



# From the Editor

## Eurocode 2 - Fire Engineering

*This edition of Concrete Today has 'fire' as its main theme.*

*Eurocode 2 proposes a qualitative change in the methodology governing the fire safety design of structures. The most significant change, is the move away from prescriptive, tabulated values for individual elements, to performance based structural analysis using computer technology and risk assessment. The new 'performance' approach to fire design is more flexible than the current 'prescribed' approach and is particularly suited to dealing with complex, multi-functional buildings.*

*Fire Engineering is an emerging science with some potential, but its limitations should be clearly understood. For example, fire engineering cannot make a building constructed as a composite of combustible and non-combustible materials, the 'equivalent' of a building constructed from non-combustible elements – such as concrete. In many cases, fire engineered buildings require high quality management and maintenance structures, but these are not always in place.*

*Fire engineering is only as sound as its assumptions and these can change over the life of the building. Unauthorised alterations to a building can effect critical fire design assumptions and new tenants can radically increase the fire load. Failure to carry out maintenance on smoke vents, sprinkler systems and other active devices, can lead to catastrophic failure in the event of fire. Ironically, the only fail-safe method of guarding against the above factors, is to build-in 'redundant capacity' into the building – thereby reducing the streamlining benefits of fire engineering. There is an element of 'catch 22' – but it would be incorrect to over state it.*

*There is growing concern across Europe that fire engineering is being used as a mechanism to relax fire standards. These concerns are being voiced in many countries including here in Ireland. In a recent report entitled 'fire safety analysis in concrete and timber frame construction', Austrian Professor Ulrich Schneider called on planners to adopt a responsible approach, expressing his concerns that recent changes in Austrian law had lead to a somewhat 'liberal approach' to fire design which 'must not lead to a reduction in the level of safety'.*

*Expressing similar concerns at a recent fire seminar, a leading Irish fire consultant stated that Irish Agreement Board Certification for 4 storey timber framed apartments, recently granted to an Irish manufacturer, was 'not worth the paper its written on'. The view of the Irish Concrete Federation is that there should be no move to timber frame apartment buildings without a detailed study of fires in 2 storey timber frame dwellings. To date no such study has been carried out. The ICF believes that studying the performance of buildings in real fires is critical to the development of robust fire regulations.*

*The introduction of performance based fire assessment can be a catalyst for the introduction of less robust construction methods – but it need no be so if specifiers continue to act responsibly. It is notable that in Sweden where performance based fire assessment was introduced as far back as 1994 that specifiers have continued the practice of constructing apartment buildings in concrete - with few exceptions. The same is true in Norway where despite an 80% timber housing stock, apartment buildings continue to be built almost exclusively in concrete. It is the view of the ICF that the preference of Scandinavian designers for concrete in multi-storey dwellings is based on long experience of the limitations of timber and steel construction.*

*Brian Ó Murchú  
Marketing & Technical Manager*