



Headline:

Less effort required to maintain cooling lubricant quality

Intro:

Prodrive Technologies, based in Son in the Netherlands, invested in Will-Fill systems to improve coolant lubricant emulsion quality in its milling machines and to spend less time manually refilling emulsion reservoirs. Six of the fifteen milling centres are now equipped with a Will-Fill system, and filling, measuring, analysing, reporting and conditioning of the emulsions are fully automated. “To machine at a high level, you have to invest in process optimisation. The results, however, will not be evident immediately.”

Text:

According to Tim Willems, Process Engineer at Prodrive, the manufacturing industry needs to invest in process optimisation in every conceivable form. “Our milling department is increasingly changing to a process-controlled environment. The entire industry is moving in this direction because machines are becoming more expensive, efficiency needs to increase, and professionals are scarce, so you have to deploy them optimally. Therefore, process optimisation and production mapping using data, often popularly referred to as Industry 4.0, is a high priority at Prodrive.”

Prodrive is a producer of an extensive range of products: from embedded computing, mechatronics, automation and control systems, to vision and image processing systems. The vast majority of the products are in-house developments, in some cases realised in collaboration with the customer. “Prodrive started purely as an engineering company in 1993, but then quickly began to produce in-house. Thanks to the combination of engineering and production, we are able to optimally perfect, automate and control the entire process,” says Willems. The effectiveness of this approach can be seen in the rapid growth enjoyed by Prodrive. This also applies to the company’s production department.

TK : Manual emulsion management takes time

Prodrive began milling eight years ago. The milling fleet was quickly expanded from one machine to five. This number has grown to fifteen in the meantime. Early in the milling adventure, Prodrive – like most companies – manually monitored, topped off and mixed the coolant emulsion. But as the number of machines increased, so did the effort required. “We try to work with a small group of people in the milling department, which allows us to keep the expertise level small. At a certain point the manual emulsion management of each machine took so much of everyone’s available time that we quickly began looking for a different solution,” says Willems. According to Willems, in addition to the amount of time that manual



emulsion management takes, it is also difficult to keep the concentration stable. “No matter how experienced you are, obtaining the right ratio remains a bit of a guess.”

Initially, a central refill station was put into operation at Prodrive, whereby the concentration for all machines was kept at a fixed percentage. Here again Prodrive found that the system still required a lot of manual control to monitor the PH value and the concentration levels. In practice the values per machine could still differ. When new machines were purchased that performed operations that required a different coolant concentration, Prodrive again looked for a different solution. This brought the company to Will-Fill.

### TK: High process stability

“Coolant emulsion quality is essential to reliable production. Especially when production is automated. We produce housings, heatsinks, precision mechanical parts as well as injection moulds, which means that we often have to deal with tolerances in the micron range. In this case a stable process and therefore high-quality coolant lubricant emulsion play an important role,” says Willems. He continues: “Our machining centres have diverse systems to maintain the temperature, but fluctuations in concentration are often a problem, with negative consequences for people, machines and the workpiece.” Using Will-Fill, Prodrive managed to bring down concentrate fluctuations to a tenth. Will-Fill is a fully automatic system that monitors and adjusts metalworking fluids. The system is able to continuously adapt the optimum fluid level and concentration. “Will-Fill was developed to handle all the management. Not only does the system continuously monitor the metalworking fluids, it also automatically tops off, regulates the concentration, carries out analyses, and logs the data that the sensors record. In fact you need to see Will-Fill as a robot,” says Pieter Dierickx, director of Will-Fill.

Capturing data from the sensors is an important advantage for Prodrive, because more and more customers want insight into emulsion management. With Will-Fill it is possible to link the emulsion data to the production times of specific products. Thanks to the ability to record the emulsion data, Prodrive is very attractive to customers with high demands, such as the medical and aviation industry. In these industries, regulations are strict and all process data must be logged. According to Willems, this will only increase in the future, as the industry increasingly approaches the limit of achievable tolerances. When complications arise, data can be used to deduce exactly where and when things went wrong in the process.



TK: The benefits are clear

Using Will-Fill, Prodrive reduced the time it takes to manually manage the cooling lubricant by 95%. Oil consumption has also decreased drastically. Because Will-Fill mixes periodically, the emulsion concentrate remains homogeneous. This means that for machines that use lubricating oil, you only need to skim, which decreases oil consumption by up to 75%. “The moment you buy a new machine, robot or other automation cell, you will see immediate results. With process optimisation such as that used by Will-Fill, this will not be immediately evident. You will only notice the benefits later when everything works better, lasts longer and there is more output from plant machinery. Indirectly, automatic cooling lubricant management offers many advantages”, Willems concludes.

#### Sidebar

##### Headline: TechniShow

From 1 through 4 September , Will-Fill will be presenting the fourth generation of the fully automatic control unit at TechniShow. The system has been on the market for over two years now and Will-Fill has further developed it in the meantime. The fourth generation is available in three versions (NEO, ION and EOS), each configured according to the node of the connected installation. The system is fully adjustable to your own preferences, and is equipped with a temperature sensor that constantly logs the data. In addition, the fourth generation Will-Fill is equipped with a self-priming dosing unit that can draw concentrate up to a distance of 40 metres. This makes it possible to connect several Will-Fill's to a central oil tank.

##### Photo captions:

###### Photo 1:

Pieter Dierickx (l) and Tim Willems in the milling department of Prodrive where all machining centres are equipped with a Will-Fill system (photos: Tim Wentink)

###### Photo 2:

Will-Fill will be demonstrated at TechniShow