

OEE Solution from
EmsPT powered by
Wonderware.

Independent analysts
report customer service
improvements for
Wonderware Users up 14%
compared to next best in
class 3%; Yield up 12%
versus 4% for the rest; and
throughput up 8%
compared with 2%.

[Source: Aberdeen
Group]

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Overall Equipment Effectiveness (OEE)

Why OEE?

To drive efficiency improvements in your organisation you need to be able to create a focus on continuous improvement. This focus then has to become part of the culture of the company and be driven from a repeatable KPI. OEE works by providing critical information including:

- Downtime
- Change-Over's
- Line Speed
- Start-Ups
- Quality and Waste
- Bottlenecks



Customers are constantly looking to their suppliers for a reduction in costs or extra capacity at peak trading times which can only be achieved by removing waste from the process, realising efficiency gains and releasing hidden additional capacity.

“Using data to drive continuous improvement”

OEE is a data driven methodology and key to making improvements as part of a Lean Manufacturing / Continuous Improvement (Kaizen) programme. Although it has become the accepted KPI for benchmarking equipment and process efficiency many programmes fail as they rely on manual data entry and processing which is often inconsistent and, over time, becomes a burden on the company.

EmsPT can provide an OEE solution that uses your existing automation equipment or, if necessary, our own data collection hardware to automate this process and provide the data in real-time and historically.

“Transfers the focus on to improvements and not the data collection”

OEE information often needs to be combined and compared with other business drivers such as energy usage and product costs. Our unique web based reporting tools enable users to drill down and find the real issues while seeing how they affect other key business drivers.

Contact EmsPT on: +44(0) 161 495 4694 or visit www.emspt.co.uk

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Financial Gains

Why does a company look at implementing OEE? In order to create the correct environment to save money:

“Make more for less” or

“Make the same in less time”

For many companies a 1% improvement in OEE can have a significant positive impact on production costs, making the difference between securing your next order or winning the production of a new product within a group of companies.

Most companies having implemented an effective Continuous Improvement Programme driven by 'Data and Information' systems achieve between a 5% and 20% increase in OEE. In real terms, and dependent on size, a 1% increase would typically save a company £100,000 to £800,000 in production costs.

An improvement in your OEE will have a direct affect on your Labour, Materials and Energy costs.

When it comes to winning your next order consider the following:

Your OEE is 50% and you currently have a production capacity of 200 units an hour. You have new orders for 18,000 units which will take you 90 Hours to produce at your current OEE.

What would happen if you competition had an OEE of 60% and could produce the same output in 75 Hours?

- Would this mean they would be able to offer a better delivery time and a better price?
- Could you absorb any additional labour, material and energy costs in order to compete?

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OEE and Energy

OEE doesn't only have the ability to affect your plant efficiency it has a direct relationship with your energy usage.

Equipment that is running slowly or has lots of downtime will use more energy. Most lines that start-up after a downtime require more energy to get back up to speed than normal running. How much of your equipment is left standing producing nothing but consuming energy to keep them on standby or at operational temperature?

The following is a simple list of statements for you to consider:

- A production Line running at 40% performance will be using 100% of the energy.
- A line running at 40% OEE will probably require double shifts to meet demands. This means you are probably using 100% more energy than you need to.
- Scrap material uses as much energy as a good part.
- Many companies buy new equipment to meet demand when they would be better investing in optimising their existing equipment. If the equipment is running and not producing it is still using the same energy. When the new equipment is introduced this again increases the energy demand and energy waste.
- A company identified that a 5% increase in OEE would allow them to remove the Saturday shift and save £155k in energy costs a year.
- A company had 7 ovens and a 8% increase in OEE would allow them to turn an oven off saving £ 250k in energy costs a year.

Alongside our OEE solutions we also provide a range of Energy Monitoring and Targeting (M&T) solutions.

- Energy Monitoring and Targeting (M&T) is an effective management tool that allows you to find and diagnose energy wastage.
- Energy usage is related to driving factors such as the weather conditions, production rate, process equipment settings...
- Understanding the driving factors allows targets to be set and energy usage monitored against these.
- The waste of energy can be signaled by a difference between the target and actual usage.

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Overall Equipment Effectiveness (OEE)

OEE Calculation



OEE was created by Seiichi Nakajima at Nippon Denso in the late 1960's but only reached the English speaking world in the late 1980's with the translation of his texts. World Class levels are reported at 85% but most companies struggle to reach a true 60%.

Leading manufacturers who have adopted Lean Manufacturing techniques approve the **OEE Calculation** as one of their continuous improvement tools. Lean ideas are not restricted to large corporations, more they are based on commonsense practice but they do require cultural adoption throughout the company. Those that truly adopt a cultural change and engage their employees on the benefits will reap the rewards.

"If you are thinking of simply introducing OEE to get a number we suggest you save your money as that is not the purpose"

What the OEE Calculation identifies:

The OEE calculation is split into the three components of Availability, Performance and Quality. These components identify the following losses:

Availability: Actual v Planned production time

- Equipment set-up
- Major Equipment breakdowns

Performance: How the process is running against the target rate

- Speed reduction
- Minor stoppages

Quality: Percentage of first time right

- Set-up yield
- Production yield

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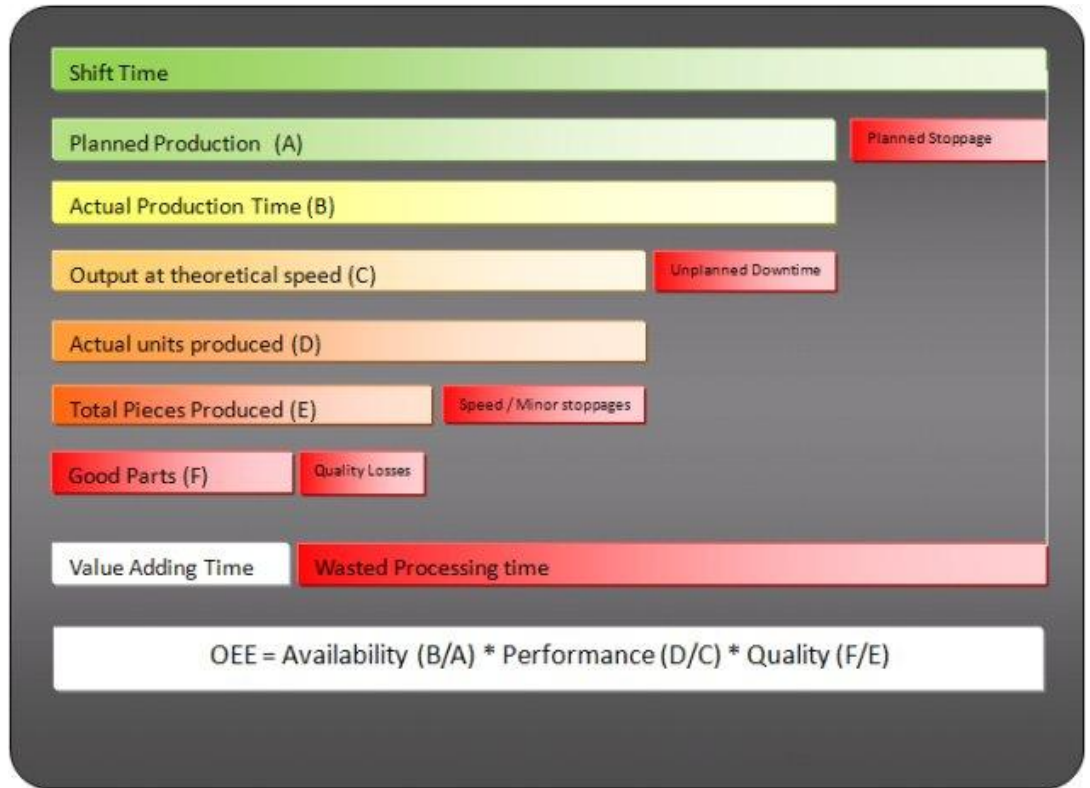
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OEE Calculation

The OEE calculation is expressed as a percentage and calculated as shown in the diagram

$$\text{OEE}\% = \text{Availability}\% * \text{Performance}\% * \text{Quality}\%$$

The OEE Calculation shows the following losses:



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OEE Software

To find your true OEE a plant connected solution is required. Manual systems can provide a starting point for OEE but require operators to accurately record all downtime and problems. When they are busy running the line or fixing production issues this rarely happens. Most production processes suffer from minor stops that go unrecorded but usually contribute to a significant loss in production time. In addition, many other losses in production time will fail to be seen or recognised and therefore not recorded in a manual system.

By collecting information in real-time with OEE software you can react to today's production performance issues as they happen, recovering valuable capacity.

An OEE software solution needs to provide varying interfaces for the different users from the operator to production management and financial control.

Our reporting solutions provide an array of reports via Wonderware's Information Server through your web browser with full 'Drill Down' capability. The following provides just a few of the configurable options we can provide:



Full Drill-Down OEE Software Reporting

Drill down into your reports and uncover your real issues



Simple Operator Interface

Allow operators to see a production plan, start / stop jobs and record downtime and waste



Production Performance

Is your production running efficiently and do you need to alert key personnel of issues?



On-Target Production for the day

Is your production on time, do you need to start planning for additional shift time?

Downtime Analysis

Analyse your current and historical downtimes with Pareto charts

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OEE Software Training and Support

Introducing an OEE programme requires careful planning and training to ensure that all personnel understand the benefits to them and the company. Introducing a solution without 'buy-in' from the people running it so they fully understand the advantages to themselves and the company will inevitably fail

EmsPT are able to help in this process with a structured training and support programme creating a culture for success.

EmsPT has the expertise to align production and performance management objectives to help achieve an effective manufacturing environment at optimum operational cost.

The logo for EmsPT, featuring the letters 'ems' in a large, grey, lowercase sans-serif font, and 'pt' in a smaller, blue, lowercase sans-serif font, positioned to the right of 'ems'.