

The ROI of Smart Manufacturing

Smart manufacturing. Industry 4.0. AI automation. The manufacturing industry is buzzing with, well, buzzwords that describe a bright future. But how do manufacturing leaders cut through the hype and assess the bottom-line impact of technology improvements? ROI of course, the traditional measure for assessing the upside potential of innovation initiatives.

Let's explore how it applies in most smart manufacturing scenarios.



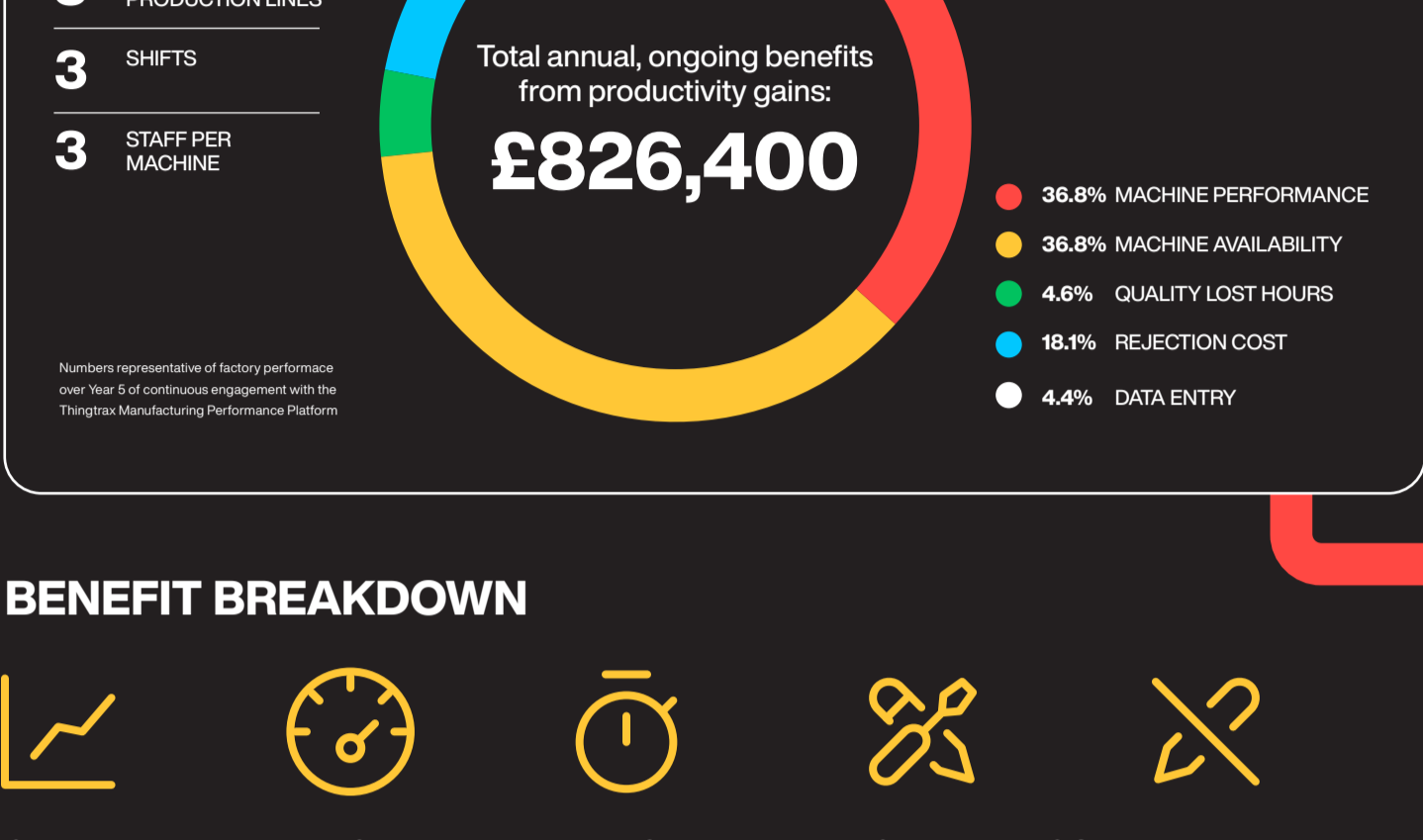
FOOD & BEVERAGE

Let's take the case of a food or beverage manufacturing plant. Faced with disconnected data sources, rising labour costs, increased waste and diminished productivity, the Operations Manager conducts a thorough audit to assess opportunities for smart manufacturing technology. They recognise that installing Thingtrax sensors on all machines can provide real-time analytics and a single source of the truth. The resulting business case captures benefits from several improvements:

- EFFICIENCY**
Real-time OEE metrics allow managers to spot bottlenecks quickly, and take proactive actions for optimal productivity.
- QUALITY & SAFETY**
AI-enabled cameras assess product quality, while measuring and monitoring manual activity on the factory floor.
- DOWNTIME & MAINTENANCE**
Predictive analytics enable a proactive maintenance schedule, and minimised downtime.
- EMPLOYEE ENGAGEMENT**
Equipped with rich data and clear performance objectives, engaged teams drive a high-performance culture.

ASSESSING PRODUCTIVITY GAINS

Our operations manager recognizes that the most substantial benefits of his business case will come from productivity gains. These are mapped into multiple categories.



BENEFIT BREAKDOWN

QUALITY SCORE	MACHINE PERFORMANCE	MACHINE AVAILABILITY	QUALITY LOST HOURS	DATA ENTRY
Reducing materials cost of rejected items	Optimising throughput for existing machines	Reducing unplanned equipment downtime	Improving product rejection rates	Reducing register effort of manual entry
SCORE: 98% → 98.5%	SCORE: 87% → 91%	SCORE: 90% → 94%	SCORE: 98% → 98.5%	SCORE: 30hrs → 1hr
SAVING: £149,500	SAVING: £304,100	SAVING: £304,100	SAVING: £38,000	SAVING: £30,600

Why stop at productivity gains? Smart manufacturing innovation can enhance ROI in several additional areas:



- PROFIT / REVENUE**
A more efficient operation allows you to take on new orders and increase capacity.
- MACHINE MAINTENANCE**
Reduced downtime due to usage-based preventative maintenance.
- ENERGY**
Automated reporting on energy use and CO2 emissions enables strategic energy choices.
- SAFETY & COMPLIANCE**
Reduce accidents and safety violations with vision-based monitoring systems.
- SOFTWARE MAINTENANCE**
Eliminate the time and expense of upgrades and patches with cloud-based solutions.

ADDING UP THE ROI

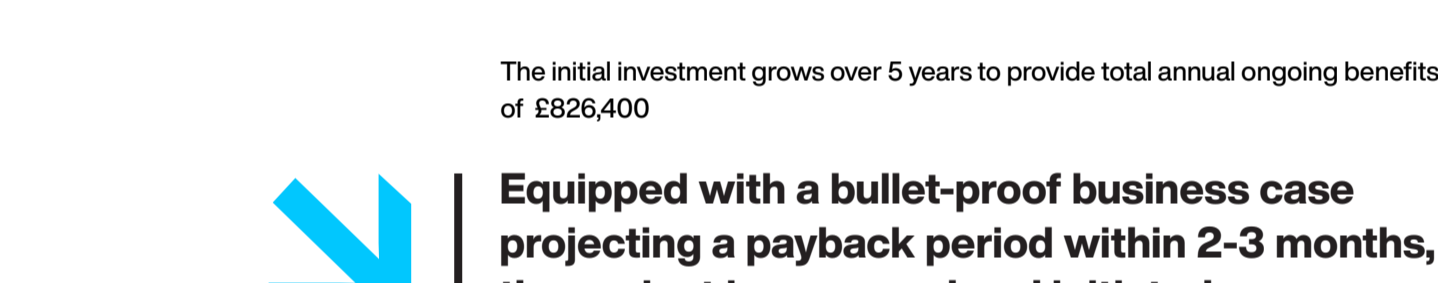
Having assessed all of the areas that smart manufacturing can impact the beverage manufacturing operation, the Operations Manager is ready to calculate bottom-line impact.

BUSINESS CASE ('000's)

Calculate both a "conservative" and "likely" scenario for Net Present Value (NPV), Internal Rate of Return (IRR), and Payback (the date when your investment pays for itself through efficiency gains).

ROI METRIC	CONSERVATIVE	LIKELY
NPV Net Present Value	£465.95	£1323.33
IRR Internal Rate of Return	106.40%	285%
Payback (Months)	5.9	3.1

BENEFITS PROJECTION ('000's)



Equipped with a bullet-proof business case projecting a payback period within 2-3 months, the project is approved and initiated.

ACHIEVING RESULTS

By continuously implementing improvements over a span of five years, the team is able to generate impressive bottom-line gains through improved operational efficiency. True to forecast, the initiative has a payback period of two months.

BEFORE	AFTER
Manual labour is a data blind-spot	Real-time measures for manual activity
Reactive approach to production bottlenecks	Predictive analytics to warn of likely production issues
Disconnected data in the hands of few	Consistent, visual reporting shared by all teams
Time-based machine maintenance	Proactive, usage-based machine maintenance
Unpredictable supplier quality	Supplier quality and yield metrics inform procurement

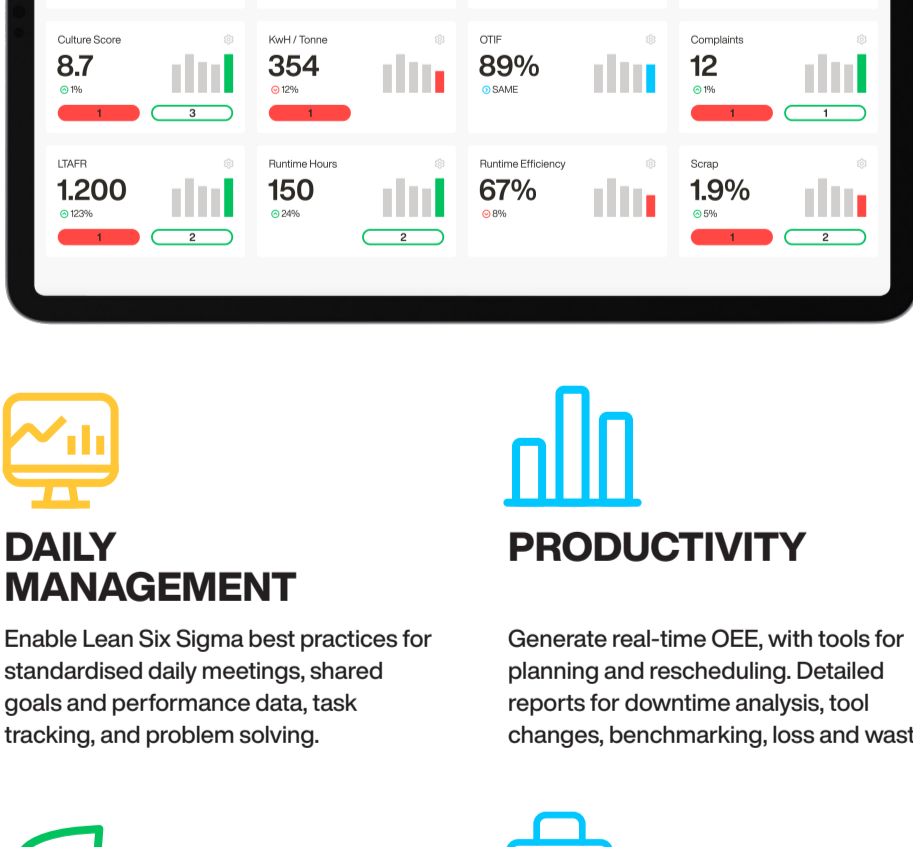
ANTICIPATING IMPLEMENTATION RISKS

Every digital transformation initiative brings some risk, but with built-in quality measures and some well-proven mitigations, these common risks can be monitored and avoided.

LOW EMPLOYEE ADOPTION Team-oriented solutions are only effective with buy-in from employees. Resistance to change is a common obstacle. MITIGATION Engage the team early and often. Share the plans, the process, and reinforce the benefits of data-empowered teamwork.	DATA ACCURACY ISSUES If your productivity solution doesn't accurately match your facilities and production lines, you're at risk of reading false indicators and trends. MITIGATION The first few months are critical for checking and re-checking that your dataset is a reliable digital twin for the activity on your factory floor.	OVER-PROMISED & UNDER-DELIVERED If your business case promised instant and exorbitant gains, you may face opposition to the entire program if these results don't materialise. MITIGATION Continuous improvement is an ongoing exercise. Pace your productivity gains in increments (20%, 30% etc.) over a reasonable timeframe.
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thingtrax THE MANUFACTURING PERFORMANCE PLATFORM

Thingtrax offers a complete solution for manufacturing leaders to improve operational excellence. Capture data insights from all stages of production, digitise team processes for all functions, set performance objectives and targets, and engage employees to develop a high-performance culture.



LEADERSHIP DASHBOARD
A control panel for CEOs that provides real-time visibility of the organisation's progress against key metrics such as OEE, quality, and safety.

DAILY MANAGEMENT Enable Lean Six Sigma best practices for standardised daily meetings, shared goals and performance data, task tracking, and problem solving.	PRODUCTIVITY Generate real-time OEE, with tools for planning and re-scheduling. Detailed reports for downtime analysis, tool changes, benchmarking, loss and waste.	QUALITY Track customer complaints and solve problems systematically with support for audit processes.
SUSTAINABILITY Measure and report on energy usage, health & safety, and CO2 emissions.	MAINTENANCE Reduce downtime and maintenance costs with a proactive approach to factory maintenance for longer asset life.	DATA CAPTURE & DISPLAY Capture digital and analog electrical signals from your equipment and use digital cameras to track non-conformance, quality and PPE.

START YOUR JOURNEY TO IMPROVED ROI

At Thingtrax, we've helped numerous manufacturers improve productivity, engage employees, and boost ROI through smart manufacturing technology and continuous improvement processes. Here are some ways we can help:



ASSESS YOUR OPPORTUNITY Our free factory assessment provides you with an expert review of ROI-enhancing opportunities in your manufacturing environment. BOOK AN ASSESSMENT	ENVISION THE FUTURE Schedule a demo to review the power of integrated analytics applied in real manufacturing scenarios. SCHEDULE A DEMO
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