



## NEWSLETTER DTI TRIBOLOGY CENTRE

July 2018

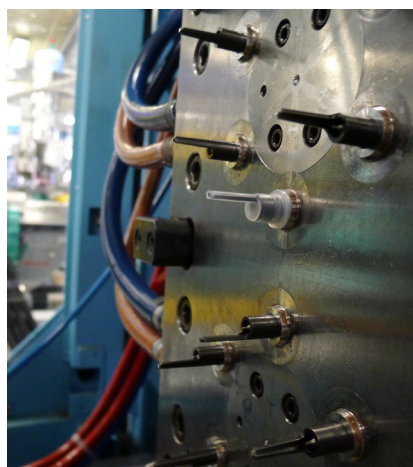
### 60% productivity increase and 5% less scrap at POLFA-Lublin

For more than 70 years, the Polish company POLFA-Lublin has produced disposable medical devices such as syringes, components for blood transfusion, infusion devices and a broad range of packaging and plastic accessories for the pharmaceutical industry.

In November 2017, POLFA-Lublin contacted the Tribology Centre, Danish Technological Institute (DTI), because they were struggling with severe release problems on shape-forming conical pins resulting in frequent machine stops and necessary manual removal of the moulded devices. After consultations with the experts from the Tribology Centre, it was decided to coat the tip of the forming pins with an optimised chromiumnitride (CrN-SD) from the Tribology Centre. This coating has a denser crystal structure compared to traditional CrN coatings and provides improved release properties. Furthermore, the CrN-SD coating allows demoulding in a much wider range of operating temperatures making process optimisation possible.

The coated pins were tested by POLFA-Lublin in February 2018. "We were expecting the elimination of demoulding problems and interruptions to the manufacturing cycle. However, a reduction of the cycle time by 26% came as

a very nice surprise", said Paweł Lizinkiewicz, Head of Technology and Development Department. "After successful technology trials, we have installed the coated pins in the production line and at present, we are achieving a cycle time reduction of 40%, which is more than satisfying", said Przemysław Zgierski, Plastics Technology Specialist. "As a result, we have effectively boosted our daily production capacity by over 60%! In addition, we have noted lower deposit formation so we have to clean the pins less often and we estimate a reduction in material waste of 5%.



Optimised mould with 60% higher productivity.

This provides us with an extremely satisfying return on investment using the CrN-SD coating from DTI".

Paweł Lizinkiewicz, Head of the Technology and Development Department, POLFA-Lublin declares: "The results we have obtained have fully convinced us to collaborate with the Tribology Centre, both because of their high reliability and fast delivery times. At present, we are analysing the options of a broader application of coatings in our injection moulds, particularly in areas where we are encountering demoulding problems. Following DTI's recommendation, we are considering to use their state-of-the-art super slip HiPIMS-CrN-SS coating that should result in further improvement of mould performance. The technical data indicate that the crystalline structure of the HiPIMS-CrN-SS is denser and around 10% harder. The chemical composition of the surface of the coating is further modified by ion implantation enabling even better demoulding properties. However, for the time being, we are standardising on the use of the CrN-SD coating from the Tribology Centre that has fully proven itself in the manufacturing environment and we will be considering it when designing and ordering new injection moulds for our plant".

For more information, please contact

**Tribology Centre**  
Kongsvang Allé 29  
DK-8000 Aarhus C

Tel. +45 72 20 15 99  
Mail: [tribo@teknologisk.dk](mailto:tribo@teknologisk.dk)  
[www.dti.dk](http://www.dti.dk)