THE FUTURE OF LUBRICANTS (4)

How does NanoVit® works in gearboxes?

Within a gearbox you'll find different kinds of frictional surfaces. Each frictional surface has its own specific frictional behaviour, heat balance and stability.
In fact these different frictional surfaces require a specific but different lubricating oil. However, in most gearboxes one single lubricating oil is used for all frictional surfaces.

Gears like spur gears; internal ring gears; helical gears; face gears, worm gears, differential gears; etc. are mostly used as a complete part or building group and differ in size depending on construction, application and interpretation. These parts are important for a correct functioning of the gearbox, however their frictional characteristics differ.
For each frictional surface, a particular calculation can be made in order to determine the most optimal lubricant.

Judging the single requirements like viscosity, wear and tear, heat-balance etc. for each frictional surface, we learn that a compromise needs to be found. A single lubricant will not meet all requirements to ensure an optimal lubrication for each frictional surface.
Often a lubricant will be chosen, which will meet the requirements for the most strained frictional surfaces.
The consequence is accepted that the specific requirements for the other friction zones aren't fulfilled completely.
That leads to additional energy losses, increased wear and a reduced life-span of the lubricant and the gearbox.
The service-maintenance increases due to shorter oil-change intervals.

A broad range of various gearbox oils on the market reflects this situation. These oils distinguish from each other by different additive-packages. These packages suggest a general or universal use for various applications.
The recipe of the additive changes the gearbox-oil into a complex system consisting of many components.
To guarantee this gearbox-oil its stability is a complicated task, which isn't any smaller than the problem to differentiate and secure the parameter in each frictional zone as such.

1 What is the effect of NanoVit®

The application of NanoVit® in gearbox oils triggers a spontaneous process of self-organization which leads to the build-up of macro-molecular structures.
This state is dynamically balanced and stabile. The process of self-organization repeats itself endlessly. The new created structure gives the oil additional properties like a non-linear change of the viscosity and an increased heat capacity.
These new properties lead to a local adaption of viscosity and temperature at different thermodynamic loads in every frictional zone in the transmission.

The changed local viscosity and heat capacity adapt themselves to the load- and speed fluctuations, and to the energy losses. In that way each single frictional surface gets "its own" lubrication which is close to the calculated optimum.

This process leads to an improvement of the effectiveness of the transmission, reduces internal losses, expands the service-intervals and lengthens the life of the gearbox.

2 Note:

Without the application of nano-scaled solids with similar characteristics like NanoVit®, the research and development of lubricants will face its limits. A material is needed which, on one hand, guarantees stability by chemical inertia, and on the other hand, holds the characteristics to ensure a surface-energy change. Apart from that, it needs to have the ability for physical and chemical absorption, which will be the "organizers" for building-up new structures in future lubricants.

NanoVit® with its unique characteristics, meets the above requirements.

Visit www.nanovit-research.de and www.msh-nanovit.de for "Future Lubricants part 1 - 3".

ATTENTION: The application of NanoVit® is only recommended in mineral or synthetic oil refineries. NanoVit® should not be applied in hydrous and glycol containing oils!

www.msh-nanovit.de · info@msh-nanovit.de www.nanovit-research.de · info@nanovit-research.de