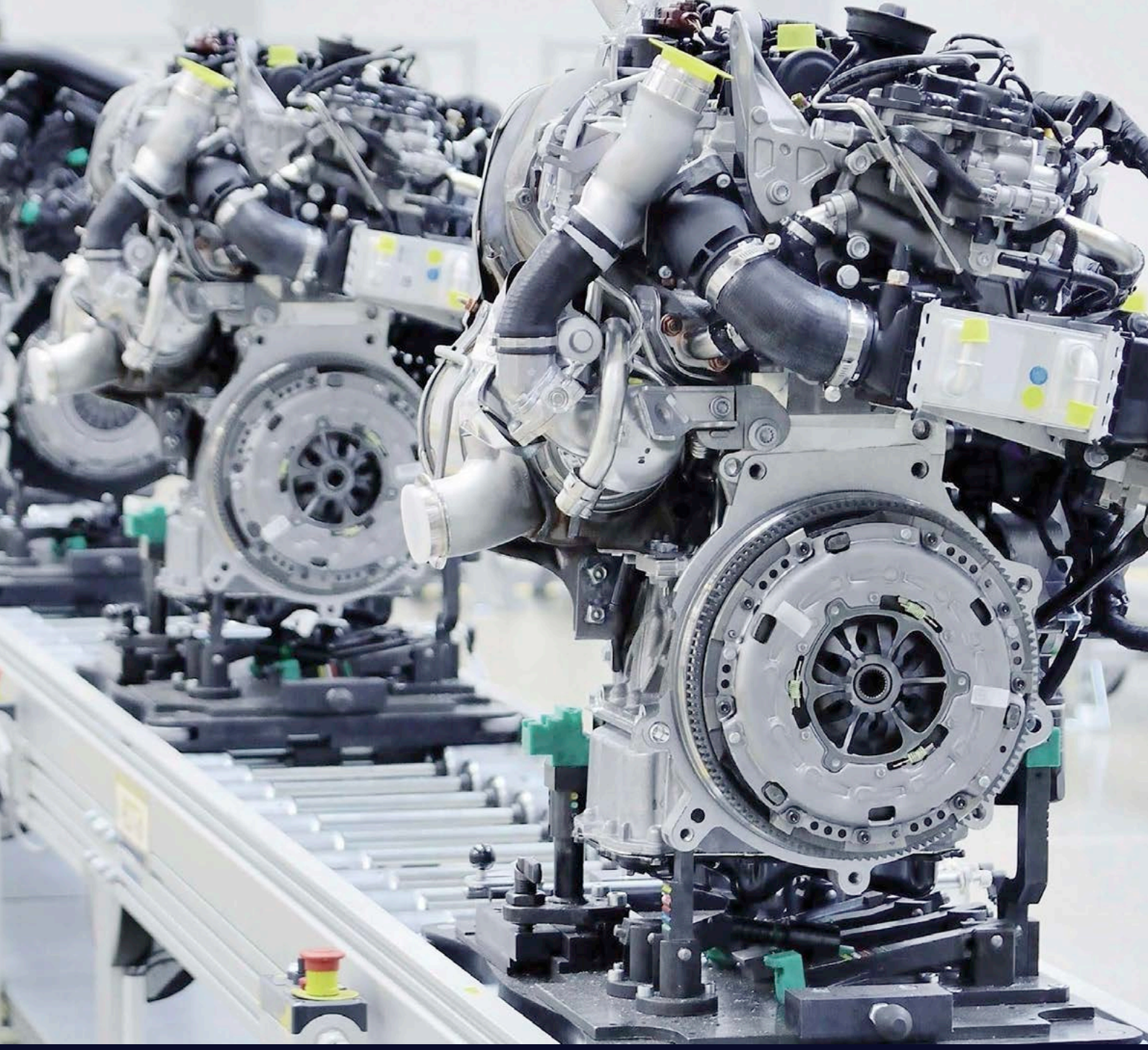

SENSEYE PREDICTIVE MAINTENANCE

Integrated Asset Condition Performance

Enabling a competitive, profitable future for manufacturers and OEMS.

Find out more: **siemens.com/senseye-predictive-maintenance**

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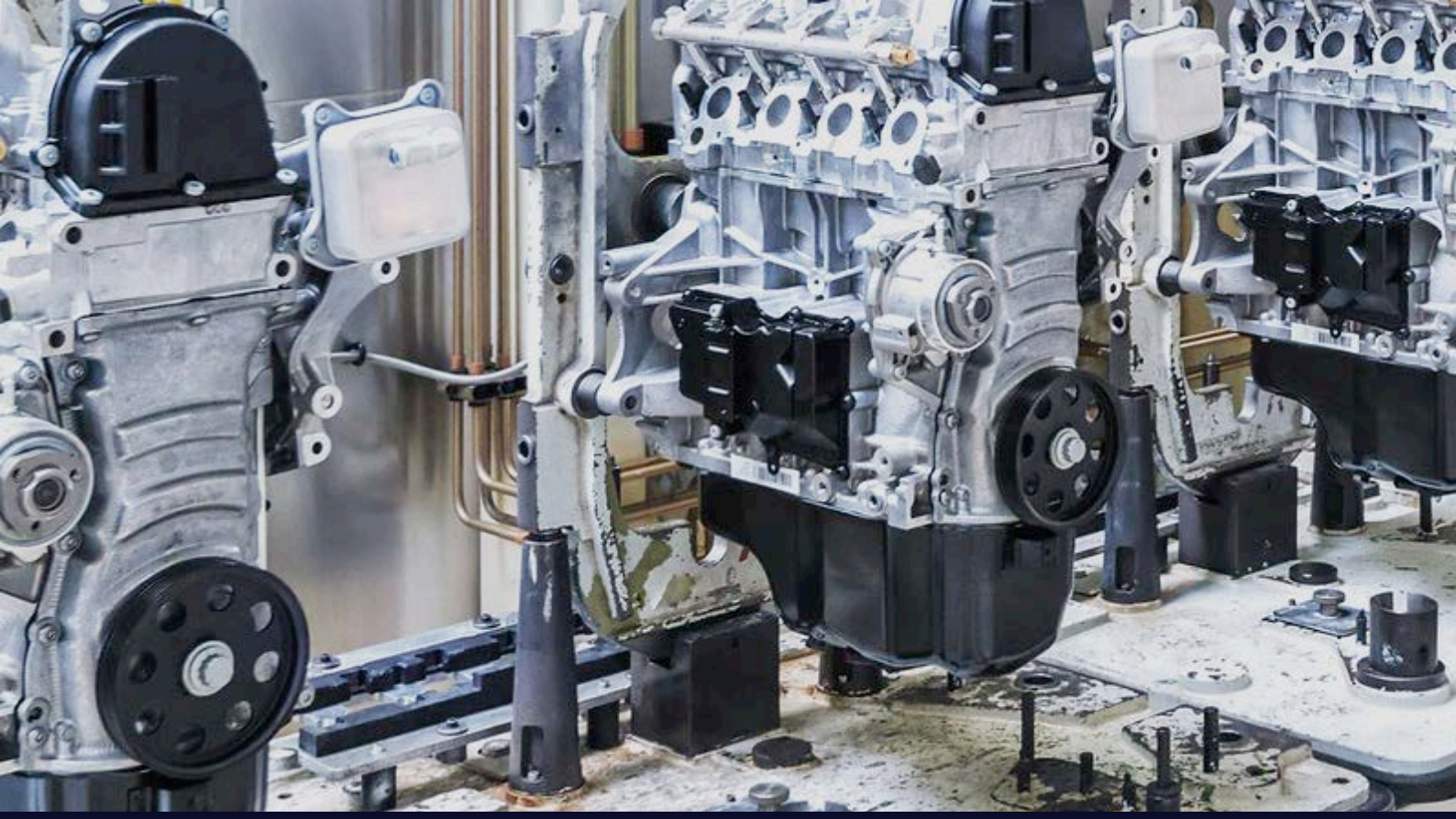


Executive Summary

In the midst of upheavals such as the Covid-19 pandemic, Brexit, the fallout from the war in Ukraine and disruptions to the global supply chain, revenue growth remains the top priority for CEOs. It leads to discussions about technology, corporate issues and even workforce and financial concerns.

Manufacturing, across all industrial sectors, operates within complex, interwoven and interdependent supply chains. To make everything work, all the companies need to collaborate and be motivated to align their business models.

Achieving that is quite a difficult prospect.

The customer has always been the ultimate focus but the means of delivering their needs is changing. Before the arrival of advanced electronics, embodied on the Internet of Things (IoT), there had to be a strong focus on product because making it to an acceptable standard was the way to deliver customer satisfaction. The availability of finer tolerances, better machinery and more accurate monitoring of production, processes and tools, has improved quality and enabled manufacturers to focus on improved customer relationships.

Manufacturers in aerospace, especially, but also defense, have adopted an approach that moved from CapEx (capital expenditure) model – buy the hardware, run it, and call in service engineers when required (usually when something goes wrong) – to OpEx (operational expenditure), where equipment and supplies are bought on a 'power by the hour' model and the end user pays for what the equipment does, rather than what it is.

In factories, in the case of air, for example, the user will pay for compressed air; in the case of aircraft, they pay for flight time. The supplier undertakes to ensure that what is needed will be delivered. This approach has various names, from 360-Degree to Full-Service Leasing – and others, doubtless.

While the principle has been widely acknowledged as a good idea, acceptance has been slow. There are several reasons for this but chief among them are: technology and financial resources.

But revenue growth remains the main objective and a number of issues can get in the way. For manufacturers in the supply chain, these include:

- Lack of visibility of the condition of customers' assets
- Unplanned customer machine downtime during unscheduled repairs
- Missed after-sales opportunities for service and maintenance and/or inefficient manual asset and part replacement processes lead to service delays and friction in customer relationships
- Slow, complex and/or inefficient manual asset and part replacement processes lead to service delays and friction in customer relationships
- Higher supply chain and inventory costs – especially sensitive during a period of rising inflation

Equipment suppliers may well want to improve their customer relationships and service standards. But the technology has stood in the way; they haven't been able to have the machine visibility necessary to ensure optimal performance, at all times.

Spare parts may not be available when needed – or they may be held in stores, by customers of suppliers, for far too long, 'just in case'.

Many OEMs have overcome these issues by moving to a servitization model. This has appeal in terms of building long-term relationships and strengthening revenue base and growth, but it has not been available to smaller and mid-sized businesses.

If the equipment supplier doesn't have clear visibility, it will have to hold more extensive inventory, tying up valuable capital. Demand forecasting will not be much better than informed guesswork.

Servitization has also been more reactive than proactive. The equipment manufacturer will strive to address failures before they happen, through collection of historic data across its customer base. Real-time monitoring is better; it is clearer and more immediate. But it and automated followups have not been fully available. Until now.

The technology, in the form of on-machine condition monitoring and SPC, has been available for some time. The challenge has been to use the available equipment to enable supplier businesses to automate service and support. The potential advantage of turning the idea into reality is huge; reactive and manual service scheduling and interaction is timeconsuming, inefficient and liable to human error.

Senseye Predictive Maintenance and Endowance Solutions have jointly introduced IACP – Integrated Asset Condition Performance. It enables even smaller companies to offer a turnkey, out-of-the-box servitization model. It puts mid-sized businesses on a competitive footing with larger operations and automates the processes, enabling a smoother, friction-free relationship for service and maintenance, on the one hand, and supply chain and inventory management, order generation and service support, on the other.

This White Paper describes why Senseye Predictive Maintenance and Endowance have come together to create IACP, what it is and how it helps equipment manufacturers, including SMEs and mid-sized companies, progress into a competitive, profitable future.

Introduction

The State of the Market

Research company Gartner, and others, began talking over 20 years ago about the future of manufacturing being about competition between supply chains, not just the OEM – the brand name on the box.

Along with these, the nature of business is changing. The rise of technology has enabled businesses to shift focus from product-centric to service-centric.

CEOs are focused on driving revenue growth.

Financial performance is a function of that growth.

Technology contributes to competitiveness and profitability. If an appropriately skilled workforce is restricted through labor shortages, then opening the doors in the morning becomes a challenge.

The modern supply chain is complex, often globe-spanning and is often characterized as a collection of disconnects, rather than a smooth conveyor of value.

In the case of machinery, maintaining uptime is a huge challenge. Unplanned downtime, caused by machine breakdown or component failure, is disruptive and disruption of that sort is expensive.

Scheduled maintenance and offline service is also a cost but it is budgeted for and can be described as under control.

But unscheduled stoppages have almost become accepted; even the most highly-automated and advanced automotive factory will often work on the assumption of 10-15%, even 20% interruptions.

In an increasingly competitive market, threatened by 'black swan' interruptions from tsunamis to war in Europe, anything less than maximization of productive capacity is a competitive disadvantage. Smaller companies, SMEs, can be particularly vulnerable.

Introducing Integrated Asset Condition Performance: **The Power to Control**

It doesn't have to be this way.

Equipment suppliers can manage and maintain assets based on realtime monitoring, to maximize machine availability, minimize disconnects – even scheduled stoppages – and do so in a way that cements partnerships and improves support and equipment performance.

Integrated Asset Condition Performance (IACP), jointly developed by Senseye Predictive Maintenance and Endowance, automates the supply chain response in order to proactively replace assets and parts. It is based on real-time events, rather than rigid timetabling, to increase asset uptime.

As well as improving reliability and output, IACP opens opportunities for suppliers and equipment manufacturers to nurture and exploit new, stable, and predictable revenue streams.

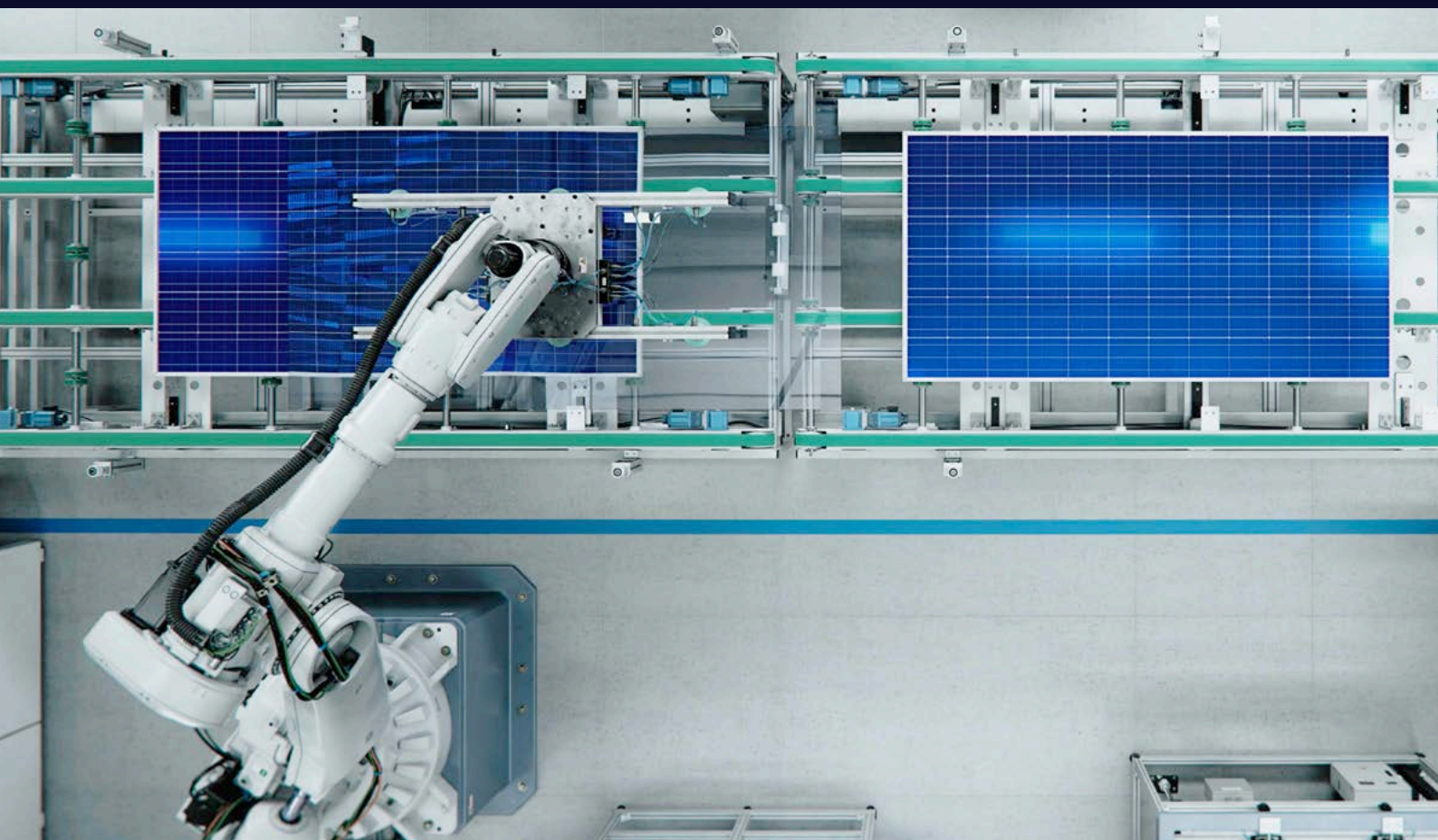
Manufacturers who use a range of IT applications will be familiar with the idea of Software as a Service – SaaS – which uses cloud computing to provide fully serviced software solutions, updated as needed rather than at monthly or quarterly intervals and thus less vulnerable to hacks or bugs. SaaS uses a subscription-based model, which shifts expenditure from CapEx to OpEx.

IACP uses a similar concept. The advent of the Industrial Internet of Things (IIoT) means that machinery – or, more precisely, the monitoring and control systems that run and manage them – can be connected to remote locations, via the web. IACP combines product/device and support 'as a service' – PaaS/DaaS – and becomes Equipment as a Service: EaaS.

IIoT enables manufacturers to monitor asset condition in real time. Tools such as OEE (overall equipment effectiveness) allow a better understanding of current machine condition and health. Initially, service support may be 'as scheduled' but, over a period of time, as condition monitoring data accumulates, failure can be predicted before it happens.

The ‘smart asset’ – the machine fitted with condition monitoring equipment, which is connected to the Web – relays its health condition to the supplier. If service or support is required, it will trigger an automated part or parts replacement process. The combination of Senseye Predictive Maintenance’s Predictive Maintenance solution and Endowance’s industrial integration services and products, on Salesforce or other CRM (customer relationship management) platform, removes friction from the parts supply process.

IACP optimizes decisions, actions and – crucially – revenue. It enables proactive management of inventory, avoiding excess or shortages. As an OpEx solution, it helps keep costs manageable.



The True Cost of Unplanned Downtime

Machine downtime leads to missed opportunities for sales and revenue generation and unnecessary costs.

Last year, Senseye Predictive Maintenance presented a report, “The True Cost of Downtime”, which found that large facilities lose 27 hours a month to machine failures, on average, at the cost of $532,000 for each hour of unplanned downtime. Total losses are reckoned to amount to 3.3 million production hours, worth $864 billion per year across Fortune Global 500 (FG500) industrial companies.

Downtime is not the only issue. Machine condition, service intervals, optimization and availability all impact performance. Warranty issues may be more expensive than necessary, because potential failure has not been spotted before it happened, leading to unscheduled downtime, emergency repairs and consequent higher cost.

Alex Hill, Chief Global Strategist of Senseye Predictive Maintenance, says that unplanned downtime is “the curse of the industrial sector”. When expensive production lines and machinery stop, organizations stop earning, and those investments start costing rather than making money. Even after years of investment in automation and systems, in fault detection and planned maintenance programs, automotive plants were found by Senseye Predictive Maintenance to lose, on average, 29 production hours a month, at the cost of $1.3 million per hour.

In total, automotive vehicle and parts manufacturers are estimated to lose $557 billion and 414,800 hours annually.

FMCG & CPG (consumer packaged goods) manufacturers lose 25 hours a month, at a cost of $23,600 per hour. Across the Fortune Global 500 (FG500), this amounts to 1.5 million hours and losses of $35 billion a year. Mining, metals and other heavy-industrial companies lose 23 hours/month, equating to 1.2 million hours a year: $225 billion annually.

Oil and gas producers suffer 32 hours of unplanned downtime each month, on average. At $220,000/hour, this amounts to $84 million per year, per facility. In refineries alone, losses to FG500 constituents are estimated to total $47 billion.

For manufacturing equipment suppliers, machine breakdowns that cause unscheduled downtime also incur costs. There may be the liability for warranty payments but, even without them, a repair and maintenance team has to be dispatched, often at short notice and, frequently at higher than standard pay rates.

Even scheduled maintenance can lead to costs. If a supplier must fly an engineer hundreds or thousands of miles for a regular visit, only to find that the machine is in pretty good order and some parts do not really need to be replaced – but they usually will replace them anyway – the supplier is wasting money on travel, attendance, hotel, and unnecessary component replacements.

Rob Hienekamp, CEO of Endowance Solutions, makes very clear the case for IACP.

"The customer gets total asset support, 24/7, which leads to uptime approaching 100 percent. Many customer companies regard 90 per cent uptime as a good result; an improvement from 90 to 100 per cent means greater output, greater productivity and a more profitable production operation, because the need to keep paying overheads when machines are down either greatly reduces or disappears completely," he said.

"A large auto manufacturer may regard (say) 86% uptime as their norm – they assume 14% downtime. That could translate into a loss of $50 to $60 million a year, easily. If you can bring availability up to 95% then your customer is going to save a lot of money. Their bottom line is going to grow, as well – as is the equipment supplier's.

Oil and gas producers suffer 32 hours of unplanned downtime each month, on average. At $220,000/hour, this amounts to $84 million per year, per facility.

Understanding your Assets is Key to Mastering Inventory Management

"By effectively creating value through strategic risk management, organizations can find insight and opportunity. They can also derive value by consistently making better decisions and outperforming competitors." (Deloitte: 'Disruption in Manufacturing', 2016).

Servitization – SaaS, EaaS – replaces 'sell and move on' commercial relationships with a model that has demonstrated the ability to improve product availability and reduce the cost of ownership, by tying a supplier's compensation to the output value of the product generated by the customer.

Visibility of assets, onsite and in real time, is critical to managing this process more efficiently.

"Currently, many of our customers simply don't have the data so they need to send out their reps four times a year, all over the world. They spend millions of dollars in travel and replacing parts that may not be broken or even particularly worn," Hienekamp explains.

Better understanding of the historical performance of assets leads to better management of stock. It helps to avoid both bloated inventory and its dark twin, part shortages, thus reducing or ultimately eliminating supply chain delays completely.

An effective servitization strategy relies on data. It must be reliable: reliably sourced, from the right place, and comprehensive. One of the big challenges manufacturers face with data is not so much about availability, as the ubiquity of USB sockets and SPC-ready equipment is ready and willing to provide it. But having it and managing it effectively are not the same thing.

Harnessing the technologies and techniques available with IIoT and Industry 4.0 can enable manufacturers to significantly improve financial and environmental performance, built on gains offered by scheduled preventive maintenance, and ensure they are in the best condition to adapt to and meet market challenges.

IIoT-ready sensors are largely in place on equipment worldwide, especially in the advanced economies. But the data they produce still has to be collected; this has, traditionally, been done manually but manually-collected data inevitably 'looks backwards' - information is collected at the end of a shift, at the end of a day, at the end of the week and then collated.

Senseye Predictive Maintenance's alliance with Endowance means that it can help clients and customers to implement strategies and manage them effectively, to get unplanned machine downtime under control and thus improve performance, profitability, and competitiveness – automatically.

"IACP has Senseye Predictive Maintenance providing condition monitoring. Data is collected from customers' IIoT-enabled machines and analyzed using Endowance Solution's Duet360 for IIoT, which identifies events and metrics and sends the information to our customer's CRM application," said Hienekamp. "IACP's protocol is integrated into the customer's ERP data and rules so it automatically creates service requests and work orders and generates shipment instructions, in line with the service contract."

In order to get the most accurate picture of how equipment is performing, data must be collected and analyzed in real time. Something like a short-term power surge may otherwise be missed and, along with it, the reason why a component fails.

A particular shift might have been running equipment at 7000 units/hour, rather than 5000, because they want to finish early and get home to their families. Higher strain leads to breakdowns.

“Exactly the same asset may perform differently in Germany or Georgia, in the UK or the USA,” Klaus Kruppel, Head of Partners, Senseye Predictive Maintenance said. “Real time monitoring enables the equipment supplier to identify differences, such as faster running – or slower running, as we had during Covid, followed by too-fast ramp-up to ‘normal’ operating speed – and then to understand and act upon it.”

Equipment must be monitored closely, to ensure that usage is within specified parameters and that repairs and maintenance are undertaken to keep the equipment working. IIoT is essential. A successful implementation means that investment in technology is key.

IACP will give the customer better visibility and better management of production capacity, as well as higher levels of uptime; machine downtime will be scheduled and minimized.

For customers who are actively seeking higher levels of machine uptime, IACP is a critical strategic offering.

For customers who are actively seeking higher levels of machine uptime, IACP is a critical strategic offering.

Sustainability – More than just a Buzzword

Better monitoring, which is the key feature of the Senseye Predictive Maintenance side of IACP, means that data on machinery use can be depended upon as accurate. The reason for a particular machine behaving outside specification can finally be understood, and action is taken based on that knowledge. Breakdowns and unscheduled downtime will be sent where they belong: to the dustbin of history.

Effective machine management and ensuring availability means that machine capacity can be better managed – even if the equipment is not, in practice, fully utilized. Better capacity management means better OTIF (on time in full) delivery, and the ability to get closer to genuine JIT (just in time) supply management, which enables better inventory management and sustainability, 'in the round'.

Sustainability is something that is being heard a lot of, these days. In some areas and regions, it is a judicial requirement.

It means more than just environmentalism, important thought that may be. It is about commercial viability. A business that is profitable, has costs under control and is commercially viable, is sustainable. A business that has costs under control can afford to invest in environmentally sustainable initiatives without worrying about return on investment to the exclusion of all other considerations.

A sustainable business will be able to calculate the ROI and put it in context: being a good corporate citizen, having positive community relations, meeting and exceeding legislative requirements.

It will recognize the commercial and environmental benefit of having machines that simply don't break down, having factories that don't – as a consequence of poor machine condition – either accidentally discharge pollutants into the environment or are faced with the unenviable task of deliberately discharging unauthorized compounds and materials, because of equipment failure.

Environmentally, if a machine can have its lifetime extended by 50% then a 10-year life becomes 15 years and the need to replace reduces from three times in 30 years, for example, to just twice, with savings in raw materials, mining, extracting and processing, helping to reduce the carbon footprint – and at no loss to the equipment manufacturer, because it is being paid for keeping the machine running, rather than just for supplying a lump of metal, electronics and ceramics, no matter how sophisticated.

Effective, optimized machine asset management helps to reduce the carbon footprints of both the equipment manufacturer and the customer. It relies on the reliable collection of appropriate data.

Sustainable uptime through automation

Manual data collection is unreliable. Everyone knows it's important but if an alert arises, elsewhere in the plant, it's possible to overlook that particular report. When this happens a few times or becomes a habit – a particular piece of machinery may have been thought of as so reliable that the belief becomes embedded and part of the culture, to the point that it is rarely checked and its ongoing condition is not effectively monitored. Even if everything is apparently 'OK', it is not properly optimized or performing as it truly could.

"IACP enables companies to move from a situation of 'educated guesswork', based on historical data, to full, fact-based information, using data generated and automatically collected, in real time," said Klaus Kruppel, Head of Partners. It also means that the opportunities for and effects of human error are greatly reduced.

"It means better asset visibility, better asset performance and a more effective way of working, without multiple staff involved in protracted processes. It means more productive users and operations," said Alex Hill, SVP Business Development, Senseye Predictive Maintenance.

The sum total is a business that is a good corporate citizen, environmentally responsible and commercially sustainable.

A sustainable business will be able to calculate the ROI and put it in context: being a good corporate citizen, having positive community relations, meeting and exceeding legislative requirements.

Generate New **Revenue Opportunities**

The traditional CapEx sales process is, if "not fire and forget" then certainly sell and move on to the next thing. In the absence of ongoing revenue, it is inevitable that equipment manufacturers will look for the next opportunity.

The OpEx approach can generate reliable and predictable revenue; the challenge for suppliers is to provide EaaS (equipment as a service) a reliable way.

Among the factors that hold back revenue growth are reduced uptime, through breakdowns or faults. Improving machine uptime makes for more productive assets – and better asset management; use can be optimized, possibly leading to less need for increased capacity or extra shifts.

From the suppliers' perspective, longer-term OpEx EaaS relationships develop service and warranty revenue opportunities; reduce costs associated with unexpected repair and inventory costs; and greatly improve visibility of the condition of end customers' assets – lessons that can be profitably applied across the whole equipment portfolio, anywhere in the customer base.

As well as improving cost control, IACP helps to drive revenue growth, in several ways.

Instead of selling capital equipment outright, the equipment manufacturer offering IACP retains effective ownership of the asset but sells a comprehensive service agreement.

Number of Assets	Monthly Service Contract Revenue	Annual Revenue	3-Year Projected Revenue	5-Year Projected Revenue
1000	$55,000.00	$660,000.00	$1,980,000.00	$3,300,000.00
2500	$137,500.00	$1,650,000.00	$4,950,000.00	$8,250,000.00
5000	$275,000.00	$3,300,000.00	$9,900,000.00	$16,500,000.00
7000	**$385,000.00**	**$4,620,000.00**	**$13,860,000.00**	**$23,100,000.00**
10,000	$550,000.00	$6,600,000.00	$19,800,000.00	$33,000,000.00
15,000	$825,000.00	$9,900,000.00	$29,700,000.00	$49,500,000.00
20,000	$1,100,000.00	$13,200,000.00	$39,600,000.00	$66,000,000.00

Better monitoring leads to better performance, better detection of out-of-specification running – leads to lower support costs. As well as the certainty of revenue flow from regular monthly payments – and higher inflows, because a fuller service is being provided – the equipment supplier stands to greatly improve profit margins.

Consider a supplier of conveyor systems. They are complicated and made up of many thousands of individual assets. Whether it's an airport baggage handling system, an automotive plant or a food manufacturer with straightforward automated packaging and palletizing systems, they have thousands of individual assets – any one of which could go wrong.

If each of those thousands of assets in a baggage handling system, for example, is paid for by a monthly fee of $50, the manufacturer will receive thousands of $50s, every month. It can be relied upon and budgeted for.

The IACP business model will guarantee certain outcomes, such as hours of uptime or units outputted. It will specify the maintenance and repair services the equipment manufacturer will provide. The financial potential is huge.

"We have a client company who has the potential to boost their revenues from $70 million to $100 million, in just one year, using IACP," said Rob Hienekamp.

It is a strong differentiator in highly competitive marketplaces, a step up from SLAs, and the equipment manufacturer can offer it without fear of loss.

"SLAs are better than nothing and they can help to improve machine availability but they are still reactive and they cannot be 100%. For that $50 a month we talked about earlier, the manufacturer offers the customer a guarantee that the equipment will not fail," said Klaus Kruppel, Head of Partners.

Better monitoring leads to better performance, better detection of outof-specification running – leads to lower support costs.

Create a Competitive **Advantage in your Market**

Data is not simply collected and then scattered around. Senseye Predictive Maintenance and Endowance filter out the 'white noise' and reduce the information from a tsunami of data that could overwhelm operators and managers alike, to useful, actionable information. Data and insight are presented to different departments, appropriate to their requirements. They only get a what they need, reducing the burden of ploughing through and picking out relevant information, reducing time-consuming wasted effort and enabling increased personnel productivity.

The terms of IACP means that equipment supplier is incentivized to improve the product, reduce breakdowns and extend service intervals because their costs will be reduced. They won't need to send out engineers on unnecessary trips. They won't need to keep a team of engineers ready to deal with an emergency breakdown or travel at a moment's notice to a customer site.

IACP spreads financial risk more equally, shifting the burden from the customer, the end user of manufacturing equipment, more towards the provider.

The certainty of an OpEx, rather than CapEx based equipment acquisition model means that the contingency fund can be reduced, freeing up valuable financial resources, or even eliminated altogether.

Supplier Reward

What does the equipment manufacturer get?

- Broader and deeper understanding of their own equipment's performance provides the means to improve performance and specification.
- Providing a service that involves daily interaction inevitably means working together more closely.
- That proximity brings better understanding of client needs – and the means to satisfy them.
- Businesses that are more prepared to use technologies and collaborative software, such as Product Lifecycle Management (PLM), Customer Relationship Management (CRM), proactive machine monitoring and data that can be shared via the Internet, using IIoT technology, identify themselves as leaders, innovators and effective collaborators.

A closer relationship raises the barriers to entry for competitors; it becomes harder for another supplier to leverage an opening.

The offer of IACP sends out a positive message to customers. It is a filter on the equipment manufacturers who may be under consideration for a supply contract. Manufacturers' confidence in their own product can lead to a guarantee against unscheduled downtime; it is a big differentiator. It becomes a sales point in and of itself – one that can be irresistible.

Eventually, all equipment may well be supplied in this way; the early movers will have an advantage. They will have established a relationship with their customers that will only get stronger with experience of IACP in action. Consequently, competitors will find it very hard to get the door opened when they come knocking. Even finding a weak spot to leverage becomes very difficult, when faced with an integrated, end-to-end solution that removes the barriers to servitization and eliminates friction in supply chain service and support.

Real time response to alerts and anomalies prevent unscheduled down time and reduce scheduled downtime, also, by eliminating unnecessary service and maintenance.

Better data means more informed decision-making. IACP replaces guesswork with factbased fully informed data-driven decision-making.

The lifecycle of machinery will be better understood and that improved understanding will feed back to improved design. The cause of common faults can be identified and remedial action undertaken. Reactive servicing – sending an engineer when something has broken – will become a thing of the past. It's an expensive, unpredictable way of doing business and barely manageable in an effective way.

Better control of service support and better understood and maintained machinery leads to financial performance improvements.

A closer relationship raises the barriers to entry for competitors; it becomes harder for another supplier to leverage an opening.

Conclusion

IACP enables manufacturers of all sizes to offer Equipment as a Service (EaaS) – the provision of equipment as an OpEx service, rather than as a CapEx large outlay. It makes the relationship between equipment provider and customer longer term, revenue based, budgeted and without unpleasant surprises – it is designed to eliminate surprises completely.

"The process is integrated into the enterprise's data and rules. It optimizes decisions, actions and revenues," said Alex Hill. "It automates and removes friction and interrupts from the parts supply process."

Service and support is a routine operation, although not one that all equipment manufacturers undertake themselves.

After-sales support and maintenance services often looks more like a cost center than a revenue earner. When machinery breaks down, it costs money. It costs the customer money in lost production and the manufacturer in higher-cost emergency support.

That is the reactive model.

The old way of doing things – reacting to breakdowns on an individual basis – is like crawling through a dark tunnel. Unexpected failures lead to breakdowns, not just in the machinery but in relationships, too. Using IIoT-linked Senseye Predictive Maintenance monitoring to manage Predictive Maintenance is proactive, more effective, improves customer satisfaction and saves money. Using Endowance's end-to-end integration makes accounting smoother and reduces the risk to the customer of unexpected costs.

EaaS is known and an established offer in manufacturing.

In the purest case of IACP, the manufacturer continues to own the equipment and undertakes to provide the customer with the means to deliver whatever the machinery actually does: conveying of components, assembling of vehicles, finished bottles, packaged boxes, or flight, in the case of aero engines. It charges a regular fee for doing so and guarantees availability.

Improved machine availability leads to better capacity planning and scheduling, for the customer manufacturer.

The equipment manufacturer escapes the expensive straitjacket of timetabled service – whether needed or not – and reactive support for breakdown. Senseye Predictive Maintenance's iLog, which monitors how equipment is being run and ensures that it is being operated within specification, reduces the risk of breakdown caused by abuse. Equipment manufacturers can offer competitive and differentiating uptime guarantees, with full confidence.

This has the environmental sustainability benefit that the equipment's use of consumables can be cut, service intervals can be extended and effective lifetime can be lengthened – by half or even more, depending on application and situation. It will continue to receive revenue while itself incurring less capital cost.

IACP offers customers a no-risk reason to upgrade operations and to move planning and maintenance from informed guesstimates to dependable, data-driven uptime, with benefits to capacity and scheduling.

Equipment manufacturers can secure and boost their revenues, with reduced risk.

A win-win situation that applies modern technology to help boost revenue in an innovative and reliable way.

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