



*Grainger & Worrall's Engineering and Technology Director, Keith Denholm discusses how Grainger & Worrall are adapting to the changes in customer requirements, especially in the transition from ICE to EV. Read the full transcript below.*

### **How are G&W Adapting to Changes in Customer Requirements?**

We aren't leading any bodies to discussions, but we are closely following. So, if the car companies were happy to make them out of cream cheese and steel, then so did we. The onset of structures when one or two more avant-garde companies started to use aluminium in a bigger way (some of the leaders in that would be the SUV community, for example), meant there was an insatiable demand from the market to actually make them. But legislation on emissions meant that they had to get massive weight savings, which came through the extensive use of aluminium for the first time. They were able to build those slightly offline and perhaps employ technologies that weren't in the main factory, which started to bring opportunity to us. We started to see that first with some of the substructure stuff, like sub frames into which a power drain or a suspension unit would sit. The market didn't know how to value those, which at some point in the future, would be perhaps a relatively low-cost fabrication of things that would be made by a high-volume producer or integrator of suspension parts. For us, it was a real challenge- big moulds, big tools, castings that really didn't know how to be made, et cetera. We were happy to be challenged by it, but we weren't really convinced that there was a good fit between that technology and sand casting because of the labours involved in just getting to produce parts-unlike things like cylinder heads, and cylinder blocks for which we have five factories set up beautifully to deal with those parts day in, day out. We know how to approach it, and we've skimmed and healed enough of the process to make it sensibly efficient. It was only when there was sort of a clear signal from some of the main car companies like Jaguar and Land Rover, for example, that we started to think very carefully about how we would start to upscale our capabilities to do it. It's not easy. Since you struggle to extract the value from something which is going to yield 50% success rate in its prototype form, it is going to take you days to make. It

doesn't seem to be very well matched to the concept of a high value, complex engineered solution, but that's a perceptive problem. All of the myriad companies around the world who are making these new vehicles with the intention of launching them very shortly, will at some point have engaged with a company like ours to help them get through that prototyping. So, we have to accept that it's with us to stay. But it brings some very uncomfortable misfit between our process and the needs of the casting. So, a complex shape which has got no intrinsic mass, but it's the size of a dinner table needs a mole the size of a piano case. That carries with it the cost, the effort, the time, the infrastructure, the lifting, the handling, the power usage, cylinder heads, and cylinder blocks, which are beautifully compact- packaged up into something very small, because that's how they're designed. This is where we've got to reduce a lot of process reengineering now to actually try and overcome some of those wastes really, in order to deliver product. That's going to be a challenge, and we've started it but we started it in the belief that we were going to make things which were conventional in their size and subframes. So the things that we're making go beyond that wildest dream. And, who's to say that's not going to stick and that's not going to become the way that all vehicles are manufactured- a bit like the dinky car really, only scaled up. You get a single casting for wheels and a seat. Why would your commercial vehicles not go that way? At some point, somebody is going to innovate this idea of upscaling across a range of products, including off road. We're going to have to have a solution for that.

Want to find out more about the role of sand casting in electric vehicle manufacturing? Read our free eBook, **Making EV Components with Sand Casting**.

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