

Ny metod för framställning av underhållsfria och nötningsbeständiga trämaterial

Aim and objectives

The objective of this project was to validate a new method for creating more stable, durable and esthetically appealing wood products at a competitive price. The idea was to protect the wood surface with a liquid solution that hardens after application, such as coatings over the wood surfaces, but in a way that those coatings create a layer of protection below the wood surfaces rather than above. Figuratively speaking, we wanted to produce a new wood material in which the external surfaces of the wood have been coated from the inside.

Method and participating organizations

As cities in the future will require more multistory buildings to accommodate a growing population, the level of maintenance required for exposed wood surfaces, such as siding and cladding, will force building developers to use other more durable but less environmentally friendly materials. With this concern in mind Luleå University of Technology, SP Swedish Research Institute, and industry members of TräCentrum Norr teamed up to test the possibility of producing enhanced wood materials that can guarantee at least 20 years of service life without maintenance.

Results

The project focused on the development of a process capable of producing an intermediate solution between standard coatings systems and full volume impregnation. The process was implemented by warming-up the wood and subsequently cooling it down in contact with an impregnation solution. The novelty of this technique is that the protective layer is not deposited over the wood surfaces, but rather below the wood surfaces where it literally becomes part of the wood and it is more protected from the external environment.

Future potential

The project showed that it is possible to create a layer of protection under the wood surfaces that can chemically react with the wood or deposit specialized particles such as color pigments, light absorbers, fire retardants, and biocides. Preliminary tests showed that a waterproof layer under the wood surfaces substantially increases the wood resistance to moisture induced damage. Once these enhanced wood materials are validated in practice, then it will be possible to look for further investment to improve the technology and build the first equipment prototype.