TECHNISCHE UNIVERSITÄT DRESDEN

Fakultät Bauingenieurwesen Institut für Massivbau

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Design of a deep-sea structure
(Entwurf einer Konstruktion für die Tiefsee)

The deep-sea research is an essential part of marine research. Not only environmental aspects but also increasingly economic interest such as the search for alternative energy resources (e.g. methane) plays a significant role. Due to the extremely corrosive environment, mainly expensive materials such as titanium and aluminum are used so far for the construction of temporary and permanent research stations.
The research should explore the suitability of high performance concrete for underwater pressure housings to provide a cost effective alternative to currently used titanium containers. Therefore Ultra high performance concrete is suitable to provide water tight housings. Based on pre-work at the institute, the focus of the work is the design, calculation and optimization of a pressure housing. Also the design of a sealing system for target depths up to 6000 m is part of the work. Further aspects like effects of the marine environment in terms of corrosion (chlorides, sulfates etc.) could be examined. Basic ANSYS knowledge should be available.

This topic is available only as a Master's Thesis.

Basic knowledge of ANSYS and FEM is required.

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