Opleiding Werktuigbouwkunde

Universiteit Twente
de ondernemende universiteit

COLLOQUIUM

Conform artikel 4.6.8 van het SSNS-wb.

Vakgroep: **Technische Stromingsleer**

In het kader van zijn doctoraalopdracht zal

Luuk Klinkert

een voordracht houden getiteld: **Modeling of a steam driven jet pump**

Datum: 16 maart 2007
Tijd: 14.00
Zaal: OH 115

Samenvatting:
About 150 years ago in 1858, a French engineer named Henri Giffard, patented the steam driven jet pump (SDJP). This pump was designed to supply the boiler of a steam engine with water. Without moving parts and with only the steam from the boiler as its driving force the SDJP can deliver water at a higher pressure than the boiler pressure. A pump powered by steam at boiler pressure producing an exit pressure higher than the boiler pressure appears a perpetual motion machine, however, the sale of thousands of pumps in the late nineteenth century shows that the SDJP is actually working. Nowadays the SDJP is used in chemical installations and research is done on the SDJP as an emergency core cooler for nuclear power plants.

Philips Domestic Appliances and Personal Care is interested in understanding the working principle of the SDJP and the feasibility of applying this working principle in a small pump. Typical order of magnitude of the dimension of such a small pump is 5 cm to 10 cm. This is a much smaller scale than the pumps used today in chemical installations or which were used in steam engines decades ago. A well-considered assessment of the suitability of the SDJP for domestic appliances can only be given when there is a clear picture of its performance. This study concentrates on developing the theory behind the stream-driven pump, which will be used to produce a numerical method for numerical simulations. In this way the functioning of the steam driven jet pump can be studied, without the need to build expensive prototypes.

Examencommissie:

prof. dr. ir. H.W.M. Hoeijmakers (afstudeerdocent)

dr.ir. A. Biesheuvel (mentor)

prof. dr. ir. A. Hirschberg

prof. dr .ir T. H. van der Meer

ir. R.W. Westra

ir. F. Fraij (Externe begeleider)

De afstudeerdocent,

_____
(handtekening)

d.d. _____