



# A specialist window & door manufacturer used CLIP to increase customer demand by improving the productivity of their workforce



View of the improved workplace in preparation for a trial run



The operational management team watching a video of the manufacturing process to spot waste

## THE PROJECT

Implementing process improvements at a window and door manufacturer

### MANUFACTURER:

KAT UK

Paul Balfe of KAT UK tells how CLIP helped them move from a batch manufacturing process to a more productive one-piece flow system.

## MANUFACTURER'S VIEW

### Background to the project

We are a privately owned company that manufactures specialist sash windows and patio doors. We are a growing business, and supply our products throughout Britain.

We have a strong focus on continuous improvement, customer service and quality.

## What attracted us to the CLIP programme

Our Managing Director, David Richards, is very pro-active and is always looking for new ways to improve the business. He heard about CLIP after attending a one-day 'Real Time' workshop on lean manufacturing.

Like many manufacturing companies, we have peaks and troughs in order patterns and sometimes experience problems meeting customer demand. The management team recognised the need to change the way we manufacture our products and make our processes more effective and efficient. CLIP appeared the ideal framework for organising and managing this change.

## What our aims & expectations were

The aim of using CLIP was to improve the productivity of our manufacturing process. At the start of the programme we produced around 60-70 windows a week. We decided to work towards a target of 150 a week. We felt that

By using CLIP...

“Our revenue will increase as it now takes around 33% less time to get the window or door through the factory, to the assembly area”

*‘By doing a simple exercise the workforce instantly realised the advantages of CLIP and bought into it’*

Paul Balfe of KAT UK

this was achievable, and gave us a benchmark to measure any improvements against.

**From using CLIP to improve our processes we expected to be able to:**

- Reduce the time taken to complete each stage of the manufacturing process
- Meet our customers’ increasing demand for our products
- Improve quality and reduce waste.

**How the CLIP process worked for us**

The operational management team met with the CLIP engineer and discussed the CLIP process in more detail. We held a one-day ‘pre-diagnostic’ workshop to look at our cost, quality and productivity data to see where we were performing well, and where we were falling down.

We started by watching a video of the windows and doors being manufactured. It quickly became clear where inefficiencies were occurring in our processes. This led to materials and operator’s time being wasted. After reviewing our processes we developed an action plan, and a programme for achieving our goals and targets. We then introduced CLIP to the factory workforce.

Initially the workforce seemed resistant to our idea of changing from a batch process, to a one-piece flow production system. This means an operator now only prepares one component of the window and then sends it down the production line, rather than doing a batch of say 10 before sending them on to the next stage. The work force was

sceptical about the changes, and what we could really achieve by using CLIP. It was a big culture shock for them.

To overcome this problem, the CLIP engineer held a ‘Masterclass’ workshop where everyone got involved in a series of simulation exercises using electrical plugs. It was a real eye opener. The team suddenly realised that CLIP was a worthwhile exercise. The simulation exercise demonstrated the different ways of approaching a task, and how you could save time by doing something differently. We definitely got ‘buy-in’ at this stage. Without this workshop we would have struggled to implement ‘lean’ working methods.

This was followed by three days of diagnostic workshops. By looking at the data we had collected, we quickly realised that the layout of the machines was not helping the flow of materials through the factory. We discussed how we could change the factory to make it more productive, and reduce waste. The changes were then carried out over a one-week improvement programme.

One of the issues was that we didn’t really want to totally stop production while we re-organised. But we realised that we had to take this risk to get the factory working more productively, so we did shut down production for a short period to make the changes.

After we re-organised the factory the CLIP engineer helped us to do a ‘5C’ check on our workbenches to improve working conditions, and to identify any health & safety issues with the equipment. We brought in the idea of using red tags to mark items that needed urgent attention. These issues are logged on a form, and a specific person is assigned to fix the problem and record the outcome.

Throughout the project we had weekly meetings to review our progress and suggest areas for further improvements. We made sure we involved the

*‘I knew we would have to take a financial hit in the first*



*few weeks but felt we would win in the long term. I think the one-day workshop was great because it showed me personally what could be achieved. It was vital that our production team completed the ‘plug game’ before we embarked upon ‘lean’ because I don’t think we could have sold the idea without it. Because of the plug game we got real buy-in with no resistance and they all had great fun. As a result of the changes we have made we are already seeing profitability improve after four weeks. I am very keen to keep up the momentum’*

David Richards, Managing Director of KAT UK

operators in these meetings to get their valuable input. By posting the latest quality, cost and productivity KPIs on the wall each week, we let everyone see what progress was being made.

We found that we needed to keep a careful eye on the team so that they did not slip back to their old methods of batch working. It was also important to brief the line managers about CLIP, and to keep them up to date with the progress we were making. We did this by revisiting the new working practices

*‘It is all about making time to improve, and understanding that it is an on-going development process’*

*Paul Balfe of KAT UK*



*The workforce re-organising the factory floor*

and routines, and explaining the benefits of using them. We have also introduced flip charts in the factory so any employee can write their issues down on an on-going basis. It is all about making time to improve, and understanding that it is an on-going development process.

Since the re-organisation we have had a further three visits from the CLIP engineer to check on our progress, and to ensure that the new processes and improvements are bedded into our new way of working. These visits are vital in maintaining momentum. The team have now fully embraced the new working practices, and dedicate 15 minutes at the end of a shift for looking at, or closing off a ‘5C’ activity.

### **How we benefited from this initiative**

Since we moved to a one-piece flow production line four weeks ago, we can now manufacture 120 windows a week, which will lead to higher revenue. It now takes around 33% less time to get the window or door through the factory, to the assembly area. We have not quite hit our main target yet, but we realise there are still many more areas where we can make improvements.

The one-piece system still enables us to bespoke each product for our customers, but enables us to get it to them quicker. It also improved quality as problems are identified sooner, and immediately rectified as materials flow down the production line. This has significantly reduced waste.

We have also noticed a big improvement in the way we work with our suppliers. Now we work more closely with them to improve product quality, along with the speed and accuracy of delivery. This is because CLIP has allowed us to manage our resources more efficiently, and plan each stage of production more effectively. It has definitely improved our relationships.

The management team has changed many of its approaches as well. For example, we have now moved the suggestion box onto the factory floor, so that the workforce can put forward ideas on how to improve production more easily. We have received a number of excellent suggestions, and reward staff based on the impact of the suggested improvement. For example, individual rewards of £250 have recently been paid to operators.

### **How we plan to use the skills & lessons learned**

We are now transferring the skills and lessons learned from CLIP into the second part of the factory, where we assemble the windows and doors. We recognised that similar improvements made in the area where we prepare the individual elements of the products could be applied there as well. We are developing a five-week action plan to carry this out. The first step is to develop a ‘5C’ check on all the areas of the factory.

The whole process has required everyone to make a big change to the way they work. People have been amazed by the difference it makes switching

from a batch to a one-piece flow production line. Using a one-piece flow system highlights inefficiencies in your production processes, but you have to be brave and find the root of the problem to make improvements.

The key to making this change was to get everyone on the shop floor to do an up-front workshop. You need to explain what you are trying to achieve, and why they need to get involved. By doing a simple exercise the workforce instantly realised the advantages of CLIP, and bought into it.

### **LEARNING POINTS**

- Set targets at the start of the CLIP activity that are achievable. This will also give you a benchmark to measure any improvements against.
- Be prepared to try something new, but be prepared to take risks to get it right. There are costs associated with this activity, particularly in the early weeks.
- It is vital to explain what you are trying to achieve, and why everybody needs to get involved on the shop floor. Use an up front workshop to do this.
- Look at processes with a fresh pair of eyes. Develop cross-functional teams and get them doing this on a regular basis. Hold weekly meetings to review your progress.
- Let everyone see what progress is being made, by posting the latest quality, cost and productivity KPIs on the wall weekly.
- Get your team to dedicate a set amount of time each day or week to look at CLIP activities. This will keep everyone focused on making improvements.

## JARGON BUSTING BOX

### ■ **7Ws – look for seven wastes that can never be added value:**

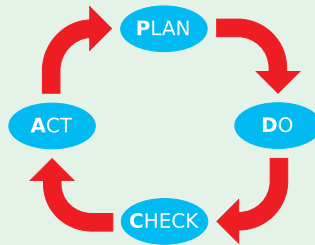
- Motion    ■ Transport
- Waiting    ■ Overproduction
- Defects    ■ Unnecessary inventory
- Inappropriate work or processing.

### ■ **5Cs – check these to lay the foundations for continuous improvement:**

- **Clear out** – separate the essential from the non-essential
- **Configure** – a place for everything, and everything in its place
- **Clean & check** – assess the current condition of the environment
- **Conformity** – ensure standard easily maintained
- **Custom & Practice** – ensure everyone follows the rules.

### ■ **THE PLAN-DO-CHECK-ACT (PDCA) CYCLE –**

a way of thinking which encourages continuous improvement



### ■ **THE CLIP – ‘standard structured approach’ – which is made up of four main stages:**

- **Pre-diagnostic** – setting the aims and training the team in lean tools and techniques
- **Diagnostic** – practically applying the tools to analyse the situation
- **Improvement activity** – looking at the data for opportunities to improve processes
- **Follow up** – identify barriers to success and set improvement actions in place.

### ■ **VISUAL CONTROL –**

a major part of the CLIP process is to use visual tools to display data, highlight improvements and record ideas. These include:

- **Key Performance Indicators** – are the measure of performance of activities that are critical to the success of an organisation
- **Pareto Chart** – a comparative bar chart that shows the number of defects for each chosen area of work, and the cumulative total of defects over the whole project
- **Fishbone Diagrams** – are used to identify the possible causes of problems. Start by defining the problem to be investigated and write it down. Then draw lines (bones) to represent each cause that runs into it. Finally you can brainstorm what is actually the cause of the problem
- **Priority Matrix** – a quadrant chart used to prioritise which improvement areas to focus on first. For example, you can place activities that will have a high impact at a low cost in one quadrant and focus on these first.

## GETTING HELP

### CONTACT DETAILS

Martin Watson  
CLIP Director  
BRE  
Garston  
Watford WD25 9XX  
01923 664638  
www.bre.co.uk  
www.constructingexcellence.org.uk/  
service/clip

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