Joint Master Thesis Announcement – Chalmers+Swerea IVF

Sustainable Manufacturing: Machining Fluid – From Mineral Oil to Vegetable Oil

Metalworking fluid, as a lubricant and coolant in machining processes, contributes to 72,500 tons of fluid industrial waste (Kemi, www.kemi.se, April 2016) in Sweden. This means that sustainability and the total life cycle of the chemicals are of great concern. In the future, a fluid should fulfil not only the technical properties and performance, but also sustainability. The chemicals should preferably be based on renewable resources, be recyclable and not cause much adverse effects to the surroundings, i.e. during processing and waste disposal, as well as to the workers’ health.

In this project, Chalmers University of Technology is working on a case study together with Gnosjö Automatsvarvning AB, Swerea IVF and Binol AB. One of the aims in the study is to introduce an alternative metalworking fluid, based on renewable vegetable oil, to a lathing machine instead of the traditional mineral oil (non-renewable resource with negative health aspects). Subjects of interests will include a comparative study of the 2 fluid products in view of functionality, durability and recyclability, also comparing the cutting tool geometry, as well as the surface topography of the final products. Candidate from manufacturing, mechanical, materials engineering and/or chemistry will be considered. Selected candidate will stay at Gnosjö for couple of weeks and work closely with the hosting company, Gnosjö Automatsvarvning AB, during the project. Duration is tentatively planned for 16 weeks (4 months). Accommodation in Gnosjö will be arranged and the transportation costs will be covered. Candidate will get a compensation after the completion of the thesis.

For more info about Gnosjö Automatsvarvning, please visit the website: [http://svarvning.nu/](http://svarvning.nu/)

To those who are interested, please contact.

Supervisors: Amir Malakizadi, Ph.D., 031 772 63 77, amir.malakizadi@chalmers.se
Eric Tam, Ph.D., 031 772 12 53, eric.tam@chalmers.se

Examiner: Professor Lars Nyborg, lars.nyborg@chalmers.se