BALTIC SEA & SPACE CLUSTER

GALATEA BLUE GROWTH ACCELERATOR

INFORMATION ABOUT AN INNOVATIVE PRODUCT / SERVICE

1. Company name / contact person (phone number, e-mail).

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2. Product / service name.

Microwave plasma system for hazardous waste reprocessing

3. Description of product / service functionality.

This project aims to deliver a prototype model of hazardous waste reprocessing system equipped with microwave plasma burner, that will allow to fully reprocess waste into pure energy without creating any byproduct waste. Any byproducts of the plasma microwave disposal system will be actual products with their own commercial value and not waste. This is an integrated solution, and the technology of the application of microwave plasma burners for waste reprocessing requires neither sorting the waste nor using any exceptionally expensive catalysators or complex and expensive system for purification of the exhaust gases. Based on the research carried out using laboratory simulation model, an initial technological documentation will be created, which can then become a foundation for creating a technological line for hazardous waste reprocessing equipped with the microwave plasma burner.

4. The type of satisfaction of the needs of the target group and its definition.

The target group for the hazardous waste disposal system with the use of microwave plasma burner is maritime economy. The project assumes establishing the plasma microwave hazardous waste disposal system on vessels (commercial vessels and cruise liners), drilling platforms, marine ports and marinas. The subsequent step of the project development will be to create mobile installations, which will allow to serve clients that are under statutory obligation of interim and constant reprocessing of waste: damping site with municipal waste, municipal waste reprocessing plants. Due to their versatility the units equipped with microwave plasma burners can be also used in: installations for disposal of toxic waste, in installations for coal ignition in heat and power plants, in installation for obtaining polycrystalline silicon, in production lines for basalt fibres, etc. The project includes research of such technological solution that will enable creation of aforementioned, mobile, contained version of the waste reprocessing system, which in return may increase its target group.

5. Indication of innovative features of the product / service solution.

The system will be equipped with microwave generator, plasma chemical reactor, syngas purification unit with filter and ash melting unit. The latter of which, creates glassy slag, which is both inactive and nontoxic and is also safe as construction material. The syngas created in this process can be used as a clean energy for a power unit, by powering gas engines ensuring an economically effective production of electrical energy. All of the byproducts of the plasma waste reprocessing have commercial value and are products of the process, not its waste. The proposed solution ensures reprocessing of morphologically diverse waste, including hazardous waste, requires neither sorting the waste nor use of any exceptionally expensive catalysators or complex and expensive system for purification of the exhaust gases. The impact on the natural environment: an ability to reprocess of practically any type of waste, zero harmful emission, obtaining syngas as byproduct, and no ash.