Ensuring compliance, maximizing uptime

Enterprise Asset Management is transforming the chemical sector through improved communication, cooperation, and collaboration.

IFS Ultimo

Achieving excellence in highly regulated markets

Compliance, safety, and reliability are three foundational pillars of the chemical industry worldwide. To be successful, any producer must excel in each area to meet the required standards of a heavily regulated market. These factors ensure cost-effectiveness and efficiency in production while ensuring worker and public safety, protecting the environment, and preventing harm from hazardous substances.

However, chemical processing can be a complex and challenging environment, particularly when managing operational assets. Maintenance teams must keep equipment such as batch reactors, distillation columns, storage tanks, pumps, compressors, and piping systems in optimal condition to ensure safety, uptime, and efficiency. Meanwhile, such equipment must also cope with exposure to harsh substances and high temperatures that can lead to corrosion and accelerated wear.

The worrying cost of unplanned downtime

These factors weigh heavily on the minds of engineers within the maintenance teams of chemical processing environments. Unplanned downtime can be expensive, resulting in lost production, quality issues, and loss of customer confidence. The cost of downtime can escalate quickly and significantly impact revenues and profitability.

Indeed, according to ABB's recently published 'Value of Reliability' survey, more than two-thirds of industrial businesses experience unplanned outages at least once a month, costing the typical business close to $125,000 per hour. The figure is likely to be far higher in the chemicals industry, which tends to have more complex facilities and safety-critical processes using highly specialized equipment and materials. In short, chemical companies must do everything possible to prevent such damaging situations.

The power of digitalization and collaboration

So, set against this context, how can chemical companies juggle these multifarious challenges to ensure compliance, safety, and reliability?

The answer comes in the form of collaboration and digitalization. Compared to other industries, the chemicals sector has a relatively high maturity level for adopting advanced technologies such as Enterprise Asset Management (EAM) software, which is used to optimize the maintenance and repair of equipment and processing lines. The industry is also highly collaborative, as manufacturers often have a non-adversarial relationship as they process different chemicals for different markets. Working groups, therefore, establish best practice approaches to deploying digital technologies to address physical asset support to ensure safety and compliance across the sector.

Also, many chemical companies' activities are covered by safety regulations such as the Seveso III directive in the European Union, which is mandatory in law. Therefore, they need effective asset management strategies in place that support compliance with safety standards – ideally through an integrated platform that avoids data silos and provides information in an accessible manner. This approach also offers chemical companies a benchmark opportunity for different sites worldwide.

Chemical plants also tend to be highly automated operations, often running 24/7. Digital technologies such as EAM provide an excellent overview of plant-wide performance that can be delivered through mobile devices such as smartphones and tablets, giving visibility to the right people in maintenance teams even when relatively few people are working on site.

Managing risk in the chemical sector

The 2023 IFS EAM trend report lays bare the value of effective asset management strategies through EAM. The report suggests that the effective integration of asset maintenance and safety is a critical consideration for sectors such as chemicals.

Respondents of the IFS EAM Report were asked whether they benefit from EAM technology and solutions. In response, 50% of respondents chose better managing of aging assets for greater control of operational risk. Other popular answers were savings in maintenance costs and time (49%), and ensuring compliance, safety, and organizational sustainability (37%). Pushed further and asked how EAM contributes strategically to your organization's long-term goals, the top two answers were standardized best practices and productivity (49%) and achieving sustainability and regulatory objectives (36%).

Clearly, EAM has a significant role in ensuring compliance, safety, and reliability in the chemicals industry. As technologies such as artificial intelligence (AI) and machine learning (ML) continue to evolve, it is likely to become a more central component of operations.

Encouraging innovation through collaboration

So, let us examine in greater detail how maintenance activities can be further improved within chemical plants. Organizations have the potential to overcome challenges, mitigate failure, and, therefore, enhance reliability within their operations in every circumstance. To achieve this, they should initiate the process by focusing on their most invaluable resource: the employees.

Fostering a culture of reliability is an integral part of this endeavor. Organizations should create a culture that values and prioritizes equipment reliability. This involves promoting open communication, encouraging collaboration, and facilitating knowledge sharing among employees. Organizations can significantly improve reliability by actively encouraging the use of best practices. Such a culture leads to increased asset performance and nurtures a sense of ownership and commitment among employees, driving them to contribute to the organization's reliability goals. Culture is the key to delivering reliability, and given its cross-functional nature, the fact remains that every individual is essentially part of the reliability team.

But how can chemical processors take communication, cooperation, and collaboration to a new level? Installing such a culture can be extremely valuable but difficult to achieve. So, here are five ways to improve communication inside your organization–underpinning maintenance management as a whole.

1. Common goals for all departments

Maintenance management is complex and multi-layered - and efficiency results from good teamwork. This requires the elimination of data silos and communication barriers between the departments involved. Regular exchange, direct communication channels, and a common, intuitively usable platform for communication, data exchange, and documentation around a company's assets are to be encouraged. In addition, tasks related to maintenance and repair need to involve all departments. Instead of a clear separation between the operators of a plant and experts for maintenance, maintenance, and operation should become everyday tasks. Operators often know the equipment best anyway - they work directly on the machines daily. Accordingly, they can notice abnormalities immediately and report and rectify them directly if they are authorized by corresponding processes and involved in executing simple maintenance tasks. In addition, one possibility for practical implementation is to define MTBF (Mean Time Between Failures) and MTTR (Mean Time To Repair) as common KPIs for production and maintenance. This is an incentive for production to avoid failures (MTBF) and cooperate in diagnostics to accelerate MTTR.

2. Understanding and mutual appreciation

At the same time, common goals create proximity between production employees, maintenance specialists, and the HSE department or quality assurance. Through mutual participation, understanding, and easily comprehensible specifications, compliance with corresponding guidelines and the corresponding documentation does not become an additional bureaucratic effort. Instead, it increases safety for all involved, all the way to the consumer.

3. Structured, low-threshold communication

A prerequisite for the described cooperation is close communication between all departments involved in the maintenance and repair of plants in the chemical industry - with regular meetings, short communication channels, and quick feedback. For this, corresponding digital platforms must be created to replace Excel lists and other solutions that are no longer up to date. What has often worked in the past - "we've always done it that way" is a typical expression - usually stands in the way of transparency and collaboration and is easier, faster, and more efficient with modern tools and technologies.

4. Simpler reporting on anomalies, failures and actions.

Improving the efficiency of actions and management around maintenance and servicing means collecting comprehensive data, learning from past events and registering downtimes and costs, etc. This is the only way to make informed, cost-efficient decisions, plan predictive maintenance and further optimize processes. This requires that this data is collected as simply as possible and stored and analyzed in a central platform - accessible to all those involved. Mobile solutions for data collection, for support in the implementation of measures, and for documentation ensure that all information can be collected and processed quickly, easily, and exactly where it is needed - i.e. directly at the plant if possible. Barcodes, QR codes, or NFC tags help to specify the defective system and to record its data quickly and easily - ideally together with a photo of the damage or the source of the malfunction.

5. Plan for downtimes and use them efficiently

Maximum uptime of a chemical production plant increases productivity - the connection is as simple as it is correct. Nevertheless, downtimes can hardly be avoided in practice, as the results of the IFS EAM Trend Report show year after year. However, it is important to distinguish between planned and unplanned downtimes: A defect or unplanned maintenance work always affects production planning, causes stress for everyone involved and often leads to inefficiently implemented measures. Plant managers, operators and maintenance staff should work together to prevent this by planning and carrying out maintenance proactively and with foresight. In the best case, downtimes that are necessary anyway, for example, for retooling a production plant, can be used optimally so that the losses in productivity are as low as possible. As with all the points mentioned above, consultation and coordination between the departments is necessary.

Enterprise Asset Management: Tools for better teamwork and successful maintenance management in chemical production

The five points show that simple measures can provide more efficiency and productivity in the maintenance and repair management of companies in the chemical industry. Successful implementation, however, requires the right tools to overcome data silos and use information across all departments to make processes and collaboration more efficient, ultimately optimizing the uptime and efficiency of a production facility in the chemical industry. This is exactly what the cloud-based EAM solution from IFS Ultimo was developed for.

How an EAM system improves communication and processes in chemical production

An EAM system is a holistic platform for all topics related to the management and maintenance of a company's assets. This includes all physical assets, i.e. buildings, plants, machinery, and vehicles. An EAM system provides a comprehensive overview of the productivity and costs of the assets as well as all related measures. This enables optimization of uptime as well as cost control and extension of asset life through ideally coordinated maintenance management. IFS Ultimo also integrates all topics related to health, safety, security and environmental protection, enables efficient knowledge retention and creates a platform for optimal resource allocation and communication between the individual departments of a company. IFS Ultimo thus combines the modules of classic Computerized Maintenance Management Systems (CMMS - also called Maintenance Software or Maintenance Management Software) and Asset Management Systems, as well as the functionalities of HSE software (Health, Security and Environment) in one platform.

The future is mobile!

Previous IFS Ultimo Trend Reports have stated that almost 90 percent of the companies noted that mobile working would be an integral part of their maintenance management and maintenance strategy in the next five years. Nevertheless, only about 60 percent of the companies were shown to use corresponding mobile technologies. IFS Ultimo is designed as a cloud-based EAM software for chemical production and other industrial and manufacturing operations and is specifically geared towards mobile working. The platform makes corresponding data available to every authorized user, regardless of whether they access Ultimo via PC, tablet or with corresponding iOS and Android apps from their smartphone. This enables completely new, highly efficient ways of communication and collaboration.

Circle of cooperation: Production, maintenance management and QHSE go hand in hand

But what does this optimal cooperation look like in practice, and how does IFS Ultimo improve communication, process management, and, ultimately, the plant's availability? With IFS Ultimo, production staff have access to all relevant information on the current status of the production line directly at the machine. Important modules here include shift handover which documents and passes on any anomalies on a machine with the least possible effort.

In addition, Total Productive Maintenance (TPM) provides operators with a tool for task scheduling, checklists, and documents; this allows relevant jobs to be carried out safely. For example, standardized processes and procedures are followed during autonomous maintenance, and all work is carried out consistently and independently of the respective operator.

The concept of autonomous maintenance means that the operators themselves can do repetitive tasks or basic repairs. This helps free up valuable time for the maintenance team so they can focus on more complex functions, such as more in-depth repairs, complex preventive maintenance, machine modifications, and improvement projects.

Higher maintenance efficiency, lower costs and time for strategic maintenance

While production workers are thus involved in maintenance, maintenance workers also use the operators' experience and knowledge of the machines and equipment: They often know the peculiarities and requirements of the equipment they work with every day. IFS Ultimo thus ensures decentralized responsibility and, thus, the highest possible degree of effectiveness and efficiency. This considers the common goals and mutual appreciation between departments when operators and maintenance managers share joint responsibility for the condition of the assets. In addition, the operators at the machine can react immediately and - if authorized to do so - carry out necessary measures in the shortest possible time. In the chemical industry, for example, this autonomous maintenance includes maintenance tasks such as cleaning, inspection, regular lubrication of plant components, and documentation of the measures taken. In this way, knowledge about the assets is documented directly at the machine and is not lost due to a lack of communication. During maintenance, the downtime of the machine is recorded directly by the operating personnel on-site via the Downtime Registration module (sill level analysis) so that exact times and information are collected without subsequent entries or time offsets.

Suppose the operators carry out the maintenance tasks mentioned. In that case, this is often the most cost-effective option for companies - apart from the time required and the more extended downtime if maintenance staff must be called in first, in the worst case, even from an external source. In turn, maintenance staff and managers gain time if they can delegate these tasks for the daily care of the machines. This time can ideally be used to plan and carry out strategic preventive maintenance measures (Preventive Maintenance / Predictive Maintenance), for which there is little time in the day-to-day business. Close communication allows you to stay in touch, plan projects, and optimize processes.

Thanks to the seamless integration between IFS Ultimo and technology partners, the software offers comprehensive functionalities for remote collaboration and jointly performed maintenance. This includes, for example, the integration of video chats and the transmission of live plant data. The result: Even during unplanned plant defects and under high time pressure, processes and maintenance specifications are adhered to. One example of this is the Sign-off by Production function: This enables production employees to confirm previously carried out measures during maintenance, such as cleaning the plant and removing material and tools. This procedure for the step-by-step processing and confirmation of maintenance is of enormous importance, especially in the chemical industry, to prevent the contamination of products with lubricants and other agents used during maintenance and to adhere to all compliance requirements, including the corresponding documentation.

HSE issues are an integral part of maintenance management

Compliance also includes adherence to measures to protect employees and their health and to reduce environmental impact. A significant source of risk for these QHSE issues is unplanned maintenance. To mitigate these risks for planned and unplanned maintenance and repairs, the EAM system, IFS Ultimo, integrates its own modules for QHSE management. They ensure compliance by, for example, only allowing maintenance tasks to be carried out if the stored safety measures have been taken beforehand and confirmed in IFS Ultimo. These step-by-step functions ensure safety when carrying out maintenance measures and, at the same time, take over direct documentation so that additional work and unnecessary effort are avoided.

Start collaboration 2.0 in chemical production

Common goals, better communication, and access to the same database from any location are the central challenges to more efficiency in maintenance management, better plant availability, and higher productivity in chemical production. This requires a rethink in collaboration - with appropriately adapted processes and a common platform for the company-wide exchange of data, knowledge and information. IFS Ultimo is the optimal tool for this. The cloud-based EAM software counteracts data silos, improves information and data exchange across departments and enables entirely new, mobile ways of collaboration. When using IFS Ultimo, companies benefit from a better overview, cost- and resource-efficient and strategic maintenance management and thus from maximum machine availability and productivity - all this combined with maximum security and compliance.

Case study: Kisuma chemicals slashes downtime by 40%: a case study in transformative asset management

Kisuma Chemicals, part of the Japanese Kyowa Group, produces high-quality additives for the polymer production and processing industry. Its four production lines operate under the Seveso directive, 24 hours daily, and it supplies environmentally friendly and competitively priced products worldwide.

Ultimo is the backbone of Kisuma's EAM system, facilitating both production and maintenance operations. Its versatile use in maintenance, change management, work permits, and shift handover has led to a diverse user base in the operations department. Additionally, the IT department benefits from Ultimo's ITSM module, fostering a collaborative environment where different disciplines can communicate effectively.

With a combination of vision, organizational structure, a continuous 'Plan Do Check Act' cycle, and the application of the Ultimo software, significant improvements have been realized in working safely, uptime, and cost control. This is not only based on immediate maintenance costs but also particularly pays attention to the cost of production loss. This has led to a policy of risk assessment–and condition-based maintenance.

The maintenance strategy at Kisuma is based on preventative maintenance. Based on an FMECA study, the company has determined the criticality of its assets and defined the correct maintenance plan in Ultimo. The FMECA strategy has helped it to reduce downtime by over 40% and realize considerable cost savings in the past ten years.

Safety is critical at Kisuma. Using the HSE module has raised safety to a higher level. Every employee can submit a report, and Kisuma's policy encourages them to do so. The company wants incidents to be reported so it can improve and work safely so its employees and third parties can do their jobs.

As part of continuous improvement, Kisuma has taken significant steps in digitization. 30,000 documents have been digitized–so everything can now be opened in Ultimo with one click. This has resulted in major efficiency gains and an even higher quality of work.

Kisuma has created a link between Ultimo and SharePoint as part of its digitization process. User manuals, datasheets, technical drawings, and other relevant documents are saved in SharePoint, which can be accessed directly from Ultimo in the SharePoint environment.

Kisuma says the most crucial thing Ultimo has given stems from the asset management philosophy: create value from your assets and treat asset management as a revenue tool.

About IFS Ultimo

IFS Ultimo is a SaaS EAM solution from IFS, focused on maintenance & safety and well known for a rapid deployment, ease of use and an unparalleled time to value. Details about IFS Ultimo can be found at Ultimo.com.

About IFS

IFS develops and delivers cloud enterprise software for companies around the world who manufacture and distribute goods, build and maintain assets, and manage service-focused operations. Within our single platform, our industry specific products are innately connected to a single data model and use embedded digital innovation so that our customers can be their best when it really matters to their customers—at the Moment of Service™. The industry expertise of our people and of our growing ecosystem, together with a commitment to deliver value at every single step, has made IFS a recognized leader and the most recommended supplier in our sector. Our team of 5,900 employees every day live our values of agility, trustworthiness and collaboration in how we support our 10,000+ customers. Learn more about how our enterprise software solutions can help your business today at ifs.com.

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