



Grainger & Worrall's Engineering and Technology Director, Keith Denholm discusses modelling and simulations. Read the full transcript below.

Will Modelling and Simulations Replace Physical Prototypes?

We go from solid to liquid to solid again, and we do that in liquid metal. We have to move, fix that phase change into something which isn't really well characterised. It's not by phase, it's multi-phase alloys. Certification dynamics is a hugely interesting subject, but if you actually look at it at the academic level, it's still very much in its infancy. That process is not adequately covered or catered for in our current modelling capability. Then the reverse happens: you reject heat through media, which again needs to be properly modelled. The accuracy of the systems that we have is good, but it's not precise enough because it's during that process of heat rejection, where the casting is physically formed, and all its properties are conferred. If you're looking to model entirely on that, you must be really sure that the property prediction is going to be reliable and safe- it's not acceptable to be close. If, for example, you're looking to optimise weight and take away all the redundancy of a product, or if it's a safety critical part where a particular property crumples, ductility is essential. So again, you will approximate very well but you won't rely entirely at the moment on that, and I think that's through the physics.

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**.

[READ THE EV EBOOK](#)