International Wood Preservation: Past, Present and Future

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ABSTRACT
This presentation addresses aspects of the current state of wood preservation in various regions including trends in research, product development and where these may be leading should the current trends continue. Aspects of funding and academic priorities are addressed, as well as the influence of these on future support for wood preservation in the future.

Service Life Concept for Wood Products Used in Exterior Out of Ground Contact Conditions

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ABSTRACT
The service life concept has become increasingly important in Europe both related to the interaction between or comparison of the performance of different competitive building materials as well as integrating performance assessment of different wood products.

The performance or service life of wood products is based on the different interactions between end use and specific interacting or degrading parameters. The end use can be translated as wood products with a specific design under a macroclimate – microclimate impact. This interaction results in an exposure dosage. This exposure (dosage) can be identified as the degree of exposure being a potential indicator for decay. The parameter design or usage can be linked to use classes 1 to 5 as defined in EN 355. Next to the geographically defined macroclimate impact the microclimate is predominantly important for use classes 2 and 3 and less or even not relevant for interior dry (UC1) and in soil and (sea) water contact (UC4/5) usage.

Each wood product in use has a material resistance against degrading factors. For each biological agent of concern - related to degradation of wood and hence having an impact on the service life - a specific combination of the inherent durability (presence of toxic components) and moisture dynamics (wetting and drying properties resulting in time of wetness, ToW) will characterize the wood product with a specific level of material resistance. The (material) resistance of a wood product is in fact the degree of resistance related to a biological hazard. Different biological (decaying) agents can be linked to hazard classes 1 to 5, which were commonly used prior to the definition of use classes in EN 335. The inherent durability can be natural durability as defined in EN 350 or enhanced durability through wood preservation as steered by EN 599. This inherent durability parameter has recently been complemented with an indicator on moisture dynamics which inevitably is less or even not relevant when discussing drywood insects (HC1) or soft rot / termites / sea organisms (HC4/5).
The SL(P) framework requires multi-objective optimization taking into account many interacting parameters. To ensure that this fits with reality or service life expectations it is important to identify relevant reference material and products. These should be functional for both inherent durability and moisture dynamics and linked to specific biological agents.

The Swedish Wood Preserving Industry – Facts and Figures

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ABSTRACT

Industrial wood preservation in Sweden dates back to the late 1950s, when Boucherie-treatment of telephone poles and railway ties with copper sulphate was established. Utility and telephone poles and railway ties were dominating commodities until the mid 1960s. Since then treatment of sawn timber has been the main commodity produced by the Swedish wood preserving industry.

Today about 1.3 million cubic metres of preservative-treated wood is produced in Sweden in 60 treating plants. Approximately 40% of the production is exported. Nearly 15% of the sawn timber for the domestic market is preservative treated. Copper-organics are used for the treatment of sawn timber and creosote for the vast majority of poles and railway ties. LOSPs are still used to some extent for the treatment of external joinery (mill-work). Only two wood species are of any importance for preservative treatment: Scots pine (Baltic redwood), Pinus sylvestris, has traditionally been used for sawn timber, poles and ties. During the last 20 years the treatment of Norway spruce, Picea abies, for cladding and battens has increased. The production of spruce is mainly exported.

The treatment of Scots pine is almost exclusively carried out according to the NWPC (Nordic Wood Preservation Council) specifications. There are four classes for preservative-treated wood, M (Use class 5, marine), A (Use class 4, in ground and fresh water), AB (Use class 3 above ground) and B (joinery/millwork). In order to treat according to the NWPC classes, the treatment plants must be affiliated to a quality control and certification scheme. SP is responsible for the quality control in Sweden.

Most of the treated wood for the domestic market is used for decking and garden timbers.
The Wood Preservation Industry in Australia – an Overview

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ABSTRACT
Australia is an island nation, with a land area much greater than Europe and almost as big as the USA. Its 60,000 km coastline is protected by strict quarantine regulations, underpinned by Australia's main wood preservation standard, AS/NZS 1604 series Specification for preservative treatment. The Australian preservation industry is relatively young, beginning commercial treatment operations in the late 1950s and reaching its zenith during the 1980s. It has declined somewhat in recent years from its most active period when Australia was the third largest per capita consumer of treated wood, behind New Zealand and the USA. Wood preservatives in Australia are registered for use by the Australian Pesticides and Veterinary Medicines Authority; they are approved for treatment when incorporated into the national standard, AS/NZS 1604 series, one of three main standards that deal with wood preservation in Australia and these are described in the paper. Australia operates six Hazard Classes, equivalent to other countries' Use Categories, and all preservative treated wood purporting to comply with AS/NZS 1604 series must be marked with a brand that identifies the Hazard Class as well as the preservative used and the treatment plant where it was produced. Today, Australia produces and consumes about 1 million cubic metres of treated timber, predominantly softwoods. Treated house framing, protected mainly against termites, accounts for about 25% of this total. There are six main preservative supply companies in Australia supplying about 120 treatment plants. The industry is dominated by the two big multinationals, Lonza and Osmose. Preservatives include CCA, ACQ, CuAz, azoles, and synthetic pyrethroids and neonicotinoids, together with small quantities of creosote, boron, and various remedial formulations. While consumption and production of treated timber has declined, there is still a culture accepting the need to use treated timber in the Australian urban and rural environments.

The New Zealand Building Code and the Timber Treatment Standard: Reflections on Developments over the last 10 years Since the Leaky Building Crisis

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ABSTRACT
The majority of single and doubled storied residential houses in New Zealand are constructed using timber framing. In the late 1990’s we were faced with a ‘leaky building’ crisis which following various reviews was described as a systemic failure of building practices. There were many contributing factors including the types and use of new building products, building designs, building practices and also the move some years previously to allow an unprecedented use of untreated pine framing. Ultimately this meant that leak events, often undetected, resulted in significant decay of framing and costly remediation
or rebuilds. Widespread changes were made across the industry sectors. The timber treatment industry responded with the introduction of preservative options for timber framing. A new hazard class (H1.2) was created. This presentation provides an overview of developments with timber framing over the last 10 years, how the timber preservative standard has been amended to recognize and refine timber framing treatments options, and how these are then recognized in the New Zealand Building Code.

Overview of the Ongoing Activities of European Standardization Committee on Wood Protection

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ABSTRACT

Standardization work in the field of wood durability and preservation is managed, at the European level, by the technical committee CEN/TC 38 “Durability of wood and wood-based products”. Its goal is the elaboration of standards for wood preservatives and preservative treated wood, modified wood and untreated wood, developing terminology, analytical methods, biological tests, classifications, and specifications in accordance with the market needs and European regulations. So far some fifty standards have been adopted by CEN/TC 38, their objectives including ensuring quality and satisfying consumer expectations, eliminating trade barriers, harmonizing the methods used in the sector of wood protection, thus facilitating the understanding between producers and users, and promoting sustainable development by delivering reliable wood products with an adequate service life.

The European landscape of wood protection has changed considerably during the past two decades, a gradual shift in the global approach from traditional “wood preservation” to “wood protection” being achieved. Nowadays, producing sustainable wood-based products requires reliable standards that take into consideration both the expectations of end-users and the broad set of parameters that may influence their service life, such as material resistance, exposure to moisture, climatic variations, and design. In order to reach this objective, and because the need for performance classification of wood products in construction strongly increased during recent years due to new European regulations, most of CEN/TC 38 standards are currently being revised. One major challenge for future is to consider how wood durability test methods and standards can inform on service life and how they might be translated into a performance classification system.