

Paintshop gets smart



We have been hearing for ages that Industry 4.0 concepts are likely to have a big application in paintshops. Is this now becoming a reality?

Daryush Arabnia: Well, we have certainly noticed a change. Our customers are always encouraging us to innovate, and always want to know about new developments, but things have stepped up a gear recently.

In the past, big established OEMs would look to us to innovate, and be very supportive, but the scale of their operations and the complexity of their standards would also cause them to be cautious. Smaller new manufacturers would be the ones willing to test things, to buy the new systems and to be the early adopters. In some ways they had less to lose and more to gain, but now this distinction seems no longer to really operate.

We have a history of innovation and our company is structured to generate new ideas and new ways of working. Even the largest of our customers seem to respond to this and be prepared to test new things and challenge traditional ways of doing things.

So perhaps the time for caution has passed?

Yes, the market pressures are now such that they cause everyone to respond to the benefit that digitally linked systems can offer. This is not just about cost reduction. It is



“Geico’s objective in developing the Smart Paintshop is all about empowering the workforce, not supplanting it. It is about enhancing their skills and utilising and sharing their experience.” – **DARYUSH ARABNIA, GEICO**

Dermot Healy talks to Geico’s chief operating officer, Daryush Arabnia, about Industry 4.0 and the company’s own Smart Paintshop project

about energy usage, maintenance, quality, flexibility, and time-to-market. All these things can be enhanced by smart technologies and everyone wishes to benefit.

It used to take about four years to develop a new model, but now manufacturers wish to do this in 18 months. Yet, to build a new facility, with buildings and planning and all approvals necessary, it can take two to three years, so you can see the appeal of any technologies that can speed up these processes. And you can see, as well, the need for facilities to be flexible – for processes to be readily reconfigured – and the new, linked digital technology makes this so much more practicable.

For us, I think a turning point came when we won an innovation prize at the last SURCAR Congress for our J-Doc system. It attracted considerable interest and the response of our customers was such that we felt the time had come when we could move the whole Smart Paintshop project forward.

Another factor for us, of course, is that we have been able

to find specialist partners who can help us with the process. Some of these partners are new start-ups, as there has been great growth in this area, but also some are established businesses that have helped us develop these concepts and systems and adapt them to our business. In many cases these partners come from outside the automotive field and serve businesses in other sectors, so they inevitably bring with them new ideas and approaches which help us develop.

At what point do the typical Industry 4.0 concepts come into the process when dealing with your customers?

Well that is an interesting thing. In order to develop what we term the Smart Paintshop we have had to remodel the way we work in our own business. We have had to introduce these processes into our own practice right across the board. So in design, installation and commissioning, Geico uses digital systems and tools to help find the appropriate solutions. From the outset, our customers encounter digitally linked systems and they allow us to provide accurate costing and options even in the bidding process, as well as allowing us to model the effect of different specifications and requirements. The same set of linked digital information systems helps us in the design, bidding and implementation phases, just as it will help them in their operation of the plant. So, to this extent, it is a new experience for us all.

So, really, you start off with ‘Smart Design’?

Yes, our system allows us to work smart from the outset. With a customer we would begin with a base programme that can be adapted as the project develops and specifications evolve. We have the 3D drawings in the system and can visualise the evolution of the plant and the interrelation of the components. This allows us to plan and plot the workflows and so on. All the time, the system links to our suppliers, with material specifications and costing information all fed in, so as changes are made all these elements are automatically recalculated. As a consequence Geico can generate better costed and better conceived proposals with minimum delay.

So customers reap the benefits from the outset

Of course. All the way through, our Smart Design process is more flexible and results can be achieved in a shorter timescale, which is a key consideration for our customers.

What about the installation and operational phases of new paintshop projects?

In all these, our Smart Paintshop concept brings real benefits. The system software, for example, allows us

to create an ‘avatar’ of the paintshop, and we can apply simulation techniques that assist in the commissioning and implementation processes. We can start out with a ‘Zero State’ simulation that allows us to bring the plant on stream without delays. The system has self-learning capabilities through which it can adapt and develop on the basis of information passed through cyber communication. This is important, for example, when plants come into operation and we wish to plan maintenance schedules. By monitoring processes we can adjust the maintenance schedules to take account of the evidence continuously generated as the plant is in operation. Obviously, different conditions of operation place different strains on components, and continuous monitoring and sophisticated self-diagnosis functions allow maintenance intervals and component replacement schedules to be adjusted accordingly. So, also, with changes in production volumes. Adjustments can easily be made to reflect new production requirements with savings, for example, in energy costs

There will be gains to be made in quality control as well?

Yes. With self-diagnostic functions as part of the system, and the capacity for self-learning, quality can be managed very effectively and problems nipped in the bud. Continuous communication between the different elements in the paint process – the oven, air quality, application and so on – can be adjusted automatically or trigger operator intervention.

What about the relationship between these ‘smart’ systems and the workforce, the operators? And what of future developments?

Geico’s objective in developing the Smart Paintshop is all about empowering the workforce, not supplanting it. It is about enhancing their skills and utilising and sharing their experience – making it possible for them to use their particular aptitudes to best effect. Some tasks can best be performed robotically, through digital processes, and others call directly for human judgments and capabilities. Our task is to find the optimum mix of human and robotic inputs into any particular process. To this end, the Smart Paintshop project has caused us to explore new wearable technologies that can assist both in the design phase and in operators.

Augmented reality tools have considerable potential and there are likely to be exciting developments in this field in the future. So, just to let you know, we will be at the 2017 SURCAR Congress in Cannes this summer, introducing all these new developments in the Smart Paintshop project to the industry. *



In design, installation and commissioning Geico uses digital systems and tools to help find appropriate solutions