

The Ultimate Guide to Maintenance Management Efficiency

50 ways of improving
efficiency on your facilities



INFRASPEAK

What is maintenance management efficiency?

Like the song goes, “the times, they are a-changin’”. Maintenance used to be a nuisance with high labour costs. But then came the 1990s, and it suddenly became a technical matter that made companies more competitive. Now, in the wake of the 4th Industrial Revolution, it’s not only a technical issue – it’s a strategic one as well.

Strategic maintenance, by definition, must be aligned with the company’s vision. It shifts according to the main objectives, focuses on the condition of buildings, and makes the best use of the available resources to deliver a satisfying customer experience. This means maintenance is no longer an isolated department running its own show.

This added weight on maintenance management turns efficiency into the operative word. And what does that imply? Efficiency is defined as “the amount of effort necessary to deliver what’s required”. Maintenance efficiency, then, is the ability to make the least amount of effort for maximum impact on the company’s broader objectives.

Every manager has probably heard that they can fight this fire with intelligence, integrations, and team management. But that still sounds like a lot to take in, so we decided to break it down into three fronts – **operational efficiency, asset efficiency, and energy efficiency** – and compile 50 actionable ways to drive efficiency.





Operational Efficiency

Despite all the progress from the 1990s onwards, maintenance is still too reactive. According to McKinsey's "Planning to fix: improving maintenance efficiency", maintenance is often overlooked in favour of production. This compromises preventive maintenance plans, which are then executed and scheduled haphazardly. Moving on from a reactive strategy not only requires more planning but also demands cultural change.

There are three pieces to this puzzle. The first is planning and scheduling preventive maintenance. The remaining two pieces, stock and people, fulfil the plan. Stocking materials and parts within a 'just-in-time' system avoids lengthy repairs. And team management, especially when you deal with several field teams, is the foundation for the whole operation.



Effective preventive maintenance

1 COMPARE PREVENTIVE MAINTENANCE HOURS TO EVERYTHING ELSE.

Preventive maintenance (or predictive maintenance, if the right technology is available) should take most of your time. Reactive maintenance shouldn't amount to more than 10% of your maintenance hours.

2 KEEP YOUR PREVENTIVE MAINTENANCE PLAN COMPLIANCE AT 90%.

If your compliance drops from 90%, you'll have a lot of catching up to do. To avoid an enormous backlog, match your planned tasks to your technicians' skill sets and optimise your inventory (more on that in a minute) to make sure things run on time.

3 PLAN BASED ON A CRITICALITY MATRIX.

Managers have to overcome time, human resources and budget constraints day in and day out, which makes "prioritise, prioritise, and prioritise" a befitting motto. Use a criticality matrix and leverage the company's objectives to decide which assets you should focus on.

4 FOCUS ON SPECIFIC FAILURE MODES.

After you've set your mind on a handful of assets per building or client, focus on specific failure modes. This tactic improves the early detection of common failures, and repairs can be made before they affect the operation.

5 SET UP CONDITION-MONITORING PLAN BASED ON A CRITICALITY MATRIX. .

Preventive maintenance is a step up from reactive maintenance, but it's not the magnum opus of efficiency. According to Reliable Plant, **around 30% of preventive maintenance is unnecessary (over-maintenance), and should be avoided with condition monitoring.**

6 PICK THE RIGHT METRICS FOR PREDICTIVE MAINTENANCE (PDM).

If you're deploying condition monitoring techniques or PdM, don't get lost in the data. Based on company goals, choose the best candidates for PdM, keep it simple with a few meaningful metrics, and develop algorithms to predict failures.

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7 IMPLEMENT TOTAL PRODUCTIVE MAINTENANCE (TPM).

TPM enlists every worker to maintain their own equipment, emphasising proactive and preventive maintenance. The ultimate goal with TPM is reaching 100% reliability – zero breakdowns, zero downtime, and zero defects.



Centralise all your work orders on a single platform to enable real-time tracking, schedule and assign pending tasks to technicians. This will generate detailed maintenance logs that you can use to reap insights and improve plans in the future.



Managing inventory

8 IMPLEMENT A TAGGING SYSTEM.

Asset tagging identifies assets throughout their life. Or at least that used to be the main purpose. With new NFC tags (or even QR Codes), you can use tags to update maintenance logs easily and keep track of work orders and inventory in real-time.

9 KEEP DOCUMENTS ACCURATE.

Whether you use NFC tags or not, keep your work orders and documents accurate. Register parts usage on your software and deduct quantities from your stock lists automatically. Find out exactly how, when and where you're using your stock.

10 ANTICIPATE INVENTORY NEEDS.

Waiting for parts is a waste of time, which means it's inefficient. To avoid this particular issue, use your maintenance logs to estimate demands and anticipate inventory needs. Set a minimum stock quantity alert and plan your orders.

11 BUILD DETAILED BILLS OF MATERIALS (BOMs).

Prepare detailed BOMs and record them on your software. You'll find out what you need to keep in stock and what is compatible with what, which improves inventory. Plus, having BOMs ready to go makes all the difference when an emergency happens.

12 MAXIMISE VERTICAL SPACE.

An oldie but a goodie. Inventory takes up a lot of space, so maximise vertical storage (add more levels or taller racks). Try to keep inventory as close to assets as possible to decrease unnecessary motion.



Infraspeak was the world's first NFC-powered maintenance management platform. You can keep track of your stock and plan orders using the Stock Management app.



Team Management

13 AUTOMATE WORKFLOWS.

Facility managers run a tight ship, which is why you can't pass on any opportunity to make things more efficient. **An Intelligent Maintenance Management Platform (IMMP) will apply machine learning and AI to automate workflows, create and assign work orders with minimal effort and no paper.**

14 AVOID STRESS AND BURNOUT.

Maintenance workers are often under a lot of pressure, and dealing with tons of emergency maintenance certainly doesn't help. Careful planning decreases stressful situations, optimises shifts, and promotes a better work/life balance.

15 IMPROVE COMMUNICATION.

Managing human resources is all about communication. Try this: (1) explain your goals clearly, (2) increase transparency, (3) learn how to give feedback – even when it's negative – and how to receive feedback. Communication is a two-way street.

16 CREATE A REWARD SYSTEM.

The lack of feedback can be discouraging. Instead, create a reward system to motivate teams and congratulate them when their performance hits benchmarks. Plus, remember team bonuses stimulate team spirit, something individual feedback won't do.

17 SEEK USER-FRIENDLY TOOLS.

If your field team is disconnected from the back office, that should give you pause. How can you manage teams without real-time updates? Swap outdated software for cloud-based, mobile tools that your technicians can use anywhere.



Asset Efficiency

When a company entrusts you their assets, they're handing over some of their most precious resources. After all, there isn't a single company in the whole world who can deliver a good customer experience if their equipment keeps failing. But, like people, assets aren't all the same; they have different needs, and need to be listened to. So the question is, how do you step up to the task and become an "asset whisperer"?

Asset efficiency is the ability to use assets to generate revenue and perform tasks. It stems from three dimensions: availability, output, and performance. Availability means maximum uptime, even when preventive maintenance fails and breakdowns happen. Then come compliance and KPIs, which give you an idea of how often you're meeting standards and expectations.



Failure Resolutions

18 ENCOURAGE AUTONOMY AND PROACTIVITY.

To implement TPM, encourage autonomy and proactivity. Even when it comes to small things! Technology helps with this as well, since technicians can make requests and avoid excessive bureaucracy to solve simple issues.

19 DON'T OVERLOOK INSPECTIONS.

Look, listen, feel and smell your equipment – you'll find it is more expressive than you'd think. Overloaded motors, contaminated lubricants and excessive condensate, for example, give a lot of signs before they cause a breakdown.

20 STREAMLINE FAILURE REPORTING.

Your clients will notice failures when your technicians are not close by. Allow them to report failures directly onto the software to remove process bottlenecks and trigger a work order. Couple this with workflow automation, and your team will be as fast as lightning.

21 DON'T STOP AT FAILURE RESOLUTION.

Once you've put out the fire, apply root-cause analysis techniques (e.g. 5 Whys, Fault-Tree Analysis, Failure Modes and Effects Analysis) to understand what triggered the failure. This allows you to address the real cause and prevent it from happening again.

22 UNDERSTAND ASSET LIFE CYCLES.

Failures are more common when assets are either brand new or very old. In the latter case, you need to decide whether the repair is worth it. If you can forecast the useful life of each asset, and predict how it'll behave throughout its lifecycle with AI, you'll make wiser decisions.



Infraspeak Direct™ allows staff and clients to report failures and kickstart a work order right away. Our Infraspeak Gear™ will assign it automatically.



Compliance

23 IMPLEMENT GUIDELINES AND STANDARD PROCEDURES.

Implement guidelines for preventive maintenance and standard procedures for reactive maintenance. Work orders should be comprehensive, organised, and propose realistic timeframes. Use visual guides to avoid accidents and improve safety compliance.

24 USE CHECKLISTS TO PERFORM COMPLIANCE AUDITS.

Audit checklists evaluate your compliance with requirements. Use ISO 9001 audit checklists to ensure you are meeting quality standards, for example. Checklists are also helpful to prepare the organisation for new certifications, such as ISO 50001.

25 ESTABLISH SLAS WITH CLIENTS.

Businesses that outsource maintenance management expect efficiency. Use an SLA to align goals, establish what to measure, and outline the terms of service. Then, export data from your software and generate periodic reports that show compliance with the SLA.



Don't keep it all in your head! Set SLAs on your maintenance platform, receive timely notifications, and never miss a deadline again.





KPIs

26 SET THE RIGHT KPIs.

Peter Drucker famously said, “you can’t manage what you can’t measure”. But, if you measure too many things, it’s likely to be just as unmanageable. Pick only the right KPIs for each client and track them over time.

27 SCHEDULE COMPLIANCE.

We’ve already mentioned establishing SLAs with clients. Schedule compliance shows managers can get the work done on time, and it is one of the most relevant customer service KPIs you should share with your clients.

28 BACKLOG.

Another KPI that managers will want to know is the backlog. Convert each task on the backlog into hours and then the total into weeks. A healthy maintenance backlog is two to four weeks.

29 MEAN TIME BETWEEN FAILURES (MTBF).

MTBF is one of the KPIs you can employ to judge the quality of the repair. On the other hand, if your repairs are top-notch and assets keep failing, it’s time to cross-reference with other indicators and decide whether to repair or replace.

30 MEAN TIME TO REPAIR (MTTR).

Another classic KPI to measure the quality of your services. A short time to repair means that you're reacting quickly, have the right procedures in place and are keeping equipment available. If MTTR does not improve over time, review your failure resolution protocol.

31 OVERALL EQUIPMENT EFFECTIVENESS (OEE).

OEE represents the amount of time that a production line is truly productive. A score of 100% would mean 100% availability, 100% performance, and 100% quality. An OEE of 85% is already considered world-class. If you're somewhere between 60% and 85%, there's room for improvement. Anything below 60% is a reason for concern.

32 Overall Operational Effectiveness (OEE).

They look the same, they sound the same, but they aren't the same. While OEE takes into account only the time the asset was scheduled to work, OEE compiles everything – even unscheduled time – which is why it measures the effectiveness of the whole operation.

33 TOTAL EQUIPMENT EFFECTIVE PERFORMANCE (TEEP).

TEEP considers all the available time (24 hours per day, 7 days per week), so it's a great indicator of the scalability of the business in its current form.



Intelligent platforms do the math for you. Infraspak collects data from your daily tasks, runs the numbers on the Analytics app, and generates accurate reports.





Building Efficiency

As we prepare a green, carbon-neutral future, there's one issue we need to address: building efficiency. According to the UN, **buildings and construction account for 36% of the global energy use**. And, as it turns out, facility managers are responsible for 75% of the building's energy use (on average).

According to IFMA's 2011 "How to Guide", 70% of buildings are consuming more energy than they need. In the UK, schools and offices use 60 to 70% more electricity than predicted at the building's design stage. University campuses take the crown, though, with demands that may be 85% higher than planned. So there are very real and very specific things maintenance managers can do to save electricity, fossil fuels, and their clients' money.



Energy Consumption

34 CUT NIGHT LIGHTING.

A lot of companies keep lights up at night for branding or security purposes. But is it really necessary? Could they be replaced by motion sensors, for example? Or turned off altogether? Consider cutting night lighting to save energy and electricity.

35 REPLACE OLDER LIGHTS WITH LEDS.

Another way to save electricity is replacing older incandescent lights with LEDs. LEDs might use 75% less energy and last 25 times longer than regular lights (which also means your team will spend far less time changing light bulbs).

36 INSTALL SENSORS.

Installing sensors is another way to decrease water and electricity consumption. A study conducted by the American Environmental Protection Agency found that occupancy sensors reduce energy waste by 68% and increase energy savings by 60%.

37 GO TO THE BUILDING AFTER-HOURS.

Do a night-time walk through every 6 months to see which equipment is on when it shouldn't be. Check if heating and cooling equipment is still running, if appliances are still connected, and if you can program them to turn off after-hours.



38 CLEAN AIR FILTERS.

Dirty air filters in air conditioners drop efficiency by 20 to 25%. Plus, cooling coils get clogged, which means the AC produces more heat and energy loss. Cleaning the filters in time is an inexpensive solution to improve HVAC efficiency.

39 IMPROVE DOOR AND WINDOW SEALING.

This is a great example of how your team can be proactive even with the smallest things. Poorly sealed windows and doors let air infiltrate the building, which causes energy loss. Improve window sealings and adjust doors to save up to 30% on HVAC energy use.

40 INSTALL CHILLER CONTROLS.

Optimise your chiller settings to save up to 20% of energy. Study different chiller staging schemes, optimise the water discharge temperature or use advanced controls, such as outdoor enthalpy controls.

41 CONDUCT AN ENERGY AUDIT.

When energy costs rise, conducting an energy audit is the best way to spot opportunities for improvement and savings. In the UK, energy audits are mandatory every 4 years for large organisations under the Energy Saving Opportunities Scheme. (ESOS).



Use Infracpeak's Utilities app to get daily readings on your water, electricity and gas meters to identify spikes, find growth patterns, predict costs, and optimise consumption levels to reduce them.





Monitoring

42 MONITOR BUILDING USAGE TO CUT ENERGY COSTS.

Monitor which meters are consuming the most energy and its peak hours on your maintenance platform. You can then predict costs, adjust heating and cooling systems, lights and control equipment accordingly.

43 MEASURE OPERATING PARAMETERS BEFORE OVERHAULING.

Before installing new equipment, measure operating parameters (e.g. amperage, run-time, cycle times, temperature). Assess if there's anything else you can do through O&M instead of jumping into an expensive overhaul.

44 CONSIDER DITCHING TIME-BASED WORK ORDERS.

When your equipment is not well maintained (e.g. there are leaks, inadequate pressure) or worn out, it will spend even more energy than necessary. For machines that use a lot of energy, create work orders based on usage or condition (and not time).

45 USE VIBRATION ANALYSIS.

Case in point: misalignment between mechanical parts consumes 15% more electricity. Using condition-monitoring techniques such as vibration analysis, you can spot these minor issues before they devastate your electricity bill – and your equipment along with it.

46 BENCHMARKING.

Assess and analyse energy consumption over time and compare your current performance with past ones. You can also compare buildings with a similar energy profile – if you don't have any on your portfolio, use modelled simulations for benchmarking.



Connect IoT sensors to your maintenance platform to centralise information and transform data into actionable insights for proactive maintenance.



Optimize and Retrofit

47 DON'T REPLACE EQUIPMENT WITH SOMETHING SIMILAR.

When it's time to replace an asset, don't replace it with something similar. Instead, use this opportunity to make an upgrade. Choose a new model that improves both energy efficiency and reliability.

49 INSTALL BETTER ACOUSTIC AND THERMAL INSULATION.

Acoustic and thermal insulation not only improves comfort but also saves energy. Retrofit the building's structure to provide a better thermal envelope and decrease utility costs. Besides, this puts less pressure on your HVAC system and extends its lifespan.

48 INSTALLATION OF VARIABLE SPEED DRIVES (VSD).

VSDs control the speed of AC motors. Because they can adjust fan speed according to the temperature of the equipment, they are more efficient than constant speed HVAC systems. One study in Italy wrapped up with annual savings of 38.9%.

Need more ideas to make buildings more energy-efficient?

As we've said before, you should use buildings with a similar energy profile for benchmarking. Likewise, we suggest you do the same before re-commissioning or retrofitting.

Here are several [energy-saving](#) measures proposed by the European Commission (with [case studies](#)). We also recommend this case study about how a university campus in Singapore became more energy-efficient both through low-cost or no-cost strategies and timely retrofitting.

Conclusion

Maintenance managers should not spend more time managing workflows than facilities. And that's exactly what an Intelligent Maintenance Management Platform prevents. Intelligence decreases the amount of effort necessary to achieve what's required. Or, in other words, it drives efficiency.

It all starts with connectivity, which provides data regarding daily operations. Accurate data helps managers understand how they are using their resources, and where they might be able to save some money without compromising comfort or reliability.

It's also this data that powers automation tools and machine-learning. In turn, they free managers from time-consuming tasks and prevent human error. It is fair to say we're entering an age of digitally-powered reliability, despite the widespread belief that predictive maintenance would be the future.

As McKinsey pointed out in their 2018 article titled "Digitally enabled reliability: Beyond predictive maintenance", integrations and insights from advanced analytical techniques provide increased control and align operations and maintenance.

For the first time, and realistically, systems can track 1) how assets and buildings are used in day to day operations, and 2) how reliable they are in the long run. **Maintenance is finally able to respond directly to the needs of users today while predicting their future needs.**

The latter becomes even more accurate as AI and machine-learning evolve. Intelligent maintenance software tracks workflows and trends, models data regarding failure modes, highlights errors and spots opportunities for improvement.

Over time, predictions of an assets' lifetimes and depreciation will become even more accurate. This is what truly enables managers to make future-conscious decisions, increasing both availability and reliability.

And we've arrived at our final 50th piece of advice:

50 DITCH OLD DATABASES FOR AN INTELLIGENT MAINTENANCE MANAGEMENT PLATFORM. When someone outsources their maintenance work to you, they expect efficiency. Don't make that promise harder on yourself than it has to be.

You will plan better, solve failures faster, and present solutions that keep driving efficiency over and over again. Sure, it might be a learning curve for teams that are still set in their old ways. But as the song goes, the times, they are a-changin'. *"If your time to you is worth savin', then you better start swimmin' or you'll sink like a stone."*

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About Infraspak

Infraspak is an Intelligent Maintenance Management Platform (IMMP) that brings outstanding connectivity, flexibility and intelligence to your operation.

Gain full control and the flexibility to build your own, custom, maintenance management solution capable of answering your own operational challenges.

Online. Offline. Behind a desk or in the field. Infraspak connects your team to your plans, your plans to your goals, and your goals to the intelligent maintenance you need to take your operation into the future.

Talk to our team of specialists and enter a world of data, intelligence and automation

Intelligent maintenance starts here.

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