

## **An Investigation on Interface Shear Resistance of Twinwall Units for Tank Structures**

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**Abstract :** Hybrid precast twinwall concrete units, mainly used in basement, core and crosswall construction, are now being adopted in water retaining tank structures. Their use offers many advantages compared with conventional in-situ concrete alternatives, however, the design could be optimised further via a deeper understanding of the unique load transfer mechanisms in the system. In the tank application, twinwall units, which consist of two precast concrete biscuits connected by steel lattices and in-situ concrete core, are subject to bending. Uncertainties about the degree of composite action between the precast biscuits and hence flexural performance of the units necessitated laboratory tests to investigate the interface shear resistance. Testing was also required to assess both the leakage performance and buildability of a variety of joint details. This paper describes some aspects of this novel approach to the design/construction of tank structures as well as selected results from some of the tests that were carried out.

**Keywords :** hybrid construction, twinwall, precast construction, composite action

**Conference Title :** ICCBE 2014 : International Conference on Civil and Building Engineering

**Conference Location :** Cape Town, South Africa

**Conference Dates :** November 06-07, 2014