Comparison of three different lubricating greases technologies from a life cycle perspective.

Axel Christiernsson is a leading lubricating grease manufacturer with production sites in Sweden, the Netherlands, France and the USA. Group management and one of the production facilities is situated in Nol which lies 20 minutes from Göteborg. Our production facilities are among the most modern in the business and we are 200 employees within the group. For more info about AXEL: www.axelch.com

The project aims at comparing two different technologies which have benefits in terms of environmental impact to a traditional lubricating grease. The benchmark will be the most common type of lubricating grease: a mineral oil based product thickened by a lithium soap. The two technologies to be compared with the benchmark is one environmentally adapted product and one low-friction product.

The environmentally adapted product, which is formulated with renewable and biodegradable raw materials, is used in loss-lubrication applications (i.e. application where the lubricant is lost in the environment). Typical areas of application is in forestry, marine applications and construction equipment. Case studies from forestry applications are available.

The low friction product is an industrial product used in manufacturing plants, typically in electrical motor bearings. The benefits here is a long grease life (i.e. less material consumed) and lower friction in the motor bearing resulting in lower power consumption. There are data both from field trials and laboratory tests highlighting the level of power saving.

In the end we would like to highlight the differences in environmental performance between the two types of lubricating greases in relation to how they are used – a grease which is lost into the environment vs. a closed industrial application.

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This thesis project is suitable for one or two engineering students at Master level. The scoping can be adjusted accordingly. Completed course in life cycle assessment (Chalmers course VTM 081 or equivalent) is a mandatory requirement.

The project can be carried out either at Chalmers or at the Axel plant in Nol. In any case, a visit to the plant in Nol where the greases are produced to gain a better understanding of the differences in manufacturing processes is part of the project.

The project timeframe is spring 2016. To apply for this thesis project please contact Johan Leckner at Axel Christiernsson and Johan Tivander at Chalmers.
Contact at Axel Christiernsson

Johan Leckner, Msc, PhD
R&D Manager
Axel Christiernsson International AB
0766-366443
johan.leckner@axelch.com
www.axelch.com

Contact at Chalmers

Johan Tivander
Research engineer, thesis supervisor
031-772 4911
johan.tivander@chalmers.se

Anne-Marie Tillman
Professor, thesis examiner
031-772 2122
anne-marie.tillman@chalmers.se

Division of Environmental Systems Analysis
Department of Energy and Environment
Chalmers University of Technology