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**First commercial HiPIMS-coatings for cutting tool applications**

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AlTiN is known as a state-of-the-art coating with high hardness and wear resistance. To further increase structure, mechanical properties and adhesion of AlTiN-based coatings increased adatom mobility and increased ion bombardment during film growth are of major importance. For this purpose a high ionization fraction of target material is required. In our presentation we describe the application of High Power Impulse Magnetron Sputtering (HiPIMS) in order to achieve high cathode peak power and high metal ionization leading to enhanced coating- and interface properties like hardness, toughness and adhesive strength compared to d.c.-sputtered coatings. The scratchtest revealed twice as good adhesion compared to conventional AlTiN-coatings ( $L_c > 140\text{N}$  on WC/Co substrates). Due to the choice of appropriate pulse parameters back sputtering was suppressed and therefore high deposition rates of  $3\ \mu\text{m/h}$  were obtained by 3-fold rotation. Furthermore the HiPIMS coating process is able to handle mixed batches of various geometries e.g. cutting inserts, shank tools, mini tools, molds, etc.. Process stability has been shown during the use of this process for more than 2 years of job coating without any defect of the HiPIMS equipment. Plenty of diverse cutting results show that HiPIMS coatings outperform the d.c. ones to all intents and purposes.

**Keywords**

HPPMS

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