



Łukasiewicz

Wood Technology Institute

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 innovative 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 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reduction introduced recently, one may hypothetically assume that in the future formaldehyde will be completely withdrawn from the production of wood-based composites.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

CONTACT INFORMATION

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