



ADVANCED MANUFACTURING GROWTH CENTRE

MEMBER PROFILE

iOrthotics

Queensland-based iOrthotics began in 2009 to manufacture for Balance Podiatry. It has grown rapidly to serve an ever-expanding number of podiatry clinics in Australia and the United States, where it is a worldwide leader in the industry when it comes to new technology adoption, such as 3D printing patient devices.

Mass customisation has long been recognised as a sweet spot for additive manufacturing, adoption by podiatrists for prescription devices has had its difficulties, specifically mechanical performance.

“**The reasons the industry has not fully adopted 3D printing is due to the issues around hardware and materials, but also software,**” explains Founding Director Dean Hartley.

iOrthotics started its research and development focus on 3D printing in 2015, and is one of the very first companies ever, to apply their technical leadership in the 3D manufacture of orthotics. In doing so, they began with fused deposition modeling (FDM) as the initial step into 3D printing arena.

With this approach, waste minimisation became the first objective. With tried and true computer numerical control (CNC) milling techniques, making a pair of orthoses would lead to 1.5 kilograms of polypropylene waste. This is significant when you make 15,000 pairs a year.

“**The scale of the problem means, additive manufacturing can provide almost zero waste, so that’s what we have been doing,**” adds Hartley.

Balance Podiatry merged with myfootDr in 2017; the scaling of manufacturing doubled overnight. As the order book grew it became increasingly necessary to focus on additive manufacturing from a scale point of view. With traditional FDM printing, the company could only produce

30 pairs of orthotics a day. However, iOrthotics being the first Australian company to invest in a state-of-the-art HP Multi Jet Fusion 4200 production machine, the number is between 120 and 130.

“**A lot of people are looking at us, and not just in Australia but around the world, because we are the first to really make this quantum leap, and evolve with our whole industry,**” says Hartley.

The company has had to develop its software to manage additive manufacture of orthotics from patient information, as well as a portal for orders. Time for designing a new pair of parts to print has shrunk from 15 to five minutes with software refinements.

iOrthotics has also partnered with the University of Queensland for things such as materials science and mechanical testing. This relationship is “integral”, according to Hartley.

As well as assisting in development, the university has provided benchmark data against other solutions. Any health practitioner offered a new device is going to want to see credible data around how it performs and why it is superior. Parts produced on a HP machine, for example, were 40–60 per cent stronger in tests compared to standard polypropylene orthotics.

Hartley’s company also praises the assistance of the Advanced Manufacturing Growth Centre in helping maintain iOrthotics’ technical leadership in its field. He cites the AMGC’s network of contacts, which have provided advice in everything from enterprise resource planning solutions to Lean manufacturing.

“**They have given us a bit more exposure as well, just through who they are and what their links are. The relationship has matured our thinking,**” says Hartley.

“Through that and other people we talk to, we are tapping into federal and state government people and grants as well.

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Dean Hartley, Founding Director