



HPM Technologie GmbH

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SPECIFICATION BY THE CUSTOMER ENSURES COST SAVINGS - ENVIRONMENT-FRIENDLY DISPOSAL

MMS FOR LARGE PARTS MACHINING

Up to 14 meters in length and a total weight of up to 50 tons – impressive figures for components that are mechanically machined at Rampp Maschinenbau. Due to this technological specialization, the company from Pfaffenhausen in Bavaria was awarded the contract by a world-leading construction equipment manufacturer. Its oversized components for the body of a crane as well as construction components must be machined. The fact that Richard Kocher, responsible for mechanical processing at Rampp, had to break new ground in such a project was ultimately based on customer specifications.

Customer requirement: Minimum quantity lubrication for milling and drilling

The Customer explicitly wanted to use the minimum quantity lubrication (MQL) for the milling and drilling. “Because the panels have to be pierced, but the flood lubricant used up to now was basically difficult to remove, there was considerable frost damage to the sensitive components in the winter at minus degrees ...”, says Richard Kocher, who supplies the reason for the customer's unusual wish. The damage to the metal components, made of a fine-grained steel S960QL, repeatedly caused considerable follow-up costs due to the damage to the finished material.

In the case of minimum quantity lubrication, in contrast to conventional flood lubrication, only very small amounts (average 50 ml/h) of a defined lubricant in the form of aerosol are fed to the machining site. On the one hand, the feed can be made from the outside. The mixture is then sprayed onto the tools. As an alternative in lubricant application, there is the internal feed, in which the mixture is transported through the spindle or small channels in the cutting tools to the machining site.

Until this project, Rampp had no experience with the use of minimum quantity spraying systems.

By researching the internet in search of a suitable providers Richard Kocher found what he was looking for at the specialist in this area HPM Technologie. “We wanted a complete solution with technical advice for the use of spraying systems”, recalls Richard Kocher. The plate drilling rigs used for the project by Skoda and the Spanish manufacturer Juaristi were to be converted to the new and desired system.

Florian Christner is the process and application engineer at HPM Technologie and was responsible for the project at Rampp.” As first measure, we provided the customer with a test device”, says Florian Christner, describing the classic procedure for creating a new project. The existing cooling hose system was used for the system implementation. “We are always looking for the most sensible interface for every project to connect our device to the system”, explains Christner, “ideal are short distances and, if possible, no radii in the drag channels.”



With the introduction of MMS technology, Rampp was able to sustainably reduce costs and at the same time produce in a much more environmentally friendly and health-compatible manner

Configuration: Test device for internal lubrication

Based on the size of the tool to be machined, the HPM employee determined the required amount of lubricant. The test device chose the LSJ Z30, the standard internal lubrication version that allows switching between both external and internal lubricant feeds. A model whose successor Z35 is characterized by a smaller and compact design with the same performance. The Z30 uses the HPM Breeze process for lubrication and simultaneous cooling of machining processes with the smallest amounts of cooling lubricants. An air/liquid mixture ensures optimum lubrication while minimizing the resulting frictional heat. Excess heat energy is dissipated via the tool used and the removed chip. Subsequently, the correct medium had to be defined. This is determined taking into account the technical framework conditions, such as the material to be processed and the manufacturing strategy used. Rampp uses the water-based medium HPM Samnos Breeze, a cooling lubricant specially developed for internal lubrication. Due to the special cooling properties of the lubricant and the low sedimentation properties of the aerosol, Samnos Breeze is the ideal medium, especially for demanding, chip-lifting machining. In addition, it dries almost without residue because only a small amount of fluid is used for the process.

The Medium was optimized in the laboratory of HPM to meet the customer's requirements. Six different fluids from the Samnos series were tested within a six-week project phase. "According to the selection, the cutting data is always adjusted", says Florian Christner, pointing out an important technical aspect.

After successful completion of the test phase, Rampp has ordered the complete system. "The installed system works perfectly and meets all requirements. I especially liked the support provided by HPM", concludes Richard Kocher.

System changeover to MMS reduces costs sustainably

The system changeover to the project now offers Rampp a whole range of advantages which contribute significantly to cost reduction in-house. "A major cost point in our company is still the disposal of the lubricant for the flood lubrication", emphasizes Richard Kocher. Costs that are not incurred with the MQL lubrication system from HPM. In addition, the chips can be fed back into the material cycle, whereas chip waste often has to be disposed of as hazardous waste with conventional lubrication.

The demand for lubricants has also been reduced sustainably because the liquid consumption is reduced to a minimum with the system used. Downstream cleaning processes are no longer necessary because the workpiece and chips remain dry.

And the human factor is rarely assessed in a process. This is because working with this lubrication system is beneficial for employees.

The Samnos Breeze lubricant does not release any emissions and is biodegradable. In addition, the risk of accidents for employees in the manufacturing process decreases, which reduces personnel costs. "Before, colleagues sometimes were standing ankle-deep in the



Richard Kocher (left), Rampp Maschinenbau GmbH & Co. KG, together with the process and application engineer Florian Christner from HPM Technologie, has successfully implemented the project for the introduction of MQL technology.

lubricant," says Richard Kocher, who points to the advantage of consumables in the same breath. This is because expensive special rubber gloves are no longer required for machining. "In detail, only a small savings potential- in total, a large amount is added up every year.

As a result, the investment in the new system paid off for Rampp because it is quickly amortized by the economic side effects. For good reason, people in Bavaria are now considering switching the machinery to MQL. „Currently, this is checked individually for each machining machine," emphasizes Richard Kocher.



At Rampp, especially components with large dimensions can be processed



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