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New Strategy of Turbo-Compressor Maintenance

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Abstract: Nowadays, the turbo compressors discussed by the turbines HP and LP pose many problems in the chain of production. Generally, the turbo compressors are affected by a series of external factors (Temperature, clogging, pressure) acting directly on the performances. Thus, in this present research, we tried to identify by the means of a correlation and a regression, the behavior of oil by vibratory analysis and the causes of these disturbances to present methods of turbo compressor sweeping.

Key words: Turbo compressor, performances, vibrations, oil, analysis, temperature

INTRODUCTION

The vibratory monitoring of the machines is one of the techniques which is spread more and more in industry. With the current technological development, the vibratory effects observed can be connected to the material causes, which generate them for the user (Gills, 1995).

The vibratory analysis itself is not significant for a decision-making, a complementary oil analysis can improve the judgment and bring a justification to the causes of failures (David, 2004; Gwidon and Andrew, 2002).

These new possibilities offer mechanisms bringing into play theoretical and practical lightings for a phenomenon as old as the invention of mechanics.

The causes are not limited to the simple unbalance of the revolving machines; they are also for origin of the terminological components used, as well as the physical principle on which their operation rests such as problems of process.

Basic configuration: The turbo shaft engines are apparatuses in which a fluid energy exchange with one or more wheels (rotors) which are provided with paddles (wings).

These paddles are profiled obstacles, plunged in the flow and spare between channels by which the fluid runs out. They can be directional to guide the flow of the fluid and to exchange mechanical efforts (Heinz, 2003; Jacques, 2004). This results from the difference in pressure between the two faces of a Fig. 1.

The failure rate for some components of the turbo compressors after the current damages is:

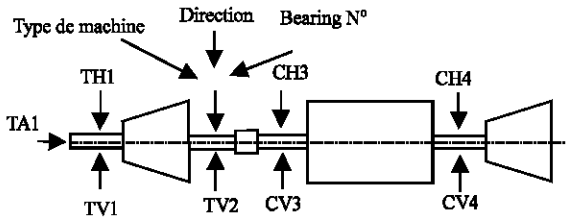

Fig. 1: Turbo compressor installation

Element	Failure rate (%)
Rotor	30%
Bearing	16%
Instrumentation	11%

MATERIALS AND METHODS

A very representative sample was taken at the same time in order to affirm the connection between the behavior of oil and the vibratory level, over a 6 months period.

Going beyond of a limit (threshold), enters in a detection strategy of defect from which the goal is to supervise and protect the machine.

The alarm threshold is Viteff = 3 m s^{-1}, going beyond of this value supposes an anomaly which requires a confirmation.

In more one can know the speed with which move the curves of tendency and the point of tendencies inflection. However we can associate an alarm of the threshold type to an alarm of the percentage type of evolution or increase compared to the preceding value (measurement).

Figure 2 represents the curves of tendency for the first bearing with dimensions harnesses. A brutal increase

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