

## James Lister & Sons Unlocking potential through 3D printing to add further value to customers

A long-standing West Midlands engineering supplies and services company is aiming to unlock further potential in its business after receiving expert advice through the Made Smarter programme.

James Lister & Sons was founded in 1874 as an ironmonger's shop in Tipton but has evolved over the decades to form four divisions: Listerfluidpower, Listertube, Listersupplies and Listersub-contract.

In 2010, James Lister's three great, great grandsons, Tim, Richard and Mike Cotterill, led a management buy-out to own its six branches across the West Midlands and South Wales including its national distribution centre in Smethwick.

For the first time, a shareholder from outside the family was brought into the business with Peter Davies joining as chief executive.

James Lister & Sons employs over 100 people and is registered to ISO 9001, ISO 14001 and ISO 45001 best practice in all areas of the business.

Through Made Smarter, the firm has explored R&D in 3D printing to offer a new service for its customers.

A state-of-the-art machine to print tools is shortly to be installed after the success of its trials with help from Jit Gatcha, Digital Transformation Specialist at Made Smarter for the Black Country, and Made Smarter's collaboration with WMG centre High Value Manufacturing Catapult.

Peter Davies said: "Without Made Smarter, it would have taken us a

lot longer to get to this point and having the in-depth knowledge of experts that the programme put us in touch with and the successful trials has been fantastic.

"Having that technical expertise from people who understand 3D printing and who were able to give us guidance has saved us so much time and means we will be up-and-running in the New Year with this new service for our customers."

### The Challenge

Listertube supplies many industries with large and small seamless tubes such as for sports equipment, gas fires and drones which are carried out on its CNC machines.

The business prides itself on supplying quotes and producing orders quicker than its competitors for mid-volume amounts ranging from bespoke one-off tubes to several hundred.

These often require new tools or tools to be adapted to complete the quick turnaround for its customers which are based throughout the UK.

Peter said: "We wanted to explore how we could increase our speed and reduce our cost of the tool making.

"That led us into the 3D printing arena. We originally bought a 3D

printer four or five years ago and started using it to make checking fixtures that we could use at the bending machine, having checked first-offs with a co-ordinated manufacturing machine.

"We then wondered if our printer could be used for some of our tooling that is normally manufactured from hardened steel. We started with very small tools where we had long lead-in times."

### The Solution

Peter is co-chair of the Manufacturing Assembly Network and heard Dr Mark Swift from WMG, University of Warwick, discussing their involvement in the programme during a virtual meeting.

Peter got in touch with Jit Gatcha at Made Smarter, who came to see him and find out more about James Lister & Sons.

A 'digital roadmap' was then put together as part of the Made Smarter programme which included a project plan to trial a set of 3D printing machine technology and materials.

Peter said: "When we heard about Made Smarter, we wanted to find out if we could take 3D printing to a more significant level.

"We have focused on how we could make the most of this opportunity to increase our business by being able to offer customers who have a product idea and would like to have a prototype tube bent in a complicated figuration but can't fund it, the opportunity for us to

produce a sample so that they can see if it works.

"Many innovative ideas stall at this point if a prototype can't be developed. By being able to produce a real bent tube component from a 3D printed tool it could unlock potential for new product development for new and existing customers.

"The next stage was finding out if we could upskill from making bending tools for tubes up from eight to 10 mm in diameter to an inch in diameter.

### The Benefits

Initially, James Lister & Sons was going to buy a £20,000 3D printing machine with 50 per cent match funding from the Made Smarter programme but further investigations led to the business investing in a £4,000 Formlabs Form 3 3D printing machine which they were able to fund themselves.

Peter explained: "The £20,000 machine would have allowed us to print bigger tools but we have carried out our research and have decided to dip our toe into the 3D market with a smaller machine and then re-visit it.

"The stress is immense on plastic tools but through Made Smarter, we were presented with six or seven 3D tools from our designs.

"If the tools are not strong enough, they will crack or will give a little bit and then the tube loses its roundness, but with some of the trials the results have been amazing.

"We have found a couple of solutions so we are feeling confident about exploring this area now.

"The whole experience of dealing with the Made Smarter team has been excellent. If we had needed the funding it would have been there which is great and being able to tap into the technical know-how of the WMG Industrial Digital Technology Advisor who understand about 3D printing and give us guidance is immense.

"Neil Jeffree, Innovation Manager at WMG, was able to say which 3D printers and materials might work in this application and which wouldn't work straight away which speeded up the whole process since we would have had to find that out through trial and error ourselves. We don't have a huge amount of time to devote to R&D so that was really useful.

"Neil carried out a meticulous regime of trials on numerous machines and materials at WMG labs to conclude on the best combination of equipment and material."

### The Future

Peter said: "We hope the new 3D machine is going to be installed in December and we have the confidence now to offer a new service and expand this area of the business.

"It is an industry which is constantly evolving and the fact we started in 1874 emphasises that we are always looking ahead and moving with the times."



From the left, Neil Jeffree (WMG at the University of Warwick), Peter Davies (James Lister & Sons) and Jit Gatcha (West Midlands Made Smarter)

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