



## Defence Munitions



MINISTRY OF DEFENCE

### Benefits at a glance

- ▶ *Missile production increased by 58%*
- ▶ *Average cycle time reduced from 18 days to six days*
- ▶ *Areas of waste identified and removed*
- ▶ *More environmentally friendly and safer site - halving explosives on site*
- ▶ *Output activity increased and input costs reduced*
- ▶ *Low-cost investment in Lean Manufacturing*
- ▶ *Process Acceleration methodologies implemented across organisation*
- ▶ *Enormous behavioural change and ownership of processes*

## Customer profile

### **Defence Munitions halves cycle time for refurbishment of sea wolf missiles**

A relatively low-cost investment in Lean Manufacturing and Process Acceleration methodologies has resulted in Defence Munitions Gosport halving the cycle time for the repair and maintenance of Sea Wolf missiles at Portsmouth. Defence munitions Gosport is part of the Defence Logistics Organisation and provide support for the Royal Navy, Army and Royal Air Force. Situated on a 475-acre site on the western shore of Portsmouth Harbour, it provides a range of ammunition and weapons maintenance activities, with warehousing for explosive and non explosive stores.



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*Duncan Judge  
Managing Director  
Defence Munitions*

Guided weapons processing at Gosport is a major activity and includes the repair and maintenance of sophisticated weaponry such as torpedoes and Sea Wolf missiles.

Managing Director, Duncan Judge outlines the problems facing the organisation in 2000: “We went from a position of routine maintenance and overhaul of the missiles to a situation where, because of their age, we were having to completely refurbish them. Using a car analogy, it was the difference between 6,000 and 72,000 mile services with an engine change thrown in. In addition, changes within a Ministry of Defence’s procurement strategy were placing a firm emphasis on more competition for contracts. Although there was a fourfold increase in our workload there was no possibility of increased resources, rather they were actually being reduced to meet cost targets. In addition, for the next generation of Sea Wolf missiles we were going out on a limb by quoting lower prices for our bid to assemble the missiles, not just repair them. So we needed results to deliver the goods on the new contract. We had to make a large step change in our efficiency and generally start to change the company culture.”

By July 2000, the company knew it was over-manned, says Duncan Judge, so MOD consultants were brought

in and were tasked specifically to look at re-structuring, layering and outsourcing some activities. This led to recommendations to reduce staffing levels from around 650 to 400. “We ran our own review to check the results and then decided to bring in external consultants for an independent health check of both reviews. These exercises enabled further savings to be identified and a base-line of 350 was established.”

Business education consultants Oliver Wight Europe had been recommended to DM Gosport, and senior managers attended the company’s Proven Path Club where they were introduced to Oliver Wight Associate, Les Brookes.

Trevor Drake, Sea Wolf Business Unit Manager takes up the story: “The review showed a definite need to reduce staffing numbers, but at same time, we had to increase output activity while reducing input costs. All in all, a very tall order. A new company-wide structure was agreed, communicated to the work force in October and implemented in November.”

Senior management from DM Gosport attended an Oliver Wight introductory workshop in December 2000, and then decided to invest in its workforce with a five-day workshop in January 2001. The workshop was attended by a multi-functional team from the Sea Wolf Business Unit consisting of 12 shop floor staff from all areas, such as quality engineering, workshops and warehousing. No middle or senior managers were involved in the workshops.

During the workshop, the team recognised the need to drastically reduce cycle times if it was to remain competitive and win new orders. The emphasis of the workshop was firmly on action-based learning by simulation, and the team used techniques such as Value Stream Mapping to identify areas of waste, Flowcharting, Pareto Analysis, Brainstorming, Team Dynamics and PDCA (Plan, Do, Check, Act). Towards the end of the week the team created plans and actions to remove the areas of waste identified at Gosport, created Dashboards for process measurement and compared working budgets to implement their recommendations.

On their return from the workshop the 12-man team faced the tough task of convincing their colleagues that their recommendations should be implemented. In a number of lengthy sessions they met a fair degree of scepticism from their colleagues in the Sea Wolf Business Unit. Some thought that management would not let them implement the changes or invest the money, but others were willing to give the ideas a chance.

Oliver Wight Associate, Les Brookes observes: “A number of cultural issues were addressed and the team’s recommendations we implemented at the site. Whilst they weren’t rocket science, they were good common sense ideas based on observation and first-hand experience of their day-to-day working activities.” They included:

- Low cost investment in new tools and reorganising the workshop layout.
- Repairing roads on the site to improve materials and work flows between the four work areas and the £12 million, hardened explosives facility.
- Replace small-wheeled vehicles used to move sensitive missiles with large wheeled, electric tow trucks.
- Change workflow patterns from batch to flow.
- Move from a push to pull system.
- The use of Kanbans.
- The use of PDCA to drive further improvements.

The result of the changes was dramatic. The Velocity = total cycle time divided by the value added time – has improved so much that missile production has increased by 58% and average cycle time has been reduced from 18 days to 6 days. The target is three days and further improvements are in hand to make this happen.

Duncan Judge adds: “The behavioural change has been enormous. People in the workshops have much more sense of pride and feel that they have a say in what goes on and a degree of control over their own destiny. There is a definite change in attitude and staff’s ownership of their processes has led to them being more confident in proposing their own solutions to problems and driving them forward. They know we are going to listen to them.”

The success of the exercise has enabled the company to roll-out similar programmes to the Sea Dart Business Unit, missile container repair, Sting Ray weapons systems, transport and logistics warehousing departments and office functions throughout 2001. “We’ve achieved these results despite working in a very prescriptive environment,” says Trevor Drake.

“The way we repair and test our products is still the same - with missiles you can’t make drastic process changes - but we have cut out the waste in the system. Besides the increased production and efficiency, the site is much more environmentally friendly and safer for everyone because our work-in-progress essentially the explosives on site at any time - has halved. The biggest lessons managers have learnt from the programme is that if you have to tell people something, it doesn’t work. You have to let them find out themselves.”

Oliver Wight’s Les Brookes comments on the company’s achievements: “This process improvement initiative is a very good example of what can be achieved when a company gives a group of employees an opportunity to be involved in education on Process Acceleration linked with a results orientated approach. Process Acceleration workshops can be outstandingly successful with the company achieving major benefits at a relatively low cost. However, for this success to be ongoing the company has to accept the need for ongoing continuous improvement, which DM Gosport definitely has.”



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