

The Ultimate  
**Guide to  
Lean  
Manufacturing**



# Introduction

**Lean Manufacturing has been hugely successful in revolutionising manufacturing industries for many years consider car manufacturers and their well publicised success in embracing Lean Principles, not only within all manufacturing processes but also as a company- wide Business Ethos.**

So why not take this success and repeat it within the Printing Industry? Countless articles, seminars and business to business conversations generally include the woes of the Printing Industry with margins squeezed, over capacity and general dismissal by buyers of how important and skilled the work carried out by Print Companies is. So the introduction of a Lean philosophy in 2003 by Vision in Print - a UK Government sponsored initiative, was a welcome and pro-active move to improve productivity and profits of the Printing Industry, with a sensible, common sense approach to streamlining businesses and maximising opportunity.

Optimus were delighted to be included at the outset of Vision in Print. Optimus sat on the Vision in Print Supplier Advisory Committee and had an active part in the studies that were performed. This helped shape a vision of how embracing the best principles of Lean manufacturing could then be adopted within the print industry.

The Lean Philosophy continues to grow and is certainly an integral part of Optimus moving forward – once you understand the benefits it is very easy to become an Evangelist! Optimus continues to work closely with clients and partners alike to ensure that the Optimus MIS is assisting Companies embracing Lean; providing instant information needed in real time.

But, don't be fooled! Lean is not something that can be adopted by Senior Managers as a 'quick fix'. Companies who have embraced Lean successfully have done so as a whole company – from 'board room to basement'. Employees and Managers alike are empowered and measures are agreed as a Company. The benefits are enormous, with faster, accurate and more productive processes and employees.

Following our extremely successful 'Ultimate Guides to MIS and Connectivity' and our promotion of Lean Principles within the Printing Industry, we felt it would be useful to produce our third guide – 'The Ultimate Guide to Lean in the Printing Industry'. We hope you find this informative and, more importantly, that it gives you enough information to be able to consider the adoption of Lean within your organisation.



**Nicola Bisset**  
**Optimus Group Managing Director**

# What is Lean Manufacturing?

The principles behind “Lean Manufacturing” were introduced into the post war reconstruction of Japanese manufacturing with a strong quality focus by American engineers including W.E. Deming, Juran and others. They are largely considered to be the modern day fathers of Lean Principles.

This led to development of new lower cost manufacturing processes and, in particular, a disciplined, process focused production system was developed called the ‘Toyota Production System’ Originally “Lean Manufacturing” was a term coined by Womack and Jones to describe the Toyota Production System in their book, ‘The Machine That Changed the World’.

**“Lean” means the systematic removal of waste.**

Typically, in the Print industry, as with many manufacturing businesses, employees are trained to work in teams and apply a series of tools and techniques. However in Lean the focus is on identifying value-adding and non value-adding process steps (Including office and administrative processes). A value-adding step is defined as anything which the customer is willing to pay for in the transformation of material into the end product required by the customer. The team then streamlines the processes selected for improvement, takes out waste and this activity usually reduces cycle time. The result is faster, slicker processes which enhance customer satisfaction and reduce cost.

“Lean” has developed with a greater starting emphasis on ‘customer value’ and a set of key principles designed to make it happen. In its simplest form the key message behind Lean is:

**“The transformation of the  
VALUE DELIVERY PROCESS...  
..through the elimination of WASTE”**

## **A DIFFERENT APPROACH**

Lean applies a different approach to how you as a business, as a manager and as an employee view, monitor and conduct business. Moving from a traditional focus on Added Value, to the elimination of waste and implementation of best practice into every department, process and person within the business, incidentally has a positive effect on value added.

# Why Lean Manufacturing for the printing industry?

## TRENDS WITHIN THE PRINTING INDUSTRY

The Print Industry will always be keen to point out that it is unique due to the very specific nature of the processes that it has had to consider in order to produce a printed product. In the traditional mindset of customers this often means the introduction of bespoke complexity and more processes into the manufacturing cycle. These complications are often reflected in the number of independent software systems and processes required to produce products.

In the last 15 years, the traditional Print Industry has changed dramatically. The key trends appear to be more print companies than ever are going out of business due to over capacity, the internet and price pressures. **In the UK during 2023, approximately four Print companies a week went into liquidation. Globally this trend is expected to continue.**

This has created demand for greater productivity and efficiencies from those companies wishing to survive and prosper. In its simplest form, more and more printed products are required to be produced by fewer companies in considerably less time and critically; for considerably less money! This means that companies have to reduce and eliminate any activity that does not add value to their production process.

## THE UK GOVERNMENT HISTORICALLY DID TRY AND HELP

When this trend was first identified, the UK Government introduced a not for profit government funded but UK Print-Industry led initiative called "Vision in Print" (VIP) in 2003 which identified the following Printing Industry facts in 2004.

- Sales £15bn. (1.5% GDP).
- 200,000 direct employees.
- Part of 5th largest manufacturing sector.

### **But...**

- Profit margins were declining, the median had been as low as 3.5%.

Their task was to improve the profitability and performance of the UK printing industry by employing the proven techniques founded by W.E Deming.

## THE SURVIVAL OF THE PRINTING INDUSTRY

Within eighteen months of the start of this initiative, Optimus started to notice an investment trend amongst printers which was very specific. There was a growth in smaller and more diverse, multi skilled, highly efficient, printing organisations who consistently invested in the streamlining of their processes and the training of their staff. This was also identified as a consistent process, not treated as a one off project.

These organisations saw what they produced as a manufacturing process not a traditional craft industry! In addition they directed their focus to excellent customer service and the elimination of waste and unnecessary repetition throughout their entire business.

# How do I know I need Lean for my business?

At Optimus we believe that the Lean philosophy is one which will continue to help rejuvenate the Print Industry as we know it and we, as an MIS vendor, have a hugely important part to play in the process to provide the technology and the management tools to make it happen.

As a business, we really switch on to delving into the process and how that can be improved. It's NOT about holding an enquiry into individual or departmental actions, it's about embracing change, and changing the process, so it doesn't become personal! However, despite that messaging, we still often must overcome the following mindset:



Determining if your business is ready for Lean requires asking many questions - about people, processes, systems, profitability, waste, and competitors. While Lean can benefit at least one process, person, or department, assessing readiness means understanding the full landscape. The range of factors to examine is wide before concluding if the timing aligns for a Lean transformation. However, some element normally stands to gain when Lean principles are applied.

# How does Lean translate to my business?

## WHAT ARE THE BENEFITS?

As stated previously, Lean is about eliminating the wasteful processes that gain no revenue in offices and production Companies. Waste is not just around materials but rather encompasses the whole business. The following are examples of measures that can transform your business and eliminate waste – all available within Optimus.

### Customer Service

It is a well known fact that retaining customers is far more cost effective than finding new customers. In the Print Industry as discussed previously, more choice and price pressure means that your customers can easily go elsewhere – it is therefore essential that Companies keep their existing customers happy!

The first question to ask is 'What is most important to my customer'? It is remarkable how many Companies find that number one is the customer receiving their order on time. It is equally remarkable that many companies have no idea how many jobs they delivered on time thereby meeting customer expectations. Therefore Optimus believes this is a vital measurement which should be used to 'pull' production to fulfil all deliveries on time.

Quality of jobs produced is another key area – after all, if you get it wrong, a reprint may be necessary, ensuring 100% waste on the original job! Therefore measurement of jobs delivered right first time is essential. There are multiple measures involved in this key area – including 'right first time' job bags, proofs submitted and returned on time, materials used – were the materials right and available exactly when required? Therefore monitoring and measuring becomes vital to ensure quality and all the elements this encompasses are available.

We should of course mention cost - both to the Customer and to the Printer – Customers make decisions on a balance of three elements: Quality, Delivery on time and COST. Therefore it is essential to be able to give the right price – but the price given should not generate a loss for the Printer and so measurement of cost versus price should be closely monitored.

Customer retention overall needs to be measured – when was the last time you received a job from your customer list? Statistics on this can be extremely revealing!

### Internal Processes

There are numerous measures that can help identify why there are issues or 'bottlenecks' in your business.

An example of this is the Estimate conversion rate which is a good measure of how many 'wasteful' estimates are produced – for example: how many times are you used as a benchmark for price without ever gaining a job? Look at your data! If companies are using you as a benchmark this becomes quickly apparent and means your staff can be re-deployed in other more profitable areas of the business.

**Job profitability by customer or sector is also an area that needs to be monitored and acted upon. Without this essential data a print company may be 'wasting resources' satisfying less profitable customers or sectors at the expense of other customers.**

Overall Equipment Efficiency is key to ensure not only that full value is received from expensive assets but also that investment decisions can be made with accurate data ensuring that all assets are fully used before further investment takes place.

**Equally it should be possible to measure and monitor equipment operated. Therefore identify bottlenecks or issues as they happen rather than after the event.**

### **For Example**

- Why is one machine more productive than another?
- Are Make Ready's quicker on different machines?
- Is this because of maintenance? If so, the manager is then able to plan repairs and maintenance.
- Are all staff trained to the same level? It could be that if one machine operator is more productive, it may not be because of work mix, it could be lack of training, organising of materials or files not ready.
- How is the equipment performing – is the speed in-line with expectations?

The follow on from this, is to measure the productivity of staff, specifically focusing on the number of available production hours by either individuals or departments. Ultimately, just how many products were able to be produced in the allotted time?

Although an obvious statement it is surprising how many Companies do not follow the rule of:

**'ONLY make what my customer wants' (and is therefore prepared to pay for).**

It is a false economy to increase a run length 'just in case' for the next job – the cost of materials and storage is not paid by the customer and indeed what is the result if the 'just in case' never happens, through brand changing or other multiple reasons? So Lean promotes only produce what your customer will pay for!

It therefore follows that LEAN promotes 'just in time' stock principles. Why order, pay for, and store materials not required? The hidden costs are pure waste!

As stated these are examples of the measures and indicators that can be introduced into your business to ensure you benefit from embracing Lean into your Business.

### **The Benefits**

The benefits of Lean will vary from company to company, but essentially if the principles are applied consistently and systematically Lean increases:

- Profitability
- Sustainability
- Customer Satisfaction

### **And reduces:**

- Human Effort
- Capital Investment
- Materials
- Time in all aspects of the business
- Floor Space

Because everything encompassed in Lean Manufacturing is about every process in the production of a product or service being mapped and understood holistically in relation to the whole business; its success has been its simplicity in identifying and mapping out the efficient from the wasteful! With that in mind, we can highlight trends that have definitely changed for the better.

## AVERAGE PROFITABILITY FOR UK PRINTERS USING TRADITIONAL LITHOGRAPHIC PROCESSES (2007)

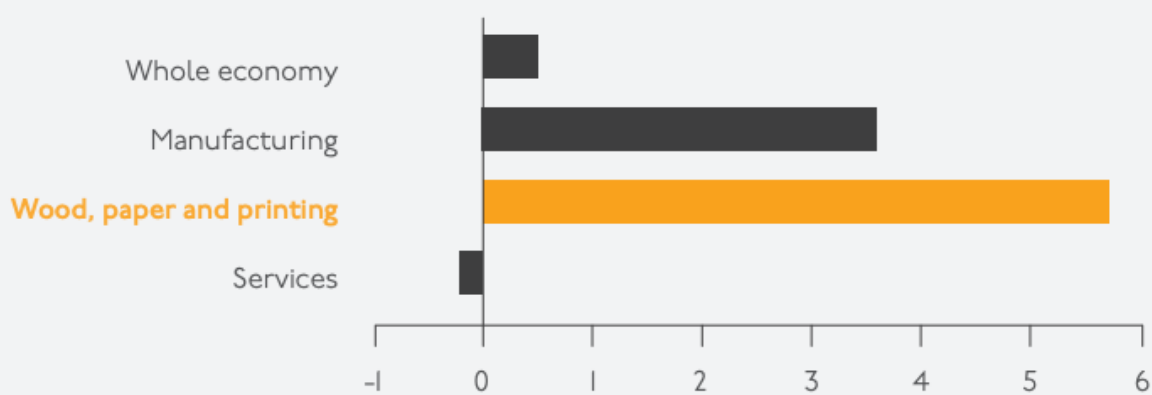
The UK average profit margin was 3.9% for litho printed products. (Source-British Printing Industry Federation Printing for Profit 2007 survey) This was deemed by many, including Optimus customers and the Print Industry at large, to be completely unsustainable!

## THE IMPACT OF LEAN MANUFACTURING TRENDS

Lean manufacturing has been the significant common denominator for businesses operating successfully in a market where most are struggling. Lean has contributed largely to the effectiveness, competitiveness, and ultimately the profitability of successful print businesses and has meant margins and performance has increased from 3.9% to over 10% for a significant no. of UK companies (Source BPIF Printing Trends Survey Dec. 2009).

Underperforming productivity continues to be a feature for much of the UK economy. However, the latest productivity statistics from the ONS reveal that the printing industry provides a productivity boost. Continued investment in training, technology and process improvements have ensured that productivity gains are well above national average.

### PRODUCTIVITY (OUTPUT PER HOUR) AVERAGE ANNUAL % CHANGE 2018-2022



(Source BPIF, UK Printing Facts and Figures 2022)



# Where did the MIS & Lean story begin?

**Optimus has been supplying its customers with critical, real time management information since its inception in the early 80's. The Optimus MIS generates a continuous flow of information from the initial customer contact, through production, to invoicing; so it has a window on every aspect of the business and is therefore an immensely powerful management tool if used correctly.**

The data captured within the modern day MIS must provide users with simple, relevant analysis and detailed measurement to keep the management team informed. This in turn facilitates performance measurement; enables more effective decision making and strategic business planning. So essentially by the nature of the software, the MIS has always been a process driven product to

monitor performance. However, traditionally the brief given to Optimus and other MIS vendors when asked to look at a new or replacement MIS system in a printing company; is often to replicate and automate the existing processes of that company in an identical form. In essence we are asked to reproduce the chaos of existing processes in an Optimus system, and then make it work!

## THE BEST PRACTICE STUDY

Optimus along with several other MIS vendors and printing companies participated in the Best Practice Study conducted as a joint venture between the DTI former (UK Department of Trade & Industry) and Vision in Print published in November 2006. The Study resulting from the coalition was called "The Guide to effective MIS use for Printers", and revealed some interesting data.

## SOME OF THE LESS POSITIVE KEY FINDINGS

- MIS systems are primarily looked upon as a means of improving speed & efficiency of administrative processes, not as a means of measuring, controlling and developing the business.
- Only 35% of companies operate a costing system, with only 7% regularly comparing job cost against estimate.
- Only 25% of companies analyse profitability of job type/customers/market sector to establish the profit and loss generators for their company.
- Estimating emerged as a critical issue, and is a primary reason for many companies to have embarked on using an MIS in the first place. Speed of estimating and turnaround times are key issues. On average 28% of estimates become real jobs. Estimators produce on average 15 estimates per day. Estimates are primarily seen as a means of generating a quotation, not as the foundation of the entire MIS process.
- Many Key Performance Indicators (KPI's) in use related to production management but, Overall Equipment Effectiveness (OEE), is only used by 2% of management.
- Analysis of production, where monitored, tends to be completed on an individual job basis rather than taking a consolidated view from which more general lessons might be learnt.

## AND THE GOOD NEWS...

There were 11 case studies which illustrated excellence in the use of an MIS from which the following Key Benefits emerged

- The ability to maintain control of the business – keep a finger on the pulse. This is achieved by the availability of real-time data and information from the MIS. A key purpose to this is that corrective action can be taken at the earliest possible time if a problem is detected.
- The ability to identify profitable and unprofitable work and/or customers so that the companies selling activity can be appropriately directed.
- Measurement of the business as the basis of continuous improvement.
- Improved pricing decision making, especially taking into account the AV% component of a job and the predicted AV/hour.
- Automation as a means of providing superior customer service (especially through E-commerce functions and rapid response to requests for quotations) and to gain administrative efficiencies.

Underpinning all of the above was a focus on Key Performance Indicators (KPI's) and the systems in place to measure that activity! KPI's were widely used and clearly seen as part of a Total Process which involved

- Establishing KPIs for all key operations.
- Establishing targets for all KPIs (for individuals/teams/departments etc as appropriate).
- Collecting and analysing the data necessary (largely done by the costing system, which can be supported by shop floor data collection).
- Monitoring trends (usually best done by presenting KPIs graphically).
- Displaying the results (for example, on departmental noticeboards where appropriate). Some KPIs are only appropriate to individuals.
- Follow up – use as the basis for continuous improvement, either with team meetings, with individuals or departmental managers.

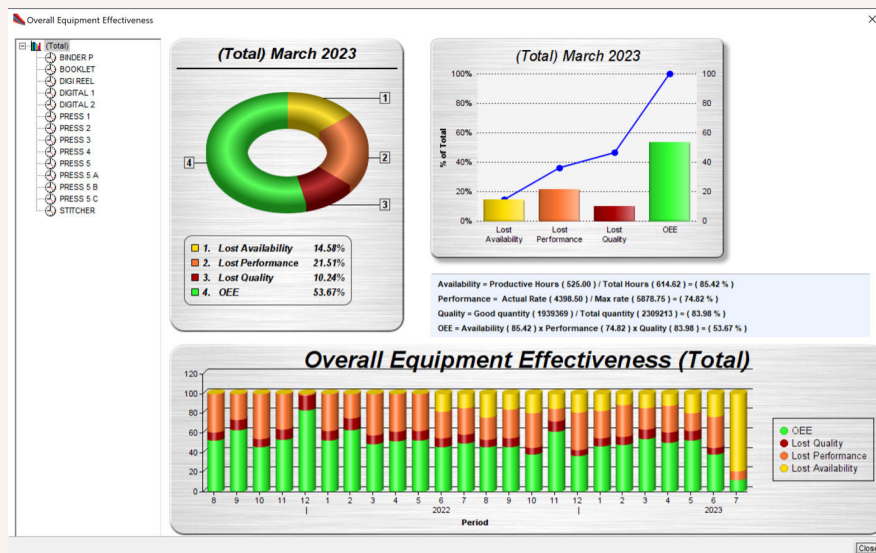
The report provided several recommendations for Print Businesses and MIS Vendors alike, to keep pushing to improve the tools that are available to the Print Industry and also the importance of Print Businesses maximising the use of those tools to effect a positive impact on the bottom line!

# What has a Lean Optimus MIS got to offer?

**Optimus made the strategic decision and commitment to be the very first Global MIS Vendor to truly reflect Lean Manufacturing Processes in the software, philosophy and culture of the company.**

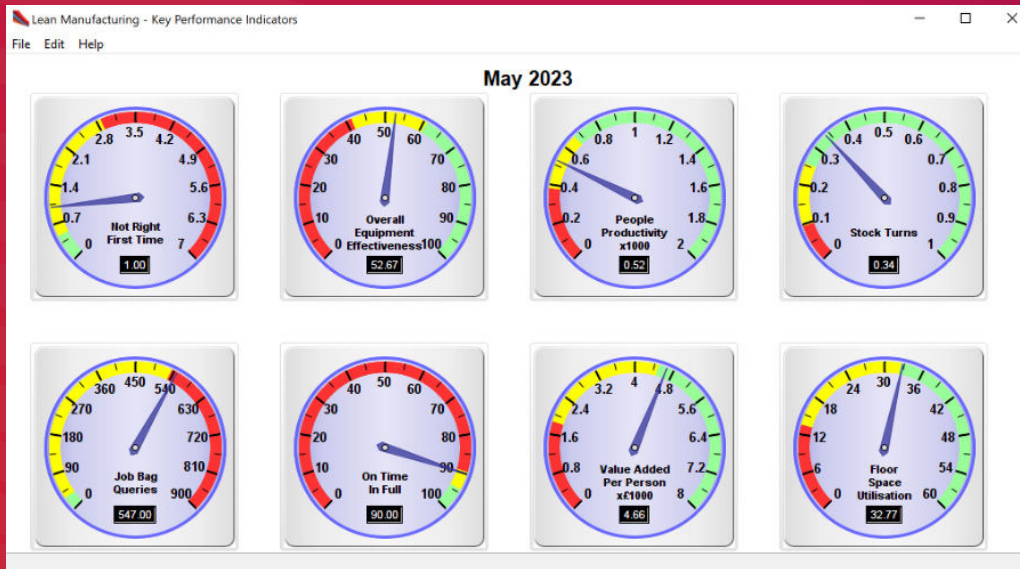
Optimus has a long term ongoing commitment to encompass Lean principles at the very heart of the product suite and has already introduced functionality to the market to assist with the adoption of Lean Principles.

Optimus KPI's are designed to translate the wealth of data captured by the MIS to identify key performance indicators on an operational level into a series of easy to read graphical charts. This ensures all staff have access to the measures by department and by company.



## These include:

- Overall Equipment Efficiency – Combination of Availability x Performance x Quality.
- People Productivity - Number of good products made in the number of hours available.
- Not right first time? – encompassing job bags, returns, credits and reprints.
- Stock Turn – how effective is your stock management?
- Value added produced per person.
- Floor space utilisation.
- Jobs produced on time and in full (OTIF).
- Job Bag Queries.



However, Optimus has, for many years, included functionality that also assists in identifying issues in real time. This includes Optimus Desktop Alerts which does exactly what the name implies, it 'alerts' the user to current key activities at a glance that may need immediate action, thereby ensuring that any potential issues can be addressed before they become a business risk. Information is provided in real time thereby ensuring any issues are highlighted immediately.

In line with the principles of Lean the Optimus Desktop Alerts provides the facility to drill down into that specific proof, job, delivery and other areas of Optimus in a single click!

dash

Menu / dash / v/demo / optimus

Alerts / dash

- You have 0 price requests returned today
- There are 3 price requests outstanding
- Predicted turnover this month is £ 2034058.42
- Top customer in last 7 days PCIMART with booked in value of £ 307821.05
- Top sales rep in last 7 days ALAN with booked in value of £ 653747.96
- You have 391 jobs (Value £ 1907941.66) booked in the last 7 days
- You have 143 late jobs with a value of £ 592962.12
- You have 22 overdue proofs
- You have 2 overdue deliveries
- You have 50 incomplete jobs due for delivery today with a value of £ 448494.84
- You have 2 proofs due to be sent today
- You have 112 incomplete jobs due for delivery this week with a value of £ 554098.63
- You have 40 open enquiries
- You have 20 pending enquiries worth between £85764 and £126329
- You have 23 completed jobs with £ 23707.75 of un-invoiced charges
- You have 0.00 hours of down time today
- You have 12 stock items below their reorder level
- Your value of Stock on hand is Allocated stock £ 35431.10 plus Unallocated stock £ 238576.26

Enquiries & Quotations: Customer Service, New Quote, Quote List, Sales Manager, Reports

Job & Proof Tracking: Job List, Proof List, Works Order List, Reports

Production Control: Task Diary, Reports

Applications: Email Shortcut

Stock & Purchasing: Issues, Materials and Outwork, Outwork Manager, Purchase Orders, Receipts, Requisitions, Requisitions to be Ordered, Sales Orders, Stock Adjustments, Stock Movement, Batch Printing

Data Collection: Connect, Remote Data Collection, Dash RDC, Timesheets, Reports

Despatch: Deliver, Report, Batch

Invoice: Charge, Invoice, Purchase, Report, Batch

Analysis: Optimus, Sales, Trans, Work, Report

Footer: You have 2 proofs due to be sent today | You have 112 incomplete jobs due for delivery this week with a value of £ 554098.63 | You have 40 open enquiries | You have 20 pending enquiries worth...

### Want to know more about what Optimus has to offer?

There are more areas of the system which have been tailored, adapted or indeed have always been in the software and comply with Lean principles, but as this is not a product brochure I hope the above examples give a flavour of what's on offer; as well as some wider context on Lean Manufacturing within the Print Industry.

For more information please contact our sales team at [sales@optimusmis.com](mailto:sales@optimusmis.com)



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