

## Challenge name: Predictive Maintenance (Never-Break-Down)

### Description

This challenge is to develop an analytical tool that would provide insights into auxiliary engine performance (wear and tear), provide an early warning system or symptoms, and forecasting break down.

Example: An auxiliary engine, has a TBO (time between overhauls) of 20,000 running hours for its bearings and an average life of 60,000 hours for the same (main, bottom end bearings, etc.). Could the tool help in extending the TBO and predict lifespan of the bearings? Could it be able to predict premature failure (time)?

### Current status

Currently Maersk Tankers has a fixed schedule of TBO based largely on experience, equipment trials, and at times, input from equipment makers. However, overhauls are often extensive and expensive, and take place irrespective of a planned maintenance being scheduled. Even worse, breakdowns can result in dangerous accidents! The present operation has currently one main input “maker’s recommendation along with TO inputs based on experience” on TBOs.

### Desired benefits

The analytical tool will allow Maersk Tankers to move beyond running hours and use multiple fractals to make analysis more accurate and reliable. Life-cycle costs of equipment could be drastically improved and result in lower cost of accidental failures, repair and maintenance and man-hours resulting in a better bottom line. Impact study results of change in Fuel grades impacting breakdown or improving performance.

### Solution criteria

- A method or an algorithm
- An interface/application

### Data sets

- Historical Lube Oil Analysis reports
- Historical Fuel Analysis reports
- Historical Power/load data
- Running hour data and patterns

### Clues to get started

- Basic Tribology (the science and engineering of interacting surfaces in relative motion)
- Study of B&W Holeby 23/30H Engines - used as prime movers for alternators.