

Establishment of Advanced Full Scale High Capacity Test Facility for Fire Resistance Performance and Evaluation of Horizontal and Vertical Building Construction Elements in Compliance with Standard Fire, Hydrocarbon Fire and RWS Fire Conditions, FACILITY CREATION PROJECT 2.0

Project Investigator: Dr. Nawal Kishor Banjara

Project Duration: 2024 - 2029

Abstract

As per the National Crime Records Bureau, between 2001 and 2014, a total of 3.16 lakh fire accident cases were reported in the country. This trend is continued to increase due to lack of awareness and adequate active and passive fire protection measures. The human life and economic losses from these incidents are substantial, indicating a pressing need for robust fire protection measures. In order to reduce spread of fire, it is necessary that fire should not spread rapidly from one room to another through the floors, partitions between rooms, and particularly between rooms and passages and staircases and thus the structural elements should have adequate fire resistance. Passive fire protection is a component of critical importance in the design and construction of buildings. This method of protection promotes building fire containment within a limited area for a certain period of time, while maintaining the structural integrity of the building. Fire safety is a critical concern in India almost in all the occupancies such as residential, institutional, educational, hospitals, industrial, theatres and malls where new and innovative building materials and elements are used which pose significant threats to both life and property. Failure of building construction elements during fire incidents may directly affects the building integrity and stability which resulted into heavy losses to life and property. Fire-resistant ratings of different building construction elements, components and assemblies have to be investigated and evaluated as per building codes and standards under advanced fire resistance wall and floor furnace to make sure their structural integrity and stability during various building occupancies. Thus, an advanced and state of art fire resistance test facility for horizontal and vertical building construction elements and assemblies is required to investigate their fire resistance performance to safeguard life and property during fire incident. All the horizontal and vertical building construction elements must be tested for fire resistance in terms of thermal insulation, radiation, integrity and stability to ensure fire safety for impeccable performance and risk reduction. This test facility will also add to the 'Make in India' programme of Govt. of India and cater to the requirements of the Indian Industries and contractors who usually outsource such specialized services from private international agencies.

