POWERFUL LIGHT WEIGHTING CAPABILITIES IN NTOP

Lightweighting means 'doing more, with less' and offers benefits beyond just material reduction. A lighter component leads to improved performance, increased energy efficiency, reduced manufacturing costs and greener products.

As part of an internal exercise we used nTop to lightweight the end of arm tooling, designed for our Automated Quality Control solution, the RoboSCAN-R.

Despite the original version being designed for AM, it was over engineered and didn't take full advantage of all the benefits AM could offer. With nTop, we were able to use topology optimisations to remove all unnecessary material. We could then use the inbuilt FEA tools to prove that even with half the material, the optimised clamp could still support twice the required weight.

Learn more about the RoboSCAN-R

Using nTop's powerful latticing tools, we were also able to create a lattice that is completely conformal to the surface of the scanner, giving a near perfect fit while offering exceptional ventilation to the scanner.
Once the workflow was set up for the first half of the clamp, we were able to optimise the second half with minimal additional design time. This workflow can now be used to automate the creation of clamps for the entire range of Creaform scanners.

THE RESULTS

	Original version	Optimised version	Savings
Weight	989g	518g	48%
Cost	£556	£315	44%
Material Used	1040cm3	545cm3	48%

Learn more about lightweighting in nTop

The results of this lightweighting activity have delivered a cascade of benefits to the RoboSCAN-R system. Not only has the upfront cost been drastically reduced, but because the part is on the end of a robotic arm, the weight savings result in reduced running costs and increased accuracy. Maximising the efficiency of the system throughout it's lifetime.