

# O.E.E. Overall Equipment Efficiency Monitoring & Improvement

Powerful “real time” environment for the monitoring of the principal performance index and of the O.E.E. (Overall Equipment Efficiency) that allows increasing profits through an improvement activity by supporting Lean Manufacturing techniques.

## Overview

O.E.E. is recognized universally as the most qualified indicator to measure the efficiency of a system. It can be defined as the ratio between qualified pieces produced by the system and pieces that it could have produced potentially. It is calculated in percentages.

O.E.E. is composed of three sub-indicators:

- 1) **Availability indicator**, it takes into account losses of efficiency due to failure or set up.
- 2) **Performance indicator**, it takes into account losses of efficiency due to microstops and loss of speed.
- 3) **Quality indicator**, it takes into account losses of efficiency due to defects / reworks and starting losses.

The identification of losses is necessary in order to establish the areas where the intervention is a top objective.

Monitoring has to be constantly supported by an improvement activity of the current state which is realizable through a dedicated analysis, so that it can become an improvement tool of the system. In other words, monitoring not followed by the definition of corrective actions is useless because it does not improve system performance.

In order to achieve a higher level of operations' efficiency, the **Talker®** tool and the supporting activity by our **Inspiring Business Consulting** provide:

- **Real time monitoring**, in the presence of misalignment between objectives and results, allows intervening at the right moment to handle all necessary corrective measures.
- **Post-analysis**, brings a detailed report and a graphical display of trends allowing to verify the quality of the corrective measures adopted.
- **Production efficiency and profits increase**, thanks to our experts' consulting supported by Lean Manufacturing techniques (O.E.E. optimization).

## The Tool

**Talker®** is the innovative module to monitor O.E.E. index. Its target is to provide in real time and in a graphical form the KPIs' (Key Performance Indicators) dashboard that is able to measure operations' trend.

### Availability indicator

It allows measuring how much time the shutdowns drew on from the time of the system's availability.

For those shutdowns whose causes are not recognized by the system, there is the possibility to choose one from a configurable menu for the worker. It is possible to calculate different index with these data that analyze assets' reliability and availability, as MTBF, MTTR, MTBM...

### Performance indicator

It is possible to measure with this index, how much the system came close to its nominal rate of production.

The system calculates various index by exploiting data acquired from the machine control systems and eventually from data entry.

For instance:

- Yield index
- Performance index



### Quality indicator

The number of products in entry, products in exit and scrap are counted for each level.

All data coming from the field are processed and shown in a graphical and tabular form. It is possible to calculate the qualitative yield index with the available data.

## Analysis Paths

In order to make analysis easy, indicators provided are aggregated at different levels, as:

- Plant
- Department
- Single machine, equipment or line of production
- Production or job order
- Lot
- Product
- Given format

## Technology

**Talker®** is a unique and essential tool created by using the most advanced technologies capable of supporting the most innovative functionalities:

- Web based architecture that guarantees an easy use and low management costs or maintenance charges
- Multiplatform to work with many operating systems such as Linux, Mac Os and Windows' different versions
- Data integration and exchange with external systems (ERP, MES, MRP..)
- E-mail and sms messages management
- Management of terminals connected with radiofrequency
- Bar code and RF-ID management



## The Competences

The first step to obtain an increase of the O.E.E. is to identify which of the three sub-indicators is the most critical one - through a specific analysis activity that can be carried out by the **Inspiring Business Consulting Division**. In this way, it is possible to define the right technical and managerial tools to increase the global efficiency value of the system. If the O.E.E. value disappoints the expectations, then it is necessary to react on some of the six big areas of a system loss:

- |             |                  |                     |
|-------------|------------------|---------------------|
| 1) Failures | 3) Microstops    | 5) Defects/Reworks  |
| 2) Set ups  | 4) Loss of speed | 6) Loss in starting |

In the case of **high set up times**, for instance, it is necessary to lower setup times value through the SMED technique (Single digit Minute Exchange of Dies) in order to increase O.E.E. This technique, with a Japanese origin and part of lean production, allows improving the setup quality and assures its standardization.

On the other hand, **high number of microstops and speed losses** bring to the use of some improvements that bring again the operative conditions of the system at optimal levels. This is obtained with operative maintenance techniques through auto-maintenance and cleaning cycles (the five S - Seiri Organization - Seiton Criticality Analysis - Seibo Cleaning - Seiketsu Standardization - Shisuke Auto-discipline).

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### Available solutions:

#### **BLINK - Energy Efficiency**

The new solution for energy costs/consumption analysis and optimization.

#### **OTM Suite - Maintenance & Reliability**

The solution capable of managing the maintenance processes that integrate their engineering and management activities.

#### **FDS - Real Time Monitoring**

The advanced MES module to collect, archive and visualize the data of production, machines and systems in real time.

#### **TALKER® - O.E.E. Monitoring & Improvement**

The innovative MES module for the measure and analysis of the operational performances.

#### **BWO - Warehouse Management System**

The solution for the integrated and collaborative management of the logistics with performances monitoring.

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20060 Bussero (Milano) Italy - Via Milano, 15/i  
Tel. +39 02 95038260 - Fax +39 02 95039892

[mkt@inspiringsoftware.com](mailto:mkt@inspiringsoftware.com) - [www.inspiringsoftware.com](http://www.inspiringsoftware.com)