DESIGN OF THE CYLINDRICAL VESSEL HEMISPHERICAL HEAD ON THE BARGE CARRIER CNG (COMPRESSED NATURAL GAS)

Name : Fajar Eriansah  
NRP : 2106 100 175  
Department : Teknik Mesin FTI-ITS  
Supervisor : Dr. Ir. Agus Sigit Pramono, DEA

ABSTRACT

Natural gas transportation method has growth. In addition to LNG (Liquid Natural Gas), CNG (Compressed Natural Gas) transportation method is developing recently. CNG is made by compressing and cooling of natural gas. Gas transportation technology with CNG is relatively simpler, cheaper, and easier than LNG, for certain distance and volume. CNG is economically cheaper for production and storage than LNG which it is need chilling and expensive cryogenic tank. However, CNG needs bigger storage for a same amount of natural gas mass, and it needs higher pressure.

In designing Cylindrical Vessel Hemispherical Head on CNG, the accomplishment of this Final Project is done by analyzing with ANSYS Workbench programming. Analyzing is done based on internal pressure on tube, and also the forces on compiler above the bag carrier. In its designing, it use three number and dimension of different pedestal, so that would be obtained the optimum of vessel design, with safe and efficient pedestal.

From modeling result, it would be obtained the pressure stress distribution, maximum and minimum equivalent stress, deformation and deflection that occurred on vessel and saddle support, and safety factor which it can be used as a reference of
pressure vessel safety level from the third draft that made, so that it can be known the effective and safe design.

Keywords:
CNG, Cylindrical Vessel Hemispherical Head, dan ANSYS Workbench.