Retraction

Retraction: Axial compressive behaviour of Concrete Filled Steel Tubular Column (IOP Conf. Ser.: Mater. Sci. Eng. 1145 012017)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

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IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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Axial compressive behaviour of Concrete Filled Steel Tubular Column

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Abstract. In current duration growing atmospheric high temperature and discharge of pollutants leads to environmental destruction became major issues in previous couple of decades. This study deals with the partial replacement of fine aggregate with steel slag in concrete filled steel tubular column to check the axial behaviour of column. Review from previous research found that fine aggregate replaced in concrete will reduce the effect of global warming and other environmental hazards.

1. Introduction
The main problem that's now being faced with reference to steel slag, by-product of steel making industry. These steel slags are being disposed by landfills. As there's increase in demand for land for people occupation, it's not a viable option. Hence numerous researches were conducted to convert it into a useful product. As a result, it's found that steel slag can replace fine aggregate in concrete to a particular extent with none adverse effects. Replacement was successfully wrapped to maximum of 30 percent further increase in steel slag percent leads to decrease in strength of concrete and causes other adverse effects. The cementitious capability of all steel slags in low and requires commencement. The works carried out by the various researchers throughout the world which are closely related to compressive strength of concrete filled steel tubular column and steel slag are discussed in this paper.

Researcher in [1] investigated the behaviour steel concrete filled steel tubes packed with steel stirrup-reinforced concrete. Results from test proved that usage of stiffeners and internal shear connectors will help to improve the load carrying capacity and durability properties of steel concrete column filled steel tubes. Research [2-15] proved that better utilisation for worth additional function in cement and concrete stuff may be achieved.

Concrete stuffed steel tube columns are widely used in building particularly at the erection of high-rise buildings. Presently these styles are particularly demanded within the countries of Japan and South-East Asia, that are placed in areas of high unstable activity CFST have variety of essential blessings. The most blessings are then high bearing capability and operational dependability, the high speed of construction of the frame, the reduction of the consumption of fabric and monetary resources for the producing of CFST concrete stuffed steel concrete filled column may be a load bearing
member with concrete stuffed within bar steel tube. CFST columns are most popular over concrete and steel columns thanks to its high axial load carrying capability, higher ductile performance, giant energy absorption capability and lower strength degradation [16]. Table 1 shows the Experimental results and load carrying capacity of reference CFST column.

Table 1. Experimental results and load carrying capacity of reference CFST column

| Author          | Type of column | Size of Specimens                  | Material used                  | Failure mode        |
|-----------------|----------------|------------------------------------|--------------------------------|---------------------|
| Ming-Xiang xiong| Circular       | Diameter-100mm Height-200mm        | Channel section                | Overall buckling    |
| Shiming Chen    | Circular       | Diameter-100mm Height-340mm        | Ultra high Performance concrete| Local Buckling      |
|                 | Square         | 100mm x 100mm                      |                                |                     |
| Yong ye         | Square         | 200mm x 200mm                      | Bimetallic tubes               | Buckling            |
| YYiyanlu        | Circular       | Diameter-133mm Height-400mm        | Steel fibre                   | Shear failure       |
| Wu xu           | Hexagonal      | Side-100mm x 100mm                 | Solid & hollow tubular sections| Local buckling      |
| B.Wu            | Circular       | Diameter-300mm Height-900mm        | Recycled coarse aggregate     | Local buckling      |
|                 |                |                                    | Steel stirrups                |                     |
| Qing-Xin Ren    | Circular       | Diameter-200mm Height-600mm        | Dune sand                      | Local buckling      |
|                 | Square         | Side-200mm x 600mm                 |                                |                     |
| Liusheng He     | Circular       | Diameter-165mm Height-495mm        | Corrugation in steel tube      | Buckling            |
| Ju chen         | Circular       | Diameter-400mm Height-4000mm       | Reinforcing bars Angles        | Crack formation     |

2. Observations on Actual State of Art
From the above review of literature, illustrates that although substantial investigations are experimentally verified on axial compressive behaviour of concrete filled steel tubular column [17-20]. In order to reduce the harm to environmental balance owing to unnecessary removal of fine aggregates from river beds, steel slag can be partially replaced for fine aggregate in concrete filled steel tubular column.

3. Proposed Method
From the above review of literature, the proposed study is to enhance the understanding of axial behaviour of concrete filled steel tubular column with is the steel slag is replaced partially for fine aggregate. Steel slag will be second-hand replacement for fine aggregate. the employment of steel slag up to 30% gives high compressive strength. This study deals with partial replacement of fine aggregate with steel slag in CFST column to search out the axial behaviour of column. The materials are collected and their properties are studied [21-28]. A design mix calculation is created to get target strength of 25MPa. The water cement ratio required for design mix calculation is going to be obtained
through consistency test. Initially trial is going to be casted to get right combination ratio. The compressive test of the specimens is tested and also the optimum percentage of steel slag is going to be obtained. The CFST column is then casted supported the above result. Within the proposed work four columns are casted of which two of it'll be headed column and other two are going to be without head. The axial compressive behaviour of CFST column is then analysed.

4. Experimental Setup
The required height (300mm) of circular steel tube cut from the 6m length hollows tubes. To get the flat surface, both ends of steel tube were surfaced by the surface grinding machine. Inside portion of hollow steel were thoroughly wire brushed to remove the rust and loose debris presented. Simultaneously all the aggregates are taken by weight batching and all the concrete mixtures are mixed together for 5 to 10 min using hand mixing. Then hollow steel tube specimens were filled with concrete and compacted by a steel rod to avoid any flaws or air gaps that occur inside the specimen. The CFST columns were tested in compression testing machine. The specimens are placed and ensured that no slippage occurs when it is loaded. Hydraulic jack is used to apply load at a constant rate. Axial deformations are recorded with help of strain gauges and load cell placed at specified intervals. Initially seating load is applied to check for accuracy of seating. The experimental setup shown in figure 1.

5. Conclusion
This paper reviewed the present research works on axial compressive behaviour of concrete filled steel tubular column. Steel slag has properties as same as natural aggregates and no problems ar caused if it is used in concrete. The use of steel slag adversely improves the durability and other mechanical properties of concrete to a certain limit. When the percentage of replacement is varied between 25 and 35%, best outputs are achieved for mechanical properties. The enduringness is raised by 1.1 - 1.3 times and the utilization of steel slag improves durability of mix for all respective ratios. An increase in properties such as freeze and thaw and durability are also achieved. If the volume is increased after 70 % and there will not be any notable changes in the properties of concrete.

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