Exhibition Keynote Lecture

Room Town & Country - Session EX-TuEx

Exhibition Keynote Lecture

Moderators: Christopher Muratore, University of Dayton, **Michael Stüber**, Karlsruhe Institute of Technology, Germany

11:00am **EX-TuEx-1 Advanced Performance of Tools in Sheet-metal Forming - The Synergy of Surface Technology and Tooling Material Selection***, **Farwah Nahif**,* voestalpine eifeler Vacotec GmbH, Germany **INVITED**

Within the last years the global trend towards reduction of CO_2 emission and ressource efficiency have significantly influenced the product design within the automotive industry and enhanced the relevance of light weight construction parts. This trend has been followed by the development and introduction of new sheet materials for forming application, such as high-strength steels with optimized properties to compete with the performance and functionality of alternative lightweight materials.

Due to this development and progress in sheet-metal material properties for automotive applications, the requirements for forming tool design are evolving permanently.

Although the application of PVD coatings in forming and cutting tool application has become common practice, the improvement of forming tool design is strongly dependent on the optimal matched value chain.

To obtain advanced functionality and performance the focus of the forming tool design has to be set on the synergy of high quality tool steels, pre-treatment and PVD surface technology.

A profound knowledge of the tool conditions during forming of high strength steel grades is prerequisite to understand the wear mechanisms and the most possible tool failure types. The transfer of this information into requirements for the forming tool and an in-depth analysis of the most suitable combination of physical and mechanical properties of tool steel and PVD coating as well as the appropriate choice of pre-treatment are the key factors of a superior forming tool design.

The talk will cover the beneficial synergy of PVD-based surface technology and tooling material selection, by discussing industrial application examples and highlighting the importance of an optimal matched value chain to obtain advanced functionality and performance of PVD-coated tools in sheet-metal forming.

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