

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 is in the process of replacing its FKM mixers. One new mixer has been installed, the second one will be in operation soon. With the new mixers process conditions can be set and controlled in a reliable way, offering possibilities to optimize the mixing process, including reduction of the number of mixing steps and improving dispersion. Guidelines for settings have to be developed and substantiated, as well as implementation of a one-step-mixing process.

### Objective

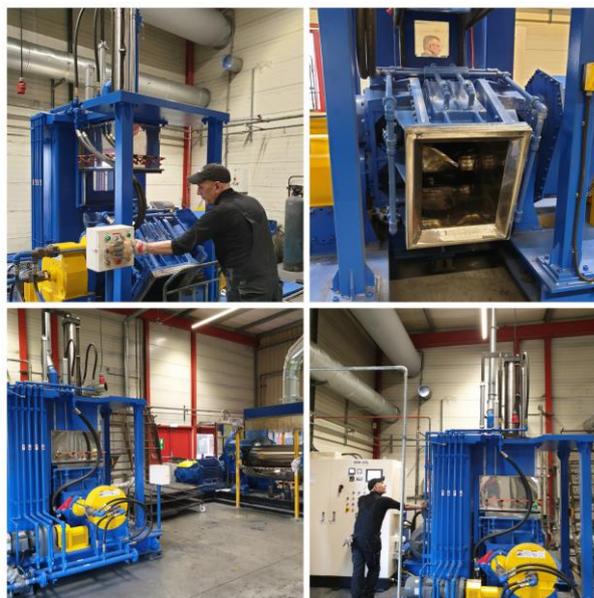
The objective of this assignment is to identify and understand the parameters that affect the mixing process and dispersion and come to guidelines for mixer settings/programmes for the various FKM types and recipes. Dispersion must be improved, and where possible a one-step-mixing process introduced.

### Assignment

At the beginning of the assignment the student will start to understand the effect of various parameters like geometry of rotors and mixing chamber, power input, mixing times, temperature, recipes/ingredients, etc. Compounds will be mixed, tested (e.g. physical properties, flow performance, dispersion), and results evaluated. The results obtained will be discussed based on mechanisms, and will ultimately lead to a set of guidelines on applicable settings of the mixer. Practical work will be performed at the laboratory and in the plant of Polycomp, and optionally at the ETE and/or other test labs.

### Report

The report should contain: **1.** Overview of mixing parameters and effect on compound properties; **2.** Test results, their evaluation, discussion and conclusions; **3.** Processing/mixing guidelines/settings.



*Fig. 1: Impression of the new FKM mixer*

### Partners

This project will be done in cooperation with Polycomp B.V., Handelsweg 7, 7251 JG Vorden. See [www.polycomp.nl](http://www.polycomp.nl).

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