WOOD PRODUCTS IN A LOW CURRENT PULSING ELECTRIC FIELD – A NEW WAY TO PROTECT WOOD?

Treu, A.[1] & Larnøy, E.[2]

ABSTRACT

A new protection system has been tested which protects wood without treating it - by installing a low pulsing electric field. This electro-osmotic pulsing technology on wood, called PLEOT, has been tested in lab trials.
Wood has a low specific conductivity and is considered as a dielectric material. Water plays therefore an important role. With increasing wood moisture content, a favorable environment for fungi development is created. At the same time, increasing wood moisture content increases the conductivity in wood and PLEOT can protect the material. Wood can be considered as naturally protected against fungal attack at a wood moisture content <20 %. It could be shown in lab tests, that a protection by means of PLEOT can be achieved at higher wood moisture content.
The current study evaluates the potential of this technology as a wood protection system. Different fungi and wood species are tested. The results show that PLEOT fully protects Scots pine sapwood and beech wood samples during 8 weeks when exposed to *Coniophora puteana* and *Trametes versicolor* in laboratory trials. Fungal degradation of untreated wood samples after 4 weeks of colonization could be stopped or slowed down in case of white rot exposure. Wood moisture content after basidiomycete test is lower for PLEOT-protected wood samples than for untreated samples. However, it is assumed that the wood moisture content of PLEOT-protected samples is not below an unfavorable amount for fungal attack.
Further studies will also include other wood-based materials and focus not only on protection against fungal attack by white rot and brown rot, but also include surface fungi and investigate the wood-water relations.

Key words: Electro osmotic pulsing, PLEOT, Wood protection

[1] Researcher, Norwegian Forest and Landscape Institute, Department of Wood Technology, Pb 115, 1431 Ås, Norway, Tel: +47 64949029, Fax: +47 64949080, E-mail: andreas.treu@skogoglandskap.no

[2] Researcher, Norwegian Forest and Landscape Institute, Department of Wood Technology, Pb 115, 1431 Ås, Norway, Tel: +47 64949016, Fax: +47 64949080, E-mail: erik.larnoy@skogoglandskap.no