

Special Research Study Title	Effect of Internal Flow on Static Equilibrium Configuration of Catenary Riser in Sea Water
Special Research Study Credits	6
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Abstract

This special research study presents the effect of internal flow on static equilibrium configuration of catenary riser in sea water. The virtual work method is used to formulate the model of the catenary riser which consists of the virtual work of horizontal top tension, effective weight of the riser, and internal fluid flow. The riser arc-length is used as an independent variable. The finite element method and Newton-Raphson iterative process are used to solve the problem. The model formulation is validated by comparing the numerical results with the catenary equation, and they are found to be in a very good agreement. The parametric studies are given to show the effects of internal flow on equilibrium configuration for various support elevations of the catenary riser.

Keywords: Catenary Riser / Finite Element Method / Internal Flow / Newton-Raphson Method / Virtual Work Method /