

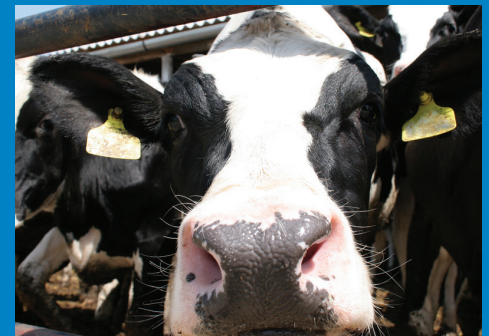
The Slurry Solver: A low-cost technology to make slurry greener and safer



Hothouse

where business meets innovation

New Technology from DIT



The Slurry Solver offers a new, low-cost approach for cattle farmers to improve health and safety around tanks, to capture and use renewable energy and to improve the quality and lessen the environmental impact of the slurry their farms produce.

The technology, developed and bench-tested at DIT, takes the form of floating plastic membranes or rafts that can be retrofitted into existing slatted units.

The semi-submerged raft converts the slurry tank into a long-term (22 Week)

low temperature (18 °C) anaerobic digester.

Slurry can pass through the interlocking geometrical structures of the raft, moving from the top of the tank to the bottom. The structure also catches biogas as it rises up from the bottom of the tank, so it can be harnessed for use.

The floating membrane of The Slurry Solver is modular, so that it can accommodate any tank size and it is designed not to interfere with the current operations of a slurry tank.

This on-farm system, the vast majority of which can be installed and maintained by the farmer, is mechanically and technically simple to operate, unlike sophisticated centralised anaerobic

digestion plants. It is also self-seeding, meaning that it restarts itself.

It reduces the carbon equivalent emissions from animals while giving the farmer options for the use of biogas, including heating the farm or generating revenue from the renewable energy.

The processed slurry generated from this system has been demonstrated to contain more bioavailable nitrogen, phosphorous and potassium than standard slurry.

Applications

The Slurry Solver is a modular solution that can be retrofitted to existing tanks to address universal issues for farmers: to improve farm safety, improve slurry quality and environmental efficiency on dairy and beef cattle farms.

Because of the low cost and modular design of The Slurry Solver, it can be used in existing slatted tanks anywhere in the world.

Opportunity

There are currently more than 6.6 million cattle in Ireland, and the recent abolition of EU milk quotas has seen the national herd expand in both the dairy and beef sectors.

More cattle means more slurry to deal with and more opportunity for its use as a renewable resource.

As a guide, 6% cattle slurry is worth STG£3.20 per tonne, and if applied at the standard rate of 30cu.m /hectare its worth is £96 per hectare.

Both in Ireland and internationally, The Slurry Solver has the capability of providing a new revenue stream while also improving safety and environmental issues associated with slatted units.

The low investment required by farmers to implement and run The Slurry Solver, and the modular design that allows it to be adapted to different tank sizes, will make The Slurry Solver an attractive solution for dairy and beef farmers to improve safety and farmyard economics.

DIT is seeking to partner with a plastics manufacturer to carry out the final phase product development for a full-sized test system of The Slurry Solver.

Advantages

The Slurry Solver makes slurry safer, more environmentally friendly and easier to work with.

Hazardous gases such as methane and hydrogen sulphide will be segregated from animals and workers with the installation of Slurry Solver. By providing a physical barrier Slurry Solver minimises the risk of falling into the slurry. The Slurry Solver will reduce the risk of injury and death in farm accidents.

The Slurry Solver is designed to enable farmers to easily capture biogas, to be used either directly on the farm or to be commercially sold. Reducing methane emissions from slurry also avoids potential carbon taxes on animals.

The Slurry Solver renders nitrogen, potassium and phosphorous in slurry more bioavailable to plants, meaning greater fertiliser efficiency. The slurry is also absorbed into soil up to three times faster, which reduces contaminated run-off.

The Slurry Solver can be retrofitted into existing slatted

“The Slurry Solver is designed to enable farmers to easily capture biogas, to be used either directly on the farm or to be commercially sold.”

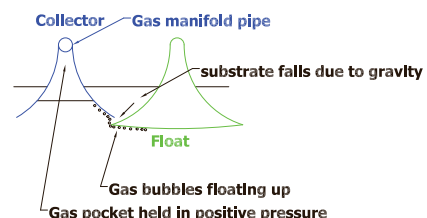
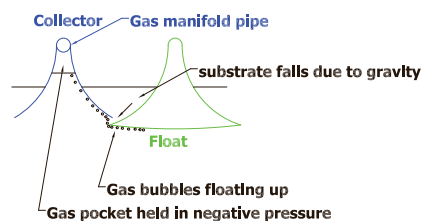
slurry tanks and because the anaerobic digestion takes place in situ, there is no need to move the slurry to a separate digester.

Stage of development

Slurry Solver has passed a micro-scale proof-of-concept stage. It also has a patent application lodged in the UK (1620419.0) that allows fine-tuning of the end design to best accommodate manufacturing complexities.

It is intended that the profile shape can be extruded in a similar manner to plastic sewer pipes, thereby keeping the cost of manufacture down. In a similar manner to piping, a range of accessories will need to be developed such as stop ends, couplers, brackets etc.

These once coupled with off-the-shelf Biogas equipment will make a viable end product that can transform the agricultural sector.



Put DIT Hothouse technologies to work for you

DIT Hothouse Knowledge Transfer Office

Dublin Institute of Technology,
Aungier St, Dublin, D02 HW71
+353 1 402 7179 hothouse@dit.ie
www.dit.ie/hothouse
T-16-030

 **ENTERPRISE
IRELAND**
where innovation means business



 **Hothouse**
where business meets innovation