Daniel Zwick

Home country:	Germany
Year of birth:	1980
Master's degree:	Mechanical Engineering
University:	NTNU
Graduation year:	2007
Research group:	Marine Civil Engineering
Supervisor:	Michael Muskulus
PhD start:	August 2009
Phone:	+47 73594648
E-mail:	daniel.zwick@ntnu.no
Home page:	http://www.ntnu.edu/employees/daniel.zwick

Design of nodes in lattice towers for effective production

The extremely ambitious political goals concerning extensive use of offshore wind energy result in an intense demand of research and development in this field. As an example, round 3 in UK could mean a need to install several thousands of offshore wind turbines within the next ten years. To be able to fulfil this goal, components for offshore wind farms has to be produced by mass production techniques and within reasonably short fabrication time.

Where offshore wind turbines are planned to be installed in the intermediate water depths of 30-70m, bottom-fixed support structures might be used. One promising concept is the lattice tower type, due to less material use compared to other concepts like monopile or tripod structures. A lattice topology could be used for the entire support structure between sea bottom and turbine nacelle or for the lower part of the tower only.

New node concepts might be of interest for more automated production of lattice towers. As a basis for such an investigation, loading and dynamic response by focusing on design of the nodes are objectives in this study of offshore wind turbines. If the complex fabrication of lattice towers can be solved in an effective way, this type might become a preferred solution for support structures of offshore wind turbines in the future.