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ONLINE ISSN : 1881-1760

PRINT ISSN : 1880-3717

Journal of the Japan Society of Naval Architects and Ocean Engineers

Vol. 5 (2007) pp.77-84

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Improvements of Bead Shape of Fillet Welding for Aluminum Alloy Tank of SPB LNG Carrier

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(Accepted February 5, 2007)

Summary: New type of LNG carrier with independent aluminum tanks of prismatic shape, SPB system (Self-supporting Prismatic Tank Type-B System), was developed in Ishikawajima-Harima Heavy Industries, Co., Ltd.(IHI). This system is specialized by the accurate estimation and guarantee of fatigue strength of aluminum tanks, hence, the stress concentration around welding bead has to be controlled under the allowable value. Though many reports have been made already, especially for design and analytic technologies, welding technologies to accomplish this system have not been reported yet in detail. This paper introduces the technology development on the fillet welding for the aluminum LNG tank. Though the weld beads are grinded by a tool in order to guarantee the fatigue strength in conventional method, new practice to ensure the fatigue strength without grinding was developed by carrying out many experiments and by introducing new automatic welding equipment. In this paper these improvements are reported.

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To cite this article:

Osamu Baba, Yasuhisa Okumoto and Sanemitsu Ikezoe: Improvements of Bead Shape of Fillet Welding for Aluminum Alloy Tank of SPB LNG Carrier , Journal of the Japan Society of



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