

Pengembangan model perhitungan kompleksitas full mold casting-studi kasus: upper dies trimming panel = The development of full mold casting complexity modelling case study upper die trimming panel

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Abstrak

Isu yang tengah menjadi perbincangan dalam dunia industri adalah bagaimana cara agar dapat menghasilkan produk dengan kualitas bagus, harga yang murah, serta waktu yang digunakan semakin singkat. Teori yang dipaparkan oleh El-Maraghy, model perhitungan kompleksitas manufaktur, dapat digunakan sebagai alat ukur kerumitan suatu produk, proses, maupun operasional yang dapat digunakan pada tahap early stage desain, sehingga dapat dijadikan pendekatan untuk menjawab permasalahan dalam dunia industri. Penelitian ini menitikberatkan pada kompleksitas proses full mold casting, salah satu tipe casting yang menggunakan Evaporative Pattern dengan cetakan sekali pakai, dengan menggunakan metode yang diperkenalkan oleh El-Maraghy dan Urbanic dimana perhitungan dilakukan dengan penilaian berdasarkan atas jumlah elemen informasi, rasio keragaman, dan isi informasi yang berupa pembobotan nilai parameter-parameter yang berpengaruh dalam proses. Perhitungan dilakukan terhadap lima produk dies, tiga produk upper dies trimming panel atap sebagai acuan serta dua produk upper dies trimming panel wheel house untuk memverifikasi model perhitungan. Hasil perhitungan dan analisis menunjukkan bahwa semakin tinggi indeks kompleksitas biaya yang dipakai dalam proses semakin tinggi. Kedepannya, model perhitungan kompleksitas yang dipaparkan oleh El-Maraghy serta pengembangannya dapat digunakan untuk dijadikan pendekatan perhitungan biaya pada tahapan early stage design.

.....Currently, the issues being debated in the industrial environment is on "how to produce products with good quality, low prices, but in a shorter amount of time. In the past years, El-Maraghy has presented a few theories regarding the manufacturing complexity calculation model. This model of calculation can be used as a measuring tool on a complexity of product, process, or even operational. It also can be used in the early stages of the product design, therefore this modelling is usable as an approach to address the problem in the industrial environment in this current days. This thesis focuses on the manufacturing complexity process of full mold casting, the type of casting that uses Evaporative Pattern with disposable mold. The study is using the method introduced by El-Maraghy and Urbanic, where the calculation is done with the assessment based on the number of information element, the ratio of diversity, and the contents information in the form of the weighting value parameters that influence the process. Calculations performed on this study are on five products of dies : three products of trimming dies upper roof panel and two reference products of trimming dies upper wheel house panel to verify the model calculations. The calculation and analysis from this study indicates that the higher the complexity index of the process gets, than the higher will the cost be. Hence, the model's complexity presented by El-Maraghy and the development done in this study, can be used for cost analysis approach on a product, and then to be used in the early stages of the product design.