FINITE ELEMENT ANALYSIS OF PSSDB WALL PANEL WITH DOOR OPENING ON THE EFFECT OF VERTICAL BUTT JOINTS IN THE DRY BOARD

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I hereby declare that the report has not been submitted, either in the same form, to this or any other University for a degree and except where references is made to the work of others, it is believed to be original.

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Abstract

In the present day, performing a finite element analysis (FEA) is mostly a day-to-day obligation in every modern and technologically updated production and design industry. In this research the author deals with finite element modeling of the ultimate load behavior of Profiled Steel Sheet Dry Board (PSSDB) as wall panel. In PSSDB, shear connectors in the form of self tapping, self drilling screws are used to transfer horizontal shear between the two dry boards (DB) with the profiled steel sheet (PSS) and the current study is based on the FEA using LUSAS. Profiled sheet steel dry board (PSSDB) is a composite system and when it combined it improved in strength and stiffness (Wright and Evans, 1986). In computer analysis carried out by the author, LUSAS 13.5 software was chosen to create finite element model. The model has been modeled using 3D thin shell elements for PSS and DB. The modeled measured 1320mm width and 1000mm high with 300mm width, 78 mm thickness and 700mm height door opening was analysed by the finite element method and the analyses has shown that these PSSBD wall panel display a high degree of flexural characteristic, ultimate strength and ductility. From a series of load had been assign to the model, it shows that the maximum stress is 0.5154 E^5 N/mm^2 occurred at node 11236 and for the maximum strain is 1.054 at node 11236. For load of 300 kN the maximum displacement is 5.5417mm at node 867.

Author keywords: PSSDB wall panels, LUSAS 13.5, ultimate load behavior, failure, and finite element method.

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