# 20 years of OEE 20 lessons learned

## CIM

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#### Is OEE more than just a software implementation?

A successful OEE project is more than just a software implementation.

How many companies see value from their OEE investment?

Or has their OEE project stalled through lack of use or understanding?



#### **Culture of Improvement**

#### Does your company have a culture of improvement?

Don't start your Digital OEE journey without it! Successful OEE projects need **all** stakeholders bought in to the system and its benefits. Indeed, Cimlogic often refer to OEE as 'Overall Employee Engagement', where company culture plays a fundamental role in a successful implementation.





Establishing a LEAN culture within the business is a necessary foundation of smart manufacturing – don't start your OEE project without it!

The traditional LEAN expert might even claim you do not need software at all, all you need is LEAN Principles. In our experience, to get above 60% OEE a powerful combination of software **and** LEAN principles sets companies apart. The emergence of digital LEAN manufacturing combines LEAN principles and evolving digital technologies to decrease waste and variability in processes.



#### A successful project needs a senior sponsor

A senior business manager/director needs to drive any OEE initiative. Yes, technical expertise is needed to ensure the system is implemented successfully, but without senior leadership there will be limited business gains and a high risk of project failure. Senior sponsorship is equally vital for completed OEE implementations, to drive future business benefits and maximise the return on investment.

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#### **Know your audience**

Engaging with your audience early on helps team members buy into the value of a system, to get the best out of it for them!

It is important to understand the needs of each stakeholder and what they would gain from the system. Everyone needs to get on board. Setting an OEE target of 85% may be a useful to the production manager but not necessarily to the operator on the line. What information do the operators need? What would help them be more effective in their role?

The benefits of improved staff engagement can be significant: operators and supervisors often identify additional opportunities for process improvements which can yield tangible financial benefits.



#### Focus on delivering stakeholder value

From operators and supervisors up to board level management, it is important to focus on delivering value to all different stakeholders in the organisation. Take time to understand the goals of all stakeholders; the operators won't use the system if they don't see a benefit, supervisors need real-time visibility of OEE metrics, the financial director wants to see tangible improvements in efficiency/ productivity.



#### Visual communication is key

Workforce silos can prevent the flow of information between teams and departments – in a large factory you simply can't see everything that is going on. A collective effort is needed when finding out where the bottlenecks are and knowing which to fix first. The use of simple Andon communications driven from the OEE data goes a long way in the essential communications. We have seen a rise in OEE from 45% to 80% within a month from adopting this simple addition (and we didn't believe it either until we saw the results for ourselves!)

At a well-known beverage manufacturer, visualisation of OEE data helped prevent stoppages through pre-emptive restocking of raw materials. A global paint company achieved £80k savings simply through initiating a push-button system to reduce time taken for quality control checks.

#### Find the real bottleneck

#### Don't measure people!

Maintain employee engagement – don't use OEE as a 'stick' to track operators. Everyone needs quick wins. Empower employees to interpret the data – supervisors and operators on the shop floor often have the best recommendations for improvement as they truly understand the processes being measured.

Target the bottleneck machine. OEE is a great measure but quite often it only looks at a machine in isolation. The line will only go as fast as the slowest machine; target this to keep it running, understand if upstream or downstream systems are affecting it.

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#### Fit for purpose system design

Understand the requirements of each team; it will help design a system which is fit for purpose (for everyone) and is not destined for failure.

**Operations team –** concerned with availability losses such as downtimes and minor stops (finding the hidden performance losses).

**Maintenance team –** concerned with availability losses such as machinery/ equipment breakdowns & personnel issues. Identifying repeating issues that can be fixed or put into a maintenance schedule (or better still, providing analytical information to indicate potential equipment failure).



**Quality team -** concerned with quality losses such as wastage, product rejects, or missing customer delivery slots due to ongoing production quality issues.

Avoid the pitfalls of too many reason codes displaying on the system, giving stakeholders misleading information. Be wary of downtime codes which might capture consequential reasons only, which can often overshadow the original root cause.

Above all, never have 'other' as a downtime reason (or 'E-stop' or 'guards open')!

#### Use OEE to find 'hidden losses'

Manufacturers can often achieve up to 60% OEE with manual systems but struggle to improve on this figure.

In the initial stages of OEE the 'low hanging fruit' will have been identified and acted on. It then becomes harder to see the issues without a realtime solution. Operators using manual systems cannot easily see or write down minor stops, which are normally recorded in performance figures as a speed loss, suggesting the line is running slowly.

In fact this 'speed loss' comprises many unseen, unrecorded minor stops which can equate to 15-20% of overall losses. Some of these losses are nothing to do with equipment, but down to supporting activities (raw material delivery, staffing shortages, waiting for maintenance, line blockages due to downstream processes etc).

In manual systems these are hidden. This a key reason why companies get to e.g. 60% OEE and can't find a way to improve on this.

Real-time OEE solutions help identify the 'hidden downtimes' (short stoppages that repeatedly happen throughout the shift) and can help increase OEE 10-20% above the manual threshold.



#### Don't measure everything

An OEE system gives you the ability to see accurate data that a manual system does not give. But do not be tempted to try to log all downtime data at once; it's too expensive and likely to be of limited use. Start small and see tangible gains before expanding the system to additional areas.

A Cimlogic global Life Sciences client started their OEE journey with a pilot implementation, measuring key metrics only, and gained measurable successes quickly, maintaining staff engagement throughout.





#### OEE needs to be part of your overall production plan

Let your OEE system measure the **improvements** in your plant/production line; avoid being fixated on a goal percentage measure.

85% OEE may not always be 'good'. It could be at the detriment of high labour costs for example. An holistic approach should be taken – what are the overall business goals/ requirements? Other business KPIs (such as On-time delivery, daily production plan targets etc) need to be considered alongside OEE. A 1% measured improvement is better than maximising the OEE KPI with no overall business benefit.





OEE is only part of the equation; don't chase OEE to the detriment of on-time delivery.



#### Use IIoT technology to reduce infrastructure costs

Historically, data collection systems (such as OEE) included a high cost for new hardware/networking infrastructures. Many companies now use IoT remote, wireless devices to avoid costly infrastructure projects. Remote data collection and reporting options make OEE affordable (and justifiable for small organisations).

## Short interval control for collective problem resolution - don't lose a week!

Give production staff (operators, supervisors, quality, maintenance team etc) the ability to make impactful decisions in real-time. 'Short interval control' using accurate, current data and the expertise of the collective team, enables real-time intervention and anticipation of failures before they occur. Having current data to hand at hourly/daily production meetings ensures staff can proactively fix problems in real-time. How much do delays cost you? Without short interval control, manufacturers might wait a week to solve a simple problem.

A popular food brand saw OEE increase from 40% to 85% through real-time intervention on the production line.





#### Ensure governance of systems is in place & create 'OEE standards' company-wide



Standards need to be clear – ensure you have governance of multi-site rollouts (whilst considering individual plant requirements). Avoid the pitfalls of multiple disparate systems across different sites in the organisation.

However, also remember that individual plants have individual needs, different people, different dynamics, and different ways of working. One size doesn't necessarily fit all, but creating an 'OEE standard' for global rollouts is essential for maintainability and site comparisons.



#### **Review standards when things change**

Manufacturing is not a static industry, and any system must be adaptable to change. OEE standards need regular review, such as reviewing of line standards when new machines are added.





Unsure of the maximum speed of your production line? Don't underestimate and thus risk your performance measure exceeding 100%. This skews OEE results and can lead to inaccurate conclusions. Understand true production line speeds, or look for the 'best of the best' speeds achieved and use these as the 100% measure (or even use a theoretical max if needed). Be wary of using planned rates within OEE calculations (not advisable), as these can lead to misleading performance figures.

#### Do finance teams use OEE data effectively?

**A)** Many finance teams base cost of production on urban myth. These costs are subsequently never updated, even after upgrades to plant/ machinery, or changes in processes.

Examples include companies who have no idea they are making products at a loss! Real-time OEE can provide valuable input to production cost calculations.

**B)** When you have multiple products, do you really understand the one with the highest margin? When a sales team has several options as to which product they can sell, how beneficial would it be if they really knew which ones had fewer issues in production, which have less potential quality issues, and which one has the largest margin aligned to high quality?

There is a real opportunity for manufacturers to use the data from OEE systems to assist sales teams in knowing which products are costing more to make, how long they take to make in the production process and what labour costs are associated with it.



## Empower employees to use the data to recommend business improvements

Use the data! Achieve higher returns by encouraging staff to 'look beyond the data' and contribute to process improvements.

Capture the data provided by the OEE system to support business decisions. Production supervisors at a global cosmetics company used data from their OEE system to justify a £50m capex investment. The data proved that maximum production levels had been achieved with existing equipment and further investment was needed to make additional improvements.

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## A shift from feature-rich systems to real business value

What is the business case for investment in OEE? Early conversations with clients centred around features, functionality and performance of OEE systems. What about the ROI?! There are still many companies simply implementing the software and leaving the client to it – which is why many OEE projects fail, as companies do not know how to use the data to make improvements to gain maximum business value. Communications and training for staff are crucial in ensuring successful pilot projects can be rolled out to maximum benefit of **all** stakeholders.



#### Use 3rd party providers to challenge the norm



A good OEE solution partner will challenge and question why a client does things in a certain way. Using subject matter expertise and experience working within different industries, the provider can challenge processes and systems. Otherwise 'if you do what you've always done, you'll get what you've always got'.

#### How much value have you seen from your company's OEE investment? Is OEE even the right place to start?

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Contact Cimlogic today for a discussion on your manufacturing challenges and how we might support you on your digital manufacturing journey.

To find out more please email **enquiries@cimlogic.co.uk** or call +44(0)1274 599955

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