



#### Provisional Agenda:

10.30 – 11.00      Coffee

#### **“Re-use of waste tyre fibres to prevent fire-induced spalling – some initial testing”**

Shan-shan Huang, University of Sheffield

*Polypropylene (PP) fibres have been found useful in preventing the explosive spalling of concrete exposed to fire. Each year, in the Europe alone, an estimated 63,000 tonnes of polymer fibres are recovered from end-of-life tyres, which are currently negative-value and hazardous waste. Their material properties are reasonably close to those of the PP fibres. This research explores the feasibility of replacing the PP fibres with reused tyre polymer fibres for fire-spalling control purpose. Preliminary testing has shown promising results; the specimens with the tyre polymer fibres have shown lower vulnerability to spalling than those of plain concrete.*

#### **“New Approach to fire safe application of fibre-reinforced polymer reinforcement for concrete”**

Mohammed Kiari, University of Edinburgh

*Fibre-reinforced polymer (FRP) reinforcement have many advantages over traditional steel reinforcement, most notably lack of corrosion. However, widespread application of FRP as internal reinforcement for concrete structures remains limited due to FRP’s bond degradation with concrete at elevated temperature as in event of fire. The research presented a new approach of FRP loops as internal reinforcement for fire performance. A series of four-point bending tests of concrete beams reinforced with FRP loops were prepared and tested at ambient and elevated temperatures. Results confirm the effectiveness of the novel approach, with significant improvement of fire resistance time and reduced deflection.*

#### **“Improving fire resistance of existing concrete slabs by concrete topping”**

Tom Molken, Stubeco

*The validity of Eurocode 2 part 1-2 is limited to the new design of buildings and civil engineering works in concrete, however there is a desire to retrofit some structures for new purposes. These buildings having been designed using other require the same standards of REI as new builds. This presentation looks at an example of using current design codes to retrofit an existing structure.*

#### **“Update to the fire element of the structural Eurocodes”**

Tom Lennon, BRE

13.00 – 14.00      Sandwich Lunch

#### **“Why don’t more sandwich panel ceilings collapse in fire”**

Gordon Cooke, Cooke on Fire

*Presentation deals with loss of stability of steel-faced sandwich panels in fire when used as ceilings. Modes of failure are illustrated and calculation method is described which has been adopted in the EN Extended Application document now used for assessing stability of long span panel assemblies in Europe. Raises question ‘Why don’t we hear more about panel failures in fire?’*

#### **“Reliability and probability of failure in structural fire engineering”**

Ruben van Coile, WSP

*Perfect safety does not exist and consequently all structural systems inherently have a probability of failure. By increasing investments in safety, the safety level or reliability can be increased, but large overinvestments are costly to the client and deprive society from valuable limited resources that can be put to more efficient use in other areas of public health and wellbeing. In order to make a decision on the optimum level of investment in structural fire safety, the reliability during (and after) fire has to be determined. In this talk some of the basic concepts of reliability engineering are introduced, and the application to structural fire safety engineering is explored. It is suggested that for fire safety applications a clear specification of performance criteria is currently one of the most critical aspects.*

#### **“Blade Columns – an EC2 discussion”**

Graham Flint, Arup

15.30      Tea