Aptean Industrial Manufacturing OEE

What is OEE - and **How Can it Minimize Losses?**

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How much of your total manufacturing time is truly productive?

If you're looking for a way to benchmark your production, OEE is a good place to start. Overall Equipment Effectiveness (OEE) is a globally accepted standard for measuring manufacturing productivity, with a maximum score of 100. A high OEE value means that your equipment is almost being utilized to its full capacity.

By measuring OEE, you'll be able to:

Continuously monitor how well your machines are being used

Find bottlenecks in your production, to increase profitability and competitiveness

Set tangible goals and measure daily improvement work

OEE scores are based on three key criteria: Availability, Performance and Quality Yield.

Availability

Availability (A) measures how much planned production time your machines really are in operation. Common obstacles include setup and adjustment periods, and unplanned downtime, such as tool change, staff shortages, lack of materials and machine failure – all of which will affect your score.

Performance

Performance (P) is also known as speed loss. It measures how machinery is impacted by performance problems, such incorrectly set speed, reduce production rates and machines not being tuned. It also includes idling, minor stops and other quality issues, as a machine not running at maximum speed still generates performance loss.

There are several ways to determine your maximum performance rate. The value can be provided by the machine manufacturer. It could be the theoretically fastest possible speed, or the highest rate ever achieved in production.

Quality Yield

Quality Yield (Q) looks at how many of the produced units can be sold at full price, versus how many cannot. Sub-par products could be pure scrap with no value at all, or a unit with defects that can still be sold – but at a reduced price. The difference between the total number of units produced and those deemed top quality creates the yield score.

While the possible reasons for a poor OEE score are endless, there are some Availability, Performance and Quality Yield problems that affect businesses more frequently. We've identified six major losses that are most likely to impact manufacturers...

Six major losses impacting your production

To optimize your OEE value, you need to eliminate all kinds of losses that arise in production. Some of these will be visible – such as breakdowns, scrap and mechanical/maintenance downtime. Others, like shorter stop and speed loss, will be less easy to see.

Here are six major losses that are most likely to impact your production flow:

1. **Equipment failure and interruptions**

   Any form of technical downtime will lengthen your processes and lower your production volumes. The cause of these machine disturbances and interruptions could be temporary; they could be recurring.

   Common examples include the breakdown of control systems or central machinery components, which need to be repaired or replace. These events mean machinery must be stationary for a long time. Other glitches, like software problems, may only result in the machine being turned off briefly. However, the issue may recur frequently until a permanent solution is found.

   To reduce these losses, it is important to break the problem down into small pieces, especially when it comes to recurring problems.

2. **Set-up and adjustments**

   Failing to get your machinery set up right can cause several issues along the production line. Firstly, equipment is running below its maximum capacity, which impacts production volumes. Secondly, the downtime needed to make technical adjustments further hinder productivity. And finally, set-up issues are a common cause of defective products, which affects your quality yield.

   To reduce these losses, take into account the disturbance of different parts; mechanical adjustments need to be made separately to machinery alignment.

3. **Idling and short stops**

   Short stops are usually caused by something that is easily solved, such as a product being caught in a feeding machine, or debris getting in the way. But if these errors aren't noticed quickly, they could lose your business significant time in the long run. The same is true of idling losses, when a machine is not operating even though it could, due to lack of material.

   The difference between these losses and chronic disruptions is that short stops don't depend on the machine itself, but the material or other equipment. However, they are difficult to detect and analyze because the operator doesn't usually record small disturbances.

4. **Reduced speed**

   Some losses can be difficult to see with the naked eye, such as when a machine runs at a slower speed than it is designed for. This often means that it isn't considered a problem, because the machinery in question is still producing articles.

   It is even harder to see this type of loss if the machine produces multiple types of articles, with a large variation of the target cycle time for each article. In these cases, you need to use a Production Monitoring System that can handle the stop times on order and article level.

5. **Equipment failure and interruptions**

   Defects are a double loss because not only does the raw material need to be discarded, but it has also been a waste of production time manufacturing the defective product. And defects can be caused by any kind of processing problem, or temporary/intermittent interference.

   Even if a defective part doesn't need to be scrapped altogether, the parts that can be revised should also be considered a loss. This is partly because they take up time for the operator, but mainly due to the machine time used for a value-adding process.

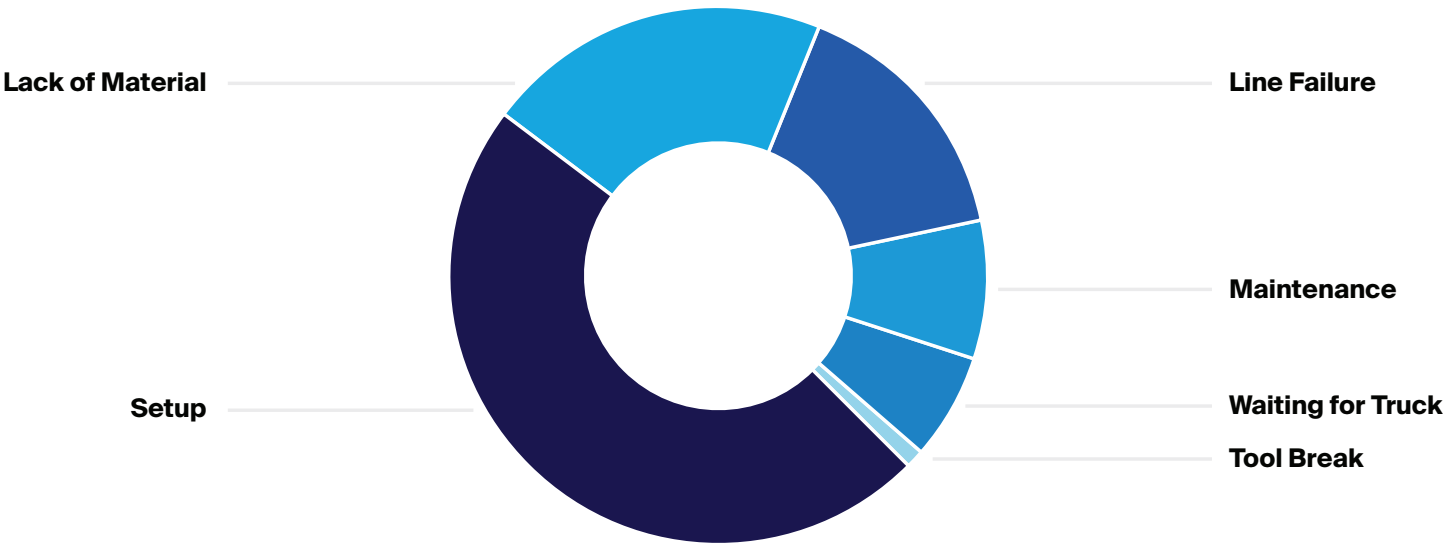
6. **Reduced yield and startup losses**

   Sometimes, a quality loss that arises while starting up an unstable machine, which leads to a number of faulty articles being produced before the process becomes stable. Such loss occurs mainly after a new set-up, or if the machine has previously been turned off.

How can you keep track of OEE?

Once your business understands how to measure OEE, the next step is to start tracking it. Continuous measurement is the only way to understand how production is being impacted by stop times, downtimes, stop causes, scrap and other key performance indicators (KPIs) – which need to be resolve if you want to improve and streamline your processes!

Analyze each of the areas in which your production is being compromised, to understand which Availability, Performance and Quality Yield issues are putting the biggest strain on productivity. Here is an example:



Collating all this information manually, from handwritten logbooks, Excel files and disparate systems, can be incredibly time consuming. To speed up the process, many manufacturers invest in a system that automatically records the OEE value in your production, to look at your current optimization.

OEE software will both simplify your operators' work and capture more data than they would have recorded in the first place. And it will give you valuable insight into your current situation, so you can set about improving your OEE value.

Learn more about your business with Aptean Industrial Manufacturing OEE

Aptean Industrial Manufacturing OEE is a Production Monitoring System that quickly, reliably collects data from your machines. Our state-of-the-art solution is ideal for both single- and multi-plant manufacturers, to provide a complete picture of your production effectiveness.

We'll help you identify the sources of loss, as well as areas for improvement. With a strong focus on production follow-up and optimization, Aptean Industrial Manufacturing OEE builds a solid foundation for your continuous improvement process.

Are you Ready to **Learn More?**

Contact us at **info@aptean.com** or visit **www.aptean.com**.

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