

Studying the behaviour of steel tubes filled with concrete foam

March 31 2014, by Darmarajah Nadarajah

UiTM researchers have found that steel tubes filled with foam concrete was inferior in strength as compared to that of normal concrete.

A team of researchers from the Faculty of Civil Engineering, UiTM, studied the use of foam [concrete](#) as infill for steel tubes that were used in construction.

Concrete-filled steel tube (CFST) structure is a composite structure and consists of a steel tube that is filled up with concrete. There are many advantages of using composite structure as compared to conventional reinforced concrete (RC) structure and steel structure. Steel tubes infilled with composite foam concrete are cheaper and it is easier to use in construction. The application of this composite structure has become increasingly popular in structural applications.

However, the use of foamed concrete as infilled material is rare and has not been studied comprehensively. Thus, this research was conducted to investigate the strength and structural behaviour of CFSTs filled with different densities of foamed concrete and with different replacement levels of Waste Paper Ash (WPSA) to cement by weight under axial (compression) loading.

All CFST column specimens were loaded on the entire surface of the CFST column specimens under axial loading. The results of the experiment showed that the series contained different densities of the foamed concrete failed at loads less than 90% of the analytical values.

It also appears that the ultimate strength of the CFST specimens mainly depends upon the strength of the infill material. The study found that the CFST specimen that is infilled with concrete attain higher strength than those of without infilled concrete.

It was found that the CFST that was infilled with foam concrete was notably inferior in strength as compared to that of normal concrete. However, higher [strength](#) of CFST is achieved when higher density of foamed concrete is adopted as infilled material.

Provided by Universiti Teknologi MARA (UiTM)

Citation: Studying the behaviour of steel tubes filled with concrete foam (2014, March 31)
retrieved 4 June 2024 from
<https://phys.org/news/2014-03-behaviour-steel-tubes-concrete-foam.html>

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