

Title: **Creation of a methodology for the analysis of lubricants with TGA and DSC by means of experimental design**

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The end-of-grade work has been carried out in an external company called Brugarolas, S.A. It is a chemical company focused on the manufacture of lubricants and process products.

This has been equipped with two instruments to investigate and manufacture new pioneer products in the market. The TGA, which uses the thermogravimetric analysis technique and the DSC, which uses the technique of differential scanning calorimetry.

The performance and implementation of the PNT (Normalize Practice of Work) of both instruments is proceeded.

In experiment is carried out with the DSC instrument and another with the TGA instrument, to adapt standard international methods (such as ASTM standards) or, on the contrary, to create new internal research methods for the analysis of lubricants.

The experiment with the DSC is about a study of substitution of one antioxidant for another in an internal product (oil) of the company by calculating the time of induction to oxidation (OIT). This is the way to formulate several combinations with both antioxidants and base oils to obtain information on what would be the best mixture to modify in the current product.

The objective of the experiment with TGA is to determine the percentage of teflon (PTFE) of a sample of the competition (grease). The product of the competition obtains very good results in the function to be performed and therefore the market success. For this reason, the purpose is to improve an internal product with similar properties to the product of the competition by modifying the teflon concentration.