

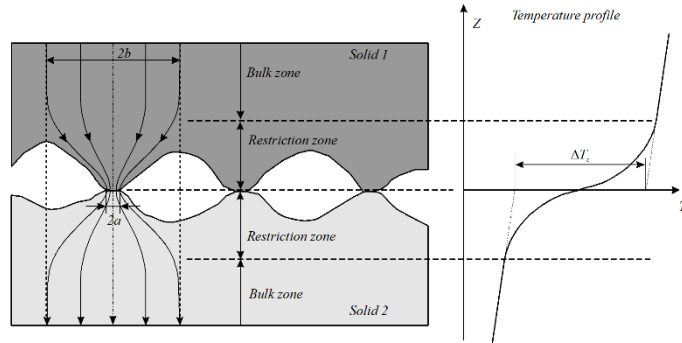
MSc Assignment

Modelling the thermal conductance of an interface

Approach

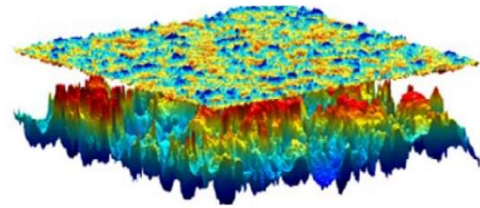
Thermal effects are one of most dominant error sources in high-end mechatronics equipment, like manufacturing and production equipment and scientific instruments. More and more these high-end systems are operating under vacuum and even cryogenic conditions.

It appears that in many applications under vacuum, thermal contact conductance at mechanical interfaces is dominating thermal system behaviour. However, despite of much research done so far, the uncertainties in the developed models are still very high. It seems that under some, not well understood conditions, the present models are less accurate..



Based on the present models with the statistical approach, the MSc assignment should take the properties of real machined surfaces into account. A model needs to be developed, which considers the statistical properties of real machined surfaces. The model should help in defining machining properties, like unflatness and waviness, and other relevant parameters to achieve a predictable thermal contact conductance.

Validation of the thermal contact conductance model is part of the assignment as well, although it is maybe not feasible to finish this completely within the period.



Research group & Company

The **Surface Technology and Tribology (STT)** group will organize the research with a focus on surfaces and interfaces in an engineering context, as well as degradation mechanisms occurring at these surfaces and interfaces. The researcher will closely collaborate with MI-Partners, a company specialized in the development of high-end mechatronic systems (e.g. products, production equipment, test/measurement setups).

We offer:

- Work in a challenging, international and multidisciplinary environment.
- Work with all kinds of state of the art equipment

Tasks:

- Literature survey
- Developing a numerical model
- Analyzing and discussing the obtained results
- Writing a scientific report

Contact:

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