Liebherr Group is a large equipment manufacturer specializing in cranes, aircraft planes and mining. In Freiburg, Switzerland, Liebherr develops and produces diesel and gas engines, injection systems as well as hydraulic components and splitter boxes. This project focuses on diesel engines, more specific predictive maintenance of the engines. It has been shown that failure of the engine is directly related to degradation of chemical characteristics of the engine oil and although these results are encouraging, oil analysis is time and resource consuming and also not possible in every given situation. For this reason we propose a different approach

**Problem description**: Liebherr company performs engine endurance testing in controlled environment where the engine is kept running for a given amount of time after which the oil analysis is performed. Considering that the correlation between oil characteristics and engine failure has already been explored, we propose modeling of correlation between testing conditions and failures.

**Tasks**:

- Analyze the domain and collect the data describing the testing conditions, such as temperature or type of bearing.
- By understanding the working conditions and causes of engine failures in real life, define a list of factors that can be tracked during testing and collect the example values.
- Using the data mining techniques, model a correlation between these factors and engine failure.
- Using the same model and oil analysis results, determine the critical levels of oil components preceding to engine failure and compare them to empirical values used in Liebherr.