

Report:

Lissmac SBM-GS 1000 grinding and deburring machines ensure the quality production of forklift attachments

Efficient cut edge processing helps increase productivity and quality

Lissmac SBM-GS 1000 grinding and deburring machines reduce production times of forklift attachments

To handle all sorts of heavy loads with the highest level of reliability, forklifts require versatile attachments. Hans H. Meyer was one of few people to recognise early on that it would be economically efficient and sensible to organise the design and production of forklift attachments separate from the vehicle manufacturers. By focussing on consistent high-quality work and fulfilling specific customer requests, the company has flourished. Thus it was only logical that Hans H. Meyer GmbH was among the first companies to express interest in the development of the grinding and deburring machine from Lissmac Maschinenbau und Diamantwerkzeuge GmbH in Bad Wurzach, Germany, and to eventually purchase this machine.

Hans H. Meyer started his company in 1953 in his parents' garage. There are currently 193 employees working at the headquarters in Salzgitter and 16 more employees at the subsidiaries with sales and service organisations in France, Great Britain, Scandinavia and Russia. Pertaining to the company's development, Hans H. Meyer's authorised representative responsible for strategic purchasing and procurement, Randolph Schmidt



Figure 2), says "Basically, we've built a new hall every 5 years." The consistent, productive quality work which the employees embody, organise and implement using modern machines is still the key factor behind our success." The Lissmac SBM-GS 1000 grinding and deburring machine



(**Figure 1**) has been integrated in Hans H. Meyer's quality manufacturing process for the past two years.

Forklift attachments for universal handling

"When it comes to side shifting units, fork adjusters, multiple pallet forks, clamps, rotary devices, paper roll clamps or special attachment designs we go to all lengths to fulfil our customers' requirements", stresses Randolph Schmidt. "In order to implement customer requests, we have developed a whole series of trend-setting inventions. This includes development of the rotary device in 1964 as well as the innovative, axle-controlled fork adjusting devices in 2008, which are distinguished by a particularly long service life of the wear parts. The majority of our attachments are customised for special applications. In order to be able to actually meet this high standard, we perform our work in an efficient production workflow and implement this with modern precision machines. Quality production in our company begins with cutting thick sheet metal. We have a relatively high level of vertical integration so we can specify and control the production quality from the outset. This approach, which all our employees use, ensures our long-standing success with regular certification of our quality management system according to DIN EN ISO 9001."

Core production technology competences

Randolf Schmidt explains, "due to the high percentage of special solutions based on customer requests, we have developed numerous creative products over the years. We place an emphasis on economic manufacturing, as can be seen in the modular design and production of low-maintenance modules with the lowest possible wear. As part of this, we specialise in the development, design, production and further processing of welded parts and assembly of the attachments. Internal production begins with cutting the welded parts from metal sheets between 6 and 200 millimetres thick. In most cases the metal thickness is between 15 and 80 millimetres. And the majority of the metal we process in this range is 60 to 80 millimetres thick. We cut out the required raw parts using a flame cutting system that performs four flame cuts simultaneously in a highly productive manner. Flame cutting results in cutting burrs on the cut surface, which are to be removed reliably prior to further processing



(**Figure 3**). Before installing the Lissmac SBM-GS 1000 grinding and deburring machine we performed this work manually using corner grinders in the cleaning room. This cleaning work involved dust, noise and an uneven appearance of the

manually processed raw parts. In addition to this, this point in the manufacturing process formed a bottleneck, because all the parts were cut faster on the CNC flame cutting system than they could be deburred. So we have been searching for quite some time for a machine that performs deburring in a mechanised and therefore reliable way."

Production bottleneck remedied

"The Lissmac SBM-GS 1000 grinding and deburring machine", explains Randolph Schmidt, "deburrs and rounds off all metal parts up to a thickness of 120 millimetres and a width of less than 1000 millimetres. This accounts for more than 70 percent of all the metal parts we cut at our company. We place smaller parts side by side to make productive use of the machine. The continuously variable feed of up to 4 m/min is just one indication of the machine's high productivity. The SBM-GS 1000 grinding and deburring machine processes up to four metres of workpiece length per minute. What's more, the workpieces are machined from above and below at the same time. It makes no difference to the machine how many workpieces are positioned side by side and how many side edges, cut-out edges or recess edges are actually to be machined. In the manual grinding process, each cut edge has to be processed separately. The way the machine works not only indicates its productivity, but also demonstrates considerable streamlining when it comes to handling long parts. Due to the fact that the machine works on the top and bottom side at the same time, it is unnecessary to turn and reposition the long material to process the second side, which takes up a lot of space and sometimes poses an accident risk. Use of the SBM-GS 1000 grinding and deburring machine has served to permanently eliminate the bottleneck in the cleaning shop." The experience gained thus far indicates an increase in efficiency of up to 60 percent as compared to conventional grinding machines.

Quality improvement

A total of eight grinding units are used to process the ingoing metal parts in the SBM-GS 1000 grinding and deburring machine. The workpieces entered by the feed belt are guided through the machine by pressure rollers. In the front part of the machine there are two parallel grinding units that grind the sheet metal parts from the top, and two units that process the sheet metal parts from the bottom at the same time. These first four units are responsible for grinding off the burrs. The grinding belts run in opposite directions so as to achieve an exceptional abrasive effect. Only when the plates have been freed of these burrs can the following four grinding units carry out the precision rounding work. Two units each above and below the plate drive abrasive belts running in opposite directions for this purpose. "This efficient way of working", states Randolph Schmidt, "both provided us with the intended increase in productivity and served to improve the appearance of our attachments." The Lissmac SBM-GS 1000 grinding and deburring machine provides consistent quality of finish



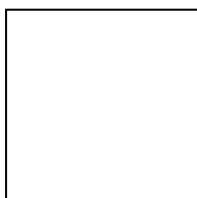
(Figure 4). The workpieces remain free from scoring, which cannot be avoided with angle grinding. "After deburring and rounding", continues Randolph Schmidt, "the parts are processed further in various ways



(Figure 5). Full deburring and rounding mitigates the risk of accidents previously caused by imprecise manual deburring. In many cases, the rounding even suffices as preparation for welding. In practical use, attachments are switched occasionally or even frequently. Also in these cases, the edge rounding helps prevent the risk of being cut."

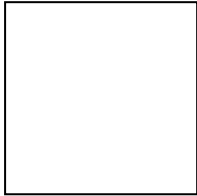
Ergonomic workplace design

The Lissmac SBM-GS 1000 grinding and deburring machine is distinguished by its very compact design, which not only requires little floor space for installation, but also improves the ergonomics of operation. Optionally available extraction units, absolute filtration and spark resistors



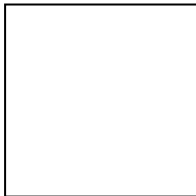
(Figure 6) ensure that the employees are not exposed to flying sparks, dust, dirt or the typical noise of manual grinding. The physical strain caused by vibrations or unhealthy postures while working with angle grinders is also done away with.

As Randolph Schmidt explains, "We place the cut-out metal parts on the feed belt. The grinding units can be enabled quickly and conveniently using the controller's intuitive display



(Figure 1). Continuously variable adjustment of the throughput speed is performed using the frequency controlled feed." The degree of edge rounding can be configured as required by enabling the grinding units and regulating the throughput speed.

Control of the feed and discharge conveyor belts is linked to the Lissmac SBM-GS 1000 grinding and deburring machine. They are positioned on fixed rollers



(Figure 1), so they can be conveniently pushed away from the machine if needed, as is the case when the machine has to be cleaned or abrasive belts have to be replaced. In addition to this, an innovative pivot system makes it possible to easily swing the machine open to the front and the back. Thus it is possible to change tools in just a few minutes. In order to be able to use the machine for different machining tasks, the eight tool units can be configured differently and they can be individually enabled or disabled as needed.

Captions:

Figure 1: Lissmac SBM-GS 1000 grinding and deburring machine. The grinding units can be enabled quickly and conveniently using the controller's intuitive display.

Figure 2: Randolph Schmidt, who is responsible for strategic purchasing and procurement as an authorised representative of Hans H. Meyer

Figure 3: Flame cutting results in cutting burrs on the cut surface

Figure 4: The parts are processed further once they have been deburred and rounded.

Figure 5: Finished bale clamp prior to painting. MEYER cellulose or bale clamps are used for productive handling of various different bales made of cellulose, cotton, wool, paper, textiles and many other materials. The slender, knife-shaped, high-strength arms allow for very compact stacking. The integrated sliding side piece compensates for driving inaccuracies.

Figure 6: Lissmac delivers and installs the optionally available suction units, absolute filtration and spark resistors as needed.

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