How to Unlock the Productivity Puzzle
How to unlock the productivity puzzle

At MESTEC we are passionate about redefining manufacturing performance and work with highly ambitious organisations who want to drive change.

Everything we do is focused on creating and implementing advanced manufacturing solutions that transform all aspects of operational performance. We do this by continuously challenging the status quo:

ERP systems are very accomplished in supporting back office processes such as finance, CRM, HR, and supply chain management but are not designed to support some of the critical aspects of a manufacturing organisation which are production planning, production execution and real-time performance management. As a result, we still see the wide spread use of paper, spreadsheets and manual processes that are error prone and weaken manufacturing performance.

MESTEC bridges the gap between the back-office and the factory-floor with a purpose-built solution that continuously redefines and improves operational manufacturing performance.

Traditional MES systems attempt to address these issues but have significant drawbacks. These include an overwhelming focus on manufacturing automation while missing the human workforce element and a rigid enterprise-based architecture that is expensive, inflexible and delays in seeing any economic payback for many months.

In contrast, MESTEC focuses on the performance of all manufacturing assets including machines AND people.

This white paper looks at the challenges that UK manufacturing faces in 2019 and beyond, and addresses those issues in four key areas:
The productivity puzzle

According to figures released by the Office for National Statistics (ONS) in April 2019, labour productivity was lower over the last 10 years than at any time in the 20th Century.

"It has taken the UK a decade to deliver 2% growth, which historically was achieved in a single year," said ONS deputy Chief Economist Richard Heys. In a recent interview with the BBC, Howard Archer, Chief Economic Adviser to the EY Item Club, said: "The UK’s ‘productivity puzzle’ is a source of much debate and analysis.

He added: "It is also probable that many companies took on labour rather than committing to costly investment, given the highly uncertain economic and political outlook. The low cost of labour relative to capital has certainly supported employment over investment."

Low productivity could be due to a combination of a fall in real wage growth and low levels of investment in plant, amongst other factors; even with the fear of unemployment, productivity can fall if employees perceive that their wages don’t reflect their levels of activity.

Poor labour productivity rates are a growing concern for policymakers and manufacturers alike. Productivity in the fourth quarter of 2018 was 18.3% below its pre-downturn (credit crunch) trend, according to the Office for National Statistics (ONS).

“There are deep-rooted structural problems in our economy that have dampened productivity from skills shortages, to infrastructure bottlenecks and limited growth finance,” suggests Suren Thiru, Head of Economics at the British Chambers of Commerce. “Delivering solutions to these critical issues would go a long way to achieving the productivity gains we need.”

You may not be able to change the UK economy’s deep-rooted structural problems, but you can improve your own business’s labour productivity. The first step is to identify the root causes that are holding your labour productivity back.
1. People

Identify underperforming operators and tasks
The problem with relying on figures for average employee productivity is that it allows individuals performing poorly to hide behind their more productive colleagues. Likewise, unless you can pinpoint exactly which tasks are dragging down your overall productivity, you won’t know where to focus your efforts to improve factory performance.

Paper-based time sheets can compound this issue with their lack of accuracy. With effective plant-floor execution software you can measure individuals’ productivity in real-time, enabling you to immediately address the issue with those members of staff. This instant feedback and constant, real-time monitoring will enforce a sense of accountability and motivate staff to increase their output.

Inadequate skills
Over a fifth of current vacancies are due to skills shortages, according to the Commission for Employment and Skills. This makes life especially difficult for manufacturers who want to recruit experienced staff but end up either taking people on who are overqualified for the positions on offer, or having to invest heavily in training inexperienced operators.

Even with trained operators, you need to ensure that they perform tasks to the required standard and work in the most productive way possible. If your production tasks change frequently, having to retrain people and wait for them to get up to speed with a new process can negatively affect labour utilisation.

Having operators follow step-by-step instructions at their workstations will enable you to capture and replicate best practice across the shop floor. Presenting unambiguous instructions using diagrams, photographs and video will enable operators to see at a glance what they need to do at each stage in the production process, helping inexperienced operators to improve their skills and minimising errors.
2. Process

Identify bottleneck sources
Sometimes low worker productivity levels are due to poor line balancing or excess capacity – operators may not be receiving sufficient tasks into their workflows due to scheduling issues, and they have to wait for upstream activities to complete. Operators may also not be trained sufficiently to carry out the tasks, leading to further issues.

Production line bottlenecks are easy to spot when you have a simple, linear production line. When you can see where the bottleneck is you can add an extra operator or machine to increase capacity, removing the bottleneck and ensuring a better flow of materials and increased overall productivity.

However, identifying the source of production line bottlenecks and spare capacity is much more difficult for factories with shared processes and thousands of different product variants. Simple visual inspection will not always reveal the source of the problem. The only way to identify the issues and optimise production is to automatically collect and report on production at a detailed level. Having access to accurate, real-time reports and dashboards can help to solve this and enable you to balance production and improve overall productivity.

Inefficient processes
To improve labour utilisation (direct hours booked divided by available or attended hours), you need to increase the time that operators spend doing useful work. If operators are idle waiting for parts or sub-assemblies because of inefficient production schedules, direct hours booked (together with labour recoveries) will suffer and hence will productivity.

Sharing performance data of your top performing operators with operators and management, almost immediately brings out the competitive nature of operators to work harder. This transparent culture consistently increases the working environment and engagement on the factory floor particularly with those who are recognised as high achievers. The clarity of also knowing who is under performing can then be managed effectively by providing training so they can reach their full potential.
Inefficient processes
Efficient planning and scheduling of anything other than a simple serial production line can quickly become complicated. You need to know exactly how long each task takes and where production is up to every minute of the day. Using real-time work-to lists, which only show jobs that are ready because the pre-requisite operations have been completed, will ensure that the shop floor has a clear list of prioritised jobs and will minimise the time that operators waste trying to find out what they should be working on next.

Poor quality
If your workforce is highly productive making goods that are of poor quality and need to be reworked, your Overall Equipment Effectiveness (OLE), which is a function of the percentage of saleable product produced, will suffer.

Many factors affect quality, amongst them the use of poor materials and operator errors. For production managers, the challenge is to maintain high quality standards without compromising productivity. One way to do this is to use quality alerts to help identify potential issues as early as possible – whether those issues are with poor materials, flawed processes or inadequate operator skills. Highlighting process steps that require more careful attention can help improve quality without slowing production down.
3. Data

Lack of data
Only by collecting detailed process information, including specific task times by operation, product variant, individual operator, team, production line and so on will you have the basis and granularity of analysis that will give you the required insights to be able to accurately measure and subsequently improve labour productivity.

If you rely on paper-based timesheet trails to collect operator task times, it’s highly likely that your data will be inaccurate and not sufficiently granular to give you the information that you need. Furthermore, by the time that you’ve collated the data that you collect manually for analysis, it will be too old to inform the changes you need to make to improve productivity for your work in progress.

Using the wrong measures
The ONS tracks figures for output per hour – fine for its economic reports, but inadequate when it comes to running a manufacturing operation because they won’t provide the level of detail you need to pinpoint performance issues. Other common measures that businesses use to track productivity include revenue and profit per full-time employee. Again, these provide no useful insight into labour productivity or how to improve it.

Overall labour effectiveness (OLE) and its constituent parts, including labour utilisation (direct hours versus attendance hours) performance (actual speed versus standard speed) and quality (labour hours lost to rework or scrap), should form the basis of your labour productivity metrics. Unlike high-level measures like profit per full-time employee, using OLE will provide you with detailed, actionable insights, such as why one cell is slower to perform a task than the others.

Highlight inaccurate benchmarks
If your benchmarks are wrong, your productivity reports will be wrong too. A key indicator of this is when certain lines of production are always exceeding your ‘standard’ costs; either all your workers are under-performing, or the standard is wrong. Inappropriate benchmarks can be demotivating for staff, and can incentivise undesirable behaviour, such as “cherry-picking” jobs with generous standards rather than the most urgent work. Worse, standard times are often used as the basis for product costing and inaccurate standards can lead to margin erosion (when standards are too low), or uncompetitive pricing (when standards are too high).

Good manufacturing management software can help you to frame your benchmarks correctly by accurately collecting and analysing your data to ascertain workable standards for employees and management to use.
4. Feedback

Provide real-time operator feedback
Performance data is crucial, and yet even if armed with all the productivity reports in the world you can’t improve a person’s productivity after the act. Rather than wait a few days to let a team know they’re underperforming, let them know immediately by providing your workforce with visibility of the targets for their current work and real-time performance data against the targets so they can immediately see areas of low productivity. Providing feedback is one of the most immediate ways to get the best from your people, and the sooner you can deliver it, the sooner you’ll see improvements.

Not showing operators what good looks like
If an operator doesn’t know what constitutes a good level of productivity and how they compare against the benchmark, it’s likely that he/she will continue to work at the same level as they always have done. In order to be able to set expectations and provide real-time performance feedback, you need to know how your best operators perform.

Our customers tell us that providing real-time feedback to operators is one of the quickest ways to improve labour productivity, and can help to drive cultural change across the shop-floor. For example, alerting a supervisor in real-time to the fact that an operator is waiting for material or a piece of equipment will enable you to fix the problem while there is still an opportunity to improve today’s performance.
Six real life examples of our customers improving labour productivity

Don’t just take our word for it. At MESTEC, we asked some of our key customers to share their experiences with you. Here are six great examples of how our customers have used the data and analysis our solutions give them. In each instance, using MESTEC has enabled them to drive their continuous productivity improvement programs and increase labour productivity.

**Providing instant feedback**

If your operators don’t know how they’re currently performing and what is expected of them, they may not know that they need to improve and they almost certainly won’t know by how much. Traditional factory floors use time sheets to collect information once a job is completed. By the time the data is collected, analysed and fed back to the operator, it’s too late to change anything or for the operator to react to feedback.

MESTEC’s solution allows you to collect task times in real-time, and immediately feed productivity information back to the shop floor.

Olicana achieved a dramatic improvement in labour performance simply by sharing information so that individual operators could see how they were performing. As a result of productivity gains, Olicana achieves a £10 return for every £1 it invests in MESTEC’s solution.

“Data is available in real-time, and shared with management and factory floor. As a result, we’ve seen an instant improvement in productivity.”

Rupert Pearson - Managing Director

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**Focus on improvement**

Even if you regularly gather accurate shop floor data to measure labour productivity, you may find that you still lack the necessary insight to improve things. With job times held in spreadsheets it can be time consuming and require advanced expertise in data manipulation in order to drill down to uncover the root causes of poor productivity.

MESTEC’s performance analytics make it simple to analyse data using a comprehensive library of report templates and interactive dashboards. You can even create bespoke dashboards on-the-fly to monitor specific KPIs at a glance, insights into complex processes and identify the root causes of poor labour productivity. Siemens spent months performing manual work studies in an attempt to investigate the difference between standard hours earned and actual hours worked, but couldn’t get to the bottom of the problem. Only once MESTEC was deployed was Siemens able to quickly determine the reasons behind the productivity gap.

“We quickly discovered the definition of ‘good hours’, estimated at 5% were actually 10%.

Being able to flag in real-time, rather than on paper, meant we could recover the cost from external suppliers involved.”

Adrian Toyne - Manufacturing Operations Manager

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**Volume tube bending manufacturer**

**Designs and manufactures industrial gas turbines**

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**SIEMENS**

**Rupert Pearson**

Managing Director

**Adrian Toyne**

Manufacturing Operations Manager
Examples of our customers improving labour productivity

**GTK**

**Electronics manufacturer**

**Identify training opportunities**

Effective training can improve productivity, but taking operators away from the shop floor for training means your productivity will take a short-term hit, so you need to be sure that the training is required and delivered to maximum effect.

By analysing productivity data, you can pinpoint who needs training and what areas you need to focus on. You can also measure the return on your training investment once operators are back on the job.

GTK used MESTEC’s analytics to compare operator performance for completing similar tasks to identify training requirements for their teams.

“Training the new team on the MESTEC system has also been straightforward. We showed our lead Craiova operator how to use the system, now she is able to get new starters up to speed on the system without further assistance.”

*Steve Robinson - Operations*

**Thales**

**Defence contractor**

**Delivery actionable information**

Manufacturing businesses report on a lot of productivity metrics that are difficult to action. According to Aberdeen Group, the top three measurements for productivity are revenue per full-time employee (FTE), service level achieved and profit per FTE. None of these are metrics are actionable in any shape or form on the factory floor.

Thales uses MESTEC to ensure that the right staff perform the right tasks and are appropriately qualified for the job with up-to-date certification. It also analyses task times to measure manufacturing cost and efficiency metrics, tracking accurate actual vs. standard times to take steps to improve labour productivity.

“Via reports and dashboards, the system is delivering valuable actionable information.”

*Brian Abernethy - Head of Manufacturing*
Examples of our customers improving labour productivity

**Deploy intuitive technology**
If the systems you deploy on the shop floor are difficult to use, require extensive training, negatively impact your existing systems or require you to change the way you work, the disadvantages of adopting any system will soon outweigh the productivity benefits.

GTK deploys MESTEC’s solution, including easy-to-use touchscreen terminals for each assembly team, to accurately analyse labour content in its products and enable accurate production scheduling and competitive pricing.

Before adopting MESTEC, GTK had to estimate labour content for wildly varying batch sizes from one cable assembly to a thousand – a task they found impossible to do with any degree of accuracy.

GTK achieves a £20 return for every £1 invested in MESTEC factory-floor solutions.

“Unlike our previous system, we soon found that our people trusted the MESTEC solution, and found it easy to use.

*Plus at a team level, there was a new sense of empowerment and accountability, with overall labour effectiveness climbed to 86%.*

**Steve Robinson - Operations Director**

**Product traceability**
The traceability of the food industry has become a priority. It is essential to provide a constant stream of internal, customer and ISO audits to prove that they adhere to food safety regulations and high commercial standards. Complete visibility and documentation of every step of the supply chain is required - as a manual process, it’s a burden.

Our manufacturing solution transforms your manual management system and embeds compliant business processes and provide accurate evidence to support audit activity. We will implement a solid manufacturing management system, which covers every aspect of your processes from labour productivity to material waste analysis.

Good factory performance and labour management keeps admin to a minimum and prompts staff and management to follow best practice processes at all times, resulting in lean manufacturing and more streamlined, compliant operations.

“At the beginning of the line, the system is capturing the original raw material receipt, ‘best before’ code, pallet code and quantity. At the end of the line, a QC code and ‘best before’ date are allocated - there’s full traceability.

It really is an end-to-end solution.”

**John Main - Head of Planning and Logistics**
In conclusion

The productivity puzzle that UK manufacturing faces in 2019 and beyond is not insurmountable.

A first class workforce, clearly defined and executed production processes, the ability to capture and act on key data and the willingness to close the loop with effective and constructive feedback will all help in the continuing desire for shop floor improvement.

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Would you like to read more?
If you want to read more about this topic, you might want to check out our 5 most popular blog posts on this subject matter:

6 essential KPIs for world-class factory performance
https://www.MESTEC.net/2015/06/6-essential-kpis-for-world-class-factory-performance/

Five reasons why your manufacturing KPIs fail
https://www.MESTEC.net/2016/04/five-reasons-why-your-manufacturing-kpis-fail/

How to turn small batch manufacturing from problem to opportunity
https://www.MESTEC.net/2016/10/turn-small-batch-manufacturing-problem-opportunity/

Six root causes of poor labour productivity

Five must-have features for your next shop floor data collection system
https://www.MESTEC.net/2018/06/five-must-have-features-for-your-next-shop-floor-data-collection-system/