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Research and Development

CPI launches project to produce biogas from seaweed through AD

The Centre for Process Innovation (CPI) has announced that it is leading a €4 million UK-based collaboration to help strengthen the UK's position within industrial biotechnology. The three year project – SeaGas – is working on producing biomethane from farmed seaweed through anaerobic digestion (AD). The project launched in July 2015 and consists of six partners including The Crown Estate, the Centre for Environment, Fisheries and Aquaculture Science, the Scottish Association for Marine Science, Queen's University Belfast and Newcastle University. A novel storage system will be developed – to support a 12-month AD operation – to counter seaweed availability and variability.
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UK's first commercial seaweed farm set to begin production

The first commercial-scale UK seaweed farm is was scheduled in Argyll off the coast of Scotland in late summer 2015. The new facility, planned by scientists at the Scottish Association for Marine Science (SAMS) in Oban, will be run as a demonstration project that will help shape the UK's fledling seaweed cultivation sector. Seven native seaweed varieties will be planted at the farm, with an expected capacity to produce up to 24 tonnes of plant material per year. In addition to its uses in food, agriculture, and cosmetics industry, there is growing interest in using seaweed for bioenergy production and biofuels. Seaweed can be used in anaerobic digestion plants to create methane gas or fermented to produce ethanol.
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Methane storage in flexible metal–organic frameworks:

UC Berkeley chemists, together with Ford and the US DoE, have developed a porous and flexible material — a so-called metal-organic framework (MOF) — for storing methane. The system has the potential to store high densities of methane within a porous material at ambient temperature and moderate pressures. Although activated carbons, zeolites, and metal–organic frameworks have been investigated extensively for CH_4 storage, there are practical challenges involved in designing systems with high capacities and in managing the thermal fluctuations associated with adsorbing and desorbing gas from the adsorbent. The use of a reversible phase transition in a metal–organic framework to maximize the deliverable capacity of CH_4 while also providing internal heat management during adsorption and desorption brought a solution.
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UK research: Grass varieties may produce higher yields in AD

At its 15-acre trial site, UK Barenbrug's agricultural team is mid-way through a two-year program evaluating the AD potential of a range of shorter-term grasses. Plots of Italian ryegrass, hybrid ryegrass and tall fescue have been sown alongside a number of areas containing mixtures of these varieties. Two cuts have been taken so far in 2015 and initial observations suggest that the mixtures are out-yielding the straight varieties and that Italian rye-grass-based blends are performing best of all. Achieving high yields of dry matter per hectare is the key objective for farmers entering the AD field, so Barenbrug is investigating the impact of delayed cutting on achieving extra bulk versus quality.
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