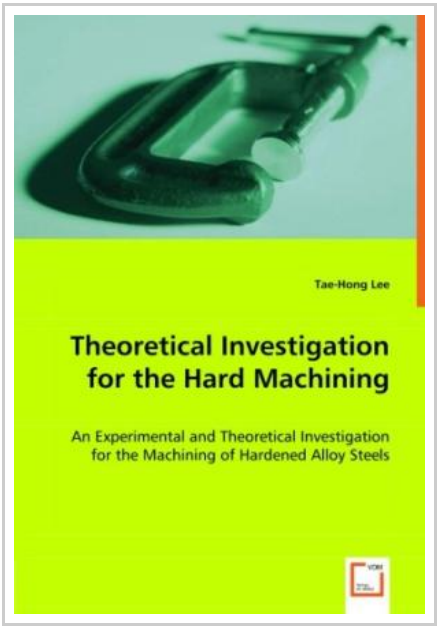

Theoretical Investigation for The Hard Machining

By Tae-Hong LEE

VDM Verlag Dr. Müller E.K. Okt 2013, 2013. Taschenbuch. Book Condition: Neu. 220x150x15 mm. Neuware - The research work in this thesis involves an experimental and theoretical investigation for high speed machining of AISI 4140 medium carbon steels and AISI D2 tool steels which are classified as being difficult to machine materials. An experimental program was carried out to determine the cutting forces, chip formation, the secondary deformation zone thickness and surface roughness at different cutting speeds using a 0.4mm and 0.8mm nose radii ceramic tools and -7 rake angle for annealed (virgin) AISI 4140 and heat treated AISI 4140 steel. Another series of experiments was carried out on the annealed (virgin) and heat treated AISI D2 with 0.4mm, 0.8mm and 1.2mm nose radii CBN (Cubic Boron Nitride) tools under various cutting conditions. A theoretical model is developed by taking into account the flow stress properties of the AISI 4140 (0.44% carbon content) to use with the Oxley Machining approach. To find the flow stress data for AISI D2 tool steel, the Johnson and Cook empirical constitutive equation is used as the constitutive model. In addition, the magnitude of tool radius should be also considered to determine the prediction of...

Reviews

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