

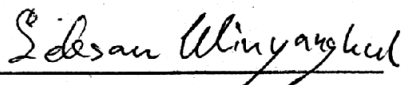
Seksan Winyangkul 2006: An Application of Computer Aided Design and Computer Aided Engineering in the Optimization of the Rubber Injection Moulding Process.

Master of Engineering (Mechanical Engineering), Major Field: Mechanical Engineering, Department of Mechanical Engineering. Thesis Advisor:

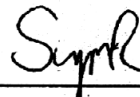
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Rubber moulds used in the injection moulding process in Thai rubber product industry are usually manufactured by the mould makers who often use skilled and experienced workers with trial-and-error method including conventional tools/ machines in mould design and manufacturing processes. As a result, various defects of the rubber products such as excessive flash and air trap are occurred. This leads to several mould try-outs and loss of raw materials used in the process. Therefore, this research aims to apply the Computer Aided Design/ Engineering (CAD/CAE) techniques for optimized injection conditions. The significant input variables include material properties of the natural rubber (NR40) such as heat conductivity, viscosity and shear rate, curing time and operating conditions like mould temperature, injection pressure, injection time including the gating and runner positions. The numerical results are also correlated well with the empirical data using the rubber injection machine. This research provides rubber researchers the tools to seek the best operating conditions in rubber injection moulding.



Student's signature



Thesis Advisor's signature

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