

EFFECT OF EXTRUDER WEAR ON RUBBER COMPOUND EXTRUSION – PREDICT WEAR BASED ON PERFORMANCE

Polycomp B.V. develops, tests, and manufactures high performance rubber compounds for demanding applications in e.g. automotive, oil & gas, food & pharma, and chemical process industries. Main focus is on compounds based on FKM, FFKM, and HNBR, as well as specialties based on most of the other elastomers. Polycomp is based in Vorden, The Netherlands. Polycomp is having its own laboratory and pilot plant for product development, as well as modern production machinery.

Polycomp supplies its compounds in a form that directly fits into the manufacturing process of its customers. Many customers require strip or rope. Extruders are being used for the manufacture of these products. Over time screw and barrel of the extruders wear due to friction and abrasiveness of the compounds. In this assignment it is examined whether it is possible to predict the degree of wear based on performance of the extruder, so that it is not necessary to completely disassemble the extruder for the purpose of measuring.

Objective

The objective of this assignment is to find out if it is possible to predict wear of an extruder based on its performance (like output, smoothness of surface of the extruded material, waste). Guidelines for judgement of wear will be developed.

Assignment

At the beginning of the assignment the student will start to understand the rubber extrusions process, geometry of screw and barrel of the extruder, and the effect of extruder settings on performance.

In the practical part of the work full scale performance will be evaluated. One extruder line has recently been refurbished; another line is scheduled. On this line measurements can be done before and after refurbishment, giving full scale input for the assignment.

Practical work will be performed at the laboratory of Polycomp, and optionally at the manufacturer, ETE and/or customers.

Report

The report should contain: **1.** Summary of literature and theoretical aspects of geometry and wear on performance; **2.** Test results before and after refurbishment, their evaluation, discussion and conclusions; **3.** Guidelines that allow to judge wear based on performance.

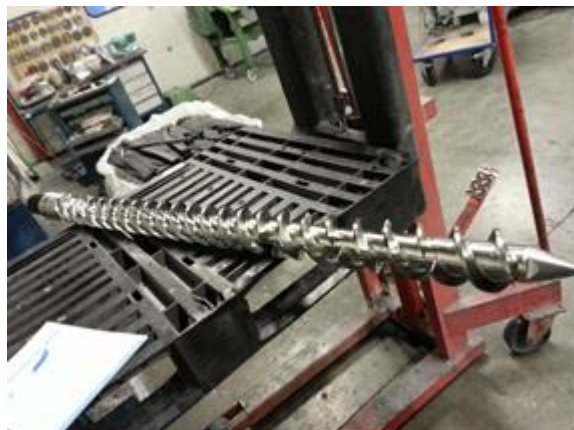


Fig. 1: Screw of a 90 mm extruder.

Partners

This project will be done in cooperation with Polycomp B.V., Handelsweg 7, 7251 JG Vorden. See www.polycomp.nl.

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