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A Comparison of Single of Decision Tree, Decision Tree Forest and Group Method of Data Handling to Evaluate the Surface Roughness in Machining Process

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Abstract : The machinability of workpieces (AISI 1045 Steel, AA2024 aluminum alloy, A48-class30 gray cast iron) in turning operation has been carried out using different types of cutting tool (conventional, cutting tool with holes in toolholder and cutting tool filled up with composite material) under dry conditions on a turning machine at different stages of spindle speed (630-1000 rpm), feed rate (0.05-0.075 mm/rev), depth of cut (0.05-0.15 mm) and tool overhang (41-65 mm). Experimentation was performed as per Taguchi’s orthogonal array. To evaluate the relative importance of factors affecting surface roughness the single decision tree (SDT), Decision tree forest (DTF) and Group method of data handling (GMDH) were applied.

Keywords : decision tree forest, GMDH, surface roughness, Taguchi method, turning process
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