Effective solidification of digestate

Development status

Phase 3

Technology validation and implementing it in real environment. Testing the technology outside of the laboratory and its adjustment to external conditions.

IP protection status

N/A

Partnering strategy

Co-development, Collaboration, investment, licensing, spin-off

Institution

University of Pardubice

Vlastník

Univerzita Pardubice

Challenge

The development of biogas plants focused on processing biodegradable waste with the goal of producing low-emission biogas or biomethane (as a substitute for natural gas) leads to the overproduction of so-called digestate, which is the liquid residue remaining after the anaerobic degradation of biomass. This material can be used as a fertilizer; however, its main disadvantages include problematic storage — in terms of capacity, cost, and odor emissions from the liquid digestate. Additional issues include high transportation costs when used directly as a fertilizer, limited commercial usability, and a relatively low nutrient content compared to commonly used fertilizers.

Description

The described solidification technology for liquid odorous digestate is based on the application of dewatering additives, which enable the stabilization of the originally liquid digestate into a solid, odorless product without nutrient loss and without the need for evaporating excess water. This product is commercially usable as a green fertilizer (e.g., for hobby gardeners). A key advantage of this technology is its simplicity compared to digestate thickening methods (e.g., using evaporators), resulting in lower capital investment requirements. It can also be easily processed into user-friendly pellets or granules, while remaining a biofertilizer, as all contained nutrients originate from the original fermented biomass. Solidification significantly facilitates both storage and transportation of the digestate.

Commercial opportunity

The technology is applicable for operators of biogas plants. It also provides a commercially viable, pelletizable alternative fertilizer in the form of solidified digestate derived from biodegradable waste, aligning with the principles of circular economy.