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Recent innovations in hard coatings prepared by reactive cathodic arc evaporation and their industrial applications

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Reactive cathodic arc evaporation represents one of the leading technologies in the tool coating industry. The successful concept and flexibility of the eifeler-Vacotec alpha400P and alpha900P arc coating systems are demonstrated on recent examples of several high-performance coatings offered by the eifeler-Vacotec GmbH.

The unique AlCrN based CROSAL® coating represents the latest development in the field of high temperature coatings. Due to its excellent adhesion, high oxidation resistance and high hot-hardness it is a versatile coating exhibiting improved performance in highly demanding applications such as dry cutting, hobbing or fine blanking.

Another innovation of the eifeler-Vacotec GmbH represents the SPCS ('strongly poisoned cathode surface') technology which was specially developed in order to challenge one of the main drawbacks of the state-of-the-art cathodic arc coatings - the generation of so called macroparticles. Using this technology it is possible to produce surface quality that is comparable to coatings deposited by filtered cathodic arc, yet without the economical drawback of a reduced deposition rate. The resulting coatings are characterised by a smooth surface, excellent adhesion and enhanced wear resistance bringing economic benefits such as higher process productivity or reduced costs for post-treatment of coated tools.

The talk will focus on presenting examples of successful industrial applications of the above mentioned recent developments and their comparison to the state-of-the-art coating solutions.

Keywords
hard coatings
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smooth coatings
high-performance cutting