



**DNIPRO UNIVERSITY
of TECHNOLOGY**
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INNOVATIVE TECHNOLOGY OF DEMOLITION WASTES RECYCLING AT SELECTION POINT

TRL 8

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PROJECT ESSENCE

Buildings destroyed by war or planned for demolition contain thousands of tons of construction waste, which can be secondary resources for the production of commodity products and secondary raw materials. Most of the waste is sent to landfills, which makes harm to the environment, leading to significant greenhouse gas and hydrogen sulfide emissions and soil contamination with harmful chemical compounds. The technology for recycling construction wastes at selection points can be implemented using a mobile crushing and screening plant with a capacity of several tons of fine-grained product per hour.

A distinctive feature is the horizontal layout of the innovative small-sized equipment, which does not require powerful foundations and high-rise metal structures, and ensures ease of installation, dismantling, and maintenance. The technology involves preliminary analysis and waste sorting.

FINISHED PRODUCT

The plant performs medium and fine crushing of high-strength materials, as well as grinding to a size of less than 0.2 mm, with the separation of the required fined product. The processed material is used as a commodity product (glass granules for design, gypsum for agriculture, etc.) or as a raw material for production (glass for melting, gypsum for drywall, etc.).

DEGREE OF TECHNOLOGY READINESS AND AMOUNT OF FUNDING

Laboratory samples of the structural elements of the mobile processing unit have been created, which have shown high efficiency in processing the above-mentioned wastes. Depending on the specific characteristics of the initial and finished product, as well as the corresponding complex, the estimated cost is EUR 45 thousand .

APPLICATION AREA

The new mobile processing plant can be effectively used in mining, construction, metallurgical, chemical, and other industries. It is designed to recycle wastes (various types of sheet or profile glass, drywall, tiles, and ceramic products, building bricks, plaster and other similar materials, and slag from metallurgical and other industries) at places where they are formed.

BENEFITS OF THE TECHNOLOGY

1. Transportation costs are significantly reduced.
2. Reduces the load on the landfill.
3. Reduces greenhouse gas emissions, improves the environment, and preserves natural resources.
4. Small sizes of the production site.
5. Obtaining commodity products and secondary raw materials at the site of construction waste formation.
6. Use of secondary raw materials in the newly created construction complex.
7. Simple and quick reinstallation at a new production site.



INTELLECTUAL PROPERTY RIGHTS

Structural elements are protected by the patents of Ukraine: No. 106274, No. 151864, No. 151840, No. 126307, No. 125159, No. 122026, No. 114513, No. 112811, No. 111339, No. 109668, No. 89439, No. 32607, No. 70113A. The mobile process plant is currently at the stage of qualification expertise within the framework of the filed invention application.

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