Movement of cooling lubricant

Metalworking, Berlin, Germany

Alfred Rexroth GmbH & Co. KG

Operation
1 tank with 1200 l cooling lubricant for CNC grinding machine with 1 OLOID Type 200

Period
Since Feb. 2015

Success
Prevention of odor
Avoid foaming

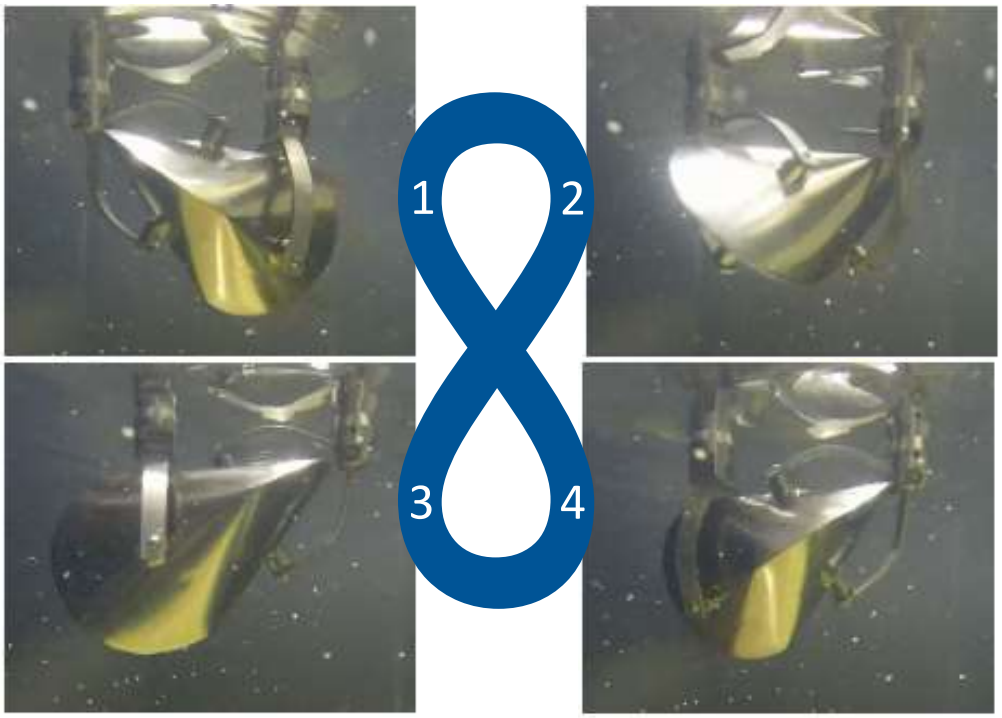
Application description and problem definition:
A CNC grinding machine with cooling lubricant (water with 3-4% synthetic lubricant Castrol Syntilo 9954) is used in production. During long periods of downtime of the grinding machine and the subsequent cleaning process in the 1 shift operation (holidays, weekend, night) there has frequently been a very strong foam formation in the cleaning system of the emulsion in recent years. This was also associated with a strong odour. In addition, the tank, the emulsion of 1200 l purified by a nonwoven, had to be completely or at least partly replaced. This is associated with additional costs for the lubricant.

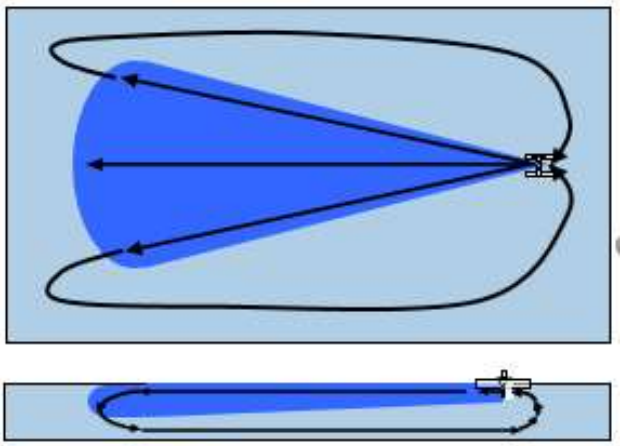
Solution and result:
By installing and operating an OLOID Type 200 during periods of standstill, **both foam formation and odour nuisance could be prevented**. The OLOID Type 200 has even been able to achieve this task with only 10% of its power. The energy consumption is thus only around **10 W**.
Since February 2015, the pH values have been **constant by pH 9** and a strong reduction to pH 6 combined with the foam formation no longer occurred. Also, the measured nitrite value of the emulsion has since then been constantly very low as is necessary for the processing step.

Outlook:
Whether the installation can even extend the service life of the emulsion of about one year will be shown in the coming months.

OLOID Engineering GmbH
Plautstraße 20 | D-04179 Leipzig | mail@oloid.de | www.oloid.de

How it works:
All OLOID devices produce an impulse-like flow. The movement always follows the same eighth looped movement, which is illustrated in Figures 1 to 4. In the first picture, the OLOID is sending out the impulse with its right half and the left half is preparing for the impulse. In the second image, the upward movement of the OLOID body produces a slight upward flow on the right side. In Fig. 3 and 4, the right-hand side sequence described above is repeated on the left-hand side.





As a result of the impulse-like flow at an angle of about 30 ° from the OLOID in one direction, a flow similar to the heart is formed in the tank which encompasses and mixes the entire volume of the emulsion. This prevents the separation of the two media (water and lubricant) at standstill. These flow ratios are shown schematically in the left image.

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