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Study of Natural Convection in Storage Tank of LNG

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Abstract : Heat transfer by natural convection in storage tanks for LNG is extremely related to heat gains through the walls with thermal insulation is not perfectly efficient. In this paper, we present the study of natural convection in the unsteady regime for natural gas in aware phase using the fluent software. The gas is just on the surface of the liquid phase. The CFD numerical method used to solve the system of equations is based on the finite volume method. This numerical simulation allowed us to determine the temperature profiles, the stream function, the velocity vectors and the variation of the heat flux density in the vapor phase in the LNG storage tank volume. The results obtained for a general configuration, by numerical simulation were compared to those found in the literature.

Keywords : numerical simulation, natural convection, heat gains, storage tank, liquefied natural gas
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