

>>> Ultra-high precision partner for production excellence



>>> Scanning instead of touching



>>> DIGILOG: One technology – many possibilities



>>> „You are my eyes“



Blum-Novotest News



>>> The TC64-RG roughness measuring gauge received an innovation award at EMO and constitutes a genuine quantum leap in the area of machine-integrated quality monitoring ... <<<

Alexander Blum
President



Heribert Bucher, Division Manager Measuring Components with Frank Jablonski, Chief Editor of the "Maschinenmarkt" magazine



It is our goal to present to you our capabilities in different regions of the world with these Blum-Novotest News. The response to the last issue showed us that this attempt was successful and that there is great interest in this international, engineering and solution-oriented concept on your part.

Since we at Blum-Novotest decided to approach the world market from the Central European niche in 1997, the situation has continually changed for our customers and thus also for us in the course of globalisation. Today, we assume that the concentration of production on a few countries, the so-called workbenches of the world, reached its peak in the financial and economic crisis of 2008/09. Latest since this point in time, more and more decision-makers in the production of machines, plants and consumer goods have recognised the need of manufacturing individual products tailored to requirements with economic efficiency closer to the sales markets or, at least, to render essential, qualified services or product configurations close to and in co-operation with customers. This does not mean the end of growth in countries like China. However, it will separate high-performance, innovative industrial enterprises relying on innovative and new production methods from weaker competitors.

This further structural change in the global distribution of the economic success is a paradigm shift which makes sense in terms of ecology and society. It was, inter alia, only possible due to a basic change in production engineering concerning the machines and plants on which

the value added is generated through to the consumer goods usable by end-consumers. The changes mentioned are sufficiently known, they concern the development to highly automated production systems which can be operated with much less qualified and also low qualified staff. For the realisation of these systems, entrepreneurial determination, innovative capacity and the educational level of the associates required for operation are of much higher importance than the temporarily existing low wages or other cost benefits.

On the one hand, there is the increasing use of complex, often multiprocess-capable production machines with integrated automation. These units range in the high investment bracket, are still complex in operation today and do not support closed process chains sufficiently. In future, however, they will increasingly present themselves on the world market with simpler user surfaces, support of self-controlling processes and embedded in the organisational production flow of the operator via CAD/CAM and ERP. They are typically employed in highly productive applications of high-value, technically sophisticated workpieces or in the production of high-priced components.

The user trend of the second direction of development departs with high speed from simple, hard to automate standard machines to what I would like to call "consumable machines". These machines are produced in large quantities unrelated to orders in modern flow concepts and are favourable, easily equipped with options by dealers and end-customers and, above all, easily automated e.g. by robot solutions.

They are increasingly used in automated turn-key production solutions for small and medium-sized enterprises and also in interlinked, automated production processes of consumer goods or the series production of smaller components in the automobile industry or in medical engineering. Today, we encounter both automated cells and interlinked series production solutions on all continents, irrespective of the local cost situation.

In this connection, the use of sensors in machine tools is constantly gaining in importance. In particular, the use of application-connected sensors/instrumentation like workpiece and tool measuring systems. The capabilities of this instrumentation often precede the capabilities of machine control today. Analogously scanning touch probes, roughness tests, eddy current instrumentation or measuring heads independent of machines are only some of the keywords concerning the technical possibilities to generate closed process chains in modern production systems/machines.

On the subsequent pages, you will get to know leading customers in your segment and their success stories. You will get a picture of the working culture at Blum-Novotest and the attitude to work of my associates who, in co-operation with you, our customers, render our joint success possible.

I would particularly recommend page 12 to you. You will find information on quite a number of new, trend-setting products of our DIGILOG family – entirely according to the motto: "One technology, many possibilities". If the previously presented systems had been particularly developed for

measuring and testing of workpieces and free-forming surfaces, we now offer many verification options from one source with these new developments.

The TC64-RG system, which received the "MM Award" for innovations of the German "Maschinenmarkt" trade magazine at EMO 2013, should be particularly emphasised. According to the jury, the roughness measuring gauge constitutes a genuine quantum leap in the area of machine-integrated quality monitoring.

I wish you interesting and useful insights from our Blum-Novotest News. Please, let us have the opportunity of creating joint success for your advantage with our products and experience. Apart from our many highly qualified international system integrators, more than 400 Blum-Novotest associates are keen to prove our capabilities worldwide.

Alexander Blum
President



SWITZERLAND

Ultra-high precision partner for production excellence

Blum-Novotest has become the chosen supplier of laser measuring systems for cutting tools at the famous Swiss timekeeper, Christophe Claret SA. The metrology specialist has become an indispensable ally in matters of the highest manufacturing quality.

For many years, the precision engineers of the world-renowned Manufaktur Christophe Claret of Le Locle in the Swiss Jura have relied on Blum-Novotest to equip its processing centres with production instrumentation. The name of Christophe Claret stands for excellent quality among clock-work manufacturers.

Working with a passion

Christophe Claret himself took to watch making as though it were a religious vocation. Micro-engineering is his creed. This passion that has driven him since his childhood, comes from his fascination for high-precision, small-scale engineering: that of making watches. Their complexities and perfections have become, through observation and work, his real reason for living and exercising this art of great accuracy.

First self-educated, then trained by the best Swiss specialists who introduced him to the craft's secrets, he started by buying, restoring and re-selling ever more complex watches before embarking on his own first creation.

Mastering tourbillons, repeaters, musical precepts, minute repeaters with Jacks, chronograph, fly-back hand with insulator, perpetual day with bi-retrograde etc., Christophe Claret searched for perfection at all levels, from the design and simulation (CAD) of a new movement to its final assembly in order to produce a unique masterpiece.

From 1987, he has supplied exclusive movements to prestigious watchmakers such as Guy Ellia and Jean Dunand. Creator of several world 'firsts', the micro-mechanism artist developed and transposed his ideas in the spirit of client brands who assemble the movements.

Clean atmosphere, controlled temperature and sometimes noise absorbers are de rigueur for the 2,000 sq. metres of workshops. The components are manufactured on the ground floor. On the first floor, in a controlled atmosphere, every movement is meticulously assembled by experts. The founder's disciples are young (average age 28) and already highly talented.

Closest production tolerances

Precision to the scale of a hundredth of a millimetre is standard, however the workshop often shapes to the scale of a micron or even a nanometre, which is the measurement for some digital controls. The flow controls organise production from some 8,000 operative ranges, to which are added some 2,000 variations. The batches are very small, sometimes only about fifty parts, launched at the rate of five per year.

Christophe Bouveret, production manager at «Le Soleil d'Or» explains: "When highly complex watches are manufactured, a considerable number of parts is needed. Thus, we have designed 30 calibres made up of 450 parts on average. The more parts, the more precise is the tolerance of each element. In this context, if the components are not machined according to very stringent precision criteria, the tolerance gap is no longer acceptable".

Highly modern machine tools

The machinery meets all requirements in terms of milling, boring, electro-erosion, laser cutting, profile turning, gear-cutting, burnishing etc. The workshop includes 18 CNC

machining centres (the oldest is only four years old). These units perform to a scrap rate rarely above 1%.

Combined machine-tools (prismatic and revolving parts) are preferred, because they allow milling in three, four or five axes. The aim is to complete fully each part in one go, with tolerances in the range of five microns either way, using standard or special tools.

The safe way to the highest precision

Given its high-technology level, the up-market watch making world is a very closed shop for confidentiality reasons. Yet the factory in Le Locle has no hesitation in revealing one aspect of its efficiency and manufacturing quality assurance: the systematic use of the BLUM LaserControl NT-H for thousands of tools, drills, bits, taps, milling cutters etc., which every day have to be examined and measured before machining use.

Programmable by built-in microprocessors, this third-generation laser technology to measure cutting tools, ensures reliability even in extreme conditions. It provides maximum machining precision and the systematic verification of cutting edges at all rotation speeds.

Monitoring of special tools

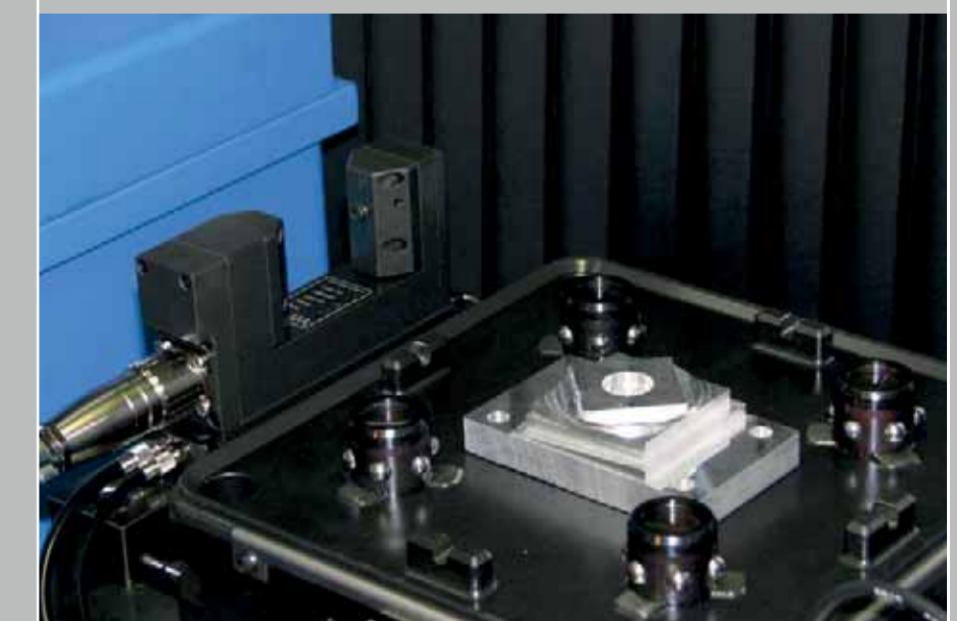
Tool pre-setting, measurement with or without contact, runout control, marking of runner (or taper) defects without the risk of collision are the system's properties, including diamond shaped or CBN cutting edges.

The monitoring also includes the examination of standard or special tool shapes with the precise marking of the number of teeth when milling. Everything is systematically integrated into the programming of the machines before production starts. LaserControl NT-H is capable of carrying out these measurements even with very fast rotating tools, thanks to high precision optics and to its focused laser beam.

Christophe Bouveret concludes: "We have chosen the most effective system for measuring and monitoring tools. Above all, we search for reliability. The system designed by BLUM meets all of our criteria expectations, since it is capable of coping with very small tool diameters to the scale of a tenth of a millimetre. LaserControl has become indispensable for measuring our tools correctly at all times before machining."

Significant productivity gains

He adds, "Productivity gains are really substantial. Previously, we wasted a considerable amount of time in pre-setting by conventional means and the wear of tools was not detected in the machine tool. And, very importantly, it is the automatic introduction of tool data into the machines' digital controls which was, until then, a manual task with the risk of error. To summarise, it is a system that allows us to guarantee quality and, simultaneously, much higher productivity."



>>> www.claret.ch

Christophe Bouveret, Production Manager at Claret





Scanning instead of touching – in a fraction of the time

After truing, a flank is now ground and then directly measured, allowing any tool faults to be identified immediately. Andrea Siedmann describes the measurement: "The advantage of the TC76-DIGILOG is that you can carry out both digital and analog measurements. The probe is mounted on an arm and is moved towards the workpiece for measurement, and the probe is moved using the machine axes. First of all, the machine uses the probe to look for a tooth gap by moving to the tooth crest diameter. The system then measures the centre of the tooth gap - these are all digital measurements, in which the workpiece is scanned at selected points. The scanning measurement then begins, which normally involves recording three flank lines each at the crest, in the centre of the tooth and close to the base from each side, along with three profiles at the two ends and in the centre of the tooth. Depending on the size of the gear, this is repeated on four to six teeth. You can imagine how much time this complex measurement previously took up, and how much quicker scanning measurement is compared to recording something like 30 measuring points at the two lots of six lines I described."

In specific terms, the duration of a measuring cycle has been cut from more than a quarter of an hour to just a few minutes. If we look at this in relation to the machining times per workpiece of quarter to half an hour, or up to an hour for very large gears such as those used in wind turbines, DIGILOG measurement enables each individual

gear to be inspected for the first time, with a corresponding increase in process reliability. The accuracy of the measurements is impressive, as Andrea Siedmann outlines: "To obtain a certified measuring report, the gear is often given a final measurement on the measuring machine after machining. But to enable production to start immediately after setup or for control measurements between and after machining, internal measurement is the perfect solution. It is predominantly about relative values, such as detecting machining errors, not about absolute values. The measuring reports from the BLUM probes and the measuring machine show almost identical results. The measured value variations are well below the permitted tolerances, normally a maximum of just a few micrometres."

Tobias Schröder sums things up: "The DIGILOG probes from BLUM are a powerful argument in favour of our machines when it comes to selling them. Because scanning measurement brings about a significant time saving, we have been able to develop lots of new applications and enable our customers to increase quality and process reliability with low idle times. Thanks to close and trusting collaboration with Blum-Novotest, we have achieved this quantum leap in an incredibly short period of time. It's a clear win-win situation for us, in the sense that we benefit, as do our customers, but so do BLUM, who not only supply the new TC76-DIGILOG to us but can sell it freely in the market too."

Gears can be produced in different ways. The most precise method is to grind the teeth. The Swiss supplier Reishauer has significantly increased the productivity of its latest machines enabling sectors where grinding had not previously been feasible to enjoy the benefits of this technology. An integral component of the latest machine generation is the TC76-DIGILOG digital/analog probe from Blum-Novotest.

Reishauer AG can look back on a proud tradition, with the Wallisellen-based company tracing its origins back to the 18th century. Starting as a manufacturer of tools, they have developed over the years into a supplier of gear tooth grinding machines and the associated tools. Today, the company supplies an extensive range of CNC-controlled grinding centres, which can produce gears with a diameter of up to 1000 millimetres.

Reishauer recently launched a modular range of gear grinding machines, which includes four machines with maximum machining diameters of 60, 160, 260 and 360 millimetres. The smallest system is used in the automotive industry for grinding the planetary gears in automatic gearboxes, where the key feature is a high output. On these machines, quality control measurements are normally carried out on a sample basis on special gear wheel measuring machines, with measurement in the machine playing only a subsidiary role. However, the larger the gears the smaller the batch size and the longer the machining cycle, which means that removing and replacing the workpiece leads to an undesirable and significant delay in machining, and means that, in this case, an integrated measuring device makes good sense.

Measuring processes are necessary after changing the grinding disc or the workpiece, for example; with larger gears the grinding disc needs to be changed several times per machining cycle, meaning that repeated recalibration is essential. During measurement, a range of values is recorded, including those relating to the shape of the blank - if this is precisely known, the machine can move to the specific blank geometry, which reduces the machining time as 'less air' is ground. In addition to the tooth crest and base diameters, four to six pairs of tooth flanks are measured in the direction of the profile and along the tooth.

In 2009, they first talked to the measuring technology specialist Blum-Novotest at EMC. BLUM's range includes a variety of probes and laser measuring systems developed especially for use in machining centres. The experts at BLUM quickly recognised that the basic technology behind their digital scanning systems would also allow analogue measurement, and so they developed the TC76-DIGILOG digital/analog probe.

Normally, a gear is ground after setting up the machine and is then transported to the measuring room. The measuring room is sometimes a long way away from the machines and large gears can frequently only be removed from the machine and loaded on the measuring machine with a crane. This can take a very long time and it is frequently several hours before the measured results are available. To achieve the highest possible machine utilisation, you can take a risk and start machining the next gear immediately, even if the measured results for the gear produced previously are not yet available. If this gear then has to be reworked, it is very difficult to recreate the original conditions when it is reloaded. If anything goes wrong, it can be expensive - the value of a single blank is often more than € 15,000. Alternatively, you can install a CMM next to the grinding system to reduce the distances, but this also involves high costs. And if the setup and transport times are also taken into account, integral measurement inside the machine brings about a major time saving.

Product Manager Tobias Schröder explains: "Time-consuming recording of the flank line and profile with the digital probes previously used involved measuring times of up to a quarter of an hour. Also, we were never sure that we were reliably picking up any machining errors - e.g. scoring - that could be produced by a faulty truing tool. These were the key reasons that we wanted to switch to scanning measurement."



Andrea Siedmann and Tobias Schröder



>>> www.reishauer.com

Leader in the production of dies & moulds for mobile devices

Located in Gumi, Korea, PROTECH produces small, precision mould parts for mobile devices using its own excellent manufacturing technologies which enable it to emerge as a dark horse in the global mould market. Blum-Novotest's measuring systems play a crucial role in ensuring the high quality and enhanced productivity of precision mould parts thus boosting the competitiveness of the company.



Mr. Park Sang-ho,
President of PROTECH



Established in 2000, PROTECH, a parts supplier of Samsung Electronics, specialises in the production of small precision mould parts for mobile devices, including the hugely popular smartphones which have become an essential feature of daily life all over the world.

PROTECH President Park Sang-ho, who has 25 years of experience as a mould expert, cites talented human resources, sophisticated (high-precision) machines, and a differentiated manufacturing environment as the main factors behind the company's competitiveness.

Ensuring manufacturing competitiveness based on 'being well prepared'

President Park has focused on the accumulation of wire machining technology since the company's early days. Five or six years ago, he installed high-speed machining centres, and established a lineup of super-precise mould parts, thus improving the company's product competitiveness.

In particular, dozens of sophisticated machines, including wire machining tools, high-speed machining centres, CNC grinding machines, and 3D measuring machines, are the barometer for assessing the company's super-precision mould machining technology. In addition, the clean working environment, in which temperatures and humidity are maintained at a constant, plays a crucial role in achieving differentiated production and timely delivery.

"For small and medium-sized firms it is difficult to hire manpower. Thus, we can boost our competitiveness by streamlining, systemising and automating our production lines," Park declared.

PROTECH has been able to build up a strong reputation in mobile mould parts on the back of its excellent machining technology, primarily because Park has had good insights into market changes and made timely decisions. In addition, the company is adhering to its principle of thoroughly protecting the clients' security and information in a relationship of strong mutual trust.

All suppliers attach great importance to good prices, timely delivery, and quality. Thus, they have to look for methods of producing precise products rapidly and efficiently.

The small mould parts produced by PROTECH often have a tight tolerance of 5 microns: therefore, sophisticated machines and environments, which can enhance precision, are crucial to improving the company's profits. As such, BLUM's measuring systems – workpiece touch probes and laser tool measuring systems – are essential for manufacturing precision mould parts.

The ability to shorten setup time and perform on-machine measurement enhances productivity

Park says, "BLUM's workpiece probes and laser tool setting systems can shorten the setup time for products extremely. The touch probes enable on-machine measurements before and after machining. As such, they are able to shorten machining time and to ensure a high-precision quality, playing a crucial role in enhancing productivity. I am extremely satisfied with our products."

BLUM's measuring systems provide optimal solutions for PROTECH's manufacturing environments, which is why Blum-Novotest has entered into a close partnership with PROTECH in the area of super-precision parts.

Meanwhile, PROTECH, with the backing of its highly competitive manufacturing technology for small precise mould parts, is preparing for a second leap forward to emerge as a strong player in the field of super-precision mould manufacturing technologies. Based on its long-time mould technology and know-how, PROTECH is further consolidating its groundwork in a drive to establish itself as a set-mould maker from product design to injection.

Believing that securing high-precision machines, outstanding human resources and a sophisticated working environment is closely related to ensuring its product competitiveness, PROTECH is ambitious to lead the way in developing the mould industry by making the necessary preparations in advance of its rivals.

KOREA





tools with Blum-Novotest's measuring systems. We faced great technical pressure because Changhe Aircraft was a very important key customer; and we did not know the after-sale service and the actual performance efficiency of Blum-Novotest." However, facts proved that Haitian Precision's concerns were unjustified.

Initial co-operation

Fortunately, Haitian Precision had had contacts with Blum-Novotest before although they had not resulted in a cooperation. Blum-Novotest technical and sales staffs had paid many visits to Haitian Precision. As a result, Haitian Precision rapidly contacted Blum-Novotest Trade (Shanghai) Co., Ltd. – Blum-Novotest's subsidiary in China.

"Haitian Precision first purchased our LaserControl NT A3 which is a high-quality cutting tool measuring system specially designed for extreme working environments in machine tools," Mr Gong states. "Thanks to its sophisticated protection against pollutants and cutting fluids, firm and durable machine design as well as the built-in intelligent NT electronic system, LaserControl NT shows extensive reliability and precision in multiple applications."

Excellent precision

"Our first co-operation with Blum-Novotest still remains fresh in my memory," comments Director Lin. "On the one hand, we were not confident in our first co-operation and did not know whether we could satisfy the Changhe Aircraft requirements, and on the other hand, we were deeply impressed by Blum-Novotest's professional technology and dedicated services in the whole process." Obviously, the process of co-operation between Haitian Precision and Blum-Novotest was pleasant and smooth.

After the first successful co-operation, Haitian Precision intensified its efforts in co-operating with Blum-Novotest. In addition to the LaserControl NT series, touch probes TC50 and TC60 used for work-piece set-up in CNC machine tools as well as the Z-3D contact tool setting system produced by Blum-Novotest were successively installed in multiple machine tools of Haitian Precision. As the co-operation gradually deepened, Haitian Precision had gained a profound and comprehensive understanding of Blum-Novotest.

"When co-operating with suppliers, we first focus on product quality and then on service. Blum-Novotest is perfect in these two aspects. We are very satisfied with it," Director Lin expresses his trust in Blum-Novotest. "More importantly, as a technologically leading supplier of measuring accessories, Blum-Novotest is always ready to bring the best products and technologies to the Chinese market. We believe our future co-operation will be more profound and extensive."

After a series of Blum-Novotest products had been applied for a year, the Haitian Precision purchasing department carried out a repeat supplier audit on Blum-Novotest on basis of the usage reports from the technical division, production division and sales division of the company as well as the final application by the customer and assessed Blum-Novotest as the "Haitian Precision Customer Recommended Preferred Brand".

With the guaranteed "bright eye" of Blum-Novotest, high-efficiency precision processing is not a matter of concern any more.

"You are my eyes"

For machine tools used in the high-end manufacturing industry, precise and reliable production metrology is of utmost importance, nearly as indispensable as the eyes are to humans. The Chinese machine tool manufacturer "Haitian Precision" found in Blum-Novotest the perfect partner for its machine tools.

Many people will think of Haitian Plastics Machinery when Ningbo Haitian Precision Machinery Co., Ltd. ("Haitian Precision") is mentioned. Indeed, as the largest global supplier of injection moulding machines, Haitian Plastics Machinery enjoys a good reputation all around the world.

Considering the rapid development of plastic machinery and the far higher development rate of the machine tool market than that of plastic machinery, Haitian Precision purchased the whole set of Japanese NIIGATA and DAINICHI technology in 2000 and initiated a technical transformation. "We investigated the machine tool market," Mr Zhou Yirong, Deputy Marketing Director of Haitian Precision said, "it will be the last 'big cake' of the machinery industry."

Thanks to years of great efforts, Haitian Precision has introduced, absorbed and innovated a series of technologies and has developed three production clusters controlled by Dagang Precision, Yanshan Precision and Dalian Precision. Presently, Haitian Precision owns five product series, including Horizontal Machining Centres, Double Column Machining Centres, CNC Lathe and Turning Centres, as well as Floor-Type Boring and Milling Machining Centres, covering hundreds of models that can be applied in all areas. Haitian Precision becomes a leading manufacturer of numerically controlled machine tools in China and its products have been widely applied in the aerospace & aviation, automobile, locomotive, ship, military, machinery, power, mould, diesel engine, etc. industries.

Haitian Precision considers quality and service to be essential and the co-operation of Haitian Precision and

Blum-Novotest is a good example of this permanent endeavour.

Connection via a detour

Every supplier of machine tool equipment takes pride, if its equipment enters the processing system of the aerospace and aviation sector because this constitutes the best recognition of the processing capabilities of its equipment. Haitian Precision has been successfully in this way. However, the co-operation between Haitian Precision and AVIC Changhe Aircraft Industries Group Co., Ltd. (Changhe Aircraft) took an interesting turn. "One of the preconditions for our co-operation with Changhe Aircraft was that our machine tool products had to be equipped with Blum-Novotest laser tool setting systems," Lin Guoyong, Machine Tool Development Director of Haitian Precision, recalls.

As everyone in machine tool processing knows, in-process measurement systems greatly help to improve machining precision and maintain continuous processing stability. They are an indispensable accessory of medium and high-end machine tools such as five-axis machining centres and high-speed milling equipment. Haitian Precision naturally knew Blum-Novotest, but did not co-operate with the company due to various reasons. The special requirement of Changhe Aircraft became an opportunity for Blum-Novotest and kicked off its co-operation with Haitian Precision.

"Satisfying customer needs is our most fundamental commitment, so we had no other choice," Director Lin states. "Actually, we were not concerned about the quality of the Blum-Novotest products, but worried because we had not worked with them before and had never equipped our machine



>>> www.hision.com.cn



DIGILOG: One technology – many possibilities

A blast of digilog products...

was presented by Blum-Novotest at the last exhibitions: the new temperature measuring system TG81, the touch probe TC64-DIGILOG, the bore gauge BG60 and the innovative surface roughness gauge TC63-RG.

Heribert Bucher, Director of the Measuring Components Division, says: "As with the previously developed digital/analogue touch probe TC76-DIGILOG, which was especially developed to measure and test workpieces, we are now presenting many verification possibilities from one source in these new developments: The measurement of workpieces and bores, the determination and compensation of workpiece temperatures, as well as the verification of the workpiece surface roughness."

Bore Gauge

The first highlight is the new bore gauge BG60. The innovative measuring system is used in series manufacturing of workpieces with narrow tolerance holes and fits. The in-process measurement is taken in original workpiece clamping and recognises faulty workpieces immediately. The bore gauge is handled like a tool within the machine and is loaded into the spindle for measurement. Especially in the volume production of workpieces with identical bore diameters, as for example in engine components – cylinder heads and blocks, connecting rods, valves, ... – or hydraulic components, BG60 provides many remarkable advantages.

DIGILOG Radio Touch Probe

Integrated in the machining centre, the compact TC64-DIGILOG checks workpieces for processing errors by an analogue scan. As is the case in BG60, the data is not transferred via cable, but by the proven BRC radio technology. The touch probe TC64-DIGILOG is the perfect solution for CNC milling and turning centres. Positive results have been obtained in milling centres with 5-axis-gear machining. In the area of turning machines, tests for roundness, radial runout and cylindricity of workpieces are planned, in which the digital application is possible as a standard touch probe.

Temperature Measuring System

The temperature measuring system TG81 is also new. It was developed for the simultaneous determination of the workpiece temperature during critical machining time. This product is used in the field of dry machining or machining of workpieces with strong entry temperature differences. Up to eight sensors, integrated in the workpiece clamping device, determine the current temperature and transfer it via BRC radio technology to the machine control. NC controls are able to calculate compensation values based on the data and implement them directly in the machining process.

Surface Roughness Gauge

The surface roughness gauge TC63-RG represents a quantum leap in the field of machine-integrated quality monitoring. While workpiece dimensions could be determined in process with the reliable BLUM measuring components, the evaluation of the surface roughness was only possible with a downstream control step or as a manual work step on the clamped workpiece. "The surface roughness gauge with integrated DIGILOG-technology will close this gap. Poor surfaces, for example, caused by worn out tools, can be recognized during the process. Finally, the workpiece is in the initial set-up during the test thus provided the possibility for re-work by a new tool.



Creative skills link the "tool" and the "machine"

We usually introduce a company which uses our products for advanced measurement and inspection in Japan. This time it is MST Corporation, located in Ikoma City, Nara Prefecture (President Haruki Mizoguchi). The company contributes its creative high-performance tooling skills to the society by linking the "tool" and the "machine".

MST Corporation emerged from the Mizokuchi iron factory founded in Nogata City, Fukuoka Prefecture, in March 1937. The latter company produced aircraft parts and machine tools with high precision. Subsequently, product development was taken up and expanded steadily. In 1946, the company entered the field of tooling manufacture and achieved good results in this line. Since then, many new technologies were patented in domestic and foreign countries. Various tooling solutions for industrial goods including NC machine tools were developed, manufactured and sold. The company expanded into the field of technology support for graphite and fine precision machining in the recent years.

In 1991, the company's name was changed to MST Corporation. During the ensuing years, the new head office was completed in the rich green field of Kansai Science City.

Overwhelming presence by "Slimline"

In 1998, on the company's 60th birthday and after tool manufacturing had started, the epoch-making long awaited product, the "Slimline" shrink fit holder, appeared. The "Slimline" utilised the difference of the co-efficient of thermal expansion of a holder and a tool and was serialised according to processing, use, etc. It has reached an



Haruki Mizoguchi, President of MST Corporation



important position in the market with an overwhelming presence. Other new products have been developed as well.

»**SlimlineZ**« is a new product with a mechanism preventing tool dropping. It has the structure of a Z shank tool with a drop stopper and a rotating stopper of a strong grasp force added to the "Slimline". It relieves the end-mill from dropping from a holder by chattering.

»**SlimlineUNO**« As an ultra high precision shrinkage fit holder, it realises the run-out of less than 1 micron. Compared with a conventional type holder, the run-out accuracy has been raised to the ultimate and machining of a nano level surface accuracy has been realised. Furthermore, the improvement of the run-out accuracy constitutes an advantage to extend tool life.

»**SMART GRIP**« Is a work clamp system for 5-axis machining. The production cost is sharply reduced by shorter set-up and machining time. The ISO HSK-A type was adopted as an interface to connect the various work holders and heads. This system stands for high rigidity and positioning accuracy which was tested and proven at a machining centre and is well suited to automatic operation.

Interview: BLUM contributes to fully automated factory operation.

Blum-Novotest: The new factory of your company aims at an increase of your production capacity and is attracting a lot of attention.

Mr Mizoguchi: This is due to the long-term management strategy of our company. Upon the completion of the new factory, the site will have expanded by 2.3 times (27,700m²) and the gross

floor space will have expanded by 1.5 times (16,400 m²). We will take advantage of this opportunity and change the production system in terms of product-oriented process control.

Blum-Novotest: What is most important when managing a new factory?

Mr Mizoguchi: Planning improvement of the production efficiency. The keyword is unmanned operation and labour-saving. For example, we have introduced a self-propelled product transportation system in the milling and turning process, and adopted the structure enabling us to produce high quality products quickly. The co-operation with machine tool builders and other equipment manufacturers is essential in realising an unmanned operation.

Blum-Novotest: The business with your company began after we had had a meeting regarding a faster moving probe. Is that correct?

Mr Mizoguchi: We were looking for a possibility to shorten the measuring time at the zero-point detection of blanks. Your probe measured the workpieces much faster than other products and with higher precision. In the new factory, all machine tool measurements will be done with BLUM products. We are raising the new factory with the aim of improving the production efficiency and your touch probes will be very helpful to reach this goal.

Blum-Novotest: What are you aiming at in your overseas strategy, apart from the improvement of your productive capacity?

Mr Mizoguchi: We have developed the "J-Compo" stock centre in major areas with the purpose of supplying our products quickly and flexibly. We have established a base in the United States, Chicago, Germany, China, Hong Kong and Singapore and are going to establish bases in Shanghai and India very soon.



"With this laser equipment," says Mariano Gutierrez, Workshop Manager of the manufacturing area, "we measure the length and radius of the tool, we control the shape of our spherical tools and we can even measure the wear and breakage of the tool at any point of its form"

The systems most used are Micro Compact NT and Mini NT while the machines measuring non-rotary tools use NTH 3D. A mechanical touch probe may be added in the structure of this laser to measure and verify the non-rotary tools.

Measurement data is collected in the CNC of the machine and all of the required cycle calls, offsets ... are carried out from there. Any error detected during the manufacturing process is logged in a file for statistical control. The file indicates why the machine has stopped, which tools are the most problematic ones and helps focussing on the solution of the problem sources in a more efficient manner. These laser measuring systems have many advantages over traditional contact tool setting equipment. They include the high measuring speed, the possibility of measuring the radius and the length of the tool at the same spindle speed rated at up to 200,000 rpm in the

machining conditions. The measuring speed can be adapted to the production conditions. On the other hand, BLUM laser has an IP68 protection class, which makes the measuring system completely safe in relation to coolants, dust, chips ... In this respect, there is the additional benefit of cleaning by the air nozzle. The shutter and the air nozzle provide the system with superior protection.

Apart from this, the focused laser beam of the BLUM LaserControl systems obtains a greater accuracy and the range of the measurable size of tools increases from a 5 micron diameter up to a virtually unlimited value. It is also noteworthy that the measurement is performed on each edge of the tool, even when the thinnest tools are involved.

"Before concluding," says Mariano Gutierrez, "I would also like to mention the good service that BLUM gives us. They have recently opened a sales and service point in the Basque country thus getting closer to our headquarters and also to the machine tool builders located mainly in this region of the country. Technological support with an immediate response is very important and constitutes a key factor to excel in this industrial area in which we live."

SPAIN

TO FLY HIGH: Quality control by laser systems

Aeronautics, as always, is a puller sector in the technological evolution field. The complexity of its products, the lifetime, the demanding quality, the safety levels and the efficiency requirements of those products force manufacturers to integrate top-quality machines equipped with the highest level components in terms of production. It is necessary to incorporate highly sophisticated technologies to ensure high reliability.

This sector is based on four key concepts: ecological, safe, smart and economic. The new generation products will be characterised by a lower environmental impact. They should be safer and more efficient, equipped with a greater intelligence to ensure safer flight operations. A clear example of this trend is ITP - Industrias Turbopropulsores, in operation since 1991 with the headquarters located in Zamudio (Spain). Their activity is focused on the design and manufacture of aircraft engines and the high-tech industry, and they are actively involved in major civil programs in this sector as well as the European defense consortia of EUROJET, EuroProp, MTRI, ... with partners such as Rolls Royce, GE, P&W, Snecma and Honeywell.

High technology in the manufacturing field

Actually, ITP, leading company in the aerospace market, has assigned the task of equipping the machines of their headquarters in Zamudio with LaserControl systems for tool setting and tool monitoring to Blum-Novotest. Of course, based on BLUM's experience and technologic behaviour.

The collaboration between ITP and Blum-Novotest goes back seven years and, during this period of time, the collaboration has played an important role in the workflow of their workshop. More than thirty of these measuring systems

have already been installed, distributed among different CNC machining centres and vertical lathes (Rigide, SACEM, Cincinnati, Mandelli, Hermle, Forest Line, Waldrich, GMTK, Pietro Carnaghi, ...).

Speed, accuracy and productivity

The LaserControl systems operating in these machines are the models Mini NT, Micro Compact NT and NTH 3D. The selection of the most appropriate model for each machine was based on the configuration, the application and the structure of each machine in order to ensure maximum efficiency.

Usually, the cutting tools of the manufacturing area are measured and tested on an external specific presetting machine. The data is stored in the CNC control. The BLUM laser performs a second measurement on the machine ensuring maximum reliability in the machining process. All of the laser systems include NT-Electronic technology patented by BLUM and have an internal microprocessor that enables measurements with the highest accuracy at every edge of the tool, even if coolant is present in the environment. This is vital in this sector because machines need to be productive 100%, no stops, no errors ... These are very sophisticated machines and any downtime involves high costs. Furthermore, any error in machining materials of aeronautical parts such as Inconel or other alloys causes high losses in scrap and invalid parts.

Previously, the second check of the cutting tools was done manually by the operator which entailed possible confusions, human errors, loss of time ... The BLUM system performs the second check automatically thus converting the previously lost time into productive time.



Mariano Gutierrez, Workshop Manager and Jokin Beristain, Technical & Sales Manager of Blum-Novotest Sarl Spain



>>> www.itp.es



Interview with BLUM's business partner, MOLTEC PRECISION Sdn. Bhd



Mr. Sunny Ng and Mr. Alan Ng, Director of Moltec Precision



Located in Selangor, Malaysia, MOLTEC PRECISION Sdn. Bhd. is well known locally, as well as internationally for high-performance quality moulds used in precision electronics, electrical and automotive parts. Measuring systems by Blum-Novotest support the company to secure their name as one of the most dynamic mould makers in the industry.

Blum-Novotest and International Metal Working News for Asia (IMNA) spoke to the Directors, Mr Alan Ng and Mr Sunny Ng as well as Sales & Marketing Manager, Ms Jocelyn Tan, about the company's profile, strategies, future expansion plans and the successful cooperation with Blum-Novotest.

Company background

MOLTEC was founded back in the year 1993. To date, the company has been in existence for more than 20 years. The management and workforce size has been steadily growing ever since to a favourable level.

"As far as our operations are concerned, the manufacturing processes are only performed locally. However, we aim at expanding outside of Malaysia and reaching out to a bigger international market while maintaining the quality and standards we presently offer our customers," explains Alan.

He adds, "Talking about the international level, our plan is to continue specialising in making quality dies and moulds to meet customers' demands. Since we deliver the highest measure of quality, our company

was accredited with the ISO 9001 standards, which is a great achievement for us and has boosted our confidence level to gain prospective customers."

Difficulties in the beginning

The biggest challenge at the start was to secure and locate new customers who are very strong supporters of the company still today. "We've faced our fair amount of hardships and some difficulties in the beginning. There was a period of time where both Alan and I practically stayed in the office the whole time to help stabilize the company's performance," says Sunny

MOLTEC managed to overcome the first difficult part of searching for new customers by providing top quality services to the existing and growing list of customers. The customers in return, provided MOLTEC with strong referrals and showed support by giving repeated sales opportunities.

The company uses technologies from Germany, Japan, and China and other countries. "We emphasise excellence in our day-to-day manufacturing

operations to give our customers only the best. And the integration of Blum-Novotest's touch probes and tool setting systems into our machining centres was also one of the effective measures to reach this goal. It made our machining processes much more precise and highly efficient with less scrap parts, which rendered us more competitive in the end," Sunny adds.

Competition

Apart from Moltec's uniqueness and being one of the biggest manufacturers of die and moulds in Malaysia, they put a lot of effort into providing good follow-up and after-sales services to their customers. In comparison to competitors in the overseas markets, whose prices may be cheaper than MOLTEC's, they maintain their good practice of delivering quality goods, apart from the follow-ups and after-sales services which their customers appreciate very much.

Success factors, future plans

"One factor that contributed to the company's success is the good communication between management and employees which resulted in a strong management team. Ideas and innovations flowed freely through the boardroom. In addition, we have access to good equipment from reputable companies like Blum-Novotest which, in turn, generates and produces the quality finished goods with which we are able to meet our customers' needs and requirements," says Sunny.

Sunny says that they also plan to expand in the future. "Our expansion plans are more locally focused, such as to increase our operational capacity locally and meet the rising demand from both the local and overseas markets. We also plan to have more marketing offices abroad so that more people will be aware of our company and we will be able to improve our export activities at the same time."

Regarding waste management, Jocelyn explained that the company had set up some guidelines to reduce waste. "Our equipment

from Blum-Novotest GmbH also ensures that we process our waste in full compliance with the rules and regulations set out by the local government," she adds.

Relationship with BLUM

Blum-Novotest has been a customer of the company for seven years now. One reason for choosing Blum-Novotest as a supplier was that MOLTEC Precision is most concerned about the quality of the materials and equipment they purchase as this greatly affects the outcome of their finished goods. In addition, delivery time is also very important, as delays could disrupt the manufacturing process and ultimately cause delivery interruptions to its customers.

One of the products MOLTEC Precision uses is the tool setting probe Z-Nano of Blum-Novotest. This extremely compact and robust tool measuring system is used in CNC machining centres for automatic tool length measurement and breakage detection. As is the case in all other tactile systems by BLUM, the Z-Nano is working with an optoelectronic measuring mechanism. During measuring, the trigger signal is generated by shading a miniature light barrier inside of the probe. This guarantees an absolutely wear-free probe with constant reliability even after millions of cycles.

"Incorporating BLUM's high-quality measuring systems into our manufacturing process has improved our setting up time, including accuracy. The time saved, in turn, has lowered the rejection rate and has improved the input and output ratio. To date, BLUM's solutions have been very efficient and do not give us any reason to search for alternatives. BLUM has been consistently providing superior support to us. With continuous upgrades and improvements, we'll continue using BLUM's solutions," Sunny says.

Interview with Lilian Barraud, Director of Blum-Novotest Sistemas de Medição Ltda, Brazil

In each issue of the Blum-Novotest News we introduce our readers to a member of the company's staff. This time, we had the opportunity of interviewing Mr Lilian Barraud, Head of the Brazilian subsidiary, in the context of opening the new representation in Campinas near São Paulo.

Mr Barraud, you have been the Director of the Brazilian subsidiary since 2011/2012. Naturally, there have been other staging points in your career. So please tell us a little about your personal and professional background.

During my studies, I had various opportunities to participate in international exchange programs. During one of these programs, I heard of Blum-Novotest for the very first time. It was in 1996 during the Mach exhibition in Birmingham, UK, where the company received an award for its innovative laser measuring technology. At that time, I was in England participating as a trainee in an industrial exchange and my host company invited me to visit the show.

Two years later, I studied in the Basque country in Northern Spain, the cradle of the Iberian machine tool industry. It was another chance for me to improve my technical and language skills but also to acquire a better understanding of the cultural aspects of communication.

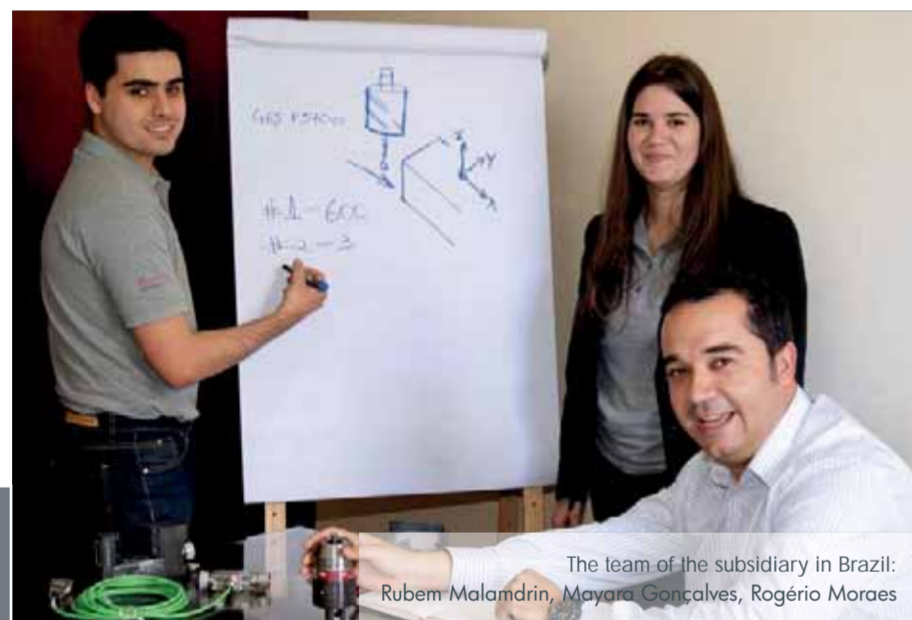
Finally, after graduating from university in mechanical engineering, I joined the Blum-Novotest team on July 1, 2000. I started my career as a Technical Sales Engineer in the French subsidiary, sharing my time between my home country of France, Spain and Portugal. From 2008 to 2012, I assumed the leadership of the French subsidiary and also participated in the international development of the group in South America. During this period, the global demand for our measuring technology increased in South America. After several missions, Blum-Novotest asked me to set-up a new subsidiary in Brazil and to promote the development there as well as in the others countries of South America.

The Brazilian subsidiary is brand new. What are your first impressions? What are your plans for the future?

Taking part in the creation of a new subsidiary is a very exciting challenge and particularly so if it concerns Brazil. Nevertheless, false ideas are legion and apart from the traditional nice postcard of Brazil and the



Lilian Barraud, Head of Blum-Novotest Sistemas de Medição Ltda in Brazil



The team of the subsidiary in Brazil: Rubem Malandrini, Mayara Gonçalves, Rogério Moraes

apparently easy-going life of the people, there is a huge country with a fast industrial development looking for highly productive solutions like the Blum-Novotest measuring technology.

Therefore, it was a logical decision for Blum-Novotest to settle in Brazil in order to provide local support to the international and national OEMs we are working with and to insure the same quality of service for our products here in Brazil as in any other part of the world.

Many of our measuring systems like LaserControl, Touch Probe TC, Bore Gage BG, etc... are already installed on imported machine tools. Local assistance is necessary to support OEMs as well as end-users in training, custom applications, spare parts etc. Our local service team is able to give full support for all of this equipment and also to provide turn-key solutions for retrofitting. After more than one year of operation, we estimate that our customer satisfaction level is encouraging. Our plans for the future are to increase this level of satisfaction and to reinforce our regional presence in order to be reactive and to offer quick solutions.

Brazil is an important and fast growing market. What are your expectations for the Brazilian economy during the next 10 years?

That's right, Brazil like the other members of the BRICS is now experiencing an important and fast industrial development. If we look back over the last decade, Brazil's social and economic performance has improved a lot, raising a large proportion of the lowest social categories to a higher standard of livings. As far as manufacturing is concerned, the markets are more and more globalised and internationalised. Of course, this global exposure brings new business opportunities but it also increases competition. The challenge of the Brazilian industries for the upcoming years

will be to remain competitive in this global market. One of the key factors will be the productivity and capacity to invest in productive resources. That's how Blum-Novotest intends to participate in this challenge offering the Brazilian industries the most advanced and high-level measuring technologies to improve quality and to reduce manufacturing costs. Let's "focus on productivity".

The Brazilian companies are in tough competition with competitors from many other countries. How can products from Blum-Novotest support the Brazilian customers to be competitive?

Like I said before, improving the competitiveness of the Brazilian industries is necessary in order to avoid being out-performed by others emerging countries. This is how the three business divisions of Blum-Novotest can help to reach this objective:

- Our Measuring Components division for machine-tools provides innovative solutions for most of the industrial fields like the car industry, aeronautics, mould & die, medical, IT, oil, etc... Within these solutions, we can highlight our LaserControl and Z-Nano tool setter range that helps to improve quality and reduce scrap by reliable tool monitoring during the machining process. Our TC touch probes allow a quick and easy set-up of the workpiece, increasing the machine time available for producing and, in combination with our FormControl software, permit a measurement of the workpiece at the end of the process, thus making re-work of the workpiece possible in its original set-up, if required. Our recently released DIGILOG technology (digital + analogue) opens new measurement possibilities like contour scanning or roughness measurement.

- The second business division of Blum-Novotest is specialized in automated solutions for dimensional and geometrical measurement and crack testing of mainly rotation symmetrical parts like brake discs, drums, wheel hubs, differential housings,...

- Our Novotest Test Engineering division is fully oriented to the automotive industry, and supplies test benches for function, endurance and life-time testing of gearboxes, drive shafts or hydraulic hoses.

Is there an interesting anecdote, of how a BLUM customer benefited due to the use of BLUM products or your personal support?

I remember well a success story at an aeronautic company where we were able to reduce the measuring time by 35% thanks to our TC50 touch probe. On a 5-axis machine, the total measuring time of a large structural workpiece was almost 4 hours. Due to the size and complexity of the workpiece, in-process measurement was required in order to check the hundreds of reference points. Probing was critical because it reduced the global machining availability of the machine drastically which was in operation 24h/day. After explaining the advantages of our TC50 touch probe, the customer was amazed by the possi-

bility of probing at a measuring speed up to 3,000mm/min and to make displacements with an acceleration of up to 50 m/s², far away from the limit of the linear axis of the machine. Using our TC50 we were able to increase the measuring speed and also to reduce the point-to-point time of the probe path. As a result, we were able to reduce the probing time from 4 hours to 1.5 hours thus exceeding the expectation of the customer and improving the productivity of the machine.

I am also thinking of another success story at a mould & die shop. Our customer was working on automating its production and the question of tool management arose. It was necessary to monitor the entire life of the tool, starting from initial presetting to the compensation of its wear during the machining process and its replacement in case of extreme wear or breakage detection. To fulfil all of these requirements and to provide higher flexibility in case of process changes we offered our LaserControl NT which was successfully implemented in almost 10 machines. Since the beginning of this project 6 years ago, we have been in close contact with the customer providing the latest advancement of the LaserControl NT technology and a high quality after-sales support.





Blum-Novotest worldwide

Established in 1968 and based in Ravensburg, Blum-Novotest GmbH is one of the globally leading manufacturers of high-quality measuring and testing technology for the international machine tool, aerospace and car industry. Today, the family-run company employs a staff of more than 400 at a total of six sites in Europe and in the USA, China, Japan, Taiwan, Singapore, Korea, India, Brazil, Thailand and Russia. Together with specially trained system integrators and regional sales offices, this sales and service network guarantees comprehensive support for BLUM products in use throughout the world.

New representation in Thailand

Last year Blum-Novotest opened its own representation office in Bangkok. Thailand is strongly gaining in importance for the tool machine industry on the whole. And the company makes a point of being represented directly on site in order to provide optimum service to national and international manufactures, as well as local customers.

The business divisions



Measuring Components

The division of Measuring Components develops and produces high-quality measuring technology for machine tools. We offer laser measuring systems and probes for tool setting and monitoring, touch probes for workpiece and tool measurement, as well as sophisticated probing software for comprehensive production control during initial setup.



Measuring and Testing Technology

The division of Measuring and Testing Technology offers state-of-the-art, well-proven solutions for dimensional or geometric measurement and crack testing mainly for rotation symmetrical parts in the automotive industry and its component suppliers. Furthermore, we are a capable partner for your individual measuring and testing demands.



NOVOTEST Test Engineering

NOVOTEST is the Test Engineering division of Blum-Novotest GmbH. The business division specialises in test stands for automotive and hydraulics industries. The scope of supply and services incorporates planning, design and manufacturing of test stands for function, endurance and lifetime testing as well as the integration into the automated systems of our customers.

“We first thought, you were selling drills...”

At EMO 2013 in Hanover, we intended to have a look at the tradeshow activities from quite a different perspective for a change. What could be more natural than to interview our tradeshow hostesses Liisa Apel and Jennifer Gronde on their impressions and experience.



Winfried Weiland, Head of Marketing Blum-Novotest GmbH, talking to the tradeshow hostesses Liisa Apel and Jennifer Gronde

During the 6 days at the tradeshow, you could observe many aspects. If you compare the EMO machine tool show with other tradeshows, what do you notice in particular?

The internationality of the tradeshow is especially impressive. We rarely serve people from so many different nations during one event. You are grateful for every English lesson you had at school. On the other hand, the general size of the tradeshow but also the dimensions of some machines are remarkable. For example, if you stand in front of a milling machine as big as a house and see how huge the parts to be processed are, this is very impressive.

At our tradeshow stand, you worked very closely with the tradeshow staff of Blum-Novotest GmbH. How did you experience that?

We were positively surprised how friendly and respectful the people of Blum-Novotest were towards us, after all, this is not the case with all of our customers. We were a genuine part of the team and that made the work really fun. It seems that the associates are getting along very well with each other, which indicates a good working atmosphere – almost like a big family.

Did you also find time to get to know what Blum-Novotest does?

To be honest – and please don't laugh – when we saw such a touch probe for the first time, we thought you sold drills. But it became quickly clear that this concerned measurements and not chips. Furthermore, the

BLUM associates were very kind and took time to introduce the products and their areas of application to us, and that in a way even a layperson could understand. We were surprised, how exciting instrumentation can be. We finally had to recognise that a little BLUM is present in many day-to-day things, e.g. cars, watches, mobile phones, plastic parts, aeroplanes or medical implants – really fascinating.

How did it feel working with the boss of the company in the kitchen?

Yes, when we heard before the tradeshow that we would work together with the boss herself, we were a little insecure at first. But the ice was broken within the first minute. Noriko BLUM is a really friendly, uncomplicated woman, very down-to-earth and open, completely different than you would expect the boss of an international company to be. She also gave us insights in the Japanese culture and treated us almost as her daughters. For example, she showed us how to prepare sushi, an art we will also use privately in future. We were even allowed to use her hand cream – as it is usual among girls.

So, you had a good time?

We had to work hard, of course, but we are used to that. And since the working climate was really great, we enjoyed coming to the stand every morning. Because of the positive experience of recent days, we thought already of possibly doing an internship at Blum-Novotest...

