

FlexiHeatModule

Flexible and scalable heating module, overcoming furnace limitations

A flexible heating module designed to heat steel beams, columns, and beam-to-column joints of any size and dimension in a controlled manner by operating across three independent zones. Each zone supports up to three thermocouples for precise temperature measurement. The temperature data is transmitted to a feedback-based control system, which adjusts heating output based on the set point and real-time temperature feedback. A host PC, equipped with custom-designed application software, provides an intuitive user interface for control, data recording, and analysis. This module accommodates heaters with power capacities ranging from 1.0 kW to 10 kW and is fully scalable to meet diverse requirements. By utilizing this module, the size limitations of specimens tested in conventional furnaces can be effectively overcome.

Features / Highlights

- ❖ Flexible and scalable to meet diverse requirements
- ❖ Highly efficient with rate of heating from 5 to 30 Degree Celsius/Minutes till 800 Degree Celsius.
- ❖ Data Acquisition through softwares
- ❖ Safe, reliable and repeatable and cost-effective
- ❖ Easy to operate and environment friendly, avoids combustion
- ❖ Highly suitable for joints and various complicated connections

Technical Details

- ❖ Capable to induce elevated temperature affect till 800°C as per user defined scenario temperature vs time plots (Three zone heating)
- ❖ Light weight and foldable
- ❖ Consist of host PC with interface software and Temperature control system and supports thermocouples of type J, K, T, E, N, B, R, and S
- ❖ Easy to handle and simplified and lesser maintenance cost
- ❖ Real time monitoring of behavior of structural components at elevated temperature is possible (Which is not possible, if it happens inside a furnace)

Applications

- Structural Integrity Testing: Heating steel components under controlled conditions to study their behaviour.
- Material Research: Examining heat effects on different alloys or composites.
- On-Site Repairs: Controlled heating during repairs of large steel structures.
- Fire Resistance Studies: Simulating localized heating for fire resistance evaluations

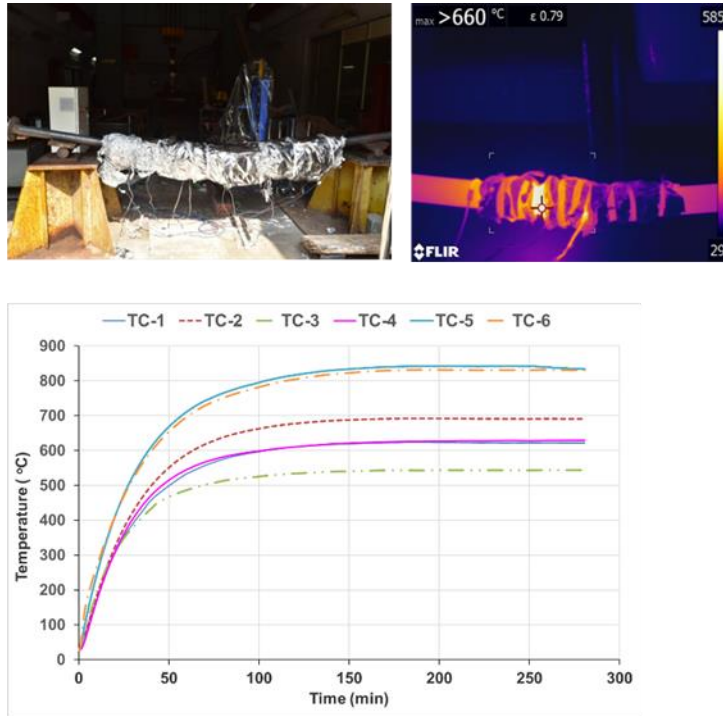


Fig.1 Photograph showing elevated temperature resistance studies on steel beam members

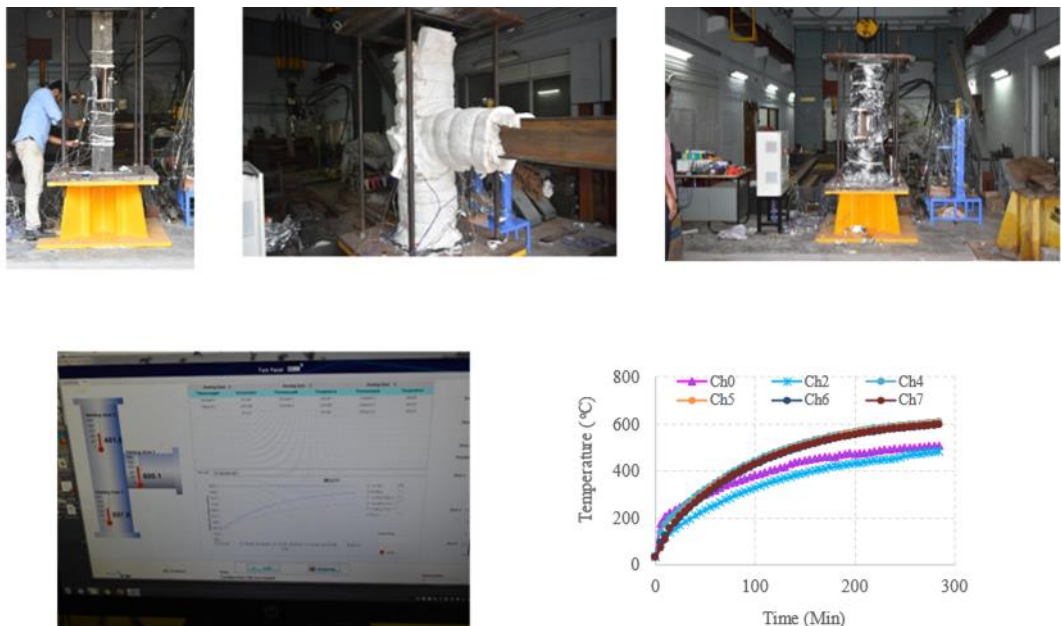


Fig.2 Photograph showing elevated temperature resistance studies on Steel beam-to-column connections

Status of Technology

- Preliminary studies on Steel beams, columns and Beam-to-Column connections

- Design and development of heaters and set-up for diverse requirements
- Varying rate of heating for different application

Future Plan

Patent Filing Technology Commercialization

For further details:

Director, CSIR-Structural Engineering Research Centre, CSIR Campus, Taramani, Chennai - 600 113.
Tel.: 91-44-22549201; director@serc.res.in; <http://serc.res.in>



<https://www.facebook.com/csirserc>



https://twitter.com/csir_serc

