

# Mixing it up

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## **The Irish Republic's first farm-scale biogas plant owes much to the role played by Landia pumps UK director, the late Hugh Vaughan.**

The McDonnell family farm in Limerick, Republic of Ireland used large volumes of fertiliser costing €100,000 annually, so the implications of the EU Nitrates Directive had a powerful impact on their livelihood.

So they embarked on producing their own ecofriendly fertiliser, explains David McDonnell, who runs the farm with his father Michael.

"We wanted to use the land as best we possibly could - and ensure that what came out of our Anaerobic Digestion (AD) plant could be put onto our land."

### **Pioneering approach**

After extensive research in Scandinavia, Germany, the USA and Australia, the McDonnells embarked on creating the country's first farm-scale AD and biogas plant for renewable energy use.

Kreig & Fischer provided design input for the new GreenGas site, while Kirk supplied the first digester and recommended Landia for the mixing systems, including the company's GasMix system.

When the results looked as if they might be less promising than expected, Landia UK director Hugh Vaughan came to the rescue. He paid a personal on-site visit, diagnosing a build-up of sulphur that he rectified by back-flushing the pipework.

Digestate was forced up the reverse and quickly cleared the pipe. Back-flushing has now been adopted as part of the GreenGas maintenance programme. Efficient mixing systems ensure

that GasMix - which combines a Landia chopper pump and venture nozzles - needs to run for just 15 minutes out of every 150 minutes. Side entry mixers (for extra impetus when required) need to run for just five out of every 60 minutes.

### **Euros with ethics**

The benefits of the AD venture for the commercial health of the farm have been clear, says David. "Thanks to our AD operation, our annual fertiliser costs have now been reduced to one third. In the future we can hopefully look at converting our digestate into a marketable product."

GreenGas is now a 1 MWe plant, having added a new 1800m<sup>3</sup> digester (from Wolf-Austrian) and being supported by nearly two dozen Landia products.

Adds David: "With 23 of its pumps and mixers on site, Landia's very robust and reliable equipment has certainly played its part in the growth, wellbeing and efficiency of this plant." GreenGas also uses a Landia pasteuriser, switching this from the front to the back end of the process. It was more efficient, process-wise, to increase the temperature of digestate already at 40° to the required ABP pasteurisation of 70° - rather than wait for it to be heated up from an ambient storage temperature of only 6-10°.

Plant manager Senan Meade concludes: "it's all about getting the balance right and fine-tuning so that you hit the sweet spot for a smooth-running plant. We have alarms in place and can keep a very close eye on things away from the plant on our smartphones. Even after all this time, we're still learning - constantly."