

Engineering division uses 3D printed SLS technology to build full size dummy.

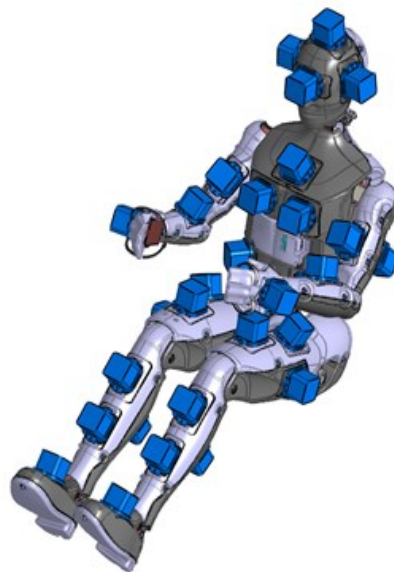
One of the main benefits ARRK offers clients is the wide range of product development services across the Group. One such example of an integrated service offering, was the involvement in an automotive project for sister company ARRK Engineering. Although ARRK's engineering headquarters is based in Munich where it employs over 1000 people, it was engineers from their site in Cluj-Napoca, Romania, who asked ARRK's prototyping division to support them in development of a dummy using 3D printing.

The assembly was designed to help automotive manufacturers to evaluate and measure passenger thermal comfort and environmental conditions. The main body parts were to be fixed together with ball joints and angle joints that are lockable in various positions, allowing for passenger movement and simulation inside the vehicle. On the surface of the body panels, sensors to measure air temperature, air velocity, radiation and relative humidity were also to be installed.

With these requirements in mind the engineering team needed a full size dummy to be built, painted and assembled. Following various discussions, CAD data was sent across to ARRK's prototyping centre in Gloucester where twenty six components were built using ARRK's Selective Laser Sintering process



Above: Representatives from ARRK's Engineering and prototyping teams alongside the completed full size SLS Dummy.



Adjacent image:

Fully assembled dummy incorporates 26 SLS components, fitted with over 60 CNC machined, fabricated & welded components



Case Study



Above images: Glass fibre matting being applied inside SLS built parts alongside CNC machined, fabricated and welded components

in nylon glass filled material. Parts ranged in size and complexity from the dummy's head, torso, arms and hands, through to its legs and feet. Numerous SLS parts also needed to be joined, assembled and re-enforced with glass fibre matting to provide additional strength. The prototyping team were also required to source, manufacture and incorporate over 60 CNC machined components in steel and aluminium. These parts also included some welded fabrications, before being fitted inside the SLS parts by the Gloucester team.

Regular communication between the project designers in Romania and our prototype team ensured parts were built to schedule and in line with the characteristics specified for each component. The components were then put through ARRK's in-house paint shop and colour matched to exact RAL requirements.

The lead engineer on the project then visited the prototyping centre and, together with the UK team, assembled the whole dummy to ensure it all came together and worked as expected. The dummy was later shipped to Munich, where it was to be fitted with various sensors and pressure pads ready for use.



Paint & Finishing



Low volume SLS components ready for assembly



Assembled sections

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Engineering

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