentation workloading provides is essential for budgeting, quality assurance and cleanliness outcomes.

CALCULATING LABOR HOURS



100,000 SQ. FT.

DIVIDED BY

25,000 SQ. FT.

PRODUCTION RATE
PER HOUR

= 4 HOURS

TASK TIME



MULTIPLIED BY



HOW OFTEN YOU CLEAN PER YEAR

260 TIMES

=
1,040 HOURS
PER YEAR

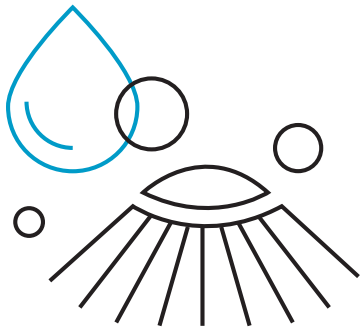
Repeat this process for each task and each area of the building.



Indoor and outdoor cleaning solutions

How to maintain consistent cleanliness inside and out

A first impression means everything. When it's time to clean your facility both indoors and out, you can't afford to rely on labor-intensive processes, outdated machinery, or an unreliable service provider. You need equipment that's designed to deliver the results you expect for your unique environment.





CHOOSE THE RIGHT CLEANING EQUIPMENT FOR YOUR ENVIRONMENT

Efficient, high-quality floor maintenance is about finding the right equipment for your needs.

Floor type

Understanding how cleaning equipment responds to different flooring types inside and outside your facility is an important first step. Dust and grit can act as an abrasive on both hard and soft surfaces. Regular cleaning and maintenance can extend the life and look of your floors, so you can avoid spending your repair budget on unnecessary flooring replacement costs.

Square footage

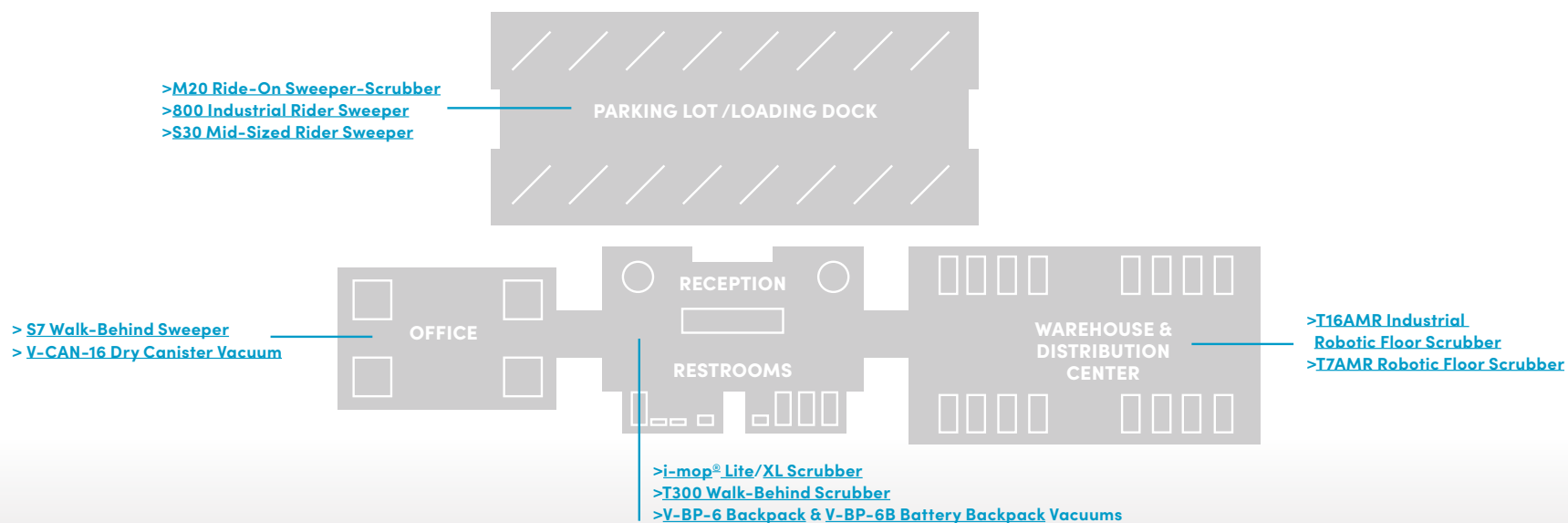
Productivity levels can help you identify whether you're using the right size equipment for your facility. Open, expansive spaces typically need larger machines, while aisles and small spaces require a different set of tools, like compact cleaning machines with a tight turning radius.

Floor coatings

Seal coated surfaces to keep stains from spilled liquids and ingrained dirt particles at bay, and make cleaning easier whether you're using a manual brush or cleaning machine.

Soil type

The soil present in your facility will determine what type of equipment you should consider. For smooth surfaces that have minimal dust or debris, scrubbing applications will be appropriate. For harsher environments or outdoor facilities where the level of clean is less crucial, dry sweeping with a multi-stage filtration process is ideal. If you need to sweep before scrubbing, consider an integrated machine that does both. If dust is an issue, a dust filtration system can eliminate additional passes.





Considerations when selecting equipment

CLEANING FUNCTION

Sweeper considerations

Walk-behind or ride-on sweepers are highly versatile and can clean small or large spaces quickly. You can find a sweeper for extremely fine dust, or for larger debris found in outdoor applications.

Sweeping is typically a dry-only application. Without the use of a cleaning solution, the floor will not reach a very high level of clean.

Scrubber considerations

Scrubbers are able to effectively pick up spilled or standing liquids and generate a high level of clean. Scrubbers range from small handheld models that can fit in tight spaces, to large ride-on scrubbers that maximize productivity.

Scrubbers have a difficult time picking up large debris. Failure to remove larger debris before scrubbing, or scrubbing at a very fast pace, can result in streaks left from the squeegee.

Sweeper-scrubber considerations

Incorporate the best of sweepers and scrubbers into one multi-function machine. Sweeper-scrubbers can sweep floors in one pass and scrub in the next, like a Swiss Army® knife for floor cleaning.

Sweeper-scrubbers often will not fit in tight or small spaces due to the larger size needed to house both scrubbing and sweeping technologies.

BATTERY TYPES

These environmentally friendly machines have a quiet motor, which makes them ideal for high-traffic areas. Recharging costs less than fuel.

They require a charging station and are vulnerable to power outages, which means they're not ideal for extreme temperature changes and are more difficult to maintain without a service contract.

- **Lithium-ion batteries:** Worry-free operation with fast charging and longer runtimes
- **AGM batteries:** Eliminate battery watering and get optimal battery life for short cleaning applications
- **Flooded lead acid (FLA) batteries:** deliver consistent and reliable power with regular battery watering

MINIMIZE POLLUTANTS IN STORMWATER RUNOFF

Dust and pollutants from industrial applications can end up in storm water, which can negatively impact bodies of water in your area and beyond. Look for versatile, well-designed sweepers with extendable side brushes that can reach under benches and planters, and on-board pressure washers that can perform off-machine cleaning in hard-to-reach spaces.





CLEANING PRODUCTS

Chemical considerations

Heavy soils or stains might require chemicals and detergents. In some industries, like food processing, sanitation processes are required.

Chemicals and detergents can add to the ongoing cost of your floor care program. Additionally, there are known health and safety hazards associated with handling these solutions. The industry is mostly trending toward sustainability and conservation with water-conserving equipment.

Environmentally friendly product considerations

Saves costs by reducing or eliminating the need to purchase detergents and other consumable items. New eco-friendly technologies are not available on aging equipment or on certain models.



Efficient, high-quality floor maintenance is about finding the right equipment for your needs.



Partnering for success

Keep your machines running smoothly

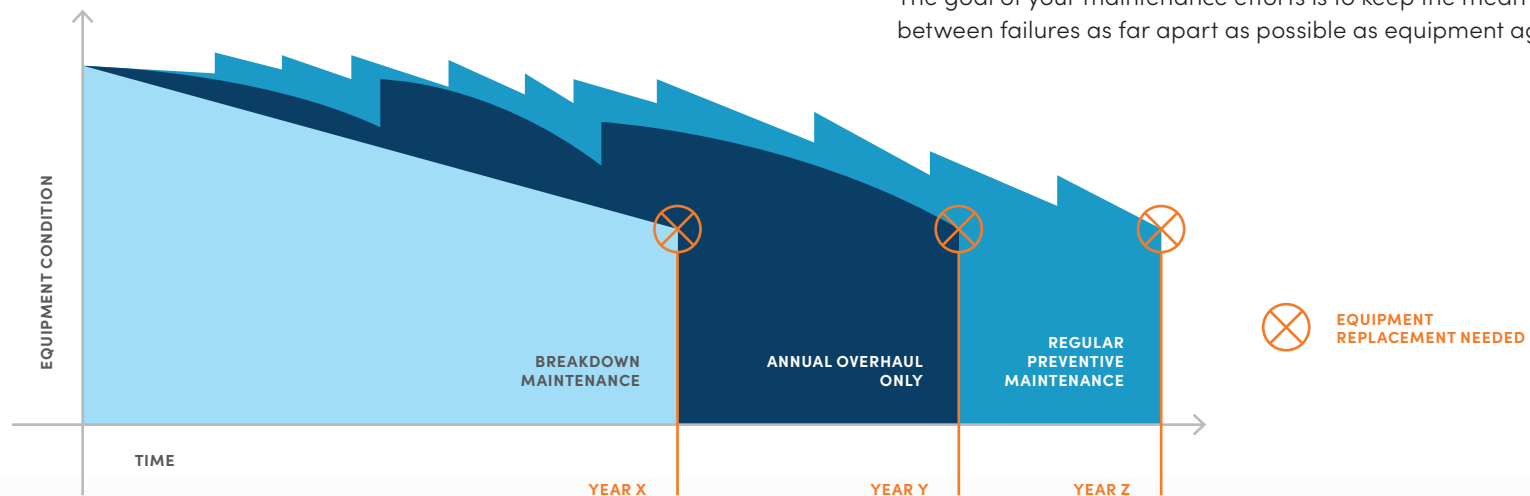
Regular maintenance helps your equipment perform more effectively, breakdown less, and last longer before needing to be replaced.

Maintaining your organization's physical assets is essential for running your enterprise efficiently. You want the equipment you invest in to work consistently with minimal down time, operate with minimal energy use, and work for as long as possible to maximize return on investment.

Ensuring your machines get regular preventative maintenance helps achieve this goal. You can track the value of your preventative maintenance program by asking these key performance questions:

How reliable is my equipment?

You can put numbers to how reliable your machines are by measuring the amount of useful time that a machine runs between breakdowns. This is called the "mean time between failures (MTBF)." The goal of your maintenance efforts is to keep the mean time between failures as far apart as possible as equipment ages.





MEAN TIME BETWEEN FAILURES (MTBF)=

Total uptime hours of machine

DIVIDED BY

Number of breakdowns

WHY ARE MACHINES BECOMING UNRELIABLE?

If the mean time between failures is shrinking, then the next step is to identify what is causing the issue – the original quality of the machine, the severity of day-to-day operations, the quality of replacement pieces, or the maintenance workmanship and routine.

HOW ARE MAINTENANCE DOLLARS BEING SPENT?

If you're spending substantially more on reactive maintenance (e.g. service calls for unexpected breakdowns) than you are for planned maintenance, you have room for improvement. Preventative maintenance is almost always less costly than reactive service when a machine is out of service unexpectedly.

ARE MAINTENANCE COSTS SKEWED FOR CERTAIN MACHINES?

How much are you spending on maintenance per machine? Is your spending in line with your budget? Tracking these expenses helps determine whether you can save money by investing in preventative maintenance or in new equipment.

KEEPING TRACK OF MTBF

If you track stats on anything, from sports teams to the stock market, you know that averages give a better indication of overall performance trends than single points of data. MTBF shows your machines' performance trends. To calculate MTBF for a machine:

- Track the machine's total uptime hours, or use the hour meter reading from the machine
- Track the number of breakdowns the machine has experienced
- Divide the total number of uptime hours by the number of breakdowns—that's the MTBF

Use that information with the rest of the key performance questions here to make proactive decisions about what kind of service to invest in or when to think about retiring a piece of equipment.

BREAKDOWN	UPTIME HOUR METER READING
1	200
2	750
3	1,100
4	1,500

**1,500 HOURS
OF TOTAL UPTIME**

DIVIDED BY

**4 INCIDENTS
OF DOWNTIME**

**= 375 HOURS
MTBF**

How does this compare to MTBF from the 2nd or 3rd breakdown or against other types of equipment you maintain?

If the mean time between failures continues to get shorter, it's time to consider different service options or invest in a new machine.



Explore your options

A plan that works for you

The last thing you need is for your cleaning staff to be sidelined by unreliable, inefficient cleaning equipment. Choosing high-quality Tennant equipment for your plant, warehouse or distribution center can help achieve maximum uptime, in addition to a clean, safe working environment and control cleaning costs.

OWN

Discover long-lasting value and the highest quality by buying a new Tennant machine.

BUY PRE-OWNED

You don't have to sacrifice performance for price. Each pre-owned Tennant machine is inspected and tested by factory-trained technicians.

LEASE

A Tennant sales representative can help you decide if leasing or financing is a good fit for you.

RENT

Whether you need machines for a short period of time or want to supplement your current fleet, consider renting Tennant equipment.

- Post-event cleanup
- Seasonal cleaning
- Time-sensitive need

EXPANSIVE SALES NETWORK

No matter where you are in the U.S. or Canada, we have a local sales representative available to come to you. [Get a quote](#) or [request a demo](#) of one of our machines today—no strings attached.

Safe, healthy, & clean

Keep your facility safe, healthy, and looking clean for years to come with Tennant.

[Contact a representative](#)



Tennant machines can now be found in 20+ countries worldwide

¹ National Safety Council (NSC), "Make Fall Safety a Priority," <https://www.nsc.org/workplace/safety-topics/slips-trips-and-falls/slips-trips-and-falls-home>

² Renesas, "Overview of TVOC and Indoor Air Quality," Dr. Christian Meyer, May 10, 2021, <https://www.renesas.com/us/en/document/whp/overview-tvoc-and-indoor-air-quality>

³ OSHA, "Indoor Air Quality," <https://www.osha.gov/indoor-air-quality>

⁴ Centers for Disease Control (CDC), "Leading Causes of Non-fatal Injury- 10 Leading Causes of Nonfatal Emergency Department Visits, United States," 2020, <https://wisqars.cdc.gov/lcnf/>

⁵ Tennant Company, "ec-H2O technology," https://www.tennantco.com/en_us/machines/technologies-and-innovations/ec-h2o-technology.html

⁶ Populist Cleaning Co., "The Cost of Clean," <https://populistcleaning.com/understanding-the-cost-of-clean-how-to-calculate-janitorial-math/>