



Magna Automotive

Barton Business Park, Burton-on-Trent

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SOPHISTICATED STORAGE AND RETRIEVAL PROJECT
ZERO DOWNTIME WITHOUT DISRUPTION
SECTOR SPECIFIC SOLUTION
FUTURE PROOF



Key Highlights

The SDI Group Solution for Magna Automotive

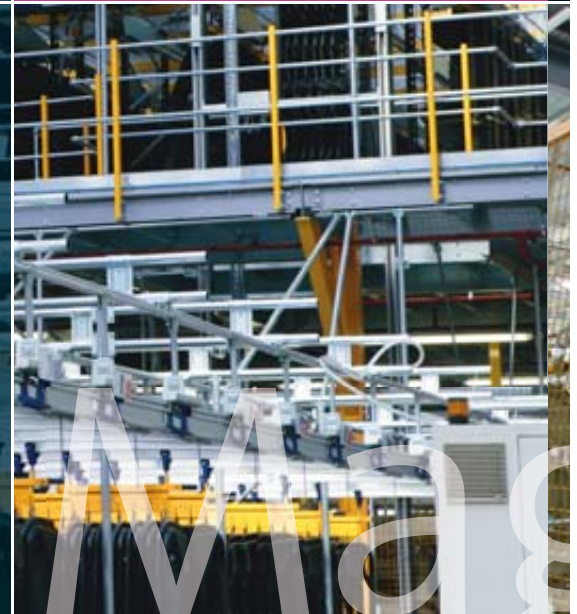
Magna Automotive

IMPROVED UTILISATION – freed-up 11,500 sq ft of additional ground-floor production space, increasing capacity to meet production needs and handle future growth

UNRIVALLED SERVICE – the materials handling solution took just 10 months to be designed, installed and fully operational, so completion within the required timeframe with zero operational downtime

INCREASED PRODUCTIVITY – an increase in available workforce equating to a headcount redeployment of 8 per cent

ENHANCED CONTROL – improved stock control, production planning, and inspection of stock produced, as well as adding advanced, automated reporting capability



THE CHALLENGE

Magna Automotive operates a manufacturing and production site at Barton Business Park in Burton-on-Trent. The facility is part of the company's Interiors Division supplying injection moulded internal door panels to a nearby car manufacturer. It provides parts for two different vehicle models, working on a just-in-time basis with a four-hour notice period for incoming orders.

Whilst the operation only manufactures door panels for two vehicle models, there are a number of different variations for each because of different interior options that are offered to the consumer. Due to a planned model change, scheduled for the first half of 2008, Magna Automotive was required to increase the number of panel variations to handle the requirements for both the outgoing and new vehicle, which meant an increase in the number of variances of around 17 per cent. As a result, additional space was needed at the Burton-on-Trent facility to accommodate extra production equipment.

Magna Automotive wanted to identify the most cost-effective solution that met production needs for the customer. In addition, any project to redevelop the site was to be weighted against the projected transfer cost of moving the operation into a bigger vacant building located next to the current facility.

THE SOLUTION

SDI Group UK was invited by Magna Automotive to design an automated system for the storage and retrieval of the injection moulded interior car door panels manufactured at the production site. A bespoke, turn-key solution was required to primarily optimise the existing facility – freeing up valuable space for new equipment – whilst avoiding any disruption to the ongoing operation.

SDI Group UK was also asked to consider a range of secondary requirements that included enhanced workforce productivity; maximising capacity for future business wins; and increasing operational visibility and control. In addition, any solution would have to take into consideration the unique needs of a just-in-time operation within the

automotive sector, which demanded particularly high levels of accuracy, timeliness and product quality.

The facility had originally been built with a ten-metre clear eave height, yet the highest piece of machinery at the plant stood at only four metres high. Therefore around 60 per cent of the cubic volume of the building was unused and could be utilised to increase ground-level production space. With this in mind, SDI created the two-floor mezzanine structure measuring 18,000 sq ft has achieved more than 10,000 sq ft of additional production space to house new equipment.

Added capacity created by the mezzanine has enabled Magna Automotive to handle the increased number of product variations, and effectively achieve a maximum daily throughput of 1,330 completed door panels, made up of a total of 5,320 parts manufactured, stored and distributed within the facility. A dynamic storage area – capable of holding one and a half days worth of parts – transports manufactured items from injection moulding machines into a temporary storage area, before handling onward



transfer to the production or secondary process areas.

This new solution replaced an existing process that used a ground-floor stock holding system that not only took up a significant area of available space within the facility, but also required staff to manually move parts between each stage of the production process. The removal of manual handling of parts between key areas within the manufacturing plant has enabled Magna Automotive to make best use of its workforce and redeploy resources to core areas of the production process. This has resulted in an increase in available resource of one site operative per shift, equating to a headcount redeployment of 8 per cent.

Elsewhere, the bespoke WMS has enhanced the overall control of the manufacturing plant and increased the ability to better manage the site. Although not an original requirement, the sophistication of the solution has helped Magna Automotive to improve on stock control, production planning, and inspection of stock produced. Furthermore, it has allowed historical operational data to be stored

and collated for reporting purposes, something that was previously process manually.

The installation was completed within the required timeframe, so Magna Automotive has been able to meet the delivery deadlines for new parts to its customer's car production line. Zero downtime was achieved during the course of the design and build process, with no forced stoppages as a direct result of the project. This ensured that Magna Automotive was able to continue to serve its customer without disruption throughout the course of the installation.

"During the course of the design, build and installation process, SDI Group UK has become a valued member of our team. They have taken a responsive and flexible partnership approach to effectively manage a continually evolving project, delivering the solution within budget and in a timely manner." Nick Towers, Magna Automotive

THE SYSTEM

SDI Group UK designed a two-floor mezzanine structure that used a powered, overhead conveyor system that would automatically move manufactured parts, placed on trolleys with load hooks, from the injection moulding machines (IMMs) into lanes located on a storage platform above the production areas. These parts would be stored until required by either production areas or drop-off points for secondary manufacturing processes, with each area fed via powered overhead conveyor on a one-to-one replenishment basis. Once parts are consumed, the emptied trolleys are automatically transferred to second mezzanine floor above the first-floor parts storage area until required at the IMMs.

A critical design challenge for SDI was to combat potential rub during the movement of parts between floors, which could affect the quality and integrity of the items. As a result, the use of incline and decline conveyors were ruled out to prevent increased movement between parts and avoid

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possible damage, meaning that some form of bespoke vertical lifting solution was needed to ensure parts remained suspended vertically. In total, five vertical lifts were used within the final design, strategically positioned to minimise the distance travelled between each area within the facility.

The installation utilised 250 specially-designed brush breaks to control and slow trolley running speeds on the storage lanes and unpowered parts of the system that relied on gravity. This innovative use of the brush break was particularly important because of the varying weights of the different manufactured parts – ranging from 11 to 38 kilograms – resulting in a significant variation of trolley speed around certain areas of the solution.

An essential aspect of the solution was a sophisticated Warehouse Management System (WMS) that was developed to meet the precise needs of Magna Automotive. This user software would provide overall control at each stage of the production process from manufacture of parts, through to storage and then transfer to production areas and drop off points. This comprehensive WMS not only had to control the

automated storage and retrieval system, but the entire life of each part from manufacture and production to the point of dispatch.

The software also offered greater control over stock – operating an effective first in first out parts usage system – as well as providing a complete audit trail for every part within the facility. The automated solution utilised more than 3,500 sensor points providing useful stock data and enabling the ability to monitor parts trolleys throughout the process. Data could be accessed and inputted via office-based computers or five touch screen monitors situated within the production facility.

As well as the design and installation of the automated retrieval and storage system, SDI Group UK also provided further expertise to maximise space utilisation. In particular, the canteen area was redeveloped to free up additional space and add office space and a quality control inspection lab. A pallet storage racking solution was developed for emergency stock and a host infrastructure services were included such as the installation of lighting, sprinkler and fire detector systems.

ABOUT SDI GROUP UK

SDI Group UK, formerly SDI Greenstone is a leading provider of systems and solutions to the retail, wholesale, fulfilment and e-commerce industries for all aspects of distribution centre materials handling.

As both consultants and systems integrators, SDI Group UK, is able to provide clients with a total logistics solution package which includes materials handling consulting, as well as design, engineering, fabrication, installation and integration services.

ABOUT MAGNA AUTOMOTIVE

Magna Automotive is a leading global automotive supplier with a diversified product and service offering. The company has approximately 84,000 employees in 241 manufacturing operations and 62 product development and engineering centres in 23 countries.



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