

# Overall Equipment Effectiveness (OEE)

**“Our output is much lower than the capacity of the installed equipment!”**

Production machines are designed on the basis of a certain production capacity. In practice, it turns out that due to various causes, the actual output lags far behind the capacity of the installed equipment. In addition, it appears that the improvements that are implemented have little or no effect: At a higher production speed, more products are rejected, and when we focus more on quality, the machine malfunctions regularly. Often we simply do not know any better; the situation is the way it is and we have learned to live with it.

## The OEE provides insight into the losses that occur during a production process

If the output of approved (!) product lags far behind the capacity of the installed machinery we speak of hidden production capacity, i.e., the capacity that is not being used for the production of good product but - unintentionally or unwittingly – used for various types of losses.

How your machine performs in comparison to an ideal machine – namely, a machine, which always operates at maximum speed and with a quality rate of 100% - is determined by losses in availability, performance, and quality. The OEE indicates how effectively your machine is being used compared to the ideal machine (OEE = 100%). The diagram below illustrates how the OEE is determined.

Total Operational Time (Time that the company is open for operation)				
Availability	A	Potential Production Time (Time planned for production)		No Production Planned
	B	Actual Production Time	<b>Stoppages</b> - Malfunction - Waiting/ Re-setting - Production Line Inhibitor	
Performance	C	Theoretical Output (Output at maximum speed)		
	D	Actual Output	<b>Speed Losses</b> - Short stoppages - Reduced production speed	
Quality	E	Actual Output (All output)		
	F	Good Product	<b>Quality Losses</b> - Wastage and re-processing - Losses during start-up and idle time	
		<b>Effectivity Loss</b>		
<b>OEE</b> = <b>Availability Rate</b> x <b>Performance Rate</b> x <b>Quality Rate</b> = B/A x D/C x F/E				

## **Measuring the OEE, a starting point for continuous improvement**

In practice, the OEE value is usually much lower than expected! The difference between reality and the ideal equals the sum of the losses and, consequently, shows right away where there is 'room for improvement'. You cannot improve what you cannot measure. The success of World Class Performance lies in measuring accurately and consistently the performance of the machine and the production process. Since the OEE is a very straightforward and powerful instrument for locating where losses occur, an improvement process always starts with measuring the OEE. For this purpose, Blom Consultancy has developed a very user-friendly software program that allows for detailed analyses of losses and production performance: the OEE Toolkit®. Within a few weeks, the OEE Toolkit® will make clear to you the production capacity that has been lost and where the losses are to be found. Furthermore, Blom Consultancy supplies you with the tools for improving the production process whereby operators and mechanics play a leading role in eliminating the losses. The fact of the matter is that the improvements in your organisation will become a real success story when everyone in the organisation can contribute and share in the results. The OEE, therefore, will make it easy for everyone to see the effect of each action that leads to an improvement and to justify this action with evidence.

## **Results**

The OEE is, therefore, a simple and an easily understandable tool for an improvement process:

- It is unrelenting in its ability to point out the problem (the losses become visible)
- Priorities will become clear (fry the big fish first)
- You will be able to make well-founded choices for specific improvements
- The results of the actions leading to improvements can be observed straight away ("the OEE increases!")
- It is simple and easy to understand for all involved.

## **The role of Blom Consultancy**

Blom Consultancy will help you on your way to a process of continuous improvement by providing:

- Implementation of the OEE measurement and application of the OEE Toolkit®
- Workshops for all involved on the effective use of the OEE
- Support when analysing the results of the OEE measurement
- Support when setting up a World Class improvement program
- Support for the successful realisation of improvements

## **More information?**

Blom Consultancy bv, Heuvel 11, 5737 BX Lieshout (NL)  
Tel. +31 (0)499 – 42 79 79 ; Fax. +31 (0)499 – 42 79 78  
Website: [www. BlomConsultancy.nl](http://www.BlomConsultancy.nl); email: [info@BlomConsultancy.nl](mailto:info@BlomConsultancy.nl)

Ask us also about the OEE Toolkit® brochure.