

## ***Multipulse Case Study for Generic Power Cabinet for Flight Simulators:***

### ***Background:***

Multipulse Group has proven track record of successful projects with Blue chip companies including Thales, Motorola and London Underground. We have been involved in design, manufacture, integration and test of a wide range of Power Cabinets for Thales Training and Simulation including, Power Cabinets for KC10 simulators, Thales View Power Distribution Unit, Power Cabinets for A320, A380 and B787 Simulators.

Our engineering team's expertise enables us to value engineer projects by implementing changes in the manufacturing processes in accordance with our Business Management System (BMS). These principles extend to value added engineering, lean manufacturing and supply chain management, additionally we participate in 21c supply chain disciplines.

### ***The Project:***

The project requirement was to design and manufacture a Generic Power Cabinet for use on all simulators. The design brief required a modular system, reduced size, easily maintainable with Mean Time to Repair (MTTR) of 35 minutes and significant cost reduction. With Multipulse's experience in the areas of value added and value engineering we successfully met and exceeded all the required criteria.

### ***The Process:***

Lean manufacturing Techniques were implemented to improve the production time and reduce waste.

A dedicated team evaluated the existing process and identified the value added and waste elements using flow charts, string diagrams and process activity charting techniques. This exercise provided the necessary information to develop a revised production floor layout which would minimise people and material movement. This enabled co-location of personnel, improved process connectivity and supported the introduction of single piece flow manufacture within the section.

Tools were relocated to improve access by using shadow boards and implement visual control. Our engineering team rationalized the drawing sets to standardise the cable usage and refined items numbering across the suite of drawings.

A dedicated cable cutting, marking and stripping cell was established and a team area created to support all manufacturing activities. This also resulted in more efficient use of floor space for additional work.

The value engineering exercise identified the most cost effective parts without compromising on specifications.

The Business Management System (BMS) which links all our process through the intranet starting with an initial sales inquiry through to delivery to our customer incorporating all of the following elements planning and scheduling, design and development, material requirement and inventory planning, production, manufacturing engineering processes, review processes, preventative and corrective action processes and packaging. As all these activities, forms and charts are available on the Business Management System it ensures time savings as well as making the processes more robust and efficient. Supply chain management uses the latest MRP II ERP for the management control of materials and inventory.

**Results:**

The exercise was based on a benefit /cost formula, without compromising on performance and quality of the system. We reduced the cost and increased the benefit by implementing the above process techniques. As a consequence of our exercise we have successfully met our targets. In this way we have improved performance, reliability, quality and cost of the system.

Value engineering cost reduction example is shown in Table 1 below.

**Table 1 – ON/OFF Delay relay**

Manufacturer	A	B
Functionality	On Delay	On, Off, single shot Flasher pause
Ambient Temperature	-5 to + 55 C	-25 to + 55 C
Mechanical Life	5,000,000	20,000,0000
Surge voltage	3.5 kv	4KV
Cost per Cabinet	50*9= 450	15*9= 145

To improve manufacturing efficiencies we have implement Lean manufacturing processes to improve production time and waste reduction. The results of these improvements for each area and overall improvement are shown in chart 2 and 3.

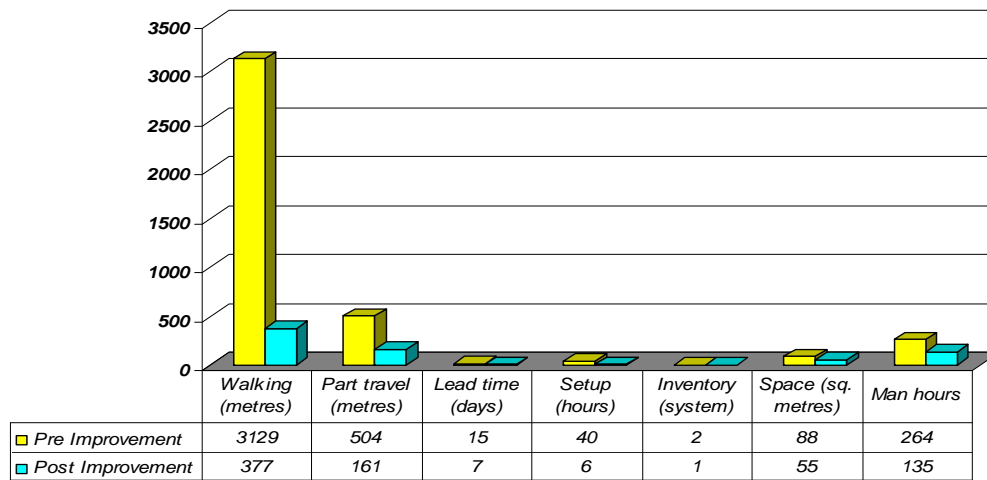


Chart 2: Improvement in each area

Overall Improvement %

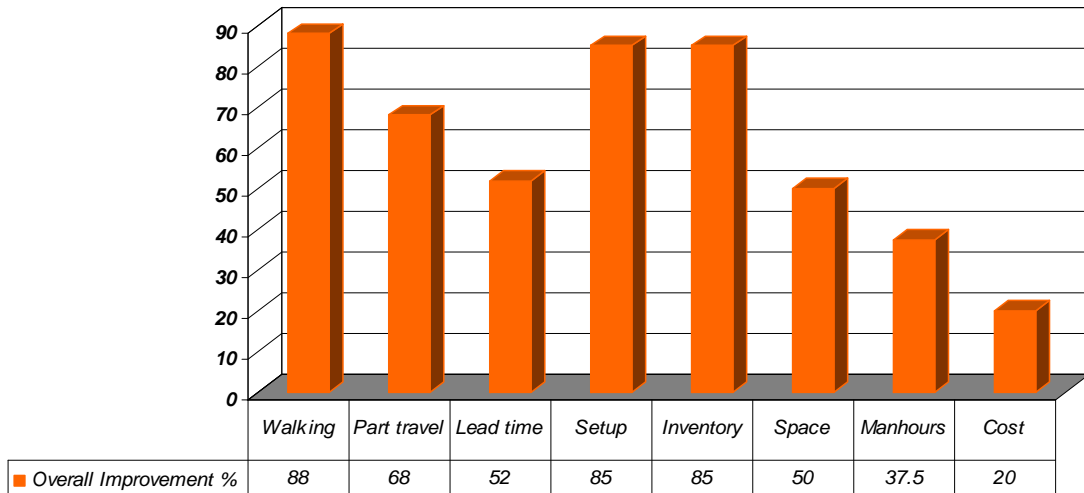


Chart 2: Overall % improvement

**Our Future Goal:**

We continually review and improve our processes, the benefit of which is seen by our customer by reducing the cost, man hour utilization and eliminating production waste. This in turn ensures continued improvement in performance, reliability, cost, quality, safety, and life cycle of the system.