METHODS FOR IMPROVING GEARBOX MENTENANCE

PATER Sorin, MITRAN Tudor, BRATU Ion, POLOJINTEF CORBU Nicolae
Universitatea din Oradea
spater@uoradea.ro

KEY WORDS: maintenance, malfunction, cepstrum

Maintenance actions with a mending nature are: malfunction diagnosis, malfunction localization, malfunction repairing, through complete or partial replacement of one or more elements affected by malfunction and verifying the correctness of the maintenance operations.

Through maintenance we mean, the ensemble of all techno-organisatorie actions taken with the view to maintain or reestablish a product to the state necessary to fulfill the required function. Nowadays, maintenance has to be a partner of production [5].

Overseeing machines and equipment working in exploitation through parameters specific to the process of functioning (vibrations, temperature, etc.), is acknowledged as an important way to increase reliability, maintenance, cost reduction for production and exploitation. The porpoise for utilizing, monitoring installations or systems is to verify the functioning normality, to detect eventual deviation and supply support-information for decisions and diagnostication.

A definition for monitorirization can be stated in such method: the action of obtaining information about the functioning state, in a given system, through some adequate observations about measuring instruments and machines, in order oversee and intervene with the view of corrections.

In real functioning conditions, the gearing process has certain deviations versus the ideal conditions. These deviations are provoked both by the execution errors and the other transmission elements of the toothed wheels, and by the assembling errors.

The toothed wheels transmission dynamic is influenced by the following facts:

- the rigidity variation of the gearing due to the variable deformations of the teeth in the process of gearing (the load is transmitted by a different number of teeth).
- the technological errors of the gearing
- the rotation speed, especially in those zones that correspond to the resonance phenomenon

Bibliography

[1] Boyes, J.D. Gearbox-Diagnosis Using the High Resolution FFT Analyses, Bruel & Kjaer, Application Notes, nr.106, 1981.
[2] Brown, D.N. & Jorgensen, J.C., Machine Monitoring Using Vibration Analysis, Bruel & Kjaer, Application Note, 1987.
[3] Dempsey, P.J., and Zakrajsek, J.J., Minimizing Loan Effects on NA4 Gear Vibration Diagnostic Parameter, NASA/TM-2001-210671, 2001