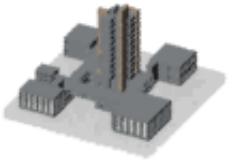
COLLOQUIUM ANNOUNCEMENT
Faculty of
Engineering Technology



Subdepartment **Engineering Fluid Dynamics - CTW**
Department **Mechanical Engineering**

As part of his / her masterassignment

Aart Kooiman

will hold a speech entitled:

Adjustments of the gas spring in the Symphony Wave Power device

Date: 15-01-2016
Time: 14:00 hr
Room: RA 1501

Summary:

The Symphony Wave Power (SWP) device is a wave energy converter, which will be designed to demonstrate improvements of the Archimedes Wave Swing device. This research aims to investigate the effects of altering the gas spring, using the SWP device as an example.
Gas springs are described using physical laws concerning the compression of an adiabatic perfect gas. It is shown that a spring can be altered to meet pre-determined requirements. Furthermore, it is shown that a cylindrical gas spring will result in an unstable system at some point. Finally, analyses are performed to derive the optimal spring coefficient for energy extraction.
A coupled set of nonlinear differential equations is derived and solved, to obtain the geometry of the SWP device for given forces. It is shown that the initial pressure and volume can be used to tune the device for variations in the energy period of the waves. The consequences of altering the gas spring in the SWP device are presented in terms of extracted energy.

Assessment committee:

prof. dr. ir. C.H. Venner	(chairman)	chairman,
dr. ir. R. Hagmeijer	(mentor)	
ing. F. Gardner	(mentor from company)	(Signature)
dr. ir. B. Vriesema	(mentor from company)	
dr. ir. P.C. Roos	(external member)	d.d.