

# Revolutionary 3D printed shoulder joint model



## Case Study

Ogle Models were recently commissioned to develop a complex shoulder joint model for one of the UK's leading medical device manufacturers.

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Originally called Neoligaments, Xiros, based in Yorkshire, have been pioneering the research, development, design and manufacture of complex medical devices since 1982. This multi-award winning firm work with healthcare professionals, medical device companies and academic institutions to provide various routes to market for inventions in the orthopaedic and sports medicine fields.

### The challenge

When Xiros were planning to exhibit one of their latest solutions at some of the world's leading trade shows, including the American Academy of Orthopedic Surgeons (AAOS) and the British Elbow and Shoulder Society (BESS), they turned to Ogle to deliver the precision and accuracy demanded by this field.

The requirement was for a 3D printed shoulder joint model that would have soft ligaments between the two joints – humerus (arm) and clavicle (shoulder). There was a short timescale to get the model ready in time for the trade shows. The model also needed to have transparent soft tissue that looked as visually accurate as possible.

With a strong reputation for applying its experience and know-how to medical device development projects, Ogle stepped up to the challenge.



## The solution

Due to the complexities of the model it was likely to be fragile in nature, however - in part to overcome this issue - Ogle selected the vacuum casting process as the chosen production method. The bone SLA master was built in two parts which would create an easier split line in the silicon mould with each half having a location. Out of the four SLA machines at Ogle, the Ipro 8000 was selected and the master was built using ClearVue. Not only does this process ensure the highest levels of accuracy, but once skilled hands removed any layering while retaining any key features and the paint department did its bit and added a superior high gloss surface finish the master was ready to produce the silicon tool.

The two hard parts (the humerus and clavicle) were cast separately in a clear, UV stable PU resin and then bonded together.

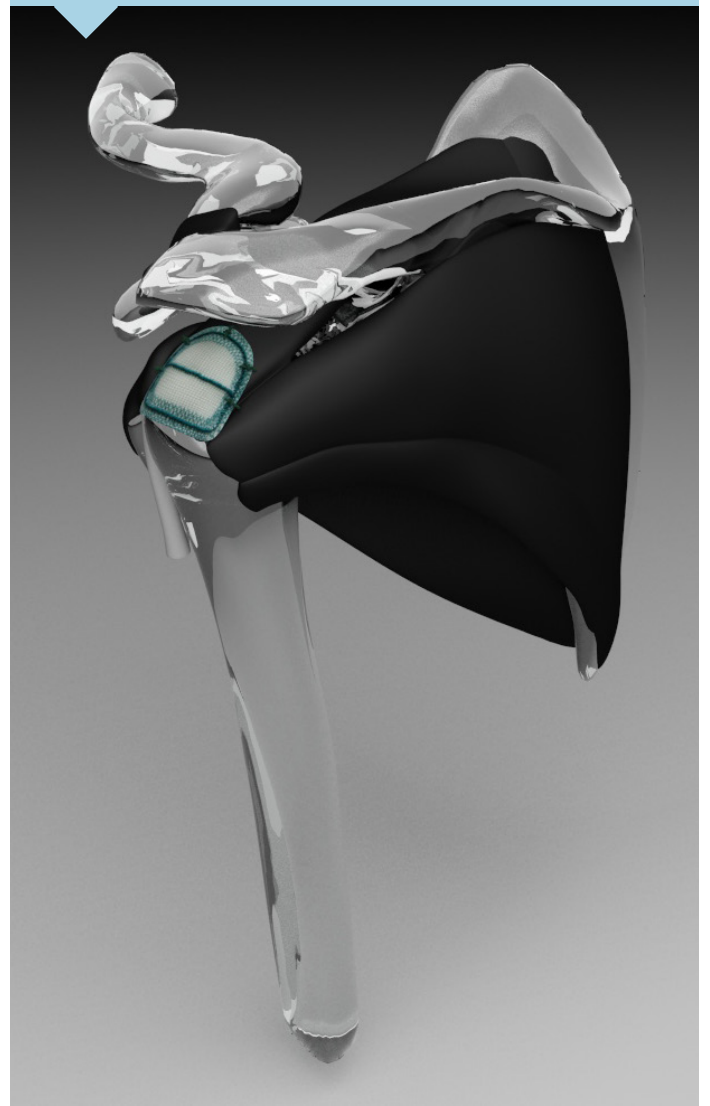
The final element was to ensure the soft tissue (ligaments) looked and behaved as realistically as possible. This was achieved by using a clear rubber casting material. The whole structure was then assembled and carefully delivered to Xiros to contribute towards the company's exhibition success.

## Conclusion

Working with pioneers in the design of such complex medical devices was a privilege for the team at Ogle. Dave Bennion, Marketing and Sales Director at Ogle, said: "It is such a pleasure to work with Ashley at Xiros. They are consummate professionals and we are always excited to see the next new idea from their team. Having worked previously in the prototyping and model making of complex medical devices, this project was a great fit for both teams."

After successfully exhibiting the model at various international trade shows, Ashley Mitchell, Senior 3D Animator at Xiros, said: "I was extremely impressed with the product portfolio at Ogle, the company looks and is very professional. We were confident and knew we would be able to achieve anything with the help of the technologies and people. The model looked great and really helped us convey the product and process."

For more information about model making or prototyping, contact our team on 01462 682 661, or visit social media to #ChallengeOgle.



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