SIMON TOWARD - VP GLOBAL SALES

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SOFTWARE AND SUSTAINABILITY

How Does Software Support Sustainability?

Sustainability touches all parts of the supply chain from sourcing spare parts through purchasing systems, optimizing warehouse storage using warehouse management, optimizing maintenance processes via CMMS, and even down to payroll and financial software. This article focusses on where sustainability can be incorporated into your Operations management.

Operational management software plays a pivotal role in the efficient functioning of Power Plants, Oil refineries, Manufacturing, and all heavy industry.

The correct setup and use of an Operations management system enables organizations to streamline their processes, reduce waste, optimize resource allocation, and make informed decisions. However, the impact of these software solutions on sustainability extends far beyond mere operational efficiency.

First let's understand what sustainability is, put very simply is making sure stuff doesn't run out. The earth only has so much resources to give, so ensuring that we use these or find alternatives to these we can sustain the operations that we carry out and the products we produce from Coal & Gas for power plants, to oil to make plastics used is many commodities, Lithium (a rare earth metal) are just a few examples. How we use these and dispose of these also has a huge effect on the planet, and if we damage the planet we damage the source of all our commodities so environment protection plays a key role in a sustainable future.

This article highlights some of these areas and try to provide examples to show how this is achieved. If implemented correctly Operations Management has several key areas that can help with this. Let's start by looking at where technology is and how it can play a role in sustainability.

It wasn't that long ago that Industry 3.0 was the latest thing in technology. Having machines that could automate production lines, computers to manage and calculate maintenance requirements, cost optimization and usage of spares and labour as well as electronic devices to cut-off machines if thresholds were reached or a sensor tripped.

Then it all changed when the World Wide Web became a public tool that could be easily accessed. This was the start of Industry 4.0. We still had the automated machines and the computer but now they were connected together and could share huge amounts of data, readings and more. The computer power and technical data available also meant that these machines could perform much more complex processes and also learn from and extrapolate data to make predictions.

This is the technology that we utilize today to support the environment and to help with the sustainability of our global operations. We live in a time marked by rapid technological advancements and a growing concern for our planet's well-being, it is imperative that we address how software solutions can contribute to a more sustainable future.

The most recognizable benefit of a well-implemented Operations Management system is its ability to increase efficiency in the processes and procedures utilized across many/all aspects of day-to-day operations. More important is their ability to monitor and track where these efficiencies are achieved or when processes and systems are inefficient so that informed decisions and changes can be made.

This is particularly crucial as the world grapples with climate change and the urgent need to reduce greenhouse gas emissions. Efficient operations mean a better running plant and emissions can be monitored and reacted to more rapidly.

A simple example of an optimized process can be seen when a safety observation is recognized at your site. Using mobile technology the observation can be recorded in the field, with supporting images or recording where these devices are allowed. Once the observation is saved (and assuming you are online to transmit), the report triggers a series of events.

- **An incident report is created automatically on the main system ready for assessment**
- **Simultaneously entries are automatically made in the Operations Log and in the Safety Log**
- **Other work in that area is automatically identified and notifications are sent so they are aware and appropriate action can be taken**

One action that uses a procedure and rules to automatically perform other tasks and notifications. Similar processes can apply to Risk Assessments (JHA), Isolations (LOTO), Permit processes, and many other operational areas.

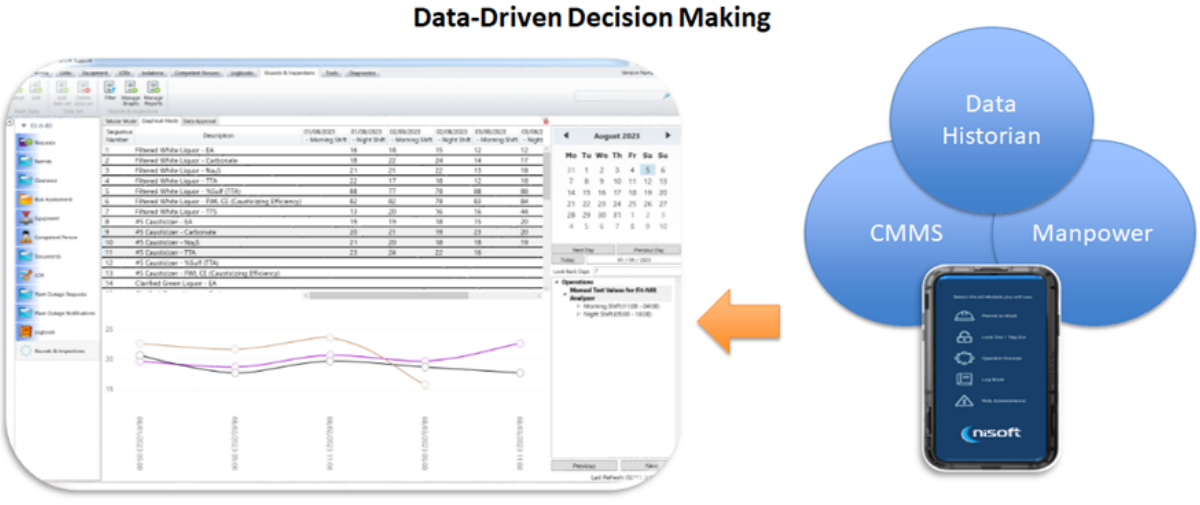
In order to best manage such related processes and procedures it is important to know what your key resources are and how they can affect sustainability. The 3 main resources that a site manages (excluding money, which is also affected by poorly optimized processes) are:

People are a key resource in many industries, knowledge and skills that are needed to run and maintain sites. These are being replaced more and more by automation and robotics but the skilled worker will still be needed for a long while yet for many roles. From a sustainability view point less workers mean less need for resources like heating, AC's, Lighting, Canteens, cars for commuting, etc... It also means less risk of harm or even fatalities to workers at the site.

Spares, material and consumables are another area where resource management is key. Having spares just in time to be utilised and not having then sitting in a warehouse where they need to be kept in dry, temperature controlled environment, or in a laydown area where they will be effected by weather and may leak or decay causing damage to the environment. Modern systems and accurate data can better predict when parts will be needed and what the optimum quantities should be held in stock.

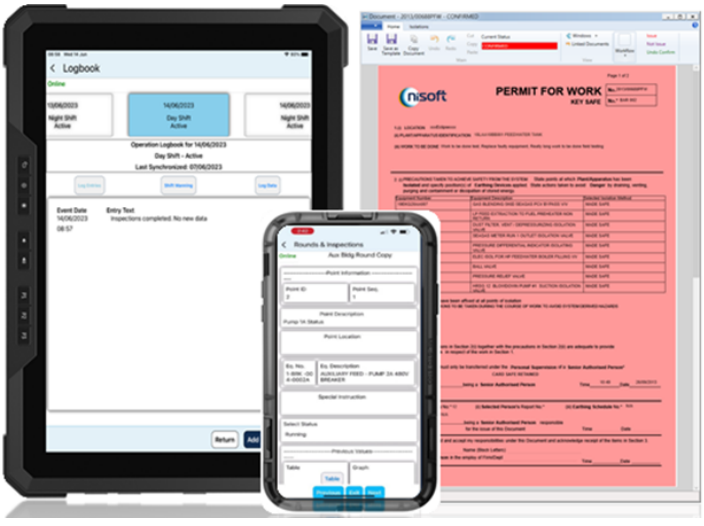
Data and Information is not considered by many to be in the resource category but if you look at the definition of industry 4.0 and how data and system connectivity play such a major role in estimating, calculating and predicting, then you will see how important data is. Quality immediate information coming direct from your plant or from offsite sources via the internet or intranet.

By helping businesses better manage their resources to better optimize production processes, these systems reduce unnecessary consumption. This not only saves money but also minimizes the environmental footprint associated with excessive resource use, all of this is as a result of retrieving and correctly using data. By harnessing data, organizations can make more informed decisions, leading to resource-efficient strategies. This data-driven approach allows businesses to spot trends, anticipate issues, and adapt their operations accordingly, reducing waste and increasing sustainability.



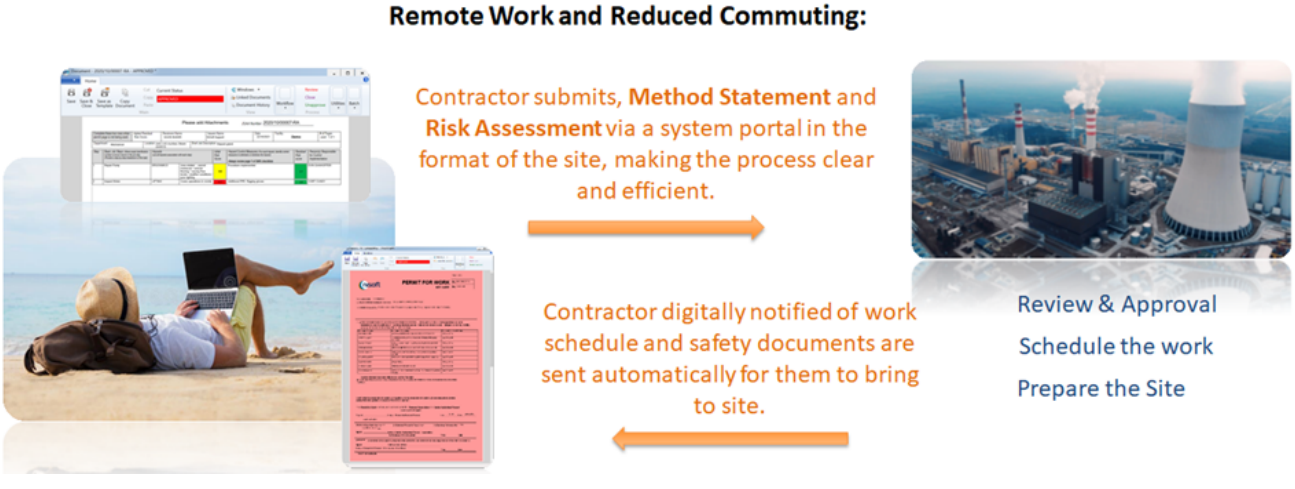
One other very obvious and visible areas of how well setup and implemented system help reduce our carbon footprint and drive better sustainability is by reducing paper usage. Digital documentation and communication tools not only save trees but also cut down on energy and resources used in the production of paper.

The introduction of mobile technologies now allows more tasks to be done at the point or work or at the site without needing to print paper documents. This is only the case if these technologies and processes are implemented correctly.



A great example of this was the introduction of computers in industry. These were marketed as technologies that would save paper and reduce the need for storing document. In reality however when the first systems were introduced paper consumption increased due to the ease of printing documents in duplicate or triplicate (or more) once the digital elements were done, completely negating the benefits of digital technology.

Designing processes to not use paper on rely more on digital communications has become more of an issues in the last few year due to the Pandemic and people not being able to pass pieces of paper around. Even now there are more people working remotely and only coming to sites once all is in place and confirmed and the contractor or work has received a digital communication of when to go to site. This may often include a QR code that needs to be scanned at the gate house when entering the site.



By allowing employees to work remotely, businesses can reduce their carbon footprint and contribute to improved air quality.

Contractors submitting information remotely via portals to your internal system increases efficiency but also allows your Operation/Safety team to review, correct and approve processes and Risk Assessments before a job starts at site, once the work is Approved and site preparations done notifications with links to Permits or other information documents can be sent to the contract to

print and bring to the site as proof that they have work and that preparations have been put in place and approved.

Transparency:

Clear information as well as an efficient handover process between shifts reduces potential risks and keeps everyone informed.

Having timely information available to all that need to see it is how we can identify inefficiencies and react more quickly to issues.

Transparency is crucial for sustainability and it is through the ability to monitor inefficiencies and see how changes in practices and procedures help mitigate and improve these.

Operational management software can provide real-time visibility leading to reduced emissions from commuting and minimized environmental impact by highlighting inefficiencies in all of the categories that have been listed herein.

All of the points written in this document also help with how you are seen as a site or company. Your reputation has always been a key decision in the selection processes but the increase in vendor qualification questionnaires and Cyber Security checksnowmeansn companies have more visibility on what systems you use and how you treat sustainability and environmental concerns.

Reputation:

Businesses that proactively address environmental and social concerns are more likely to gain the trust of customers and investors.

Sustainable practices, including the use of eco-friendly software, contribute to a company's long-term viability. Businesses that proactively address environmental and social concerns are more likely to gain the trust of customers and investors.

Sustainability in operational management software is not just a buzzword; it's a critical necessity in our modern world. By incorporating sustainable practices into your software solutions, we can make a significant positive impact on the environment, society and our bottom lines.

As responsible leaders in our industries, it is our duty to embrace this transformation and steer our organizations towards a more sustainable future.