ATILA ® FEM for Underwater Analysis

ATILA can be used for analysis of sonar and other acoustic transducers using piezoelectric or magnetostrictive materials, or a combination of both. Fluid model contains the isotropic fluid media with or without losses for axisymmetrical, plane strain, and 3D models. Radiating boundary option includes fluid open-boundary radiating elements for axisymmetrical, plane strain, and 3D models. Transmitting Voltage Response (TVR) can be also analyzed.

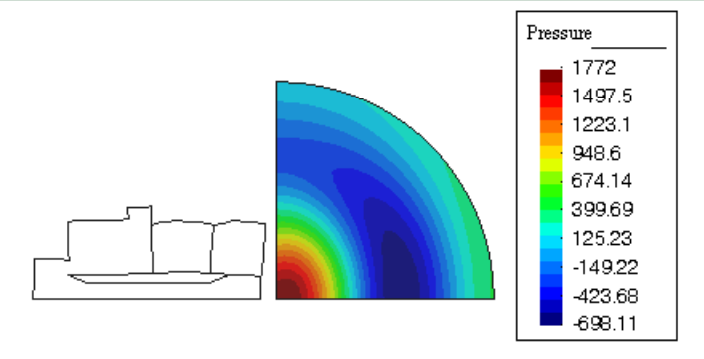

Figure 1. *Water pressure and displacement generated by Tonpilz transducer.*

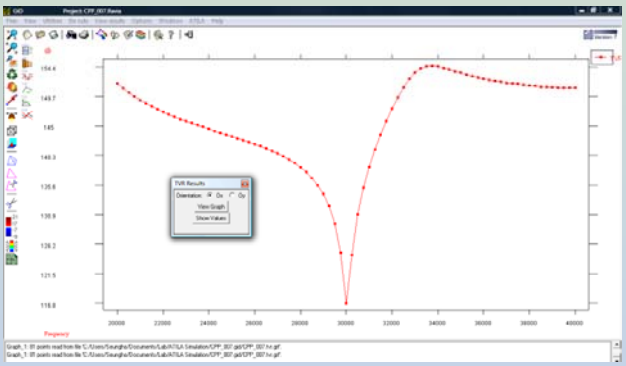

Figure 2. *Transmitting Voltage Response with radiating boundary conditions.*

EQI is a boundary element solver that can be coupled to ATILA to carry out FEM-BEM analyses of scattering and radiating problems in the frequency domain. The computation of the far-field pressure is then obtained by numerical integration of the mechanical impedance information at those radiating and scattering surfaces. Results of an ATILA-EQI computation include displacements, stresses, electrical impedance, far-field pressures, as well as acoustic radiation and scattering quantities.

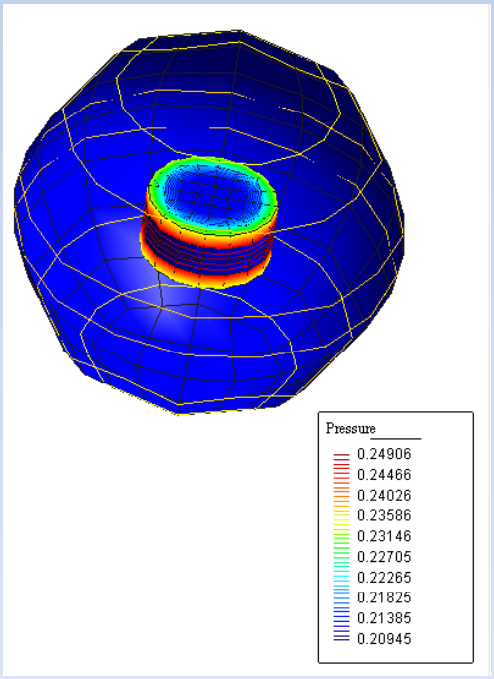

Figure 3. *3D FEM-BEM analysis of piezoelectric device for underwater applications.*

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