CLEAROPS
EMPOWERING SUPPLY CHAIN EXCELLENCE

Machine Downtime:

The Ultimate Guide for OEMs

Machine downtime is a dirty word when it comes to heavy machinery—and it's no surprise when research found it cost Fortune Global 500 companies $1.5 trillion in 2022.

Worse yet, the same research found that, in every sector surveyed, an hour's unplanned downtime now costs the manufacturer at least **50% more than it did two years ago**. This is bad news for OEMs.

$1.5 trillion in damages

due to Machine downtime in 2022

But, what exactly is machine downtime? What is the true cost for businesses? Most importantly, how can you go about reducing it?

We're covering this and more in this guide—starting with the basics.

Shall we?

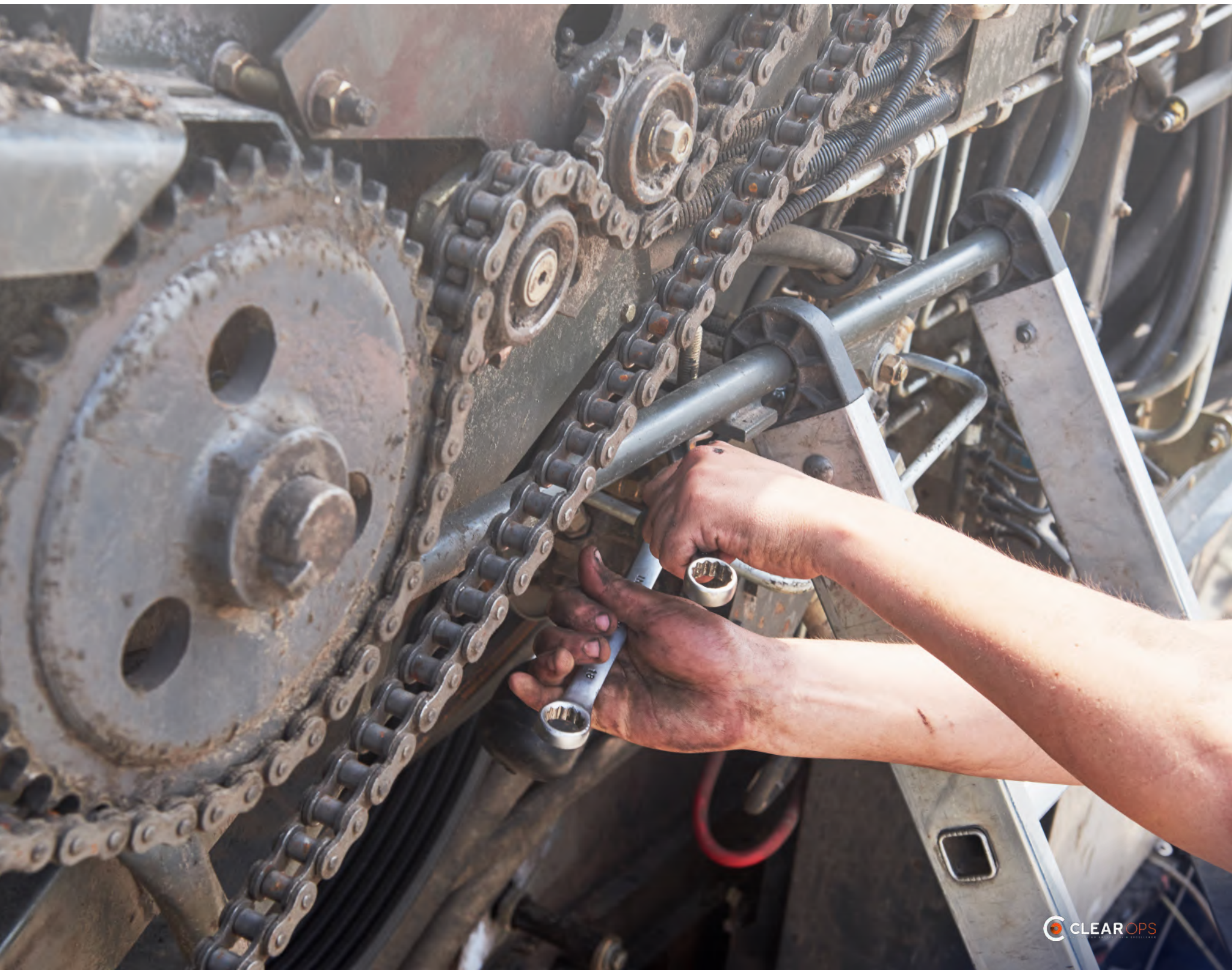
What is machine downtime?

Machine downtime refers to the time period in which the manufacturing process is stopped due to a machine or process being unable to function at its intended capacity.

Machine downtime is typically associated with machine breakdown, but breakdown isn't the only cause of downtime. There can be a number of reasons for machine downtime—planned and unplanned—such as scheduled maintenance, operator error, tool failure, and more.

Put simply, machine downtime is the time wasted waiting for equipment to be fixed. It leads to increased costs, can threaten the successful delivery of finished goods, and is often the root cause of problems further along the up- and downstream supply chain.

There are two types of machine breakdown that affect OEMs—planned and unplanned. No prizes for guessing which causes businesses more hassle.



What is planned downtime?

Planned downtime refers to the scheduled period of time in which equipment is intentionally limited or taken offline for maintenance, repairs, upgrades, testing, or other planned activities. Planned downtime is essential for ensuring the efficient and safe operation of machines.

Planned downtime is expected—meaning OEMs and dealers aren't left scrambling to attend to unanticipated issues. OEMs—and all the players in the downstream supply chain—prepare for planned downtime in advance by ensuring they've got the parts, technicians, and know-how to perform the required maintenance.

For example, let's say you know the oil and filter in your tractor need to be changed every 500 hours. You can plan for this downtime by setting up an alert for once the machine has run for 500 hours, and by ensuring you've got the correct oil on hand.

However, even though they often know that there is a service upcoming, they lack a proper way to alert their dealers, make sure they have the required parts available, and ultimately check whether or not the service has been conducted. Despite being foreseeable, planned downtime can still cause OEMs and their service partners issues if they lack connectivity between one another.

Every 500 hours

Proactive alert for planned downtime

What is unplanned downtime?

Unplanned downtime refers to the time period in which unexpected disruption or failure of a machine or component causes business as usual to come to a halt. Unplanned downtime throws off schedules and causes costly delays for equipment users.

For example, let's say your excavator breaks down—one minute it's working, the next it's screeched to a halt. The clock starts ticking as you're scratching your head trying to figure out why, and your main focus is identifying and solving the problem. This is unplanned downtime.

OEMs, dealers, and end-users can't prepare for unplanned downtime as efficiently as they could planned downtime, meaning they're often left scrambling for a solution in order to get equipment back up and running. Well, they are if they haven't got an adequate downstream supply chain management solution—more on that shortly.

For now, let's take a closer look at the true cost of machine downtime—both planned and unplanned.

What is the true cost of machine downtime?

The true cost of machine downtime includes tangible and intangible costs. Tangible costs are those that have a quantifiable value, like labor costs, whereas intangible costs are those that can't be quantified, like reputation damage.

Here are some examples of tangible and intangible costs associated with machine downtime.

Most instances of machine downtime cause both tangible and intangible costs to those affected, with the severity of these costs being determined by the specifics of the machine downtime incident. Planned downtime—time that is scheduled by operators—costs significantly less than unplanned downtime—which is difficult to predict and plan for.

Tangible costs	Intangible costs
Associated labor costs	Reputation damage
Lost production output	Reduced brand loyalty
Late delivery charges for delays	Responsiveness issues
Wasted materials and scrappage costs	Reduced customer service
Repair or replacement equipment costs	Increased stress on machines and employees

The costs of unplanned downtime are hitting industries hard. A study by Caterpillar® shows that construction equipment breakdown can cause up to 800 nonproductive hours every year per machine. The annual **cost of this idle time equates to $3120 on average per machine**. While this number doesn't seem enormous, the cost quickly adds up with a larger machine park and drastically cuts profits.

It's clear to see why businesses are keen to reduce unplanned machine downtime, with the costs of failing to do so only climbing. With the average manufacturing facility suffering **20 downtime incidents a month**, the tangible and intangible costs quickly add up—negatively impacting an OEMs profits, production, service, and reputation.

However, this rise in total costs could've been a whole lot worse. The increased use of Industry 4.0 technologies—like ClearOps—has helped minimize the number and impact of machine downtime incidents.

Before we take a look at how to reduce machine downtime, let's look at why it's increasingly important to do so.

Why is reducing machine downtime important?

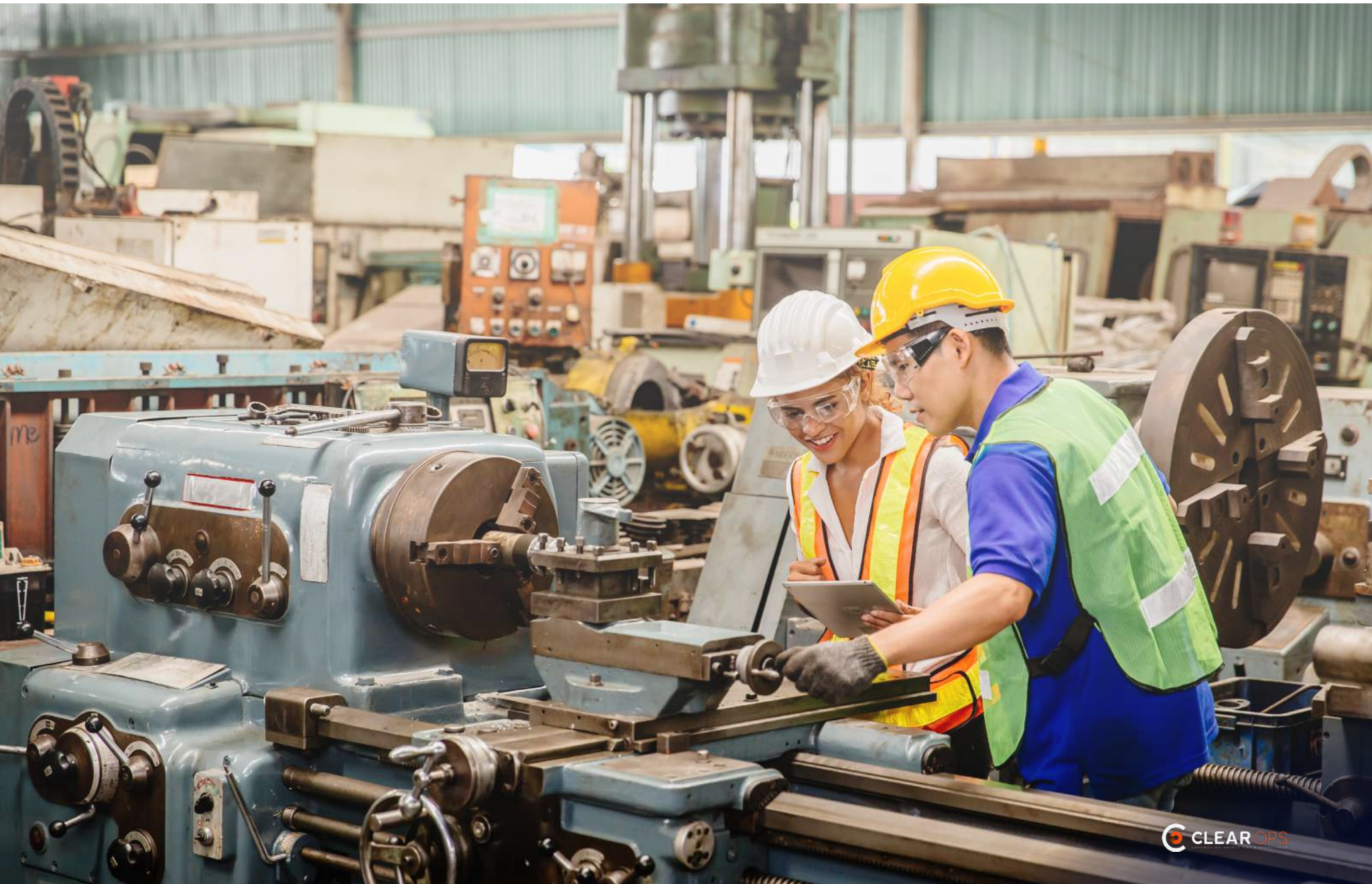
Machine downtime affects OEMs throughout the entirety of their equipment's lifetime. OEMs have a responsibility to limit the impact of machine downtime on end users—and the dealerships that serve as their first point of contact when things go wrong.

Building and maintaining strong relationships with dealers and customers is key for increasing customer loyalty, maximizing aftersales revenue, and establishing your brand as a trustworthy equipment manufacturer. Ensuring you've got the parts, technicians, and know-how on hand to reduce machine downtime is essential for successful business.

Having a complete overview of the entire downstream supply chain—not just the manufacturing plant—is a priority for OEMs. The goal is not just to reduce in-factory machine downtime, but also the downtime of equipment that the manufacturer produces and sells.

It's not just about reducing machine downtime during the manufacturing process, it's about reducing machine downtime in the entire downstream supply chain.

But, how?



How to reduce unplanned machine downtime

Ever heard the phrase there's more than one way to cook an egg? The same applies to reducing machine downtime—there are a number of ways you can go about cutting down the time that equipment sits idle.

Track downtime

The first step OEMs should take when attempting to reduce machine downtime is to track it. Starting by tracking machine downtime gives you a baseline to compare improvements to. Renowned consultant and educator, Peter Drucker, hit the nail on the head when he stated 'if you can't measure it, you can't manage it'.

Consider collecting the following data for a complete view of the machine downtime variables:

- Downtime duration
- Cause of downtime
- Shift on hand during downtime
- Operator comments relating to the incident
- Other attributes such as impact of downtime, waste collected over the duration, safety concerns, and more.

This data can be collected manually from customers, of course, but you'll save a lot more time by collecting it automatically with downtime tracking software.

Perform DMAIC analysis

DMAIC is a data-driven quality strategy used to improve processes. It stands for:

- **Define** the problem, improvement activities, project goals, and requirements.
- **Measure** the current process performance.
- **Analyze** the process to determine the root causes of issues.
- **Improve** the process by addressing the issues you've identified.
- **Control** the process moving forward by continuing to assess the situation.

It's a structured method for problem solving—one that helps teams identify process and equipment issues before they cause machine breakdown.

Have a risk audit done

Risk auditing and inspection is a great way to identify and prevent possible unplanned machine downtime incidents. These audits help spot issues with machinery and processes before they result in machine downtime.

Risk audits can help turn unplanned downtime into planned downtime by enabling OEMs, dealers, and end-customers to identify problems before they worsen. The results of these audits enable manufacturers to organize spare parts, technicians, and more in order to limit downtime.

Create a preventative maintenance schedule

The best defense is a good offense. In our case, the best machine downtime defense is good preventative maintenance. Doesn't quite roll off the

tongue in the same way, but it definitely rings true.

Preventative maintenance is a typical cause of planned downtime, but it can also go a long way towards preventing machine downtime of all types. Not all maintenance requires machine downtime; it can often take place whilst the equipment and process continues to function as usual—avoiding all downtime by actioning preventative maintenance. Good maintenance can elongate equipment lifetime, saving costs in the long-run.

Creating and maintaining a preventative maintenance schedule can also provide key performance data to help improve the maintenance process moving forward.

ClearOps enables OEMs to take this one step further by providing service partners óf all kinds with a centralized platform for machines, parts and especially services. Both OEMs and their service partners carry highly valuable data that must be shared with one another. Whilst OEMs sit on bill of materials, IoT data, documentation and machine service profiles the service partners sit on the actual service history of the machine and the exact parts that have been used to repair it.

This merged foundation of data enables OEMs and their service network to learn from each other, and access information on all machines and their needs. It allows one centralized view on past and future service and parts needs of machines - and is highly valuable to assess the most optimized preventative maintenance schedules to avoid downtimes once and for all. Don’t forget, the flow of goods depends on the flow of data. Hence, the more network data you can get, the better.

Train maintenance staff to diagnose and repair equipment failures

Well-trained and highly-qualified staff are another key contributor to reducing both planned and unplanned downtime. Without the right technicians, machines are sat idle waiting for key maintenance and service.

Providing maintenance staff with the knowledge, documentation, and resources necessary to quickly attend to machine downtime incidents helps reduce the amount of time that these machines are out of action. Here, sharing of the bill of materials, diagnostic trouble codes or even a virtual search engine for parts to speed up the technician search process can help. Again, equipping the technician with the right tools begins with connecting OEMs and their service partners on one central platform to combine all global information in order to speed up repair and realize maximum efficiency in the repair process.

Use a software solution to connect the downstream supply chain

Finally, OEMs can reduce machine downtime and its impacts with purpose-built software solutions. These solutions have been key to minimizing the losses incurred due to machine downtime over past years, and are continuing to revolutionize the equipment manufacturing industry.

By providing greater connectivity and visibility over the entire downstream supply chain, OEMs and dealers have the data necessary to help them predict and prevent machine downtime. A supply chain starts and ends with the end-customer. It starts with their demand, and ends with their demand fulfillment. This then repeats over and over again. Breaking down silos between OEMs, their dealers, distributors and service partners is a core element of every successful supply chain and happy end-customers.

How the ClearOps preventive maintenance solution helped Terex

Supply chain software offers a wide variety of solutions and functionalities to OEMs, many of which help action the machine downtime reduction methods discussed above. These software primarily do this by providing increased connectivity, visibility, and control over the manufacturing, distribution, and end-user service process.

One company that has experienced this first hand is **Terex**. Terex, a global manufacturer of lifting and material processing products and services, was **facing issues caused by manual and non-digitized processes**. The lack of connectivity in the downstream supply chain was leading to long repair times for machines and less available time to perform customer facing activities.

Terex worked with ClearOps to identify and solve its problems by implementing a number of solutions. These solutions include:

Implementing these solutions helped Terex connect with dealerships and end-customers to provide the visibility necessary to prevent and solve machine downtime efficiently.

- A global web-based Service and Spare Parts planning solution connecting Terex and their dealers
- Full Integration of that platform into Terex and Dealer ERP systems
- Real-time telemetry data to identify service opportunities and alert service partners
- Ensuring parts availability by incorporating all part demand streams involving planned services into the parts planning process and establishing direct order interfaces from service partner to Terex, without any manual work or system breaks in-between
- Global Machine Population Tracking including a virtual service history to enrich advanced service analytics

Final thoughts on machine downtime

Machine downtime is inevitable—there are no two ways about it. The solution for OEMs and their service partners is to take the action necessary to predict and prevent machine downtime as best as possible, ideally before something breaks down. Completely eliminating machine downtime is currently impossible, but that doesn't mean effective steps to reduce it can't be taken.

If you're an OEM or dealer looking to cut down machine downtime across the downstream supply chain, **get in touch today** to find out how ClearOps solutions can help. Proactive innovation when it comes to processes is essential for continued success—find out how you can digitize your processes today.