PRECISION MACHINING MAGNIFICENCE

Providing solutions that make customers more competitive; achieving this simple sounding requirement in the machining world is anything but. However, according to Axel Warth, Head of Marketing and Business Development at Mikron Machining – leading supplier of customised machining solutions for the manufacturing of complex high-precision metal components – this Swiss company achieves this time and time again... and he’s got the figures to prove it. Daniel Barnes reports.

Established in Lugano-Viganello in 1953, Albe – as it was then known – designed and constructed automatic indexing tables for the production of tips for ballpoint pens. “This is still part of the company,” said Marketing and Business Development Manager, Axel Warth. In fact, Mikron’s systems account for 95 per cent of all ballpoint pen tips produced worldwide; a figure that currently stands at an astronomical 145 million tips per day!

“The number seems very high, but when calculated it equates to each of the seven billion people on the planet using an average of seven or eight pens a year,” said Mr Warth.

A Quick Mikron Glance
Mikron Machining comprises of three production companies; Mikron SA Agno (Switzerland, headquarters), Mikron Tool SA Agno (Switzerland) and Mikron GmbH Rottweil (Germany); with a sales and service company, Mikron Corporation, located in Monrovia (USA). In total, over 530 highly skilled individuals work throughout these branches, whilst another 570-odd are employed under the guise of Mikron Automation, the group’s other division.

Both divisions operate by and large independently of each other; this allows us to cater specifically to our respective customers, and to do so with the greatest possible efficiency,” explained Mr Warth. “Both have their own research and development departments but both stand for high precision, and highly productive equipment; the aptitudes for both divisions are the same.”

Mikron Machining has developed five standard platforms that form the foundation of every customer solution. The five transfer systems – Mikron Multistar, Mikron Multifactor, Mikron NAM, Mikron NRG and Mikron Multistep XT-200 – can all be combined with in-house cutting tool technology that enables customers to produce workpiece sizes up to 200 x 200 x 200 mm.

Switzerland’s engineering, electrical and metal industries – known collectively as the MEM industries, are the country’s largest industrial employers, currently providing jobs to over 330,000 people and contributing 32.5 per cent of all Swiss exported goods with a value of CHF 65 billion (2013’s figures).

The reputations of Swiss MEM companies are as strong today as they have ever been. Within the machining world, companies such as Mikron Machining are ensuring that Switzerland still leads the way in complex high-precision engineering. And for Mikron Machining, its success has been inextricably linked to one of the 20th century’s greatest, but simplest inventions: the ballpoint pen.
Parts are manufactured accurate to up to ± 0.002 millimetres – half the size of a human red blood cell – on Mikron production systems. “We develop production solutions which make our customers more competitive. With Mikron solutions, they can produce with a better efficiency, with higher quality across all main industry segments.”

Mikron NRG-50 and NRG Plus

One of the latest machining developments at the company has been the emergence of the Mikron NRG Plus; the firm’s upgrade from its Mikron NRG model. Productivity compared to the NRG-50 increases by almost 50 per cent in some circumstances. With the ability to also machine larger components, and with five simultaneous axes, its range of applications has been widened significantly. The Mikron NRG systems have proven to be extremely beneficial for customers, according to Mr Warth, who proceeded to recall a recent example which depicts how productivity, space and manual labour costs are improved significantly when purchasing the system.

“One particular customer was producing 750,000 different adapter plates in five variations in three shifts out of AlMgSi blanks; a total of 30 to 40 processing steps. The production required over 190m² of space and 18 employees.”

The company’s five double-spindle machining centres with motorised tools and two measuring systems were replaced with one Mikron NRG-50 system that was integrated with the Mikron TB-600 bar saw, a robotised measuring station and a palletised system. As a result, the company was able to double its productivity to 1.5 million plates with more precise results and reduce the space down to 127m² and, crucially, only three people are now required to man the production, compared to 18 previously. The end result: costs per part were reduced by 58 per cent.

Many Hands Make Light (But Not Precise) Work

And it is this employee aspect, combined of course with quality, which Mr Warth said has seen customers that were once swayed to opt for Far East alternatives to come back to Mikron. “Take a component such as lock plugs for example. In the past, they have been mainly produced in Europe. But in the last few years manufacturing has gone to China. “I would say China invented the human concept by employing 100 people to produce these parts in place of one machine. Of course, those 100 people cannot produce the same precision of parts as a machine and with wages going up in China and industrial space getting more expensive, eventually you come to a junction and people have discovered that our machine solution works out cheaper once again.”

The scope of end products machined on Mikron systems around the world is extremely widespread. Market segments include automotive, electronics, writing, consumer goods (including top of the range Swiss watches), medical and industrial. In the automotive sector alone, Mikron systems produce seven million components every day; product lines include injector bodies, diesel nozzle holders, rocker arm, pistons for ABS brakes, expansion valves and throttle valve shafts.

“With our portfolio of high-precision transfer systems and cutting tools, we fully meet the stringent demands of the automotive industry for accuracy, quality, complex operations and flexibility,” stated Mr Warth.

Servicing and Cutting Tools

In addition to the machining solutions arm of Mikron Machining, the company also develops and produces in-house the high-performance cutting tools used on its systems. This cutting tools division that, Mr Warth proudly stated, is regarded as one of the best in the world, provides high performance small to medium sized cutting tools for the high-end market. With it’s extremely high precision, the company guarantees each and every production run to be 100 per cent identical for all types of machining including centering, drilling, milling, reaming, deburring and many others.

Service and support is the third branch of the business. Encompassing spare parts, exchange services, product and business support, Mikron aims to provide quick, competent and uncomplicated service and support, working with customers to design service solutions tailored to specific requirements.

“If customers buy a highly productive machine, the machine needs to be running, and if there’s an error, we immediately have to be there and make it run again; it is as simple as that,” said Mr Warth.

Simple is one of the last words that springs to mind when describing the vast engineering intricacies, expertise and experience that has made Mikron Machining such a formidable and highly reputable industry leader. Perhaps the only simple aspect for your company to consider, is opting for one of Mikron’s systems next time the opportunity arises!