

# **INFLUENCE OF THE MAGNETIC FIELD ON THE MORPHOLOGY OF THE WEAR OF THE INSERT IN P25 CARBIDE WITHOUT LUBRICATION**

**D. NECIB & A. BOUCHOUCHA**

Laboratory of Mechanics, Faculty of Sciences of Engineering, Mentouri Constantine University, Constantine, Algeria

## **ABSTRACT**

This paper reports the study of the influence of a magnetic field on the morphology of the wear of the cutting tool as a function of the cutting speed during the cutting operation, and observed the weight losses (wear) and their morphologies. The wear of the cutting tool was quantified by weight loss during cutting. While carrying out experiments, we have noticed the existence of a critical value of the magnetic field intensity  $H = 16.5 \text{ kA.m}^{-1}$ , for which the depth of the crater wear of cutting is minimal and the cutting edge of the cutting tool is preserved. The presence of the magnetic field in the manufacturing contact modifies completely the morphology of cutting, shape of chips of manufacturing, and quality of the surface state of the cutting edge. Moreover, the increasing of the magnetic field was found to change the cutting temperature. In the present manuscript we presented the different behaviours of manufacturing observed with and without magnetic field.

**KEYWORDS:** Cutting Tool, Cutting Speed, Magnetic Field, Surface Quality, Wear