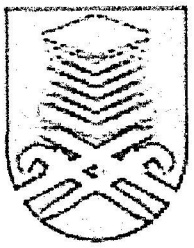

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DEVELOPMENT OF FRICTION STIR WELDING OF PLASTIC USING VERTICAL MILLING MACHINE

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AUTHORS DECLARATION

"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any bachelor degree and is not concurrently submitted in candidature of any bachelor degree"

Signed : .....

Date : 4/12/2009.....

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ABSTRACT

Friction stir welding (FSW) process had been used for production welding of aluminum since early 2000AD. Although the performance, quality and application had been described in several technical papers presented in international conferences, yet the actual operation parameter of the welding process was treated as industrial secret. The published patent information only described the welding parameter in so wide a range that actually "hides" the know-how of the welding process and characteristic of the welding machine.

Due to the absence of approved welding parameter, we feel there is a need to demonstrate the welding operation parameter for plastics such as PVC. By variation of the welding parameters, like spindle speed, travel speed and stir tool diameter, the practical range of welding conditions that produce successful welding would be known. The application of the conventional vertical milling machine, instead of a custom-designed machine, open the way to a new application in metal and plastic joining procedure. The weld joint quality will be tested based on commercial welding code. This welding process can be applied to the manufacturing of many kinds of industrial plastic components such as welding of plastic pipe in the future.

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