

عنوان مقاله:

EXPERIMENTAL STUDY FOR CONJUGATED HEAT TRANSFER IN SKIRT HOT BOX IN PRESSURE VESSELS
OR TANKS

محل انتشار:

چهاردهمین کنفرانس سالانه مهندسی مکانیک (سال: 1385)

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نویسندگان:

Hossein Shokouhmand - *Prof. of Mechanical Engineering, University of Tehran*

Manoochehr Bozorgmehrian - *Student of Mechanical Engineering, University of Tehran*

خلاصه مقاله:

In oil, gas and petrochemical industries, in pressure vessels, excessive temperature gradient at junction of skirt to head (weld line) in hot operating cases, can cause unpredicted high thermal stresses at the junction. Then fracture of the vessel may occur as a result of cyclic operation. Providing a hot box (air pocket) in crotch space is a economical, applicable and easy mounted method in order to reduce the intensity of thermal stresses, by which, natural convection due to temperature difference between the wall of pocket, will absorb heat near the hot wall(head of the vessel) and release that near the cold wall(skirt of the vessel), then the skirt wall conducts heat to the earth as a fin .This conjugated heat transfer removes the temperature gradient boundary and convert its step form to approximately ramp form , thereby the skirt- head weld line, that is a critical region, could be protected from excessive thermal stresses. This paper demonstrated the profit of hot box and conjugated heat transfer in the cavity according to Experimental Studies.. It has been seen that natural convection has important effect on heat transfer in this triangular cavity and thereby heat conduction in the vertical wall (skirt) is the most important parameter to keep convection in steady state condition. Our other researches investigated the optimization of the parameters that affect performance and .efficiency; like shape of the air pocket, dimensions, enclosed fluid properties and operating conditions

کلمات کلیدی:

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