



Success Story



LeaderMES

With **LeaderMES** Tetro gain real-time window into its production environment, achieving immediate and tangible efficiency improvements, reduction in energy consumption and optimize raw materials usage and upgrade the overall company working culture towards perfection.

Highlights

- Plug & Play technology helped achieve immediate and tangible results with minimum upfront investment and no extra operational complexity
- Full visibility and real-time data collection throughout the manufacturing process in support of information-based decision making culture
- Powerful dashboard visualizes production data in real-time by product, machine and process
- Building accumulated manufacturing data that allow us manage SWOT process to maximize advantages and reduce risks
- High ROI, tangible improvement in less than a month of operation; OEE improved by over 30% while saving on energy & Material waste, while cutting time to market by 25%
- High ROI, LeaderMES system is characterized by very fast returns on investments – less the 6 months
- Easy integration with dozing systems to enable precise, computerized control of material grades usage integrity to prevent critical mistakes
- Managing manufacturing with minimal inventory
- Monitor and compare energy consumption per product, per machine throughout the manufacturing cycle, instant notification on energy deviations
- Compare and analyze actual manufacturing results with Tetro long-term heuristic and physical models



Tetro Factory



Tetro Factory



Challenges

- Control the production flow, trace mistakes and optimize performance
- Run a fully integrated knowledge-based business with systems that work seamlessly together
- Centralize manufacturing production data into one system that can be viewed and analyzed from a single-point-of-entry
- Pinpoint in real-time which stations are compromising production and what can be done to restore and improve efficiency
- Implement preventative maintenance and ensure minimum downtime
- Monitor energy consumption and optimize material consumption per product



"LeaderMES made it possible to collect data in real time, gain crucial predictive insights and reduce time-to-market per product by 25%.

Within weeks we reached significant savings in energy consumption, master batch and materials and prevention maintenance".

**Ping Chen,
Information
System Manager,
Tetro**





Tetro Factory

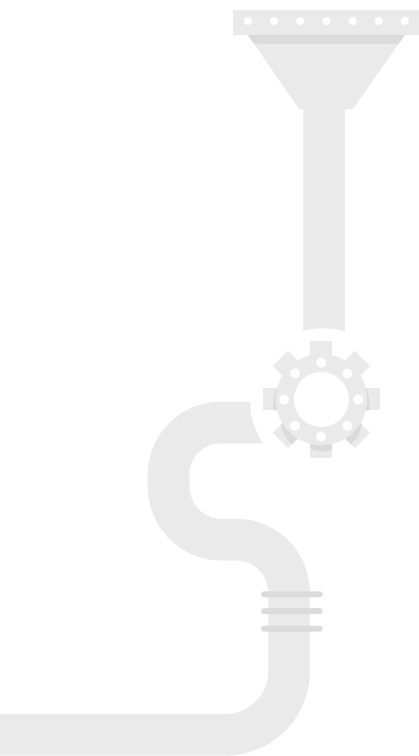


Tetro's management, in a bid to exceed market demands and consistently produce high-quality products at competitive pricing, realized it needed an accurate real-time window into its factory floors.

Data visibility became crucial in order to make information based decisions. Tracking and monitoring the factory's manufacturing operations, optimize material usage and energy consumption. The data is transparent to Tetro customers showing how Tetro utilized their investments in Tools. Tetro management wished to have better control over its manufacturing process in order to streamline the production process and identify production patterns that could help anticipate machine failures, notify management about potential production pitfalls and reduce risk of not meeting production delivery

quality, cost, and timing targets. An important cost element in the process of plastic injection and extrusion is Energy consumption. Highly granular monitoring and comparing of energy consumption per each product's manufacturing-cycle per machine will enable Tetro's management to improve OEE and meet its sustainability targets. The system's planning module helped reducing the MOQ of Tetro customers which enable them to spend more on marketing and reduce inventory costs.

Tetro's management set to create an information based decision making culture, improve corporate transparency and quality assurance by automatically generating real-time reports that displayed data at each stage of the production process and provide customized per- production milestone alerts and call-to-actions.



Why LeaderMES system?

The plastics industry faces increasing competition, fluctuations in material costs and growing sustainability awareness issues. LeaderMES brings years of experience in the plastic manufacturing sector with a proven track record in streamlining plastic manufacturing processes, reducing time to market and generating significant cost savings. LeaderMES developed specific MES modules, tailored to plastic industry processes including injection molding, extrusion dozing management and assembly.

LeaderMES offered Tetro solutions for machine and production monitoring and tracking across the entire manufacturing process. LeaderMES's real-time OEE reports and machine fault prediction alerts were particularly important to Tetro. Tetro's interest in LeaderMES was initially triggered by LeaderMES's open, flexible and modular design making it possible for Tetro to easily configure, customize and expand the system for their own specific needs and embed their own modules

and knowhow. Tetro soon recognized that by implementing the LeaderMES system in their factories, they could run and manage a fully integrated plant with multi systems that work seamlessly together.

Tetro could then generate real-time reports on daily or per shift basis that displayed a top-down snapshot of the entire manufacturing process including machines status and material inventory and usage, which was crucial for its daily production meetings and ongoing production assessments.

To achieve immediate results Tetro searched for an MES system that could be rapidly deployed, configured and connected to all machines. The LeaderMES unique Plug-and-Play design met Tetro's requirement for setting up an MES system within days, acquire and present data immediately, and achieve tangible ROI within weeks of operations. In addition, LeaderMES team was recognized by Tetro for its high-quality and responsive support and outstanding record with previous customers in the plastic manufacturing industry.



"If I can identify whether a machine is about to breakdown or reduce its capacity and solve it, let's say, by simply replacing a filter on time, we avoid the risk of downtime and achieve huge savings".

**Ping Chen,
Information
System Manager,
Tetro**





LeaderMES Solution for Tetro

- Plug-and-Play modules
- open and flexible
- Full visibility
- Preventative maintenance unplanned downtime
- Real-time monitoring of resources consumption helps to save costs
- Online material management & control
- Corporate sustainability policies reinforced by energy reduction and material savings

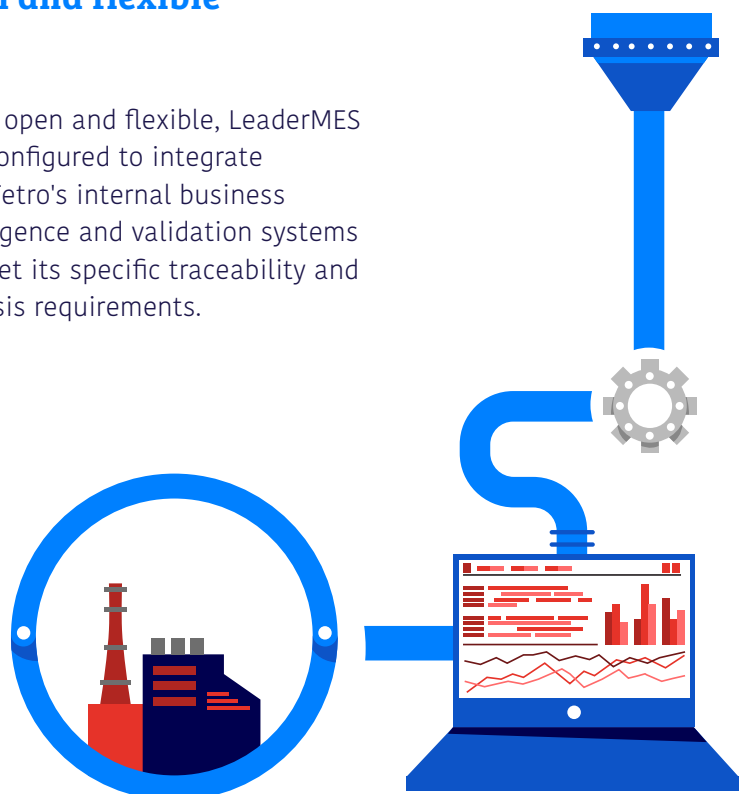
Plug-and-Play modules

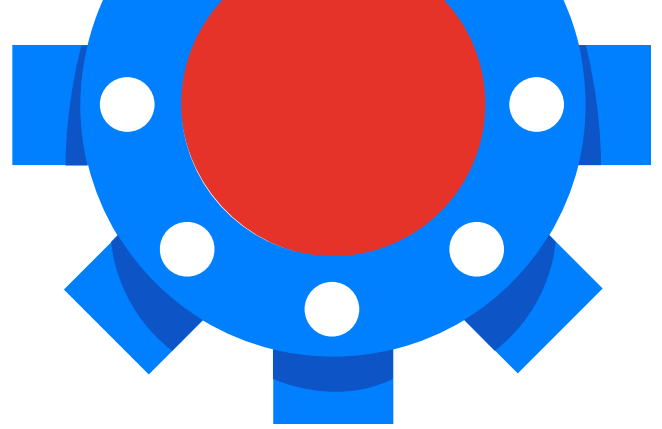
The implementation of LeaderMES became instrumental to Tetro's operational success and long term vision of a fully visible, connected and knowledge-based factory.

Using its Plug-and-Play modules, the LeaderMES solution was deployed across the production floor and was up-and-running within days. Following one week, Tetro was able to view production data from the factory floor and produce real time ops reports.

open and flexible

Being open and flexible, LeaderMES was configured to integrate with Tetro's internal business intelligence and validation systems to meet its specific traceability and analysis requirements.





Full visibility

Full visibility of production floor operations and material management enabled the team to monitor and track the entire plant's day-to-day operations and resource usage in real time.

Following the integration process, Tetro's management was given

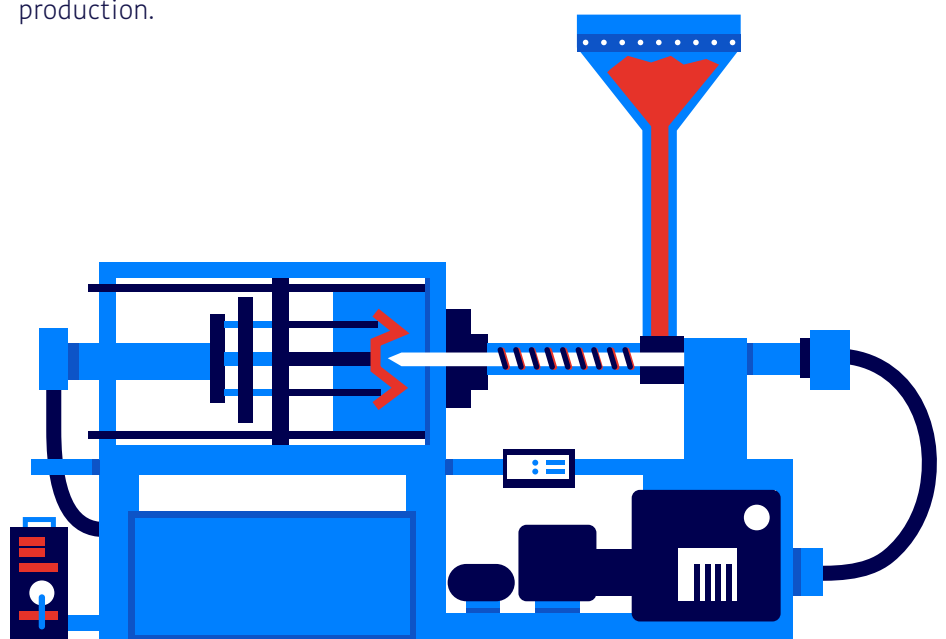
va real-time window into the plant's production floor. 24 hour summary reports helped management and production teams review and discuss plant activity during Tetro's daily morning meetings. Data collection made it possible for Tetro to analyze OEE information, detect

patterns and trends and discover where they could make adjustments and improvements. Data was documented and compared, performance was tracked and increased and waste was reduced.

Preventative maintenance unplanned downtime

The adjustments introduced to preventative care process helped Tetro run smarter maintenance schedules, improve manufacturing speed, reduce unplanned downtime and prevent operator's error. Data collected via LeaderMES provided real time monitoring of each machine's availability, job progress

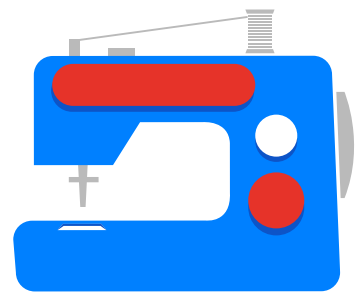
status and causes of potential process pitfalls, An operations history log enabled the Tetro team to analyze potential production pitfalls and fix them before a breakdown occurred and achieve better and more cost effective production.



Next Steps

Following the improvements achieved in automation, energy consumption reduction and improve productivity, Tetro decided to implement additional LeaderMES modules and embed its solutions in the rest of its factories.

In addition, Tetro undertook to develop complimentary modules to the LeaderMES system to extract further business information and manufacturing knowledge from the big data being collected by the LeaderMES system.



About Tetro

Tetro Ltd. is part of the Starry group, a privately owned holding with 8 production facilities in south East Asia. Established in 2007 Tetro Ltd. has 3 production facilities covering 90,000 square meters.

Today it employs over 1,350 people. The company specializes in OEM Manufacturing, plastic injection tooling, textile sewing, plastic injection, metal and aluminum, anodizing lines and consumer

goods engineering. Offering complete solutions for partner needs, Tetro is fast becoming a leading OEM/ODM supplier.



About LeaderMES

• **LeaderMES** digital factory solutions develops and implements OEE, resource optimization and secure cloud-based systems for industrial SME's worldwide. Following years of experience and

expertise LeaderMES developed a reputation for delivering fast and simple deployments, high ROI and robust performances. LeaderMES systems connect thousands of machines 24/7, worldwide all operating in a highly demanding

production environment. Today the company partners with leading IT corporations to provide a gateway to the digital factory world.

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Thank You