Home > Analytical Chemistry > Column Article Using carbon-fibre-reinforced polymer to strengthen concrete-filled steel tubular columns May 2017 · <u>Structures & Buildings</u> 170(12):1-1 DOI: 10.1680/jstbu.16.00015 Authors:		FEAT Sci
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Abstract External bonding of carbon-fibre-reinforced polymer composites has been proposed as an innovative technique to strengthen steel structures. This paper discusses an experimental study carried out to investigate the feasibility of using carbon-fibre-reinforced polymer composite strips for strengthening concrete-filled steel tubular columns. In this study, columns were strengthened using polymer composite strips 50 mm wide at two different spacings. They were then tested under compression until failure. The test results are discussed in terms of failure modes, stress–strain behaviour, load-carrying capacity and ductility. The results show that externally bonding composite polymer strips is an effective approach to restraining axial deformation and enhancing the ultimate capacity of columns under compression. By bonding the strips, the deformation of the columns was restricted to a maximum of 141·2% and 69·75% compared to the reference column when set at spacings of 20 mm and 40 mm, respectively. The capacity of the columns increased by about 30% for a 20 mm spacing, whereas no significant increase in capacity was observed for a 40 mm spacing. It is therefore recommended to apply this technique for strengthening and rehabilitating concrete-filled steel tubular columns and to use a 20 mm spacing.	Discover the world's research • 19+ million members • 135+ million publications • 700k+ re: projects Join for free	
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