

PNEUMATICS IN PRACTICE
Mattei and Ammogas for a green industry

Posted by Anna Barozzi on 31 July 2017 in Top from the World - 0 Comments

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External silos of the farm in Skive, Denmark.

Denmark Mattei has developed an interesting partnership with Ammogas A/S, a consultancy and engineering company, for the recovery and upgrading of biogas in large farming industries. This is a sector subject to stringent environmental regulations which have contributed to the development of an intense green culture.

"Our state-of-the-art systems, in some cases unique in their kind for the type of technology used, are able to capture large quantities of biogas produced by the Danish organic farming enterprises, that process it and channel it into the national gas distribution network – comments Dan Haan Mathias, Production Manager of Ammogas A/S. The Green Biogas Unit, using state-of-the-art technology, is able to channel the biogas produced from the biomass to the upgrading system, generating an excellent return also in terms of resource recovery efficiency".

The first of these projects addressed a large farm in Skive, Denmark, which was followed by a second installation in the nearby. The system in Skive, that operates at very low pressures (near zero), is capable of turning the biogas generated by organic waste and containing 70% CH₄ into 99% pure biogas, with the additional advantage of cooling (discharge) into the atmosphere. The Methane gas is then compressed, able to higher pressures (pressure well above 10 bar) to ensure the physical characteristics required to be channelled into the Danish gas distribution network.

Mattei AGC series compressors, which are all equipped with an inverter regulated variable speed system and with an output from 30 to 90 kW, are used during the Methane gas compression phase.



Compressor room of the farm in Skive, Denmark.

Inverter, together with a software specifically developed for this type of application, makes it possible to adjust the delivery to meet the actual demand. The compressors have been installed with a larger, more delicate and complex system: the gas flow is continuously controlled to ensure it is channelled to the gas distribution network in a calibrated manner. To ensure maximum efficiency, the compressors operate as a network, ensuring the balance of the system and avoiding "wasteful energy" explains Andrea Capoferrri, Senior Technical Manager at Mattei, who followed the project with Andrea Saggio, Andrea Saggio, co-founder of the Danish enterprise J&K Tyskult A/S, Mattei local distributor of air and gas compressors.

"One of the main criticalities of the system is represented by the control of gas flow. Mattei has developed a Master Controller able to detect and alert when the set point is reached, using a signal, before the biomass gas is channelled from the large silos where they ferment to the compressor" adds Andrea Saggio.

"The application has required numerous efforts by Ammogas to create unique machines that could be adapted to meet the customer demands. We developed a software that has a feedback control – added Eng. Capoferrri. Inside the biogas gas is delivered to the compressor, the measuring device checks that the capacity flow settings comply with the parameters set by the user. The control system developed by Mattei is exceptionally accurate in adjusting the flow to fit the actual demands, with a margin of error of less than 1%".



External plants and compressor room of the farm in Skive, Denmark.



The system in Skive, that operates at very low pressures (near zero), is capable of turning the biogas generated by organic waste and containing 70% of CO₂ into 99% pure biogas.

collaboration with J&K Tyskult and Ammogas, has led to the design of a product with both air and water cooled solutions, aimed at achieving continuous improvement of energy recovery values" continues Capoferrri.

Large farming enterprises are required to comply with very stringent environmental protection standards and require substantial investments towards developing green projects.

"We offered a highly competitive product to Ammogas that guarantees consistent levels of performance – adds Andrea Saggio. – The result delivered by the Mattei compressor has exceeded all expectations. The achievement of energy consumption has proven to be exceptional, going well beyond the expected results, which is subject to stringent control in Denmark".

"The choice of Mattei technology offers high performance combined with absolute energy efficiency and significant reliability, an aspect for us very important in an environment as demanding as that of agricultural – comments Stefano Piccini, Export Area Manager (UK, Lowland, Sengale), Custom Product Manager at Mattei – In the long run, this is complemented by lower maintenance and repair costs, thanks to the quality of the components used".

More information on Mattei products are available at the following links:
<http://www.matteigrup.com/>
<http://www.matteigrup.com/vari-compressori/special-applications>