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Contents

Go-Detect Application Inspired by Apoptosis to Detect SMS Exploitation by Malwares	101
Madihah Mohd Saudi, Luqman Amran and Farida Ridzuan	
The Influence of Coolant on Tool Deterioration of Uncoated Carbide Tools in End Milling Hardened Inconel 718Plus Nickel Based Superalloy	117
Nurul Hidayah Razak	
Challenges of Applying Scrum Model and Knowledge Management for Software Product Management	123
Boraq Ahmad Abed Ammourah and Sakinah Ali Pitchay	
Human-Robot Full-Sentence VQA Interaction System with Highway Memory Network	131
Sanghyun Cho, Jin-Man Park, Taek-Jin Song and Jong-Hwan Kim	
Learning Time Constant of Continuous-Time Neurons with Gradient Descent	149
Toshitaka Matsuki and Katsunari Shibata	
Data Linking Testing Between Humanoid Robot and IoRT Network Server for Autism Telerehabilitation System Development	161
Muhammad Aliff Rosly, Mohd Azfar Miskam, Syamimi Shamsuddin, Hanafiah Yussof and Nur Ismarrubie Zahari	
A Mechatronics Approach to Develop STEM Accessibility Tools for Visually Impaired Students	171
Muhammad Ikmal Hakim and Hazlina Md Yusof	
Study on Airless Variable Rigid Wheel to Travel Rigid and Loose Surface for UGV	185
Kojiro Izuka, Takahiro Nakamura and Yoshitaka Ishii	
UAV Path Planning for Local Defense Systems	199
Hyeok-Joo Chae, Soon-Seo Park, Han-Vit Kim, Hyo-Sang Ko and Han-Lim Choi	
A Performance Comparison of Geomagnetic Field-Based Vector Field SLAM Approaches	213
Seung-Mok Lee	

The Influence of Coolant on Tool Deterioration of Uncoated Carbide Tools in EndMilling Hardened Inconel 718Plus Nickel Based Superalloy

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Abstract:

A critical review has been carried out in the literature in order to investigate the impact of the coolant in machining hardened nickel-based superalloy; however little has been found. The increase in strength of a workpiece material generates a high cutting force during the material removal process, therefore reduce the tool life. As a result of limited knowledge addressing the role of coolant in enhancing the life of the cutting tool, this research intends to investigate the influence of coolant on tool deterioration of a hardened nickel-based superalloy. Milling experiments were conducted a hardened state of Inconel 718Plus nickel-based superalloy with uncoated carbide tools in dry and wet conditions. Experimental results showed that on average, both dry and wet conditions allowed for four passes (Npass) before the end of tool life.

Keyword: Tool Deterioration; Inconel 718plus; Nickel-Based Superalloy