INFLUENCE OF TOOL TYPE INSERT ON CUTTING FORCE IN MACHINING OF HDPE

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Abstract: This paper presents an experimental study on cutting force for high density poliethylene (HDPE) material, during orthogonal cutting. The experiments were carried out on extruded workpieces using cemented carbide inserts (K20) and mineral ceramic tools. This paper aims to investigate the behaviour of cutting force F_z on HDPE with various tools under distinct cutting conditions (different depth of cut, feed rate and cutting speed). Comparing cemented carbide (K20) and mineral ceramic tool, mineral ceramic type tool is better than cemented carbide type tool in turning of plastic materials. The cutting force during machining is measured based on Hottinger strain gages. Cutting force signals at different cutting parameters were captured and processed using a data acquisition system based on hardware SPIDER 8 and software running on.
Key words: orthogonal cutting, HDPE, cutting force.