

# **BeneFEU - Benefits of Fire Safety Engineering in the EU**

## **Executive Summary**

### **Establishing an EU study**

EC DG Enterprise commissioned a study to establish the basis for possible future activity, at a European level, on fire safety engineering and performance based fire codes in relation to construction works and products. The study examined:

- a) current, and planned regulations in Member States
- b) the state of the art in fire safety engineering,
- c) possible initiatives at a European level, and
- d) the costs and benefits of any such actions.

This study was undertaken by a consortium led by warringtonfire in the UK (formerly Warrington Fire Research) and included representatives from: CTICM (France), DIFT (Denmark), IST (Portugal), warringtonfiregent (formerly RUG, Belgium) and TNO (Netherlands).

### **Outcome of the Benefeu project**

The societal goals embodied within existing national regulations of the countries of the EU are very similar; these being the safeguarding of life and health and, to a lesser extent, the protection of property.

The vast majority of regulatory systems are dominated by prescriptive rules and regulations. Very few countries have facilitated a performance-based, or fire engineering approach, to legislation. However, it is clear that the majority of Member States intend to implement an alternative fire safety engineering approach into national building fire safety legislation, in the future.

Having assessed the current understanding and use of fire safety engineering it is clear that there is a need for further research and standardisation, primarily in support of:

- the use of risk concepts
- a better understanding of fire phenomena
- a better understanding of human factors
- the need for data

There are insufficient educational establishments that offer fire safety engineering courses at first degree and higher degree levels throughout Europe. It is estimated that 250 to 300 new graduates per year are needed to meet current requirements of a fully developed performance based fire safety regulation, compared to the actual number currently graduating of around 50 per year.

There are two essential requisites that must exist if fire safety engineering is to be implemented throughout the EU Member States, these are;

1. the availability of a research and educational system, focused on fire safety engineering and having adequate coverage throughout all Member States; and
2. the availability of a system of performance based codes and regulations, including guidance to regulators and practitioners.

If such facilities were in place, the potential benefits associated with the implementation of fire safety engineering across EU Member States has been estimated to be 0.3 to 1 Billion Euro per annum (€0.3B - €1B), i.e. 1% to 3% of capital building costs, whilst the associated costs have been calculated at 28 Million Euro per annum (€28M).

In the absence of support and intervention from the EC, the change from prescriptive to performance based codes may create further barriers to the free circulation of products, services and people. Without a coherent strategy across all member states the transition to performance based codes will be slow and, therefore, the potential benefits arising from the adoption of fire engineering will not be realised for a very long time. National building regulations will fail to converge with the result that new barriers to the free circulation of building products, systems and people will emerge.

### **Proposed EU initiatives**

It is recommended that the European Commission should initiate all of the following actions within a total timescale of 10 years. For the success of the project it is important that all of the actions are undertaken within a total framework. Deleting or postponing one or more of the actions will endanger or at least delay substantially the success of the project.

- DG Enterprise to set up a Steering Committee to steer and manage future developments in relation to fire safety engineering in support of regulations for construction works with defined terms of reference and target dates. Members of the committee to include:
  - representatives of DG Enterprise
  - national fire regulators
  - fire safety engineering practitioners
  - any other individual experts as considered necessary by DG Enterprise

The Steering Committee may establish Task Groups to assist in executing its activities.

- The Steering Committee will define the necessary framework within which performance based fire safety codes can function and draft a model code for performance based fire safety regulation.
- The Steering Committee will identify the Standards needed at a European level covering the need for common assumptions, test methods, calculation procedures and all other tools necessary in support of the model codes. Wherever possible existing international or national standards will be used. A mandate will then be issued to CEN.
- The Steering Committee will examine and prioritise the needs for fundamental and applied research in support of fire safety engineering and standardisation in this field. The Steering Committee will explore the means to finance the research through the sixth framework programme. It will also explore alternative financial resources, e.g. from the interested users: industry and Member States.
- The Steering Committee will facilitate the development of a core curriculum for the education of fire safety engineers, at undergraduate, graduate and postgraduate level. This will be initiated by the organisation of a workshop involving all interested parties. The developments as a consequence of this workshop will be promoted and monitored by the Steering Committee. The basis for the activities shall be, wherever possible, existing (national) documents. The

requirements of continuous professional development and the need for education of building professionals will also be considered.

- The Steering Committee will facilitate activities aimed at the organisation and recognition of the profession and the professional ethic at a European level, taking into account the FEANI principles for the engineering profession. This will include the establishment and approval of a code of conduct. This will be initiated by the organisation of a workshop involving all interested parties. The developments as a consequence of this workshop will be promoted and monitored by the Steering Committee.

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