**CAE Tech software solution helps EvenKeel Performance Insoles take giant step towards mass customised manufacturing**

An innovative software provider has enabled a producer of custom orthotic insoles to create a mass-customised workflow from design through to manufacture, which will drive growth while improving patient care.

EvenKeel Performance Insoles, based in Massachusetts USA, partnered with CAE Tech, a Warwick-based technology to digitalise the process of producing mass customised and build-to-order orthotics while keeping their price competitive.

CAE Tech has created software to support purchasing through to manufacturing of insoles and orthotics by EvenKeel Performance Insoles.

Nicole Ballantyne, Knowledge Transfer Manager for Digital Manufacturing at KTN, said: “Scaling up to mass produce a product in line with specific customer’s needs and preferences is an art.

“The collaboration between EvenKeel and CAE Tech is a striking example of what can be achieved with vision, attitude and drive to leverage digital technology to lay the foundations for business growth while never losing sight of the customer.

“Bringing communities together to drive positive change and transform UK manufacturing is exactly what we are looking to achieve with the Made Smarter Innovation Network over the next four years.”

**The Inspiration**

Launched as a manufacturing arm to a long-established podiatric practice, EvenKeel Performance Insoles has spent the last 15 years harnessing technology to drive consistency and efficiency across patient care.

After creating a proprietary method of producing custom orthotics, the business has made incremental progress linking digital modelling to CNC machining, then developing a measurement tool that captured key data from the customer using an app and integrated with CAD software.

But EvenKeel’s struggled to overcome the challenges of connecting its complex stack software to communicate configurable data with their customers and supply chain partners.

David Santopietro, Co-Founder and CEO, said: “We have always been a customisation company - creating bespoke devices by hand for the majority of our 45 year history. But it is only recently that we set out to achieve mass customisation.

“Our journey has used technology to overcome the problems of consistency and after years of developing our ideas into something workable, we realised that to achieve our ambitions we would need some help. And that meant rebuilding our system from the ground up.”

**The Innovation**

The breakthrough came when EvenKeel discovered PTC Onshape, a cloud-native product solution that combines CAD and built-in data management. They were then introduced to CAE Tech, experts in using Onshape to support manufacturers with mass-customisation and build-to-orders products.

CAE Tech has created software to support purchasing through to manufacturing.

The bespoke software solution seamlessly unifies three major parts. A front end user interface capturing the information about the patient’s feet as well as biomechanical information such as gait analysis. A backend administrative app performs the calculations to create the bespoke orthotics, and then transmits the order. And finally, a web application which transfers and translates the order data through Onshape to be manufactured on CNC machines.

The next critical stage of development is cloud-based CNC machining which means overcoming the hurdle of having to download Onshape parts to a PC and import them into third party CAD systems to post toolpaths for manufacturing.

This feature is key to scaling up the solution and will enable localised manufacturing and distribution via third party franchise.

**The Impact**

The outcome is a new integrated system that is fast, simple and easy to use for the customer and the business.

The switch to a fully cloud-based system is also forecast to save EvenKeel thousands of dollars per year. Previously EvenKeel took advantage of web based front end software that required expensive licences and personal servers to maintain its presence on the web. Renting costly data center space and equipment will soon be a thing of the past. Moreover Onshape’s cloud presence ensures EvenKeel does not have to worry about maintaining software or servers on its own. Onshape, Google and CAE Tech handle all of that for them: a dramatically superior experience. CAE Tech’s contribution enabled EvenKeel to pay a one time development fee to create software that integrates beautifully with Onshape, operates on a No-SQL database and enables extremely fast mobile applications.

And with the full stack unified scaling up will be much easier.

Xenia Pie Martinez, a Mechanical and Software Engineer at CAE Tech, said: “By creating a cloud-based manufacturing app for EvenKeel, the team is able to manage the incoming order and prepare it for manufacture, using the Onshape document as the geometry source. This will give them an efficient approach to manufacturing that suits their current operations and most importantly will scale well to having more customers, more referring doctors and more production.

“The manufacturing app uses parameterised CAD, which means changes can be applied on the fly and gives the customer the ability to self service. The solution allows real-time monitoring of the manufacturing process and also creates customised documents for each order, including a sticker label for packaging and instructions on how to use the insoles.”

“EvenKeel can now reap the benefits of flexibility, integration and personalisation - the cornerstones to mass customisation.”

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