

Inline

Further development of a coating unit for the environmentally friendly processing of semi-finished products

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Duration	September 2016 – August 2019
Department	Tribology
Funded by	DBU

Abstract

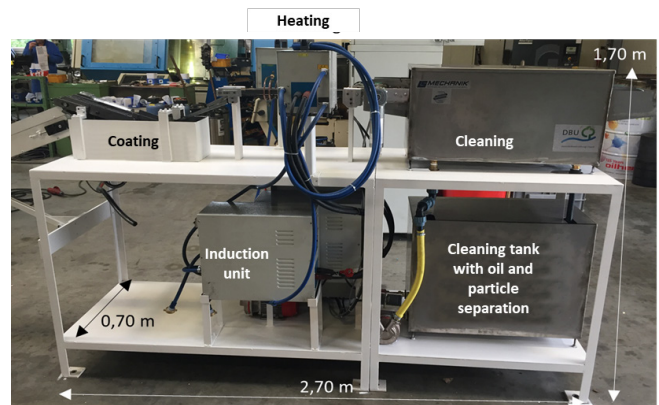
The zinc phosphate based lubricant system used in cold forging has ecological and economical disadvantages when applied. The substitution of these lubricant systems by single-layer lubricants enables a more environmentally friendly process chain. In a previous project, a prototype of an inline-capable coating system was developed that proves its suitability in principle for coating with single-layer lubricants. The aim of the project is to further develop the prototype system to increase its flexibility and practicality in an industrial environment.

Project description

The transport, heating and drying units of the existing plant are being redesigned in order to expand the range of possible components. For the optimisation of the coating unit, coating tests with conversion coating-free lubricants are carried out in the laboratory. The achievable coating homogeneity is evaluated by varying the surface topography and the type of coating application. Tribometer tests serve to further characterise the coatings. Finally, the plant components are manufactured and assembled, and the plant is commissioned and used in an industrial environment.

Results

The newly developed plant is shown in Figure 1. The coating can take place in the press cycle, while the parts are fed to the press fully automatically. The elimination of the zinc phosphate carrier layer makes it possible to design the plant so compactly during coating that it can be integrated into the feed of a forming plant. This eliminates transport journeys between different plants as well as the disposal of hazardous waste and reduces the space required for intermediate storage of material.



[1] New coating stand with cleaning and heating unit [Source: LS Mechanik]

Acknowledgement

The PtU would like to thank the Deutsche Bundesstiftung Umwelt (DBU) for funding this research project under reference 30738-02. We would also like to thank the industrial partners LS Mechanik GmbH and Schondelmaier GmbH Presswerk, who supported the research project.

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Project partners

