DISCRETE PROGRAM FOR MINIMIZATION OF BOIL-OFF-GAS IN LNG PLANT

WORDU, A. A; and VIURA, A.T
Department of Chemical; Petrochemical Engineering
Rivers State University; Nkpolu-Oroworukwo
Port Harcourt, Rivers State - **NIGERIA**
E-mail: wordu.animia@ust.edu.ng

ABSTRACT

The research on minimization of boil-off-gas in refrigerated vessels of liquefied natural gas plant is facilitated with third degree polynomial function. Technically, the mode of operations, safety control of gaseous emissions, and transport of highly volatile products vapour pressure effects forms the main thrust of the polynomial model which this research is based on. Minimization of boil-off-gas due to loading-unloading operations from storage vessels acceptable working pressure was determined through the Newton-Raphson iteration of the polynomial functions. The iterations gave successive degree of convergence on the working Pressures of 5, 10, 25, 100, 150 kPas. The best operating working pressure of 150kPa was achieved to minimize loss of boil-off-gas to barest minimum. Compressive stress, hydrostatic stress of each shell course calculations with corrosion allowance of 3mm gave a constant value of 160.67MPa and 180.75MPa pressure at API 650 is the mechanical integrity recommended.
Keywords: Boil-off-gas, Newton-Raphson-iteration, polynomial function, mechanical-integrity, pressure-volume effects, convergence.