Source: Stahl/ETMM

The Gotools shop floor is almost at the limit of its capacity. To fit in the next machine, an OPS Ingersoll Gantry Eagle 800, arriving in March 2018 two old machines have to be removed.

Taking a leap: Investment in EDM machinery and HSC enabled growth

Rosemarie Stahl

Gotools is a British company located in Rotherham, a 90-minute drive from Birmingham. In only a little over five years of existence, the company has managed to record a growth of around 50% per year. All that success started with the decision to buy a new EDM machine.

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Gotools is in employee ownership. This means that every employee owns shares of the company. 15% growth is promised to all shareholders and the staff is directly rewarded for the success of the company.

What happened in these five years, between 2012 and now? To understand that, it is important to look at the whole story. In 2012, Gotools's current managing director, Andrew Millard, was working as a technical director at PMS Diecasting in Rotherham. During that time, the company regularly bought tools from external toolmakers, but was not happy with it. In many cases, agreements were not respected and tools arrived later than promised. Most of the toolmakers around were quite old and they had no intention of investing in new equipment. The board of PMS knew that tools could be made much quicker and much more effectively, especially if a toolmaker were able to invest in modern machinery. PMS took an important step: Gotools was founded to have access to its own tools and to have an influence on where they are coming from.

PMS is still located where it was in 2012. The rearmost part of the production halls is now claimed by floor-to-ceiling shelves filled with zink parts like wire joiners that were produced here. In 2012, this is where Andrew Millard made room for two machines and one employee. It was the hour of Gotools' birth.

At the end of 2012, Gotools already had four employees. In 2013, Steve Barrowcliff came aboard. He had his own tooling shop before and brought some much-needed equipment like grinders with him. In the same year, Gotools started with erosion but found it to be a very time-consuming process. At this time, the company only used copper electrodes.

With the equipment, Gotools had, it sometimes took weeks to finish a spark erosion task. The electrodes took very long to be machined and soon it became apparent that the workers at Gotools could not feed the sparker quickly enough, resulting in unproductive and inefficient downtime of the EDM machines.

Still, the company was growing. The constant incoming orders from the partner company PMS were helping to keep things busy. Andrew Millard, however, had a vision of where Gotools needed to go and at the Mach exhibition in 2014 in Birmingham, he would find someone who understood that vision.

A vision to help skip the middle steps

At Mach 2014, Andrew Millard and Steve Barrowcliff looked for machines to improve their productivity. Gotools was only two years old at that point. It was clear that they would have to invest to be able to grow, but at that time they were still a very young company and not every company and supplier at Mach believed in their future success. Of the few EDM machine suppliers at the trade show, HK Technologies was the one that took interest in the company's intentions of investing in a EDM machine. When Millard and Barrowcliff met Scott Elsmere, they felt like they were being taken seriously.

Scott Elsmere workes as team manager at HK Technologies in the UK, which also distributes OPS Ingersoll machines. After meeting with the Gotools directors, he soon talked about Gotools' future. The investment in new machinery that Millard has planned for would help Gotools in the coming years, but would not be enough to get the company to where Millard would like to see them in the future. "We would have obtained machinery that would have supported our workload for several years. Afterwards, however, we would have been obliged to update the machinery again," remembers Millard. Elsmere realised early on that Millard had a vision that went much farther beyond that point. Having worked on automation projects before, Millard has a clear idea of how Gotools' processes need to work.

Source: Stahl/ETMM

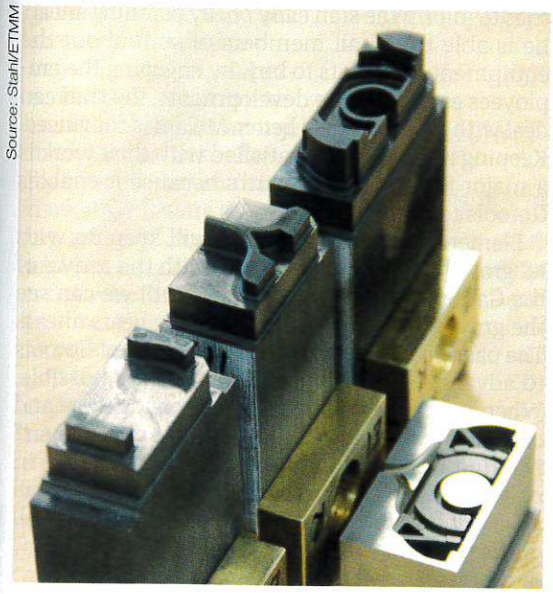
Scott Elsmere, EDM Technologies Team Manager at HK Technologies, Steve Barrowcliff and Andrew Millard in front of the OPS Ingersoll Eagle V5.

His ambitious plan for the future is a fully automated production with machines running 150 hours a week. This is why OPS Ingersoll comes into play. From the very beginning, Millard liked the way the German supplier of EDM machines aims at offering a one-stop solution designed to fulfill the needs of their clients in the toolmaking industry. To experience themselves what the machines were capable of doing, Andrew Millard and Steve Barrowcliff travelled to OPS Ingersoll in Germany.

The machine that fitted Gotools' requirements best was the smallest of OPS Ingersoll's product range. Even though the OPS Ingersoll Gantry Eagle 400 was a much higher investment than Millard had planned for, he still decided to buy it. One of the main reasons for his decision was the possibility to automate the machine with OPS Ingersoll, coming closer to his vision of an automated production.

All OPS Ingersoll machines can be automated, either from the left or the right side. Additionally, machines can be linked together being fed by the same robot system. This was also true for the machine Millard decided to acquire. The Gantry Eagle 400, the smallest of the OPS Ingersoll machines, comes with the Gantry Eagle design, which — compared to standard C-frame constructions — means that the distance of the ram in relation to the machine shoes remains constant, irrespective of the position of the machine. Therefore, electrodes are not effected by hydraulic forces during the erosion process resulting in homogeneous surface finishes.

The main reason for Gotools' investment, however, was the machine's speed. According to OPS Ingersoll, the machine also came with excellent electrode wear properties, resulting in a relevant reduction in the number of electrodes required. The increase in production capacity was further enhanced when Millard and Barrowcliff decided on switching from copper to graphite electrodes. After the first reservations about graphite concerning costs and soiling because of dust had been overcome, Gotools embraced the adaptation. "Suddenly, we were able to machine more in a day then we had done before in a whole week!" remembers



Source: Stahl/ETMM

An example of electrodes machined on the V5: A process that used to take weeks is now done in only a couple of hours.

Source: Gotools

The gantry design of the OPS Ingersoll machines allows for an easy access.

Millard. After the first investment was so successful, Gotools soon decided on investing in the next machine: An OPS Ingersoll Eagle V5 high-speed milling centre that was intended to machine not only graphite for the electrodes but metal parts for the tools themselves. It arrived in March 2015. On this high-speed mill, Gotools was able to mill the hardened steel parts as well as the graphite for the EDM electrodes thanks to the capsule design. The light head construction of the machine offeres a 1-to-7 mass compared to the machine base, meaning high dynamics are maintained through the machining process, extending tool life and achieving maximum surface finish, thereby resulting in the fastest times possible.

The 4th and 5th axes (-120/+60°) with an Erowa ITS UPC chucking combination, offers a 250kg and 400mm diameter workpiece loading suitable for larger steel parts and smaller inserts and electrodes, which are loaded by the smallest automation solution from OPS Ingersoll, the "IMC (Ingersoll Multi Change) Easy". This simple automation allows Gotools to offer overnight machining of the electrodes. The 4th and 5th axes is placed low into the machine to offer maximum machining possibilities and can be covered with a 3-axis work bed in a matter of minutesto offer 3-axis table-loading of 500kg.

One step ahead: Gotools further modernises its machinery

Making this second investment was not easy, especially for Steve Barrowcliff. Millard explains: "We are not a German company. For a British company, it is much harder to be innovative. We rather stick with what we know. How do you know that it will work if no one has tried it before, is what many British companies think. By the way I see it, if I am the first one to have the latest technology, I have a head start on everyone else. That is my goal."

The success of recent years proves him right. Gotools is today a very successful company with its new machines, its forward-looking planning and also its staff leadership, which is aimed at keeping employees in business for a long time. Millard is proud to hire and retain more and more people. The shortage of skilled workers, which many European companies are struggling with, is also noticeable in the UK. Gotools, however, can claim for itself that it has not lost a single employee in the last five years, an achievement Millard is justifiably proud of. Moreover, Gotools is a sought-after employer. Millard confesses that there are a number of people who would like to come work for the company.

At the moment, Gotools is waiting for the arrival of a third OPS Ingersoll machine, a Gantry Eagle 800. To be able to set it up in the crammed production hall, two old EDM machines will have to go. "Too ineffective," Millard explains. "Some people are wondering why I don't keep them as a back-up. But they are so inefficient that it is a waste of floor space."

Soon, the floor space at the current location won't suffice anymore. When Gotools moved to this location in 2015, across the street from PMS, they intended to stay there for 10 years. Three years later, they already need to move again. Gotools started with 2,000 square feet in 2012. Soon, they will occupy 10,000 square feet, more than double that which they have now. "When Gotools attended Mach 2014, it was clear they had a vision to grow the business, not by a small amount, but at a phenomenal rate," Scott Elsmere remembers the first meeting with the directors of Gotools. "To do so, it was important for them to understand that standard technology would not help them to get where they wanted to be, even by investing in multiple, lower end, standard machines. The throughput of the Gantry Eagle EDM was the first step to revolutionise their business, resulting in more than 60% growth, followed by the Eagle V5 high-speed mill, which helped them grow even more."

Step by step towards automated production

And where is Gotool heading in the coming years? Andrew Millard already has already a plan for the next investment: "I am obliged to constantly account for our profits and investments. Therefore, I have a very good overview of our current status, but also about our growth." This enables him to plan ahead and consider investments for the next years, including the machines he wants to buy in 2019 and 2020. To have all his employees on board with these new investments and changes, Millard tries to inform the staff early on. By planning ahead, he is able to tell all members of staff about the equipment he intents to buy. By engaging the employees early in future developments, the staff can deal with changes much better, Millard is convinced. Keeping his employees satisfied with their work is a major ambition of Millard's because it enables Gotools to continue to grow.

Elsmere is sure that Gotools will keep up with its growth in the years ahead: "With the arrival of the Gantry 800 just before Mach 2018 we can see the growing trend to continue in the years ahead. The passion and open-minded approach of Gotools to advance in their business made this possible. When such passion and technology know-how and capability come together, great things can happen." Looking back on what Gotools accomplished in only five years, it seems very likely that Millard will achieve his automation goal very soon and have all of the machines running 150 hours a week.

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OPS at Mach 2018

OPS Ingersoll will exhibit the V5 5-axis HSM with the latest torque axis, offering 100rpm for high-speed production of simultaneous axis-machined parts and electrodes, enhancing tool life of cutters, together with the HSKE40 and Heidenhain TNC 640 control. Alongside the V5, OPS will show the Gantry Eagle 500 EDM machine with portal construction and Eagle power-tech generator, delivering fantastic electrode wear properties.

Hall 17, Booth 510