Analysis of geosynthetic tubes filled with several liquids with different densities

Josef Malík

Ústav geonikyAV ČR, Ostrava

A two dimensional model of geosynthetic tubes sitting on a rigid horizontal foundation and filled with several separated liquids with different densities is proposed. The material from which tubes are made is a special synthetic fabric which is inextensible, perfectly flexible, and leakproof. Basic equations describing the equilibrium of tube are formulated. A numerical procedure for solving the equations is proposed and implemented in the code MATLAB. Some model problems for geosynthetic tubes filled with two, three, and four liquids with different densities are solved. Such values like the pressure on the top and bottom of the tube, the tension in the geosynthetic fabric, the length of the contact zone between the tube and rigid foundation are studied.