

WHITEPAPER

How to Calculate and Improve Your OEE in Manufacturing

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1.Introduction

Overall Equipment Effectiveness (OEE) is a key performance metric used in various industries, including process manufacturing, to evaluate and improve operational efficiency.

OEE assesses how well equipment or machinery is utilised in a manufacturing or industrial setting. While it is traditionally associated with discrete manufacturing, it adapts to the unique characteristics of process manufacturing processes, whether they involve batch or continuous operation.

However, it is crucial to grasp the nuances of approaching OEE and addressing losses within the process industry. OEE solutions are often marketed as one-size-fits-all solutions for all plants, regardless of their industry or type of operation. The philosophy underpinning OEE, and loss accounting must align with the requirements of each process, respecting the inherent disparities.

This whitepaper aims to explore the aspects of OEE and its practical application, equipping professionals in the process industry to enhance productivity. We will examine the origins of OEE, its definition, and its practical implementation in both batch and continuous production processes. We aim to demonstrate the concept and transform it into a valuable resource for achieving sustainable improvements in operational performance.



2. Understanding OEE: A Methodology to Identify Losses

Overall Equipment Effectiveness (OEE) has its roots in the Total Productive Maintenance (TPM) and Lean Manufacturing methodologies. It was conceived as a metric and concept to evaluate and increase the effectiveness of manufacturing equipment and processes. The Japan Institute of Plant Maintenance (JIPM) early advocated the OEE concept. Over time, it became an integral component of the broader lean manufacturing and continuous improvement methodologies.

Seiichi Nakajima, the pioneering founder of the TPM system, notably introduced OEE in his book "Introduction to TPM," published in the eighties. Nakajima was a key advocate for TPM and focused on developing practical methods to measure and enhance equipment performance in manufacturing settings.

OEE is defined as a metric that aims to uncover hidden costs and provide a comprehensive assessment of the efficiency of both equipment and processes. It achieves this by considering availability, performance, and quality losses directly associated with the TPM Six Big Losses.

2.1 The Six Big Losses: A Comprehensive Classification

The Six Big Losses efficiently categorises equipment-related setbacks, as illustrated in image 1 below.

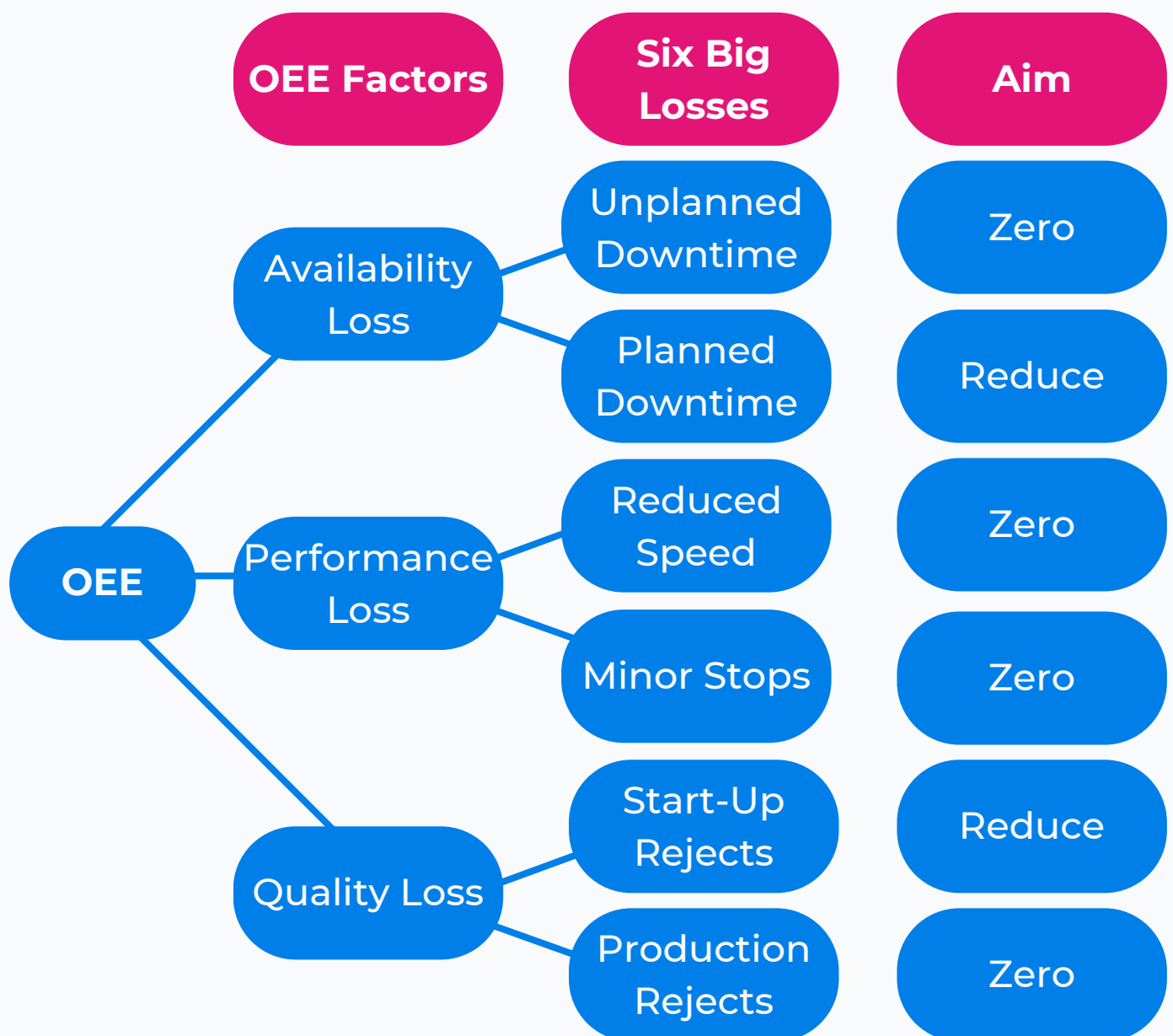


Image 1: As demonstrated, the TPM Six Big Losses can be mapped to various elements of OEE.

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