

EUREKA PROJECT E!455 - EUROCARE PROWOOD

1. General description

Project	E! 455 - EUROCARE PROWOOD	Status	Finished - 04-JUN-1996
Title	Protective Surface Treatment For Exterior Wooden Material		
Class	Sub-Umbrella	Technological area	Environment
Start date	01-JAN-1990	End date	01-JAN-1995
Duration	60 months	Total cost	1.88 Meuro
Partner sought	No		
Summary	Environmentally Acceptable Treatment Development: Protection For Older, Previously-Treated Wooden Objects And Protection Of Timber From Sawmill-To-Wall And Maintenance Of Final Construction.		

Budget and duration

Phase	Budget(Meuro)	Duration (Months)
Definition phase	0.1	12
Feasibility phase	0.1	12
Implementation phase	1.68	36
Total	1.88	60

Member contribution

Member	Contribution	Position	Since
Norway	95.00%	Notified Finished	05-JUN-1996
Sweden	5.00%	Notified Finished	01-JUN-1996

Participants

Company	Country	Type	Role
Jotun A/S - Corporate Technology Centre	Norway	Large company	Main
Traetek - Swedish Institute For Wood Technology Research	Sweden	Research Institute	Partner
Nilu - Norwegian Institute For Air Research	Norway	Research Institute	Partner
Kth - Royal Institute Of Technology/Materials Technol. Div.	Sweden	Research Institute	Partner

2. Project outline

Project description

Wood is still one of the most widespread construction materials in Europe, particularly in the Nordic countries. In NORWAY for instance, there are about 1.3 million wooden houses, and roughly one third of all exposed building material is timber. The Nordic countries produce about 23 million m³ sawn wood each year.

Timber is an "environmentally friendly product" in the real sense of the word. It represents a renewable resource, it requires very little energy and there are no waste problems. Unfortunately, however, wood was not designed to last forever. Wood is particularly susceptible to microbiological attack and UV degradation. Environmental aggression has increased considerably over the last few decades strongly influencing the rate of decay of wood including microbiological factors. Generally this aggressive environment will require strong and more effective wood protection, including more efficient preservatives. At the same time, however, the need to protect the environment requires the use of preservatives free from harmful ingredients such as chromium and arsenic. In addition to the normal degradation factors, wood is also a flammable material which requires a special treatment i.e. flame retardant.

The aim of this project is to obtain knowledge regarding the environmental effects on exterior treated wood with the view to developing and specifying technical solutions increasing the service life of wooden materials. The main driving force of the project is the protection of the environment.

The project may be divided into the following sub-projects:

1. The development of environmentally acceptable products and processes (industrial and DIY) for the protection of wood.
2. The development of environmentally acceptable systems for the maintenance of previously treated wooden objects, industrially pretreated and as DIY treatments.
3. Obtain service life documentation necessary for the development of products for wood treatment.
 - 3.1 The study of environmental, climatic and pollution factors.
 - 3.2 The study of factors affecting the moisture content in wood.
 - 3.3 Product formulation factors influencing the service life of wood under varying climatic conditions.

Technological development envisaged

Development of new methods and products for wood protection. This includes:

1. The development of new water-based industrial surface treatment for wood with improved barrier and conservation properties.
2. The development of water-based maintenance systems adapted to industrial pretreatment and for previously painted wooden surfaces.
3. The development of new water-based impregnation products

replacing the CCA-products of today.

4. The development of water-based joinery treatment having improved water barrier properties.

Water diffusion (moisture dynamics) and the protection of the wood surface (interface) against UV degradation by microbiological decay are viewed as the main factors of control, the main driving force always being the development of environmentally acceptable systems.

Markets application and exploitation

In NORWAY, there are approximately 1.3 million wooden buildings. In the Nordic countries the use of wood protection treatments amounts to some 40 million litres per year. In ENGLAND alone, the estimated figures are 20 million litres. The Nordic countries produce about 23 million cubic metres of sawn wood each year.

Project codes

BSI

KXV

PK

VRC/VRH

VS/VT

WC

WCW

lasers

surface treatment

paints

coatings technology

wood (timber)

wood preservation

NACE

7310

Research and experimental development on natural sciences and engineering

3. Main participant

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Organisation type Large company
Participant role Main

Contribution to project

Budget: 70%. NFNT budget share: 25% Production development and documentation for industrial application and maintenance of previously treated wooden buildings: 9.48 million NOK. (Duration: 3 years).

Expertise

The JOTUN Group had a 1991 turnover of 2831 million NOK. It has a workforce of 2,200 and subsidiaries in 15 countries. The JOTUN Group consists of the following companies and subsidiaries: - JOTUN BINDER DIVISION - JOTUN PROTECTIVE COATINGS - JOTUN DECORATIVE PRODUCTS - VERA A/S - JOTUN POLYMER A/S - JOTUN CORROCOAT A/S - NODEST A/S - A/S SCANDIA KJEMISKE.

4. Partner

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R & D Project Leader

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Organisation type Research Institute
Participant role Partner

Contribution to project

Study of moisture dynamics for painted and impregnated wood using X-ray tomography. (Duration: 3 years). Water repellent and conserving treatments for wood.(Duration 3 years). Budget for both: 1.35 million NOK.

Expertise

4. Partner

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Organisation type Research Institute
Participant role Partner

Contribution to project

Long term weathering studies using ECE exposure sights: 0.93 million NOK. (Duration: 3 years). Exposure in artificial climate with defined atmosphere: 1.05 million NOK. (Duration: 3 years).

Expertise

4. Partner

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Organisation type
Participant role

Research Institute
Partner

Contribution to project

Water repellent and conserving treatments for wood: 3 years. Study of degradation mechanisms in relation to environmental and product factors: 1.5 million NOK: 3 years. Contribution: 0.7 million SEK. Budget share: 5%.

Expertise