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## **Stress Prediction Model on Static Components Located in Complex Scenarios**

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**Abstract:** This article presents a prediction model of a static component (pressure vessels) which is affected by operating conditions such as the type of material, the internal temperature and pressure, fluid behavior and also because the loads produced by wind and the waves induced by environmental conditions. The aim of this study was to determine the structural behavior of a steel tank SA516-70 to predict and prevent failure using Finite Element Simulation (FEM) with taking variable wind loads and analyzing data using statistical tools for the development of predictive models in components located in complex scenarios, where it is difficult to collect historical data.

*Keywords:* Static components, statistical tools, FEM