Norway grants

The National Centre for Research and Development



Negative CO_2 emission gas power plant

nC$_2$PP

The primary objective of the project is to develop an innovative technology confirming the possibility of utilization of sewage sludge with subsequent carbon dioxide collection to produce electricity and in such a way showing a positive impact on the environment. The synergy between the CCS/CCU plant and the proposed utilization of sewage sludge (such fuel is considered as a renewable energy source) enables the installation to achieve overall negative emissions of CO_2. The additional advantage of vitrification of sewage sludge, owing to sufficiently high process temperatures, allows turning this problematical waste into a marketable product.

Completion of the project will return the developed technologies for the management of syngas produced from sewage sludge gasification, and a dedicated wet combustion chamber with the use of oxy-combustion for the type of fuel developed. Finally, the CO_2 sequestration will be demonstrated using the spray-ejector condenser (SEC) combined with a separator. These three aspects are major novelties of the project. Subsequently, the intention of partners is to develop container-based installation to demonstrate the capabilities of the developed technology. Once the system is integrated, it will be possible to capture CO_2 from commonly recognized problematic waste and achieve a positive environmental impact, whilst generating electricity and heat.

1st November 2020 – 30th October 2023

Lead partner:

Gdańsk University of Technology (Gdańsk Tech) – Poland

Project partners:

Institute of Fluid-Flow Machinery of Polish Academy of Sciences (IMP PAN) - Poland
Wrocław University of Science and Technology (WUST) - Poland
Norwegian University of Science and Technology (NTNU) - Norway
AGH University of Science and Technology - Poland
SINTEF Energi AS - Norway
Institute of Power Systems Automation Sp. z o.o. (IASE) - Poland
Bros Control Sp. z o.o. - Poland

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