

ABSTRACT

Gauge oil level which manufactured at PT. Dynaplast Cibitung has a function to cover up lubricating oil's hole in the right side of the motorcycle crankcase. Gauge oil level is produced by an injection molding process, 100 tons of the machine's capacity is used on Toyo SI 100-6/F75D for produced gauge oil level. Nylon 66 is used as a raw material for producing a gauge oil level. During the trial process of gauge oil level there are one defect that always occurs, that is weld lines. There are more than one factors that caused weld lines, therefore it is necessary to the analysis of polymer flow and analysis the caused of weld lines.

Analysis of the flow of polymer using software that was specifically created to analyze the flow of polymer materials and give predictions defect in a product, Autodesk Moldflow Insight be a software option to analyze gauge oil level. Analysis that did is looking for best gate locations and perform trials simulation with that software. Based on the gate location obtained by the software, the gate position was changed in the mold. The data were obtained then tested in 100-tons of the injection molding machine.

Based on the trial result, much better weld lines were obtained. The settings result are, the mold temperature was 90°C, heater temperature 1 was 295°C, heater temperature 2 was 330°C, heater temperature 3 was 330°C, heater temperature 4 was 330°C, and heater temperature 5 was 285°C. the injection speed are, speed 1 was 15 mm/s, speed 2 was 150 mm/s, and speed 3 was 130 mm/s. packing pressure was 80 MPa.

Keywords: *Injection Molding process, weld lines, moldflow*

INTISARI

Gauge oil level hasil produksi PT. Dynaplast Cibitung berfungsi untuk menutup lubang oli pada bagian kanan dari *crankcase* sepeda motor. *Gauge oil level* diproduksi dengan proses injeksi *molding*, mesin yang digunakan Toyo SI 100-6/F75D kapasitas 100 ton. Nylon 66 digunakan sebagai *raw material* untuk memproduksi *gauge oil level*. Selama proses *trial gauge oil level* terdapat satu cacat yang selalu timbul, yaitu *weld lines*. Lebih dari satu faktor yang dapat menyebabkan *weld lines* oleh karena itu, perlu dilakukan analisis aliran polimer dan analisis penyebab *weld lines*.

Analisis aliran polimer menggunakan perangkat lunak yang dibuat khusus untuk menganalisis aliran material polimer dan memberikan prediksi cacat pada produk, *Autodesk Moldflow Insight* menjadi pilihan perangkat lunak untuk menganalisis produk *gauge oil level*. Analisis yang dilakukan adalah mencari lokasi *gate* yang baik dan melakukan simulasi *trial* dengan *software* tersebut. Berdasarkan lokasi *gate* yang didapatkan *software*, dilakukan perubahan posisi *gate* pada *mold*. Data yang diperoleh setelah simulasi, yaitu temperatur *mold*, temperatur leleh polimer, kecepatan injeksi, dan tekanan *packing*. Data yang diperoleh kemudian diuji coba dengan mesin injeksi 100 ton.

Berdasarkan hasil *trial*, diperoleh hasil *weld lines* yang jauh lebih baik. Hasil setting yang diperoleh, yaitu temperatur *mold* sebesar 90°C; temperatur heater 1 sebesar 295°C; temperatur heater 2 sebesar 330°C; temperatur heater 3 sebesar 330°C; temperatur heater 4 sebesar 330°C; dan temperatur heater 5 sebesar 285°C. kecepatan injeksi yaitu, kecepatan 1 sebesar 15 mm/s; kecepatan 2 sebesar 150 mm/s; kecepatan 3 sebesar 130 mm/s. tekanan *packing* sebesar 80 MPa.

Kata kunci: Proses Injeksi *Molding*, *weld lines*, *moldflow*