

Automotive Manufacturing Solutions



Machining

Turning powertrain futures around through outsourcing expertise



Nissan

New software boosts Qashqai quality in powertrain & assembly



GM Hungary

Laser honing and higher speeds power agile motor making



Materials

Carbon fibre and composites – from racecars to production



Environment

Solar and wind power plus biofuels combine to run green plants



Regional focus

Turmoil at the top as Big 3 face threat from rising global players



Thomas Weber

Bionic optimisation at Mercedes

Holding the line

General Motors is embracing energy savings and improved performance with a new decentralised vacuum system from PIAB. AMS talks to Senior Manufacturing Project Engineer **Dan Anfinson** about getting a grip on the competitive edge

Dan Anfinson recognises that competition is the driving force in today's automotive industry.

"Competitiveness has never been greater. In terms of manufacturing, this has driven two points of the four-point GM Turnaround Plan – to raise the bar on execution of new products, and to intensify our focus on cost and quality."

When it comes to cost and quality, specifying a vacuum system can make a big difference for an automotive manufacturer. Because GM strives to benchmark and adopt technical best practices that can be applied worldwide, selecting the appropriate system to specify in its plants is vital.

A firm grasp on safety and performance

"I needed a system that would function in harsh environments and provide a high level of performance and safety," states Anfinson. "Here, I saw a number of advantages in choosing a decentralised vacuum system over a centralised one."

Performance can be enhanced with a decentralised system as it offers a great amount of flexibility. As additional product styles are included in a line at GM, a valve and the necessary cups to accommodate the new product are easily added. This is much more cost-effective and convenient than purchasing a new centralised pump each time.

Strong, continuous vacuum flow is another goal to consider when choosing a system. A centralised system with a damaged suction cup can cause a decrease in vacuum flow that may result in compromised grip. This creates downtime and decreases speed, which can be costly, affecting production and product quality. With vacuum being produced at each suction cup, a decentralised system will still retain a strong hold if some of the cups are damaged or line losses occur.

With regard to safety, Anfinson also saw major benefits. "Since the decentralised system is controlled by a two-

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position, detented valve; there is no need for an emergency state to engage with the loss of power like it would on a centralised system. The valve remains in the position it was last in when power was lost."

"Air is the most expensive medium in a manufacturing environment," Anfinson says. "So along with safety and performance, I next look at efficiency, and then of course cost."

The decentralised vacuum system from PIAB is about 80+ per cent more efficient than a centralised vacuum setup. This means that huge potential savings in air can be realised when we're using that system."

In 1996, GM initiated a formalised Facility Energy Conservation Program to increase emphasis on energy conservation. The company is dedicated to protecting human health, natural resources and the global environment, which means constantly improving the performance of its vehicles, as well as the processes used to manufacture them. This is why its facilities strive to conserve resources by using less energy, and another reason as to why a decentralised system made perfect sense.

Increased up-time

GM has also recognised gains through improved setup and simple maintenance, as the setup for the decentralised system is very simplistic. "A centralised system has many adjustments that lead to confusion in setup and troubleshooting. The trades commonly play with the settings, not fully understanding what they are adjusting when vacuum faults occur." On the other hand, a decentralised system enhances troubleshooting with feedback at each suction cup, pointing operators directly to the faulty cup.

"With increased up-time and improved throughput possible with a decentralised system, I certainly don't see vacuum going away," remarks Anfinson. "A robust vacuum solution remains important to our manufacturing competitiveness." ■