Barriers to global adoption of Eurocode 3 and 4

Stephen Hicks

Heavy Engineering Research Association, Auckland, New Zealand

Brian Uy

The University of New South Wales, Sydney, Australia

Won-Hee Kang

The University of Western Sydney, Penrith, Australia

Contact: stephen.hicks@hera.org.nz

Abstract

In 2010 the structural Eurocodes replaced the equivalent national standards in all EU member states. As a result of this, many other countries around the world that have historical connections with the UK are now adopting the Eurocodes as their national standards. For steel construction, adoption is proving challenging in these countries. This paper describes the different approaches that are being used in the Asia-Pacific region.

Keywords: international design challenges; steel structures; Eurocodes; quality; safety; reliability.

1 Introduction

Many countries within the Asia-Pacific Region that had previously adopted British Standards as their national standards are adopting the Eurocodes. Unfortunately, adoption is proving challenging, as it may not be possible to source steel products that are produced according to the harmonised European product standards (hENs) listed in the Eurocode 3 and 4 normative references. As a consequence of this, designers are faced with the dilemma of identifying what local products can be deemed equivalent, and whether the recommended values of the partial factors given in Eurocode 3 and 4 remain valid.

2 Alternative steel in Singapore

In 2013, China accounted for 50% of world steel production[1]: equivalent to an output of approximately 822 Mt. It is therefore important for designers in the Asia-Pacific region to be able to gain access to this vast supply of steel. The Building and Construction Authority in Singapore has introduced guide BC1[2] for use with Eurocode 3 and 4; this permits designers to use alternative steel products that are deemed to have equivalent performance to particular hENs. A similar guide is also under development for Hong Kong and Macau.

Depending on the national standard that the steel product has been produced to, together with its level of traceability, different partial factors are given by the BC1 guide. For all intents and purposes, this approach is consistent with the reliability differentiation given in EN 1990 where, instead of using different inspection levels (IL)/execution classes (EXC), different partial

https://doi.org/10.2749/222137815818357827