Technion-Israel Institute of Technology
Faculty of Mechanical Engineering

הטכניון-מכון טכנולוגי לישראל
הפקולטה להנדסת מכונות

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 16.02.17 (כ' בשבט, תשע"ז), בניין דן-קאהן, קומה 0, אודיטוריום 1 , 14:30.

יוצא: מיכאל מיליץ'

מנחה: פרופ"ח נתאי דרימר

על הנושא:

אנליזה הידרודינמית-מבנית לתכן מערכות גמישות לחקלאות ים פתוח
Hydrodynamic-Structural Analysis for the Design of Flexible Systems for Open Sea Aquaculture

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

The aquaculture sector is one of the most rapidly developing and promising sectors of the food industry. Various studies showed that offshore aquaculture provides better return on investment having lower mortality rate and better quality of the fish.

However, due to high waves typical for open sea, the popular design for fish farms for sheltered water cannot survive open sea conditions. In order to move offshore, new designs with the ability to reduce the wave loads are needed. One of the most promising concepts, from structural and hydrodynamic aspects, is a flexible, submerged, Single Point Mooring (SPM) system. Due to hydrostatic pressure, which compresses the volume of the components, the submerging is unstable and has to be addressed as a part of the structure design. A possible solution for the stabilization is by installing chains at the bottom of the structure, which are placed on the seabed while submerging the system. Such a solution is dependent on the ocean floor depth, restraining the move further offshore and restricting potential areas.

In the current work, we used the commercial finite elements software AQUASIM, specialized in flexible structures at sea for hydrodynamic and structural analysis for the design the new generation of flexible SPM submersible system for offshore aquaculture. One of the new aspects that we examine is a new solution for the stabilization – flexible pipes that remains at surface. Such a solution does not depend on the depth of the seabed. The analysis focuses on the structural integrity, structural stability and volume keeping of the cages, which is essential in order to decrease fish mortality rate. Furthermore, we compared the FE analysis to a simplified formulation of loads and discussed the optimization of the cages and submerging of the structure.

בברכה,

פרופ"א שמואל אוסובסקי
מרכז הסמינרים