

## A new panel method for unsteady flows

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**ABSTRACT.** Some critical points of the classical Panel Method Technology have been pointed out while performing aeronautical and naval fluid dynamic time-dependent calculations. In order to have satisfactory analysis and design tools, a new BEM open-source method has been developed, focusing on a drastic reduction of the costs, in terms of overall time, resources and man power, by using unstructured panel discretization, and by introducing a wide variety of boundary and closure conditions, enclosed the existence of an interface air/water. Quadrilateral and triangular elements have been used. User may bypass the steps consisting in the geometry treatment and paneling when a satisfactory acceptable CAD Model is available. This method has been used to solve a number of scientific and technical, steady and unsteady, problems. It seems capable to perform complex simulations coupled to both structural and dynamics methods and/or by introducing deformations due to fluid dynamics loads.

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