



# Factory Acceleration

**White  
Paper**

# Factory Acceleration

by Dr. Peter Bowen BA, M.Litt, D.Phil, FCIPD

## Biography:

Peter Bowen began his career as Head of an undergraduate teaching department in the Behavioural Sciences in the University of Northumbria, Newcastle upon Tyne. He has also been a Director of the Centre for Employment Policy Studies, Henley Business School. This career also involved research in workforce performance and behaviour for the Social Science Research Council and in white collar workforce performance for the Anglo German Foundation.

He holds first and higher degrees of the Universities of Leicester and Durham in the UK. He is also a Fellow of the Institute of Personnel and Development, London. He left academic life to found MPL and develop ideas and methods of business, workforce and workplace performance, which are now the focus of his work.

In this role Peter has shaped and influenced the thinking and activities of over 200 UK, European, African and US businesses in their interpretation and implementation of lean management and accelerated savings programmes. Fundamental to his approach is the high value of actively involving first line management and operational work teams in the development of business solutions which integrate the motivational aspirations of workforces with the performance requirements of their employers.



*Dr Peter Bowen*

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Managing factory performance to deliver flexible, agile responses to changing customer demands is an ongoing challenge. How a business manages its manufacturing environment can be a source of real competitive advantage or can contribute to a decline in market share and profitability. So, what can we do to improve manufacturing performance when urgent or long-term changes to plans are needed?

What do we know? Size is no guarantee of superior performance: smaller factories can outpace larger units. A large order-book is no guarantee of well-delivered output in any factory, large or small. Yet well-executed, repeatable and sustainable factory output is critical to customer attraction and customer retention.

Does this happen by chance? Never!

Proficient factories operate to planned outputs. Successful factories are agile producers; delivering products of varying complexity on time and in full. Converting production plans to finished schedules within given timescales and to stringent budgets is the daily factory challenge. But competitive factories also aim to operate to full capacity. So their managers face dual challenges: delivering daily planned outputs to daily planned capacities. This is the competitive factory challenge, and it is endless.

Our interest is in the dynamics of competitive factory management:

**How to size up the factory challenge and how to respond to it today, tomorrow, and over longer timescales.**

**Where to begin, how to sustain and then accelerate factory performance to beat the competition.**

Factory performance acceleration is a process which is dependent on three key elements being in place:

1. A stable data measurement system delivering plant-floor analytics at the right time to the right people.
2. A method of short interval management control (SIC) by which repeatable management actions occur to a plan.
3. Factory supply chain functions managed across silos and boundaries with Common Purpose.

These three elements together deliver the conditions needed for factory acceleration.

### **Does this happen by chance? Never!**

Let's take a closer look at these variables and how they work together to deliver faster results.



## DATA DRIVEN DECISION MAKING

Everything in manufacturing hangs on the availability of accurate, up to the minute performance data. This means the real-time tracking of outputs, rapid variance recognition, SKU margin maintenance, and regular automatic feedback on performance against standards. These are available in today's advanced factory data management systems. Effective factory performance improvement cannot occur without them.

Designed to stand alone or fully integrate with and enhance the accuracy of corporate ERP/MRP platforms and other IT systems. These systems are also now available to the smaller manufacturer, and to the smaller factory unit. Designed for speedy implementation, these new data recording and reporting technologies provide factory managements with entirely new opportunities to deliver improved margins against automatically learned standards faster and faster.

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With them, the gaps between sales-driven plans and works order outputs are now eliminated, the top wastes and losses are instantly identified and the margins of SKU's can be tracked as they happen. Welcome to the new world of real-time factory analytics and to the new opportunities these open up to factory managements to increase profits as well as deliver products for their businesses.

Today, manufacturers of all sizes can access these technologies cheaply for modest and flexible licence fees and receive both online support and site coaching in their use. Above all, they provide factories of any size with an entirely new opportunity; to operate increasingly as business units with the management know-how to balance their books, using the range of dynamic performance, cost, capacity and quality tools provided by these new real-time cloud-based MIS/MES.



## 2

## MANAGING THE PROCESS: SHORT INTERVAL CONTROL CYCLES (SIC)

Access to real-time data and information poses the obvious question of how successfully it helps to deliver sound management decisions. And how rapidly it enables factory managers to make decisions which directly influence the speed of factory performance improvement.

Factories vary widely in their ability to manage the plan/do/check/act cycles of management action in support of delivering optimum business performance. Errors accumulated, opportunities lost, mismatches unattended, delays tolerated and wastes unchecked are well-known indicators of underperformance. Unchecked, they put the business at an increasing risk. These risks are intensified in today's competitive markets of reduced margins, increased consumer vigilance, and quality monitoring. The unmanaged costs of ongoing underperformance can prove too high for survival.

In this environment of right-first-time (RFT), and just-in-time (JIT), proficient manufacturers need to maintain vigilant procedures to protect the accurate delivery of goods on time and in full. Less proficient managements will allow inaccurate factory plans to go into production when they do not reflect updates, amendments or changes to customer requirements. Materials purchased cheaply but rejected as sub-standard will also increase the manufacturing cost-drag. Excessive crewing of production operations is an additional cost burden.

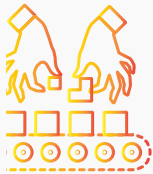
The maintenance of tight SIC management is a vital element in underpinning and realising the benefits of any integrated MIS/MES system. It is a structured process for identifying and acting on opportunities to improve the effectiveness and efficiency of production during the shift and is most intensively used by production teams and front-line management.

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A factory-based MIS/MES positions and diagnoses performance to plan and, used within the SIC environment, can help to establish the best solutions to maintain today's targets and standards, but also how to accelerate performance onwards.



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## OPERATIONS MANAGEMENT AND COMMON PURPOSE

The third and final element required for accelerated performance improvement relies on the agility of an integrated factory management team. The issue is how best to build on the dynamic response of first-line management to hourly factory performance and extend a common purpose of management action across the factory organisation, along the supply chain. We can arm factories with real-time KPI and standards reporting of performance to plan and with trend analysis of the status of all live factory processes. We can link works order completion to plan, and identify deviations well ahead of completion. We can extend manufacturing performance improvement to end to end factory processes via data links to other data sources. This is a technology unlikely to respond to piecemeal management response. Traditional factory management, with its departmental focus, allows cooperation, but not necessarily common purpose towards customer-focused goals. And common purpose is the management style most likely to propel factory acceleration successfully.

So what's involved? We need to link real-time data management to the use of short interval control management. This is a vital first step and one which provides the foundation of management style in any fast moving production environment. This is the style which maintains accurate focused management of real time operations. But the achievement of longer term factory business targets involves entirely new styles of management team-working. And these new ways of collaborating need to be learned and coached in parallel with an understanding of the new technology itself.

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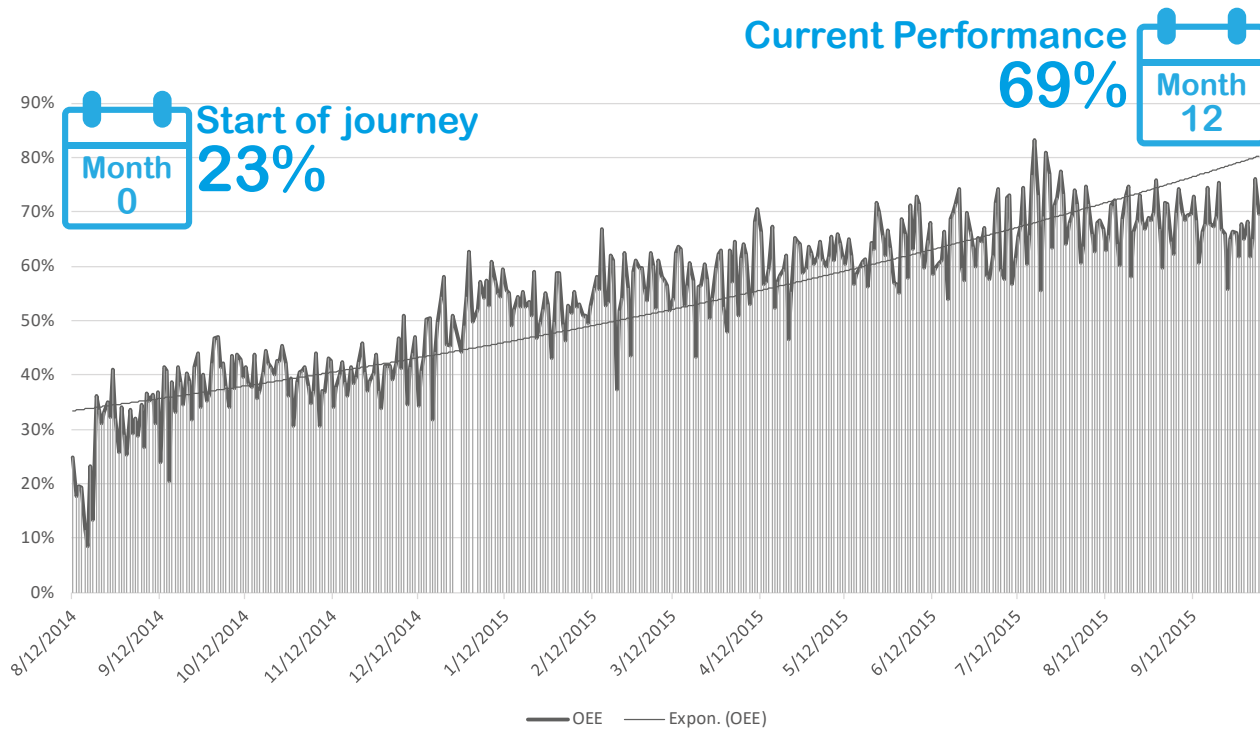
Common purpose teamworking programmes are not new. But they enable the growth of unified shared service level agreements without which factories inevitably fracture and pursue discordant goals. Too often this shared vision is absent. Operations fragment between departments, and the pace is lost. Gaps between planning, purchasing, engineering, production and logistics are notoriously conspicuous and reflect the absence of integrated actions. Common Purpose management styles are best learnt by coached team working. Cross-functional action learning is a good way of developing integrated thinking, and the service level agreements which drive coordinated actions. These integrated actions provide the focus for overall factory management performance.

## SUMMARY

We have concentrated our attention here on the factory alone. This to emphasise the often overlooked and significant opportunities available to factories to drive substantial added value from their production processes. Some idea of the powerful and synergistic impact on factory performance when all three elements are integrated can be seen in the graph below. This is a twelve month measure of the overall effectiveness (OEE) of a multi-line factory site. It shows clearly a marked and continuing upward trend. These are distinctive results offering real financial benefits to the business. But they are achieved only when management actions operate to consistent and well integrated long term targets.



## OEE Journey



Value of savings so far **£1.2m**



These results are available to any factory prepared to develop better integrated data technologies and management action. Longer-term targets are achieved only by the prior introduction of short interval control management. This requires the development of a very well disciplined factory floor control of time and resource to plan.

In our view the practice of operations management includes a skillset allowing both shorter and longer-term goals to be achieved. Real-time precision of minute by minute performance depends upon the availability of sound short interval control shift management.

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