

Chassis Systems Ltd improves shop floor efficiency, accuracy and quality with implementation of Lighthouse Systems Shopfloor-Online

Three phases of implementation deliver greater visibility across production process

EXECUTIVE SUMMARY

Chassis Systems Ltd (CSL) is the product of a joint venture merger between Dana and GKN and it was formed to produce the chassis structures for two of Land Rover's newer brands – the Land Rover Discovery and the Range Rover Sport. The production of the chassis is a precision process, involving the use of over 200 parts and requiring more than 700 welds.

Ensuring the quality of each product is essential and procedures are in place to take measurements across the production line and to record manual/physical inspection data to confirm the quality and to alert operators to any potential or actual faults. Historically, much of the recording of this data was done manually, making analysis time-consuming and cumbersome.



PHASE ONE – CMM DATA

Chassis Systems recognised the limitations of this approach and began looking for a solution at the beginning of 2007. The aim was to provide greater visibility of the CMM data, free up engineers' time analysing the data, and increase the number of products inspected each day. A greater level of automation was required and the company explored available options.

As Scott Jeggo, Quality Engineering Leader at CSL, comments,

“We wanted a system to give real time data to engineers at their desktops so that they no longer needed to go onto the shop floor to find information from the CMM operators. It's all about eliminating waste and giving our engineers the data they need to analyse processes, make informed decisions and then perform moves to improve the quality of the finished product. Having real time data available to them means that the engineers can react to potential problems before they have an impact on quality and therefore make sure that the production stays within specification limits at all times. We produce as many as 2,700 chassis each week and accuracy and quality is a huge focus.”

Having already worked with Lighthouse Systems for several years, CSL looked to its supplier for a way to improve data visibility from the CMM measurement process. Lighthouse Systems Shopfloor-Online fitted the bill and offered other potential benefits in the future. Its modular design means that CSL will be able to add functionality, such as downtime analysis, OEE, maintenance management, as required. The system was implemented quickly following budget approval and its impact on the CMM operators was felt almost immediately. The manual processes, whereby operators generated PDF documents to alert managers to potential issues, were eliminated freeing up operator time. Now the system provides an automated

alert when readings move towards out-of-specification levels. The new approach has been welcomed by the CMM operators and sampling

throughput has increased by approximately 50 per cent as a result of the new system. Its success led to phase two of the implementation and an expansion of the system to the patrol inspectors on the lines.



PHASE TWO – ROVING INSPECTION

Visual inspections are an important part of the production process at Chassis Systems and a team of patrol inspectors move around the production cells examining the quality of all the welds. They are required to check one in 25 parts (full chassis and all sub-assemblies), so their days are busy and the amount of information collected large.

To help them with the process and to provide a log of all visual checks performed, a number of rugged tablet PCs were provided that operate over the wireless network with Shopfloor-Online. This means that all of the functionality of Shopfloor-Online is available to the inspectors at all times and they can report all checks done and any faults found immediately.

Once again this system has replaced a manual system that requires operators to identify specific parts and welds and report on their quality. The manual, catalogue approach was time-consuming, difficult to work with, and required a good deal of hands-on experience before operators could perform well in the role. For example to be able to identify the weld number quickly, from one of 700, if a defect is found. The automated approach, on the other hand, requires less training

and provides the user with a CAD image of the weld as they make their weld number selection to give visual assurance that their findings are accurately reported on every occasion.

Also, as data is now available in real time, reports can show progress and status to the minute. Before, it was only possible to report on the inspections at the end of each eight hour shift. This was given to the quality supervisor and then input to a PC creating further delays, duplicating effort and leaving room for re-keying errors.

According to Jeggo,

“The implementation of the wireless system for the inspectors has improved the quality checks enormously. Everything is done in real time now so we have an accurate account of any faults, what the fault was, when it occurred and, most importantly, what was done to sort it out. This audit trail is very important to us when reporting back to the customer and gives us incredible visibility of the quality of the production line at every point along the way. The users welcome the new systems and they all see great benefit from it.”



PHASE THREE – END OF LINE QUARANTINE

Of course, the process is not complete until the product reaches the end of line. Once again, checks are carried out here to ensure that no faults are present. This visual inspection is carried out once the chassis is built and painted, and therefore ready to be shipped to the customer. Any faults found are input to Shopfloor-Online in detail and the chassis is placed into containment until it can be fixed. Once repaired, the detail of the repair is captured and the chassis released. Shopfloor-Online provides a complete audit trail of the chassis and is able to report on fault frequency and corrective actions.



CONCLUSION

For this high volume producer making high value, complex parts, quality is a major focus and Chassis Systems has a system in place now that helps the company to achieve its goal of 100 per cent in-specification output. Shopfloor-Online is able to automate many processes that previously relied on human intervention and manual input. It is able to automatically alert engineers to measurements that are moving towards being out of specification. In this way, the software helps to pre-empt problems and allows the operators and engineers to take action to avoid faults before they happen.

Jeggo concludes,

“Lighthouse Systems have been instrumental in helping to get us to where we are and we hope to further extend the implementation over the coming months. Having downtime analysis would be the next logical step so that we could measure OEE, line rates and run rates. This is another manual process at present and automation will help us move even closer to production perfection.”

 **Lighthouse**

Lighthouse Systems is a world-leading vendor of MES/MOM systems with offices in the UK, the USA, Singapore and Sweden.

Lighthouse Systems' **Shopfloor-Online™** is a smart manufacturing enabler. It creates the connectivity previously missing throughout manufacturing operations and provides real time visibility of the entire manufacturing operations environment. At the right time, anywhere. With Shopfloor-Online people can work smarter and assets can work harder, whilst delivering superior quality to customers and controlling costs.

The software is modular, with functionalities across all four areas of plant operations, production, quality, inventory and maintenance. It can be hosted on premise, in the corporate data centre and in the Cloud.

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