



# COLLOQUIUM

Conform artikel 4.6.8 van het SSNS-wb.

Vakgroep: Technische Stromingsleer

In het kader van zijn doctoraalopdracht zal

**M. van de Zande**

een voordracht houden getiteld:

## **A Model for Prediction of Erosion Wear of Impeller of a Dredge Pump**

Datum: 6 July 2007

Tijd: 14.00u.

Zaal: Horstring N 109 (Filmzaal)

### **Samenvatting:**

Dredge pumps are used in the dredging industry for transporting water-soil mixtures. An important design factor for a dredge pump is erosion wear, since the life span of the pump is largely determined by this factor.

The objective of this research has been to develop a model, with which the wear characteristics of the impeller of the dredge pump can be predicted. This model is based on potential flow for the carrier fluid. Solid particle trajectories through the impeller channels are determined, using the flow field of the carrier fluid. Once the trajectories of the solid particles have been determined, it is known if and where particles hit the surface of the impeller blades. An additional model is implemented which relates the impact velocity and impingement angle to the wear rate. From this information, the desired prediction of wear characteristics is obtained.

The model is tested on an impeller with logarithmic blades, as well as on the impeller of an industrial dredge pump.

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