

How Smart Checkweighers Can Drive OEE and Production Efficiency

07 October 2026 | News

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Food manufacturers, pharmaceutical companies, and chemical plants all face rising raw material costs, high quality requirements, and increasing competitive pressure. In turn, this is forcing production managers to scrutinise their processes ever more closely. Yet although modern production lines provide a wealth of data, it often remains unclear where performance is actually being lost. The analysis of Overall Equipment Effectiveness (OEE) reveals where processes are actually squandering potential and modern checkweighers play a key role in determining OEE.

OEE is now regarded as one of the most important key performance indicators for production optimisation. It combines availability, performance, and quality, and shows how efficiently a piece of equipment is actually working. It is precisely the combination of these three perspectives that makes OEE so valuable. This is because the greatest losses often do not stem from time-consuming machine breakdowns, but from small losses that go largely unnoticed in day-to-day operations and continue to add up over time.

Modern checkweighers now do far more than simply check weight. They continuously record data on quality, throughput and process stability. Checkweighers detect over- and under-fills in real time and enable early correction of filling processes. This helps to avoid unnecessary additional costs, particularly for high-value products.

Furthermore, modern systems document rejections, faulty batches and quality deviations. Performance losses, such as reduced line speeds or recurring interruptions, are also identified and can be factored into OEE analysis. "Checkweighers occupy a crucial position within the production line, often as the final link in the chain," says Linus Dellweg, Product Manager at Minebea Intec, a world-leading manufacturer of weighing and inspection solutions. "They see virtually every single product produced and thus provide information that goes far beyond mere weight. Used correctly, this provides a very precise picture of the actual process stability."

However, as digitalisation advances, the volume of available data is also growing. Many production facilities now have thousands of data records at their disposal, yet are unable to automatically use them to make informed decisions. The real added value only arises when information is presented in a comprehensible way and placed in the correct context.

This is precisely where Minebea Intec's Blue HMI comes in. The modern user interface visualises production, quality and OEE data directly on the machine and highlights deviations in real time. This enables operators and production managers to identify where performance is being lost more quickly and to react immediately. "In many plants, it is not the data that is lacking, but the time to analyse complex reports. When important information is immediately visible, the time taken to move from identification to action is significantly reduced," explains Dellweg.

Whilst Blue HMI makes production data visible directly at the point of operation, SPC@Enterprise broadens the view to encompass the entire production process. The software centrally collects measurement, quality and process data from all sensors along the production line, analyses trends over longer periods and documents all relevant information for audits and quality certification.

The interaction between the two solutions creates a seamless data flow: the Blue HMI user interface supports operational control in real time, whilst the software SPC@Enterprise provides the basis for comprehensive analyses and continuous improvement processes. This enables companies not only to identify current performance issues, but also to systematically analyse their causes and resolve them in the long term.

As digitalisation advances, OEE is evolving from a mere analytical tool into an instrument for operational production control. By intelligently linking data from checkweighers, inspection systems and software platforms, companies lay the foundations for sustainable efficiency gains and greater competitiveness.