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Wood Technology Institute

CALL: HORIZON 2020, European Green Deal, Area 4: Energy and resource efficient buildings

KEYWORDS
Autonomous building, prefabrication, engineered wood, building product, renewable raw materials, modified wood, recycling

PROJECT TITLE
Autonomous, friendly to the environment and residents, multi-family public housing building made using the prefabricated wooden frame technology, observing the principles of sustainable construction

PROJECT ACRONYM BULDWOODPREF

CUSTOMER
The project is planned to be executed in partnership with:
- design company,
- manufacturer of wooden building products,
- producer of prefabricates for wooden construction,
- territorial self-government unit,
- R&D institutions.

The project is targeted at various-level administration and self-government authorities whose competence is to provide buildings for socially impaired people (i.e. requiring assisted living, especially single mothers, the elderly and the handicapped) and/or provide them in case of natural disasters.

PROJECT IDEA
The main parts of the project:
- development and empirical verification of the technology of prefabrication of building partitions made of wood, while recycled materials and products are used in the process to the maximum possible degree,
- design of a model solution of a building and/or a set of several multi-family buildings, observing all presently known principles of residents' safety and comfort; the solution will be designed based on prefabricates of building partitions, developed at the first stage of the project implementation. The building and/or the set of buildings, designed as a zero-energy building or set of buildings, should be autonomous at least as regards the supply of electric energy (photovoltaics) and water, including water supply supplemented by management of rain water and "grey" water, preferably with its own water treatment facility,
- erection of a building and/or a set of several buildings, together with installation of measuring devices facilitating tests of the building/s for the actual consumption of utilities and the air quality,
- carrying out tests of the building/s for the actual consumption of utilities, the air quality and the quality of living in a minimum two-year cycle, in order to verify the adopted project assumptions and identify the areas where the implemented solutions can be improved.

MARKET
Poland, like many other European countries, is a country whose resources of raw wood material are average, but where the wood-based industries are well developed. Annual removals equal up to 40 million m^3. The project is targeted, inter alia, at the market made up by companies manufacturing prefabricated wooden houses, which for a few years has been developing and becoming more effective in Poland. Although, wooden construction in Poland is practically limited to single-family housing,, prefabricates are today also used to build some public buildings, such as schools, kindergartens, and hotels.

LOOKING FOR
- Project Leader
- Partners

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CALL: HORIZON 2020, European Green Deal, Area 7: Restoring biodiversity and ecosystem services

KEYWORDS
Forestry, climate change, carbon sequestration, phytoremediation, heavy metals, sustainable development, low-carbon bioeconomy

PROJECT TITLE
Climate-friendly restoration of lands polluted with heavy metals

PROJECT ACRONYM CROMPSA

CUSTOMER
- owners and stewards of lands polluted with heavy metals (e.g. metal mining companies and metallurgical companies),
- entrepreneurs who buy, sell and process wood,
- indirectly, the authorities and residents of cities/communes

PROJECT IDEA
Development of a model manner of management of degraded lands polluted with heavy metals, which will contribute to social-economic transformation and development of low-emission economy. The proposed solution is to take into account the benefits of combining production, recreational and environmental functions on such lands. A key feature of the new revitalising technology are fast-growing trees with low requirements as to habitat, which will be a source of raw material and will fulfil the environmental function (soil purification, CO_2 sequestration). The removed wood is to be used for economic purposes in a safe manner, i.e. minding the level of pollution. Eventually, the developed technology is to contribute to restoration of biodiversity of degraded ecosystems with indigenous species. The suggested technical solutions will be in line with a broader context of social-economic growth in the conditions of systems transformation and public policy (especially climatic policy).

MARKET
The degraded lands, where waste originating from mining and metallurgic industries is stored, often lie waste and irretrievably lose their usefulness. In other cases, management of such lands is homogeneous and is neither a compromise between social benefits (recreational function) and industrial benefits (production function) nor contributes to restoration of biodiversity and climate change mitigation (carbon sequestration). The owners of polluted lands look for solutions which will facilitate comprehensive management of such lands and their further use for production purposes, and, at the same time, be based on sustainable development principles. The issue concerns many European countries as well as countries aspiring to EU.

LOOKING FOR
- Project Leader
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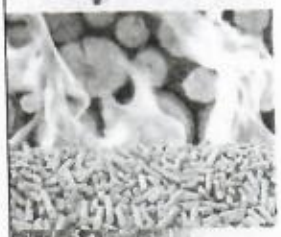

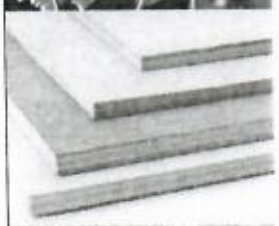

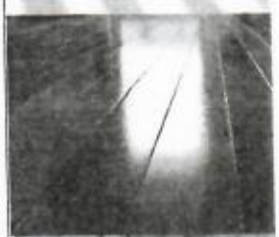

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CALL: HORIZON 2020, European Green Deal, Area 8: Zero-pollution, toxic-free environment (Topic 1: Innovative, systemic zero-pollution solutions to protect health, environment and natural resources from persistent and mobile chemicals)

KEYWORDS
Wood-based material, lignocellulose composite, biocomposite, recycling, formaldehyde, volatile organic compounds (VOC), UV-LED curing, coating performance

PROJECT TITLE
Development of low-emission biocomposites using innovatice manufacturing and finishing technologies

PROJECT ACRONYM BioReComp

CUSTOMER
- producers of wood-based panels and biocomposites,
- construction, furniture and interior furnishings sectors,
- producers of adhesives systems for wood composites Industry,
- manufacturers with unmanaged post-production waste,
- research units and center

PROJECT IDEA
The aim of the project is to develop technology of production of biocomposites with reduced emission of formaldehyde and volatile organic compounds (VOC) using alternative lignocellulosic, waste and recycled raw materials. It is assumed that these biocomposites will be an alternative to commonly used used wood-based materials, which are made using mainly synthetic adhesives based on amines and shredded wood with a small amount of recycled wood. Depending on the intended purpose and taking into account the possible thermo-sensitivity of some materials used as components in the production of biocomposites, it was assumed that the biocomposites' surface will be finished by varnishing it in the UV-LED technology (full curing LED). This technology is more environmentally friendly and saves resources compared to classic UV technology. Additionally, the possibility of using a photo-initiator, whose breakdown products do not migrate from the coating, in the base products will be evaluated.

MARKET
Contemporary production paradigm requires that improved materials are produced using less material and energy outlay. In the case of wood-based composites this means the need to modernise the technology and reduce the emission of formaldehyde and VOC. Having analysed the guidelines on the formaldehyde emission reduction introduced recently, one may hypothetically assume that in the future formaldehyde will be completely withdrawn from the production of wood-based composites. Recycling and reuse of materials is also an important part of growth and development because it facilitates manufacturing of new products, while less raw materials and energy is used in the process. The UV-LED technology has been more and more often used by the industry producing paints for wood materials. The rate allowing evaluation of the dynamics of the market share of the UV-LED technology is the evaluation of the market in UV-LED diodes. The share of UV-LED diodes within the whole LED product market has been rising – from 8.3% in 2008 to 25.3% in 2018. Yole Developpement anticipates that the turnover of the UV-LED emitter market will reach USD 320 million in 2020, i.e. will be twice as high as in 2017. It is forecasted that in 2023 value of this market will reach as much as USD 1 billion.

LOOKING FOR
- Project Leader
- Partners

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