

## New road ahead for automotive moulding

**Mobility is changing and with it automakers are gearing up for the ultimate electric and digitally connected reinvention. Nigel Flowers, UK Managing Director of injection moulding specialist Sumitomo (SHI) Demag examines the future of connected cars, the mega technology trends just around the corner and how domestic tier 1-3 suppliers are scaling up production of micro-precision components in preparedness for the next phase of the automotive revolution.**

Incrementally, automakers have begun the connectivity journey. Already, vehicle interiors have commenced the shift towards greater comfort, convenience, driver safety and creating a sensory experience. Yet, analysts predict 2021 will be the year of innovation acceleration for the industry, which stalled during the pandemic.

For exhausted engine vehicles, noise reduction, efficiency, weight reduction remain major trends. Additionally, for hybrid vehicles there is a focus on improving and regulating the thermal management of the temperature to ensure the system can adapt to the ambient temperature and maintain comfort for passengers.

In all-electric vehicles, current trends are focused on improving the protection of the current. Materials like Duroplastics are experiencing a renaissance. Additionally the vibration and resonance behaviour are totally different and consequently need a new selection of materials and part design.

Nigel explains: *“As more complexity is added into vehicle electronics, demand for connectors, micro-gears and micro-switches is rising. In the fibre optics market, this particular technology is adopted for moulding gears such as micro connectors, ceramic holders, and optics housing. Other applications comprise micro engines, micro drive control systems, and micromechanics rotators.”*

### **EV coming of age**

With countries like the UK, Norway, France and Germany introducing legislation banning the sale of non-electric vehicles – some as early as 2025 (2030 in the UK) – innovations in this space are rife. So too is creativity. Smart use of space, advanced safety features and driving range are all deal breakers for discerning buyers.

Interest among consumers for EV is certainly heightened. With the Society of Motor Manufacturers and Traders (SMMT) reporting that sales of battery electric cars and plug-in hybrids accounted for a combined 13.9% of the market in March 2021, up from 7.3% at the start of the pandemic.

EV design is a major influence, especially the vehicle front. Unlike conventional passenger cars, designers are not constrained by internal combustion engines and fuel tanks. This means they can package up functional parts differently, and the engine bonnet will be more of a design element.

Battery and fuel cell EV technology is another critical area that requires new generations of parts, and consequently new supply chains. It is an area where Sumitomo (SHI) Demag is regarded as a strong development partner, working with customers to determine the best solution. The company is currently supporting several projects to establish new market concepts, including the development of a new Liquid Silicone Rubber system. This technology can be utilised in combination with others to produce parts for hybrid vehicle fuel cells.

Many experts forecast that 2021 will be the year FCEVs will start to overtake BEVs, citing faster recharging, longer driving range and cleaner emissions as a critical benefits. *“High pressure applied*

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to FCEV tanks requires a great deal of component stability and reliable seals and gaskets,” states Nigel.

### **Reshaping the sensory experience**

As a result of AI and infotainment, car interiors are changing fast. According to the latest research, the global automotive interiors market is anticipated to reach USD29.35bn by 2025.<sup>1</sup>

With more technology companies starting to muscle into the digital touchpoint space combined with automakers predicting a bounce-back in global orders for new vehicles by 2023, OEMs are rapidly disseminating the disruptive forces that could ultimately render a driver obsolete.

Bulky dashboards are being replaced by more aesthetically-pleasing minimalist surfaces. Customisable controls are boosting comfort. Interior lighting, acoustic systems and sound insulation are being integrated into door panels. Moulding these high-tech interior components without compromising on fuel efficiency requires greater precision and process stability.

These new automotive applications tend to use new materials, including PC, PET, linseed or similar, as well as new processes like integration of function foils and backlighting for smart surfaces. It’s an area where Sumitomo (SHI) Demag has advanced knowledge, with recent show exhibits demonstrating the company’s automotive market-led solutions.

*“Featuring fewer switches, these tactile panels create a more sensory experience for motorists. In the future, applications like this will reduce the number of components in a vehicle,”* notes Nigel.

### **Talk to the car**

From vehicle entry to finger print ignition, sensors to computer vision software, the possibilities are endless. Health, wellness and wellbeing (HWW) are new features already being spotlighted, with a number of startups developing health tracking sensors to monitor heart rates, rhythms, fatigue and stress levels. Sophisticated biometrics like this could even adjust personal comfort settings or perform an automatic alcohol breath test.

In-car voice assistance has an equally big role to play. For many consumers, voice is one of the biggest purchasing influencers suggests a report by Voicebot, allowing drivers to safely access navigation, detours, and potential pit stop information. Over 60 percent of drivers now factor the availability of voice assistance when purchasing a new vehicle<sup>2</sup>. By no means new technology - Ford pioneered its Bluetooth connectivity way back in 2007 – brand consistency from home to car is emerging as a preference. As testament, this April Lamborghini unveiled the first car to rely entirely on Alexa to control environmental settings.

*“The level of hyper personalisation and sophisticated in-car entertainment that pushes content from one connected device to another is opening up a whole new market for manufacturers and OEMs,”* states Nigel.

As with any electronics or safety component, moulding precision and stability is paramount. This need to enhance precision and eradicate component defects is prompting more moulders in the automotive supply chain to switch to all-electric machines.

Nigel comments: *“If you are repeatedly manufacturing a connector or sensor and you know it performs between the upper and lower weight limit, an all-electric system will enable you to run much closer to the lower limit, with greater precision and consequently fewer defects and lower scrap rates.”*

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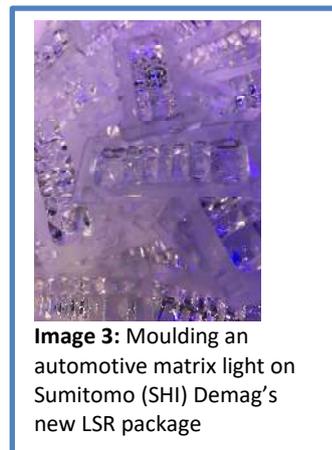
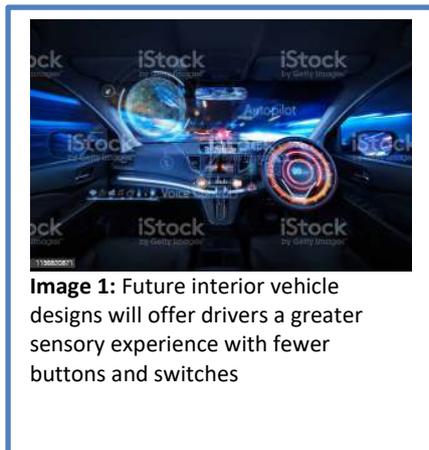
Dynamic, precise and energy saving, the newest IntElect series features direct servo drives, enabling improved repeatability and shorter cycle times. Ranging from 220 to 500 tonnes, the big tie bar spacing, increase in mould height and opening stroke means that the new IntElect models can accommodate larger moulds. The result is a less energy intensive machine for automotive applications that would previously have required a larger tonnage.

Nigel adds: *“As society moves towards more integrated and sophisticated electronic components in vehicles, injection moulding machines and OEMs have to adapt. All of the technological enhancements in the IntElect series are designed to give moulders the tools, machine synchronisation, mould safety and real-time production monitoring required for the next generation of digitalised automotive concepts.”*

The IntElect’s optimised clamp force is a result of an innovative double centre press platen. Designed in-house by Sumitomo (SHI) Demag, it ensures equal surface pressure distribution. Units can be modified with a larger screw geometry and non-return valve (activeLock) to achieve higher repeatability and precision.

**ENDS.**

### Images/ captions



### Notes to the editor

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Sumitomo (SHI) Demag Plastics Machinery UK Ltd. is a wholly owned subsidiary of Sumitomo (SHI) Demag, Germany, established in 1956. Sumitomo (SHI) Demag specialises in the production of electric, hybrid and servo hydraulic injection moulding machines with clamping forces between 250 kN and 20,000 kN. With over 125,000 machines installed worldwide, over 65,000 of which are full electric, we supply machines to all sectors, including automotive, packaging, electric/electronic, medical and pharmaceutical, building products

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and leisure, and assist injection moulders to meet their energy management, quality assurance, lean manufacturing and Total Cost of Ownership strategic and production goals. The company's UK and Ireland business delivers world-class service and support to more than 400 customers, supporting in excess of 1,800 injection moulding machines. Sumitomo (SHI) Demag won Best Technology Application of the Year two years running at the Plastic Industry Awards (2015 and 2016). Our UK-based Training Academy is a Cogent Skills Partner and delivers six structured and bespoke polymer processing and industry-led training and development courses, aimed at all operational levels, from new starters to tool setters, engineers and asset care managers. All course content has been designed to enhance precision, productivity and Overall Equipment Effectiveness (OEE).

<http://uk.sumitomo-shi-demag.eu/>

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<sup>1</sup> <https://www.alliedmarketresearch.com/automotive-interiors-market>

<sup>2</sup> <https://voicebot.ai/2020/02/25/over-60-of-car-buyers-that-have-used-voice-assistants-factor-availability-into-purchase-decision/>