



INNOVATION FUND

Deployment of net-zero and innovative technologies

S2H2: Sludge-to-Hydrogen for a Circular Economy

The Innovation Fund is 100% funded by the EU Emissions Trading System

| Project Factsheet

The S2H2 project intends to produce renewable hydrogen fuel from wastewater sludge by using a novel and patentable technology. S2H2 transforms previously landfilled sludge into hydrogen to be used as fuel or feedstock with only by-products being ashes and carbon black. These by-products are then recovered and reused. By adopting circular economy principles, the project aims to lead the way in national sewage water treatment practices. Located in Zagreb, Croatia, the project's relative greenhouse gas (GHG) emissions avoided amounted to 108% compared to the reference scenario.

Sewage sludge is the solid residue obtained after removing water from the slurry generated during the treatment of municipal wastewater. The S2H2 project employs a new approach to gasification through use of afterheater and syngas recirculation which emits zero carbon dioxide. The S2H2 unit

COORDINATOR

E. ON PLIN DOO ZA OPSKRBU PLINOM

LOCATION

Croatia

CATEGORY

Energy intensive industries (EII)

SECTOR

Hydrogen

AMOUNT OF INNOVATION FUND GRANT

EUR 4,489,800

EXPECTED GHG EMISSIONS AVOIDANCE

29,356 tonnes CO2 equivalent

STARTING DATE

01 July, 2024

ENTRY INTO OPERATION DATE

31 December, 2026

FINANCIAL CLOSE DATE

31 August, 2025

takes 25 tonnes of sludge daily and processes it into one tonne of renewable hydrogen. Therefore, alternative and new renewable hydrogen production technologies, such as sludge to hydrogen, will play an important role in serving the fast growing renewable hydrogen demand. The hydrogen will be used for the decarbonisation of the local gas grid and a local technical gas distribution company.

The ash and carbon black by-products are used in cement production and tyre manufacturing respectively. To illustrate the effectiveness of this project, the 28,9 tonnes of reduced CO2 emissions are equivalent to circling the Earth 5,5 times by a fossil-fuel powered car.

The project is expected to provide a solution for the

problem of wastewater sludge, for which there is no alternative for ground reclamation (mixing with other materials and then landfilling) in Croatia. This technology constitutes one of the first steps towards the creation of a Croatian hydrogen industry, in line with the national hydrogen roadmap in alignment with the European goals. In addition, it will reduce the negative environmental impact of sewage sludge landfills.

The solution can be scaled across multiple wastewater treatment plants in Croatia and in the European Union because of its flexibility and scalable design. The project directly affects energy value chains, providing carbon-free and affordable energy and feedstock, as well as material value chains in cement and tyre manufacturing industries.

| Beneficiaries

E. ON PLIN DOO ZA OPSKRBU PLINOM

Croatia

DOK-ING DRUSTVO S OGRANICENOM ODGOVORNOSCU ZA INZENJERING I UNUTARNJUI VANJSKU TRGOVINU

Croatia