Resource efficiency: a missed opportunity in manufacturing

A survey of manufacturers
The UK’s productivity crisis is a huge competitive problem.

The slump in output which has tarnished the UK economy and manufacturing since the beginning of the financial crisis has been more severe than in any other western country. Britain, the nation which once had the best productivity in Europe, has now fallen behind France, Germany and Italy; its annual growth in productivity nose-diving from average annual rates of 2.3% to a shocking 0.4% over the last decade.

To many in manufacturing, the answer to this problem is increased investment in automation. This is, undoubtedly, a valid option, likely to result in reduced labour costs, increased hours of operation and improved output. However, at a time of acute uncertainty triggered by Brexit, the levels of investment required to make the productivity leap forwards through automation are simply not forthcoming.

So, what then? How can UK manufacturers take action to compete at a time when their capacity for investment is so limited? The answer is perhaps one of the greatest missed opportunities in manufacturing: the improvement of non-labour resource efficiency.

Generally, non-labour resources represent 50% or more of a factory’s production costs, of which energy is about 10%. Materials, waste management and water make
up the rest. Cambridge University’s Institute for Manufacturing (IfM) has identified that, on average, factories are only improving the efficiency of their resource use at 1% per annum. When it comes to non-labour resources, most UK manufacturers are woefully inefficient.

Given that energy costs, in particular, are set to rise significantly between now and 2020 (driven largely by non-commodity costs such as tax, distribution and environmental tariffs, which are forecast to increase by a staggering 20%), we could see a 2% increase in production costs from energy alone. Add fluctuating materials prices and the rising costs of water and waste management, and a large number of manufacturing businesses could be in real difficulty.

But it doesn’t need to be this way. According to IfM, best-in-class manufacturers improve their resource efficiency at around 7% p.a. year on year, giving leading manufacturers a 26% resource efficiency advantage over their average peers every five years. However, if the average UK manufacturer were to close this gap, they could improve their profits by 12% per annum – and the country as a whole could save £10bn. Perhaps most surprising of all, however, is that the IfM research shows that none of this progress requires significant capital investment!

Resource efficiency initiatives should be low-hanging fruit that can be plucked to improve profits, competitiveness and productivity. Yet apparently, while such initiatives are not financially expensive, they still prove extremely challenging for the majority of manufacturers. Why are projects that are so obviously beneficial and economical not happening at scale?

Our research, conducted in partnership with The Manufacturer, has been designed to shed light on this conundrum. The results indicate clearly that while most manufacturers recognise that resource efficiency can be used to improve profit margin, significant barriers to progress remain – time scarcity, complexity, the risk of disruption, difficulty in creating cross-company cooperation and a lack of simple, low-cost supporting tools to name but a few.

If manufacturers are to succeed in plucking the low-hanging fruit of resource efficiency, steps must be taken to facilitate a shift in culture that emphasises resource efficiency as complementary to rather than competitive with production output. To effect tangible change, the focus must move from solely tackling large-scale, costly projects to including the systematic management of the hundreds of small, inexpensive adjustments that can drive continuous improvement.

Achieving this shift could allow UK manufacturers to make substantial improvements to their profits, productivity and competitiveness.

Martin Chilcott
Founder and Executive Chairman
Manufacture 2030
Key findings

• The improvement of non-labour resource efficiency is one of the greatest missed opportunities for cost reduction and improved competitiveness in manufacturing

• Although senior management in many manufacturing businesses are broadly supportive of resource efficiency, finding the right implementation teams and creating cross-company cooperation is a challenge

• Significant barriers to resource efficiency are perceived to be time scarcity, complexity and the risk of disruption

• Despite good intentions, many manufacturers fail to set meaningful targets for resource efficiency, which compromises both the creation of focused projects and the ability to assess them

• There is a lack of easy-to-use, low-cost tools for running resource efficiency programmes
Introduction

There is no doubt that from a general ecological, moral or simply common-sense perspective, misusing our one and only planet is self-inflicted harm that will lead to disaster. Many good arguments are marshalled against waste and pollution, but one that is heard too rarely is the financial argument – the unnecessary use of resources in a manufacturing environment is simply throwing away good money for no return. So the key question in this report is why, when real savings are there to be made, are manufacturers not making more effort to be more efficient – resource efficient, energy efficient, water efficient and waste efficient? Or, as one survey respondent succinctly put it, “The cheapest kilowatt you buy is the one you don’t use.”

To help answer this question, this report analyses the results of a survey examining attitudes to resource efficiency among UK manufacturers. In the survey, we explained that ‘resource efficiency’ represents the inputs and outputs of a manufacturing process – energy, water, raw materials, physical wastes. It does not include human capital (labour and skills) and financial resources.

Thus, the overall aim of the survey is to better understand the resource efficiency challenges and concerns facing manufacturers, as well as their appetite for implementing improvements.

Who did we talk to?

The survey was open to all manufacturers with operations in the UK. Not surprisingly, the UK’s plentiful supply of SMEs made up the bulk of replies – half (50%) with up to 50 employees, and a further quarter (24%) with 50-250 employees. At the top end one in six (16%) respondents were from companies with over 1,000 staff.

Turnover figures roughly mirrored the company size statistics; 45% are under £5m p.a. and 15% reported annual turnover exceeding £200m.

Respondents came from a wide range of sectors. The six largest accounting for nearly half (48%) of the replies were (general) engineering (11%), followed by aerospace (8%), automotive (8%), metalwork (7%), food and beverage (7%) and electronics (7%).

The vast majority (80%) of people who replied were managers and senior executives up to chairman and CEO. A fifth (20%) classed themselves as ‘other’, likely to be less senior personnel.
Value proposition

The first set of survey questions looked at the basic ‘value proposition’ of the survey – to what extent respondents agree that there are opportunities to increase profit margin in their business through more efficient use of resources and the reduction of waste arising.

Significance of resource efficiency

To what extent do you agree that there are opportunities to increase profit margin in your business through more efficient use of resources and reduction of waste arising?

By and large there’s a pretty good buy-in from manufacturers to the idea of increasing profit margin through waste reduction. To some extent it depends on what respondents understand by ‘opportunities’ – lots of opportunities and lots of money, as opposed to just some opportunities – but despite the open-ended nature of the question, the vast majority (83%) expressed interest in reducing their electricity, gas or water bill, even if the savings are modest. Typical comments include: “Energy is our second biggest spend after people”, “Always need to do more with less” and “Our products are low value, bulky and heavy and any efficiency savings affect the bottom line.”

A small minority – just 16% – did not agree with the value proposition, ranging from neutral (9%) through to disagree (2%) and strongly disagree (5%). Of course not all manufacturers are large consumers of resources. Manufacturers of small, low-volume, possibly labour-intensive products (for example, bespoke watches) will be in a very different position to an industrial bakery or a car factory. Such respondents commented: “The value add we provide is in people, skills, knowledge, experience and machinery capabilities”, “Physical resources are not a significant factor in this business” and “We use very few resources in our manufacturing process and so it has little impact on our profitability.”

Despite the few who feel resource efficiency is not for them, the vast majority do see value in absorbing resource efficiency and waste reduction into their operations.
The next question examined a collection of factors that most managers face regularly. Not every manager has to deal with every issue, but overall, respondents see the listed items as of roughly equal importance.

Over half (57%) of the respondents described themselves as filling just five roles: chairman, MD, or chief/manager/director of engineering, operations or continuous improvement. These people have a wide range of competing general management challenges, and while they clearly think resource efficiency is important and a useful opportunity, it competes with the daily tasks of managing supply chains, looking after customers, raising productivity and getting the most out of staff. One respondent commented, “Productivity Growth is the main top level target, and resource efficiency is just one of the many subsets that we are addressing.”

Respondents were clear that they saw resource efficiency as a valuable opportunity. It is the highest-scoring (60%) ‘important’ option, just beating supply chain management (59%) and increasing productivity levels (46%). However, in the ‘top priority’ section it did not do nearly so well, running at approximately half the score of most other choices.

Resource efficiency is viewed positively, but it has to compete with many other managerial priorities which would also elicit a positive answer when questioned in a similar fashion – ‘Do you think there are opportunities to improve your health and safety?’, or ‘Are there opportunities for increasing orders on time to your customers?’

A view on this came from one respondent, who commented: “Emphasis is usually given to customer-driven priorities, for example quality and delivery.” While improving quality and delivery are admirable aims this is not a zero-sum game and there should be room for resource efficiency too.

Overall, resource efficiency is taken seriously, it’s arguably first (or second) among equals, but it is not an absolute priority over everything else.
Reducing costs

When looking at ways to reduce costs and increase margin, which of the following are a priority for your business?

The answers to this question reveal a genuine thirst among manufacturers for implementing resource efficiency and waste reduction as a route to increasing their profit margin. Resource efficiency was the second highest scoring (52%) option in the ‘important’ section, and an impressive highest-scoring option (35%) in the ‘top priority’ section, where second place was claimed by ‘embedding lean manufacturing’ (29%) and third went to ‘automation’.

It is noticeable that the three highest-scoring options - resource efficiency, lean and automation represent forward-thinking, innovative philosophies and that ‘old-fashioned’ approaches to improving profit margin, such as driving down supplier costs and headcount reduction were the least-popular options. Manufacturers operate in a highly globalised supply chain environment and regularly find it difficult to recruit the right staff, so it is understandable that they see limited opportunities for profit margin improvements in their supplier costs and staff headcount; instead they look to improving their own operations to boost profits. For example, Nicola Young, technical account manager with global farming and food company Barfoots, explained their approach to both managing food waste products and their electricity bill. “When we process sweet corn we have to remove all the husks and that generates a lot of waste,” she said. “In 2010 we invested in building an anaerobic digestion plant on our site. So all green waste from our sites goes there and that generates electricity for our sites and more, which we sell back to the grid. So in terms of electricity, we feel we’ve ticked a big box there.”
Quantifying the savings

The survey now moved on to six questions that examined managers’ perceptions around quantifying possible savings from resource efficiency.

Energy efficiency target
To what extent do you agree that there are opportunities to increase profit margin in your business through more efficient use of resources and reduction of waste arising?

Often, the first resource efficiency project in an organisation is reducing energy, specifically electricity consumption, and the survey asked about targets for reduction in 2018. This elicited quite a spiky response – respondents were either quite bullish (28%), had no target (36%) or didn’t know their target (25%).

The fact that over 60% had no target or were unaware of its value is telling. On the one hand resource efficiency is viewed as a clear route to increasing profits and as important as other first tier priorities, but on the other, the most important metric – a target for achieving it – is absent. This goes some way to explaining the low 1% annual improvement industry average. There appears to be a disconnect between knowing there’s an opportunity and then actually prioritising it and setting targets around it.

However, a third (32%) do have an ambitious target of 5% or more, illustrating a likely lesson that once people make the decision and set a target then they get on with it and are ambitious; the challenge is getting people to make that decision.

Energy efficiency target
Is your answer to Question 12 an absolute reduction target or a reduction per unit of production?

![Bar chart showing the distribution of answers to the question on energy efficiency target.

- No target: 40%
- 1%: 10%
- 2%: 10%
- 3%: 5%
- 4%: 5%
- 5%: 20%
- 6%: 5%
- 7%: 5%
- 8%: 5%
- 9%: 5%
- 10%+: 5%
- Unknown: 5%

Absolute: 80%
Per unit: 20%]
Once an electricity target is set, the vast majority (80%) just look at the final bill rather than the bill per unit produced. An absolute reduction might be important when starting from a low base, knowing there were lots of savings – easy low-hanging fruit. But, as soon as you get past that stage it makes more sense to look at savings per unit. Indeed, analysis per unit is probably a good indicator of the level of sophistication a company uses to become more resource efficient.

If you can swap out an old motor, upgrade a boiler and plug leaks in your airline, you could chop a quarter off your energy consumption, which will have a quick and positive effect on the headline energy bill. After that, the quick big wins will be more elusive, so a more compelling financial model looks at energy use per item produced, and the strategy changes to finding a few per cent year on year improvements – every year.

For ambitious factory managers this approach makes even more sense when viewed from an overall productivity perspective. A manager who is looking to boost output and productivity is likely to invest in automation and robots. Robots are energy-thirsty machines, so if you get automation right, your overall electricity consumption may rise but your production should outpace that rise and per-unit consumption will fall. Trebling output, but only doubling energy costs would be very impressive, a huge per-unit reduction. However, on an absolute basis you look as though you’re losing because the energy bill has risen, which means resource efficiency planners need to be sure they measure, evaluate and report on the right parameters.

This is a point made well by Rachel Wildman, senior health, safety and environment manager at global beauty company Coty. “Our target is a 2% reduction from the previous year on per-unit produced for electricity, gas and water – with a 2-5% stretch target. It’s the first year that we’ve had a per-unit target. We’ve been producing roughly 150 million units of makeup each year, but we’re hoping this fiscal year to produce about 200 million units. So we know if we just look at kilowatt usage then that would go up considerably, which is why we’re now trying per-units targets.”

**Confidence in meeting target**

How confident are you that your business will be able to achieve this target for energy efficiency?
When it came to confidence in meeting their energy target, most were ‘neutral’ (56%) (presumably those who had no targets), but the ‘confident’ (26%) and ‘really confident’ (6%) considerably outnumbered the ‘not confident’ (4%) or ‘not at all confident’ (3%). Again, an indication that once targets are set, managers are prepared to chase a reasonably ambitious goal for improvement.

**Comparison with industrial peers**

Research has shown that best-in-class manufacturing businesses improve their resource efficiency by 7% per unit per year, whereas the average rate of improvement is just 1%. Based on this research, would you rate your business’ improvement rate as;

![Comparison with industrial peers chart]

The survey asked respondents how they scored their own business’s improvement rate. When benchmarking their operations, again there is a core 30% who believe they are doing better than average, but an awful lot are at best average or worse. Given that this average is only 1% per year, that’s a disappointing self-assessment. While this might be at variance with their ambitions and appreciation of the opportunities available, it matches closely with the 60% who have failed to set or don’t know their targets – yet again reinforcing the fundamental need to set targets to produce action.

Understanding that your business achieves poor resource efficiency improvements is only the first step. To make changes the action of setting a target is crucial. When this is turned into action it can be transformative. Again, Nicola Young from Barfoots offers an example of tackling waste, “We’re now being charged more for waste, be it water, plastic, cardboard or whatever. Plastic is a prime example. We used to just send it to China and nobody thought about it, whereas now it’s a big issue and the costs attached to that are only going to grow.”

**Comparison with other costs**

How significant to your business’ profit margin is resource efficiency, when compared to other cost of sale factors (e.g. labour, supply chain & marketing)?

![Comparison with other costs chart]

As discussed earlier, managers face many demands on their time, and resource efficiency is not the only improvement they can chase. The next question asked them to rate the significance of resource efficiency to their business’s profit margin when compared to other cost of sale factors (for example, labour, supply chain and
marketing). Not surprisingly, the majority of respondents (53%) see resource efficiency as one of many challenges and not an outlier in terms of costs. For those who view it less neutrally, nearly twice as many (30%) see it as a ‘significant’ or ‘very significant’ opportunity to improve profit margin, compared to the 17% who consider it ‘not significant’, or ‘not at all significant’. This was pretty much a repeat of the results of the first question, where 83% viewed resource efficiency as an opportunity.

30% – resource efficiency compared to other costs
When asked how significant resource efficiency is to their business’s profit margin when compared to other cost of sale factors such as labour, supply chain or marketing, 30% said significant or very significant.

Resource efficiency compared to other initiatives
As a manufacturing business, how much emphasis do you think is given to improving resource efficiency, in comparison to other business initiatives?

- No importance
- Minor importance
- Neutral
- Important
- Top priority

The last question in the survey section regarding quantifying savings asked respondents to rate the level of emphasis given to improving resource efficiency in comparison to other business initiatives. Although the results showed that 58% see this as important and only 15% as not important, it is somewhat at odds with the lack of targets, low ambitions for energy efficiency and low self-assessment figures revealed by earlier replies.

Again, despite clearly expressed enthusiasm for resource efficiency, the apparent absence of basic preparation, such as setting targets, reveals a lack of understanding of how to achieve and measure results.

There does appear to be something of a discrepancy in respondents’ mind-set – on the one hand many managers appreciate on a theoretical level that resource efficiency is an opportunity, but many seem unable to move beyond that position to the level of practical implementation of a coherent strategy that will yield results. As Martin Chilcott, founder and chairman of 2degrees puts it, “You can’t manage if you can’t measure.” This lack of management sophistication is revealed by the industry average annual improvement of 1%, despite claims that resource efficiency is taken seriously.

58% – resource efficiency seen as important
A healthy majority (58%) of respondents view improving resource efficiency as important or a top priority in comparison to other business initiatives.
Easy to implement, or difficult and complicated?

The final nine questions examined respondents’ perceptions of how easy or difficult it is to achieve resource efficiency improvements – focusing especially on potential barriers to its implementation.

Ease of implementation
Relative to other savings opportunities in your business, do you consider potential resource efficiency savings easy or difficult to achieve?

The section started by examining if, relative to other savings opportunities in respondents’ businesses, resource efficiency savings are easy or difficult to achieve. A solid 59% see resource efficiency as no more difficult than other challenges they face, but a significant 37% find it difficult – only 4% consider it an easy route to profitability. So, there is no question that overall, the perception of implementing resource efficiency is skewed towards the difficult side, but only 1% viewed it as very difficult. In fact, this is a moderately positive answer – resource efficiency is not viewed as too hard to implement, but as the results earlier show, some form of assistance to help managers navigate the route to achieve it is needed.

Who drives resource efficiency?
Who does your business look to for identifying and executing resource efficiency saving initiatives?

A dedicated central team
Site-specific teams
Engineering Department
HSE Department
Operations Department
External consultants
Equipment suppliers (OEMs)
Other (please specify)
Achieving resource efficiency is not just about ‘how’ – ‘who’ is also important, and the next question examined who in their company identifies and executes resource efficiency savings initiatives. In terms of implementation, there is a definite bias toward operations. There is a fair sprinkling of other job titles, especially dedicated central teams, site-specific teams or engineering, but operations is almost twice as big as any other choice.

Different-sized companies and different sectors will find their own solutions; nevertheless, there is certainly no uniform approach to who runs resource efficiency, which implies to some extent that companies are grappling with a new problem for which they have yet to find an agreed, optimum solution.

Operations is an interesting highest-scoring choice and may reveal one of the reasons why resource efficiency has failed to move beyond its low 1% level. If an operations manager is responsible for implementing resource efficiency, then it is logical to ask how easy it is for someone in that role to balance the smooth running of a production line versus reducing waste. If all your problems look like downtime or product rejects then why would you worry about resource efficiency?
Mark Adams, MD of shelving system and furniture manufacturer Vitsoe, takes a radical approach and builds ‘who’ into his recruitment process: “It [resource efficiency] is difficult, you’re battling against everybody’s natural prejudices. That’s why our recruitment process is so important, because we have to have like-minded people in the business who naturally want to save on the packaging, switch off the light, or not switch on the light. So for us it starts with the right mind-set, which starts with recruitment, which starts with selection of suppliers. It’s a never-ending challenge; you have to go back to source all the time – choosing the right supplier, choosing the right employee.”

Professor Steve Evans (director of the EPSRC Centre for Innovative Manufacturing in Industrial Sustainability at The University of Cambridge) is a believer in a multi-team approach: “One of the challenges is that in many larger organisations, what seems to be the natural home for resource efficiency is with people who are not trained in efficiency. If you give it to a general engineering team, but you don’t give them sufficient training, they may have the tools to do efficiency but not the insight to apply it to resources. If you create a specialist team in the centre, they don’t understand the subtlety of how a particular factory works. They don’t know where the real waste is and where the opportunities are. So teams from the centre tend not to drive resource efficiency very rapidly and local teams don’t have the benefit of a well-resourced central team that can gather information by talking to experts. The right answer is a combination of all of the above.”

### Barriers to resource efficiency

Please rate the following factors based on the extent to which you see them as a barrier to your business improving its overall resource efficiency.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complexity of managing hundreds of ‘marginal gains’ initiatives</td>
<td></td>
</tr>
<tr>
<td>Responsibility for action is spread across multiple departments and teams</td>
<td></td>
</tr>
<tr>
<td>Projects are currently supported by under-performing in-house or legacy systems</td>
<td></td>
</tr>
<tr>
<td>Business and team culture resistant to change</td>
<td></td>
</tr>
<tr>
<td>A misplaced emphasis by management on measurement and auditing, rather than taking firm action</td>
<td></td>
</tr>
<tr>
<td>Risk of disruption to the production line, or down-time</td>
<td></td>
</tr>
<tr>
<td>No dedicated ‘simple’ solution for business-wide implementation and assessment of projects is available</td>
<td></td>
</tr>
<tr>
<td>Resource efficiency project does not meet the business/financial guidelines</td>
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</table>

[Graph showing ratings: Major barrier, Barrier, Neutral, Minor issue, No problem]
Next, the survey asked about specific examples of barriers to improving the overall resource efficiency of respondents’ businesses. Although adopting resource efficiency is a logical and commendable aim, it is not straightforward and needs to be introduced into a complex business and manufacturing environment where teams, departments and line managers all have their own views on what is a priority and how innovation should be introduced.

There’s a very clear spike showing the risk of disruption to the production line is a barrier. It is not unreasonable for a line manager to say, ‘I’ve got a factory that’s actually running quite well. You say you want to cut 2% of my airline loss? I say, it’s not a priority. My job is to keep a multimillion-pound production line running. And you want to save me a few hundred pounds? Well, that’s not important to me.’

It’s telling that of the eight barrier dimensions offered to respondents, risk of disruption was the only one where ‘barrier’ was seen as the highest-scoring choice, which strongly implies that resource efficiency implementation may be delayed, downgraded or not even happen because of the need to maintain production. Resource efficiency may be highly rated, but mission-critical production will always be rated higher.

There is also a very clear spike around the complexity of managing ‘hundreds’ of marginal projects. Once the low-hanging fruit has been picked, resource efficiency becomes a complex, multi-faceted incremental approach to improvement, and it has to compete with other business priorities. The addition of further complexity is clearly a concern for managers.

Other barriers are poor support from in-house or legacy systems, and the lack of a simple solution for business-wide implementation and assessment. The inadequacy and complexity of systems to run and measure resource efficiency, when added to the shortage of targets, may well undermine promising but poorly resourced projects. The ideas may be good, but they will struggle to achieve their potential if company systems are focused elsewhere.

It’s certainly not all doom and gloom. In no example did the strength of response for ‘barrier’ or ‘major barrier’ exceed 38%, so while there are challenges for managers, they do not see them as overwhelming. Furthermore, there is a general perception that resource efficiency does meet their company’s main business and financial guidelines. The corporate will is there, if not always the means to follow it up.
Manufacturing involves multiple OpEx and CapEx initiatives and the survey asked respondents to rate four barriers (time, complexity, expertise and small return) to resource efficiency improvement delivered through these projects.

Only 20% of respondents stated that time for planning is a minor issue, although one explicitly cited it as a barrier: “We are looking for ways to improve and become faster, but finding the time to do this whilst maintaining output is often challenging.” Other barriers include the perception that resource efficiency is complex and they don’t have the expertise to achieve their goals. One respondent appeared to have had a particularly disappointing experience when looking for external help. “‘Resource efficiency’ is just another buzz word for useless consultants”. Clearly a manager in need of some straightforward and practical tools rather than over-priced ‘advice’.

Interestingly, respondents are less bothered about the relatively small return for the effort, consistent with the idea that by and large they do see the potential value in resource efficiency, but there’s only so much a manager can plan, innovate and implement, and there are only so many hours in the day to do it.
The effect of corporate structure and bureaucracy

Specific to improving your business’ resource efficiency, how much of a problem is each of the following factors?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage of Respondents</th>
</tr>
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<tbody>
<tr>
<td>Corporate inertia</td>
<td>40%</td>
</tr>
<tr>
<td>Communication barriers – departmental silo mentality</td>
<td>30%</td>
</tr>
<tr>
<td>Lack of agreed focus on problems</td>
<td>20%</td>
</tr>
<tr>
<td>Cross-site or cross-department rivalry</td>
<td>15%</td>
</tr>
<tr>
<td>Bureaucracy slowing decision making and implementation</td>
<td>10%</td>
</tr>
<tr>
<td>Lack of senior team buy in</td>
<td>5%</td>
</tr>
<tr>
<td>Lack of interest from the operational team</td>
<td>5%</td>
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</table>

Every business has a structure and bureaucracy, which can empower or act as a drag on innovation and new projects. The next question looked at how this affects resource efficiency.

The real standout response to this question showed that senior team buy-in is not a problem – senior management are firmly behind the goal of improving resource efficiency and reducing waste. By contrast, the biggest problem is a lack of agreed focus on problems, doubtless one of the main causes of a lack of targets, the lack of sophistication inherent in chasing absolute rather than per unit improvements in energy efficiency and the poor self-assessment when it came to ranking energy efficiency.

The second (27%) and third (25%) largest barriers were cited as ‘departmental silo mentality’ and ‘cross-department rivalry’. One respondent stated this well: “Poor inter-department communications results in isolated improvements. Better results across the business could be obtained with involvement from all departments.”

40% — senior management attitudes
When asked about their corporate structure and bureaucracy and its effect on implementing resource efficiency, the least problematic area is senior team buy in – 40% said it is no problem at all.
There has been a growing realisation over the last 10 to 15 years that waste, in the most general sense, is a problem that must be urgently tackled, but being aware of the issue doesn’t mean businesses are organisationally capable of doing much about it. That is one of the core messages, and although its inherent riskiness, complexity and the time it takes are doubtless factors in slowing down implementation, poor focus will always undermine any project, however well intentioned and supportive a company may be.

In other words, the era of waste denial is over, but the era of resource efficiency action is not yet here. Manufacturing is in an interesting interim period which (hopefully) is accelerating in the right direction.

**IT systems**

With specific regard to managing your business’ resource efficiency program using IT systems, how would you rate these factors as barriers to improvement?

<table>
<thead>
<tr>
<th>IT Systems</th>
<th>Rating</th>
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<tbody>
<tr>
<td>Major barrier</td>
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<tr>
<td>Barrier</td>
<td></td>
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<tr>
<td>Neutral</td>
<td></td>
</tr>
<tr>
<td>Minor issue</td>
<td></td>
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<tr>
<td>No problem</td>
<td></td>
</tr>
<tr>
<td>Old-fashioned, under-performing, legacy IT systems</td>
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</tr>
<tr>
<td>Reliance on expensive and complex enterprise systems</td>
<td><img src="chart.png" alt="Graph" /></td>
</tr>
<tr>
<td>Using generic, non-specialised, systems (e.g. spreadsheets)</td>
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All modern enterprises run on software, and the survey asked, with specific regard to managing respondents’ resource efficiency programs, how they rate IT-related factors as barriers to improvement.

Whether it’s Word or a complex ERP system, there are always gripes and grumbles. However, when implementing resource efficiency, IT systems are not seen as the main problem. Managers do see an issue around old-fashioned underperforming systems – they are a barrier, but overall opinion is skewed toward ‘neutral’, ‘minor’ or ‘no problem’.

**Team culture**

Team culture and behaviour are vital when implementing change. To what extent do you agree with the following statements about your business?

<table>
<thead>
<tr>
<th>Team Culture</th>
<th>Rating</th>
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<tbody>
<tr>
<td>Senior management embrace change</td>
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<tr>
<td>The business culture supports change</td>
<td><img src="chart.png" alt="Graph" /></td>
</tr>
<tr>
<td>We’re good at involving all levels of colleagues in change programs</td>
<td><img src="chart.png" alt="Graph" /></td>
</tr>
<tr>
<td>We provide the right tools and training to accompany changes</td>
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Strongly agree | Agree | Neutral | Disagree | Strongly disagree
Every company has a unique culture and way of doing things. These corporate characteristics have a direct bearing on implementing change, and the survey asked to what extent respondents felt it affected their resource efficiency projects.

Again, senior management gets a good report, and people by and large believe that business culture supports change. Teamwork, however, is regarded less positively.

Clearly people feel that teamwork can be a challenge when achieving resource efficiency. In terms of implementation, getting disparate groups like engineers and operations to work together in a new project is always a non-trivial undertaking. So while senior management are supportive in embracing change, working with colleagues is harder to follow through.

**Data and analytics**

Please rate the factors below based on their impact on your business improving resource efficiency.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-reliance on mass data collection instead of intelligent targeted data collection</td>
<td>Minor issue</td>
</tr>
<tr>
<td>Failure to use collected data to produce meaningful evidence-based actions</td>
<td>Neutral</td>
</tr>
<tr>
<td>Lack of focused data analysis once data has been captured</td>
<td>Barrier</td>
</tr>
<tr>
<td>Inability to act without ‘proof’ from data when the case for change may already be obvious</td>
<td>Major barrier</td>
</tr>
</tbody>
</table>

It is the nature of an initiative that depends on many small sub-projects chasing incremental improvements that data collection is vital, but that on its own is not enough – what you do with that data is the key. The survey questioned respondents about the impact of data collection and analysis on improving their resource efficiency.

Over-reliance on general mass data collection does not seem to be a huge problem, but there are companies where people collect data but don’t do much with it, which does represent a barrier to progress.

Between a quarter and a third of respondents see a lack of focused data analysis once it’s been captured as a problem. This is likely to lead to a failure to use collected data to produce meaningful evidence, resulting in organisations that are competent at capturing data but don’t do enough follow up. This can undermine resource efficiency projects because without accurate, relevant proof from the data, well-targeted action becomes much more difficult, leading to delays and compromised interventions.
Enabling continuous improvement

To be most effective, resource efficiency benefits from a robust system of continuous improvements. Does your business suffer from the following?

The final question looked at the solutions companies use to implement an effective resource efficiency program.

Although responses were spread across all opinions, from ‘major barrier’ to ‘no problem’, there were two stand-out responses – a good third of respondents see solutions as both expensive to buy, implement and support, and also difficult to learn, use and expensive in terms of training.

Evidently, some businesses are beginning to recognise the importance of supportive solutions, and senior management recognises the need to change, but far too many are not yet investing in the systems needed to really implement the changes required to reap the rewards.

Many companies need a solution that makes resource efficiency simple for them, one that is inexpensive, easy to learn and use – and which is ideally a single unifying solution that can bring in external expertise and shared experience from other companies facing the same challenges. Such systems are out there, but companies need to do their homework in finding them. Once they have found the right solution they will be well placed to become much more ambitious in terms of setting targets, initiating projects and creating a more effective resource efficiency strategy.
The good news is that the majority of respondents see resource efficiency as a valuable opportunity to increase their profit margin. Senior management understand the basic issue and by and large provide broad support for the concept.

However, that’s where the good news ends, because despite recognition and backing for resource efficiency as an idea, its implementation is patchy at best. There are some companies that are doing well and doubtless benefitting from it, but resource efficiency is widely viewed as complex, time consuming and a potential disruptor of production. There is no agreed place for it within existing staffing structures and creating a teamwork approach can be challenging. Possibly the biggest hurdle manufacturing managers face is a lack of inexpensive, easy-to-use tools that they can acquire to enable the issues of complexity and time to be adequately addressed. The knock-on effect of this is that data analysis and target setting suffer, potentially compromising projects from the outset.

Despite these challenges, the generally positive attitude to resource efficiency does mean that given the right tools the majority of manufacturers, who are eager to go down the resource efficiency path, will find a way to become more efficient, less wasteful and ultimately more profitable.