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## MTT SET TO SCALE UP SLM

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## LEAD NEWS

### MTT Technologies Group sheds its skin



You could be forgiven if you had some gaps in your knowledge when it comes to the UK's only ALM machine manufacturer — MTT Technologies Group. The company has undergone a significant metamorphosis in the last 18 months, but on a recent visit James Woodcock found a company that is sure of its identity and sure of its future.

I was lucky enough this month to steal some of MTT Product Manager Rob Weston's time. He explained to me how MTT came to be, where they're at now, and what they see in the crystal ball.

So, first off, a little history: If, like me, you have been hiding under a rock for the last 18 months, the genesis of MTT Technologies Group may have passed you by. The more perceptive among you will have noticed the subtle, but significant, change in name and logo — MCP Tooling Technologies becoming MTT Technologies Group.

Owned and run in the UK, MTT was originally part of a larger UK registered company, the MCP Group, active in diverse industry sectors — from mining and chemicals to vacuum casting and injection moulding. The MCP name was relinquished, following the sale of MCP's minor metals and chemicals business to Sidech SA in 2008 — forming MCP Group SA. With the name gone, MTT Technologies Group was established to continue and build upon the legacy of MCP Tooling Technologies Ltd and MCP HEK (as it was known in Germany).

At the time of the name change more than half of the company's revenue came from its legacy business sectors, including vacuum casting, casting for metals and small injection moulding machines. The company is still dedicated to these legacy products and is continuing to service and maintain all lines. The vacuum casting of nylon is still an important aspect of what MTT offers, especially for the automotive market where the durable parts can be

used for under-bonnet applications.

This said, the sale of MCP along with the economic turbulence of the last 18 months have accelerated the change in MTT's development focus from these established processes towards Selective Laser Melting.

MTT's first foray into additive manufacturing was through its partnership with Realizer, the German manufacturer of Selective Laser Melting machines, and developer of the first commercially available SLM machine back in the late 1990s.

After a few successful years of partnership, it became obvious to MTT that its commercial ambitions weren't compatible with Realizer's research driven approach. Had the company not had the foresight to stick with SLM at this point the story for us would probably be over... However, it was the SLM technologies that caught the management team's eye as products best positioned to grow the company. At this juncture I'd have to say they made the right decision.

The next big step came when MTT resolved to design and manufacture its own SLM machines from its headquarters in Staffordshire.

Although not new to the technology or the market, launching into a sector that is often suspicious of (percieved or actual) newcomers was a big play. One of the driving forces behind MTT's transition to manufacturing its own SLM machines was a key partnership with Stryker Orthopaedics, that, as a company, had collaborated with The University of Liverpool and invested significantly in investigating SLM as a manufacturing technology. This three-way development partnership, linking academia, end-user and supplier is now one of the hallmarks of how MTT operates as a business.

Indeed, MTT has been careful to use development partners at different levels of technology readiness — from academics involved in process development and conception, to institutes and initiatives looking at applications for the resulting technologies. The list of

partners reads like who's who in ALM: The Welding Institute, who broke new ground with the first UK built SLM machine from MTT and have since gone on to gain extensive applications expertise; The Rapid Manufacturing Group at The University of Loughborough; Exeter University; and De Montford University to name a few. As with all technology companies, I got the feeling that names of the big commercial partners probably lay under stacks of NDAs in a drawer somewhere far from prying eyes.

Having such close links to academia and the ultimate end-user throughout the development process is not without its risks, but through its careful management of the setup, MTT utilises technical resources, expertise and ideas unavailable in-house, while giving itself time to identify the areas in which a commercial outcome can be achieved.

The company's links to the University of Liverpool were further strengthened by the appointment of Dr Chris Sutcliffe as Research and Development Director. Chris has been instrumental in the development of the current crop of machines (the SLM125 & SLM250) as well as pioneering the company's pipeline offering, the SLM500.



Chris explained how he got involved:

"Most people know I never stop blathering on about how fantastic SLM is! So when the opportunity came up at MTT to get properly involved in designing a system that closed the gap on the failings that I had experienced when using the systems for applications and process development at The University of Liverpool, I couldn't really pass up the challenge (especially after all the complaining!) What we've achieved as a team over the last two years is quite impressive — two new SLM machines launched and major steps towards the largest machine (SLM500) ever built. I have high ambitions for the company as a whole and we still expect there to be significant challenges, but as we grow our team and expand our knowledge and skills base, our customers and partners can look forward to high-performance machines that will get faster and more proficient as we accelerate our efforts."

The SLM500 (in recognition of its 500 mm x 500 mm



build envelope) is in development, having passed through the feasibility study stage. Having a half-metre square build platform would once have been the stuff of dreams — even today the technical challenges are great.

Rob offered some insight: “Whenever you scale a technology up or down you will encounter difficulty. There tends to be an optimum size for any given device dictated by its supporting technologies. Through our research efforts we know that scaling up to a 500 x-y build area is feasible with current laser and optical systems.”

Currently in testing using a single 400 W laser system, the development team are eventually looking to ship the largest in the SLM range with a 1 kW laser. Developing larger build areas has historically been slowed down by laser and optical systems development, although recent breakthroughs mean that MTT have so far avoided the need to use a multiple-laser system and the complex challenges of synchronisation that comes with them.

Chris Sutcliffe added: “The SLM500 was an EPSRC funded project and as such no one expected it to be easy. That said, the machine is now operational and is building parts. Closing the gap between where we are now and real world applications will be no less of a challenge but we do expect to see use as both a series parts manufacturing system — with the large bed bringing significant economies of scale — and also use on large single objects in both aerospace and automotive. We do have significant interest from some high-profile potential users and are looking forward to the exciting applications prospects that lie ahead.”

### 3D SYSTEMS PARTNERSHIP

Another driving force behind the company’s growth is its sales agreement with 3D Systems. As the first company to commercialise additive manufacturing technologies (see page 35 of this issue for more), 3D Systems bring a global presence and its associated infrastructure to the deal, while MTT brings the technology.

The two companies have a close working agreement that sees 3D selling its own label version of the MTT machines in a number of worldwide markets. Rob explained: “The deal with 3D Systems is key to our exposure to the market place. We will be scaling up our production capacity here, and will be recruiting

over the next 12 to 18 months.”

Bob Bennett, Sales Manager at MTT explained what the 3D Systems deal means for him: “The 3D systems agreement is of strategic importance to the MTT Technologies Group. MTT gains considerable market exposure from 3D’s worldwide presence and global approach to marketing their technologies. The relationship has also helped us raise our own game in order to meet the high standards that we know are required to compete with both our peers in the industry, and also traditional manufacturing technologies where high expectations are already embedded.”

Simon Scott, MD concluded the visit with his projections for the company moving forward: “There is no denying that the last two years’ trading conditions have been very challenging, especially when coupled with the refocusing of the Group’s activities. We continue to maintain and grow our manufacturing facilities here in the UK and have added to our team of engineers and technologists to ensure our product development commitments on the SLM project are met or exceeded. R&D is the life blood of MTT and we do have several other exciting development projects underway, split between our R&D functions in the UK and our German subsidiary office. This allows us to capitalise on the relationships we have fostered with institutes and academia both in the UK and Germany. Although I don’t believe the UK economy is out of the woods yet, we continue to make significant progress on our export territories and expect 80–90% of our SLM business to come from outside the UK. We have a great team both in the UK and our subsidiary offices and I am looking forward to swelling those numbers over the coming months.”

When taken as a whole package MTT looks to be in an enviable position: a strong lineup of legacy products in established technologies; a product pipeline that includes some exciting developments in SLM; a deal with a big industry name that should further help MTT’s market exposure; and a proven and dedicated management team that know what they want for the company in the future.

## Meet the Team



### Simon Scott

Simon joined MTT in 1997 as Design Engineer and following a period as General Manager was appointed Managing Director in 2006. He is now Managing Director and Deputy CEO. Simon graduated from Manchester Metropolitan University with a degree in Industrial Design and Business Management after already

having served an engineering apprenticeship. As well as having overall responsibility for managing the company and reporting to the Group’s shareholders, Simon plays a hands-on role in new product design and development. Known for his ability to foster and develop key strategic relationships with partners and institutes, Simon has set the trajectory for growth and success and has an eye firmly on the future for the MTT Technologies Group.



### Dr Chris Sutcliffe

Chris joined MTT Technologies Group as Director of R&D back in 2008.

Chris was one of the original innovators of Selective Laser Melting (SLM) working with the technology at the University of Liverpool. He is one of the founder members of the Manufacturing Science and Engineering Research Centre,

known for its innovative approach to manufacturing. Chris is well known and highly regarded in the rapid prototyping industry. He holds a Masters degree in Mechanical Engineering and a PhD in fluid dynamics from the University of Liverpool, and has published over 100 articles on advanced manufacturing. Chris forms MTT’s vital link to academia and key industrial partners ensuring that MTT’s products are both pioneering and relevant in the dynamic world of manufacturing.



### Robin Weston

Rob joined MTT Technologies Group in early 2006, first as a Sales Engineer before his current appointment as Group Marketing Manager in 2009. Following the completion of an engineering apprenticeship at Royal Ordnance and a spell in industry, Rob returned as a ‘mature’ student to study Technology and Business management at Manchester

Metropolitan University, graduating in 2000. Following five years at Renishaw Plc, as Product Manager on high-speed measuring systems, Rob now takes responsibility for SLM Product Management and the wider marketing activities for the MTT business as a whole. Rob’s experience in industrial and high-tech manufacturing equipped him with a broad understanding of the demands on SLM technologies, as SLM makes the transition to machine tool status.



### Bob Bennett

Bob Bennett joined MTT Technologies Group almost 17 years ago, first as Sales Manager for the south of England before graduating to Sales Manager for both UK and export territories.

Bob maintains a wealth of knowledge on the company’s products and markets and is a familiar face within the rapid prototyping industry. His time is split between maintaining the legacy business and managing the transition to the increased focus on SLM technology products. Known for his open style combined with great communication skills, Bob’s approach is a million miles away from the ‘hard sell’ sometimes associated with sales.