



“Protecting and Optimizing
your Robotic Investment”

Case Study: Automotive Sub Assembly Manufacturer, West Midlands

Abstract:

A Medium size Automotive sub-assembly manufacturing plant in the West Midlands were suffering high levels of production stoppages, poor quality which resulted in almost 85% rework, and poor cycle times. The company was looking to increase production levels with introduction of new product but had zero additional capacity.

The Challenge:

The company had a number of Robotic systems producing a wide range of sub-assemblies for both local and international car manufacturers. The systems ranged from new installations (within 3 years) and older systems (up to 6 years). The personnel on site had not received formal training and therefore could not ascertain the causes of the stoppages.

After a two day review it became clear that the majority of the problems were caused by incorrect path programming. The quality issues were also addressed and root causes were highlighted as poor tooling on the welding cells and quality variance upstream from the power presses.

Moving forward the priority was to reduce stoppages and ensure that production targets were set, whilst also removing the excess amount of rework caused by poor quality welding.

Methodology:

After a three day site survey the following targets were discussed and agreed with the production and engineering team:

- Prioritize cell production requirements and target systems
- Take accurate cycle timings and compare to product expectations
- Assessment of current tooling and a ‘Fit for Purpose’ Analysis
- Provide operator and maintenance team with troubleshooting techniques and formal training
- Look at upstream production and improve delivery & quality of sub-components

Because of production constraints it was necessary to formulate an action timing plan alongside the clients production schedule.

How we succeeded:

The target cells were very rapidly improved by targeting portions of programs that were causing the stoppages. Within two days production stoppages were reduced by 95%. Following on from this and the removal of a third shift we were able to spend a greater amount of time reducing cycle times with typical achievements of 15-20%.

Quality issues were addressed both at the Robotic cell and upstream with the introduction of additional tooling and rework levels were initially reduced by 50% with a further reduction after reprogramming of welding paths. Following on from this success together with the Engineering department we implemented a TPM (Total Preventative Maintenance) system including program and cycle time assessment on a monthly basis to prevent a loss of cycle time and/or quality.

Each operator and maintenance member were given a familiarization course so that the systems were maintained at their optimal level.

Consumables were organized next to each cell to reduce stoppage time and Cell manuals were created as reference material to both cell operation and consumable requirements. “How to.....” guides were also included as original manuals had been lost, these gave operators and maintenance personnel a quick reference to solve production problems if they were to arise.

Statistics:

- Shifts reduced from three to two on a number of Robotic cells
- Cycle Time’s reduced by up to 30%
- Stoppage time reduced by up to 95% due to path reprogramming
- Visual Quality improvement and reject quantities reduced by 60%
- Production capacity increase to allow introduction on new products

“delivering quality Robotic Solutions to the
manufacturing industry”