For more efficient processes: nozzle instead of roller lubrication

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Roller or spray lubrication? This question comes up time and time again. Kölle, the tool maker and stamped parts manufacturer, has found a clear cut answer for certain production processes – and has opted for the spray solution.

With headquarters in Vaihingen/Enz, Germany, the metalworking, family-owned company Kölle employs some 120 employees and achieved a turnover amounting to approximately 18 million euros in 2015. The company focuses mainly on tool making and manufacturing stamped, drawn and bent component parts in series production for the automotive sector in amounts ranging from 500 up to 2 million parts per year. The machine park consists of ten stamping machines and a further 18 manually loaded hydraulic and mechanical press machines. The range of products Kölle produces includes steel and aluminium carrier frames for gaskets as well as stainless steel casings for thermal and acoustic insulation – the latter is a particular company speciality. In response to increasing requests from the e-mobility sector Kölle is expanding its activities in this field as well.

Photo: Eckardt

Rainer Göbel, Head of Production at Kölle (left) and Daniel Assmann, Sales Manager at Eckardt. Göbel is very pleased: "We are now able to lubricate any thickness of material efficiently according to requirements and increase process reliability and quality still further as a consequence."

"The demands placed on lubrication are becoming ever more complex with increasingly less wriggle room – in particular when the downstream production stages such as washing and gluing are taken into consideration," summarizes Rainer Göbel, Head of Production at Kölle. Specifications regarding the use of oils must be adhered to down to the finest detail, otherwise washing systems fail if the additives differ. The adhesiveness of the components depends significantly on the oils used; consequently, defined surface tensions must be stated, which at Kölle applies in particular to shielding plates and gasket carriers. And, using less expendable materials also has a major role to play with regard to environmental responsibility

It is also possible to process very thin strips

Against this background the company took a closer look at lubricating processes for certain components. Although the company had placed its faith in rollers until now, production management decided to change to spray lubrication. "One factor was that we also wish to process very thin strips so as to increase and diversify our products and services", Mr Göbel explains. "When pushing strips through the lubrication system the resistance of the rollers can cause very thin material to ripple slightly, which is why the strips must be made to fit into a rigid strip guide.

However, that makes it difficult to pass through the lubricating rollers or rather the rollers must be wider than the width of the strip and the guide. When processing different material widths it is impossible to avoid having to change rollers. That alone meant changing to contact-free spray lubrication was the obvious thing to do. "Generally speaking, a spray system is more flexible to use because individual spray nozzles can be activated or deactivated to suit requirements. This has led directly to less oil being used, while by comparison the rollers always became fully saturated with oil even when the material passing through did not need to be lubricated across the entire width of the roller. The specified requirements Kölle placed on a suitable spray system also envisaged an option to choose between two types of oil to feed without losing time to retooling.

Photo: Eckardt

Kölle now places its faith in spray lubrication, because a spray system is generally more flexible to use as individual spray nozzles can be activated or deactivated to suit requirements.

In the end, the decision was made to go with the spray lubrication system EOS I manufactured by Eckardt Systems GmbH based in Bretten. Two systems for processing material widths up to 600 and 800 mm have initially been installed, more are planned. "Our spray lubricators have been designed to enable us to integrate them into any process structure" says Daniel Assmann, Sales Manager at Eckardt. "At Kölle it was necessary to fully retain the installation space between the feed and press columns. Furthermore, the lubrication process had to be integrated into the existing plant control system." And the spray system also needs to be easy to maintain, which is made possible by providing access to the "inner workings" from above and below. It is possible to switch from one type of oil to the other via remote control – not an inconsiderable advantage in confined conditions.

With a lead time of between eight and ten weeks the project could be categorized as "tight" – nevertheless, the deadline was met. "That was due in no small part to the efficient cooperation with the press work manufacturer, Raster, when integrating the controls", says Mr Assmann. "Our controls are equipped with many popular interfaces as standard, so they can generally be merged quite quickly with industrial machines." Implementation at Kölle required only a day each for the electrics and mechanical systems respectively.

It was possible to increase process reliability and quality

"Fundamentally, there are good reasons that speak for roller lubrication and also spray lubrication. The decision which technique is the more suitable should take different factors into consideration. Amongst others, that includes if several types of oil are to be used and how quickly the amounts applied need to be changed. A further criterion is if whole surfaces or partial surfaces need to be lubricated differently. And the question regarding how much time you are prepared to take to change materials and oils also has a huge influence."

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Expert opinion

The crucial question is rollers or spray. Daniel Assmann, Sales Manager at Eckardt Systems GmbH explains:

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