BONNHOFF BUCHENHOF BIOENERGIE | CASE STUDY

Reduced fuel consumption and greenhouse emissions for biogas farm

WULF JOHANNSEN

STORM

BOWMAN

Customer: Bonnhoff Buchenhof Bioenergie
Location: Klein Offenseth, Germany
Engine: Jenbacher J312
Fuel type: Biogas
Sector: Agriculture
Installation date: June 2019

RESULTS:

12,000 **kWh power generated** in just over a week

5.7% **reduction** in fuel for the same power output

30% **reduction** in unburnt hydrocarbon emissions

18% **reduction** in greenhouse gas emissions (% CO_2-equivalent)

I have been very pleased with the results from the ETC 1000 system, with some highly promising initial gains in efficiency and reductions in emissions. Bowman and STORM-Group worked seamlessly together and have provided an excellent level of support from day one."

Bjorn Bonnhoff, Customer,

Bonnhoff Buchenhof Bioenergie

We have been long supporters of Bowman since 2016 and are always keen to find innovative new solutions to solve the challenges of our customers. With Bowman's latest system now offering a 50% cost reduction per kWh generated when compared to their previous generation system, and fitting a wider set of engines, this was the ideal time for us to fully embrace ETC."

Jan-Willem and Bernard Storm, Managing Directors

STORM-Group

THE CUSTOMER

Bonnhoff Buchenhof Bioenergie (Bonnhoff) operate two sites in Germany that perfectly meet the needs of the circular economy, with a key focus on recycling and sustainability.

Since 2006, Bonnhoff has provided renewable electricity to the public grid. In addition to using their 440 hectares of agricultural land for growing crops, they use a digestor to turn any waste in to biogas. This biogas is then used to generate power across four combined heat and power (CHP) plants.

The excess heat is used by a local school, gymnasium and fire station, along with Kordes Rosen, the largest rose nursery in Europe, which heats its greenhouses and outbuildings.

The customer site in Klein Offenseth, Germany.

THE CHALLENGE

Keen to reduce their fuel consumption and emissions, Bonnhoff sought out Bowman to explore how their Electric Turbo Compounding (ETC) technology could help them achieve this goal.

Bowman had already installed over 400 ETC systems in Germany, more than in any other country. When combined with their extensive experience with biogas engines this made Bowman an ideal supplier for the project.

It was agreed that Bowman would initially fit their ETC 1000 engine efficiency system on a Jenbacher J312 engine at one of the sites.

Key requirements:

- Reduce fuel consumption
- Reduce greenhouse gas emissions
- Must have compact footprint
- Conduct testing pre and post installation to assess performance

The customer's Jenbacher J312 engine.

THE SOLUTION

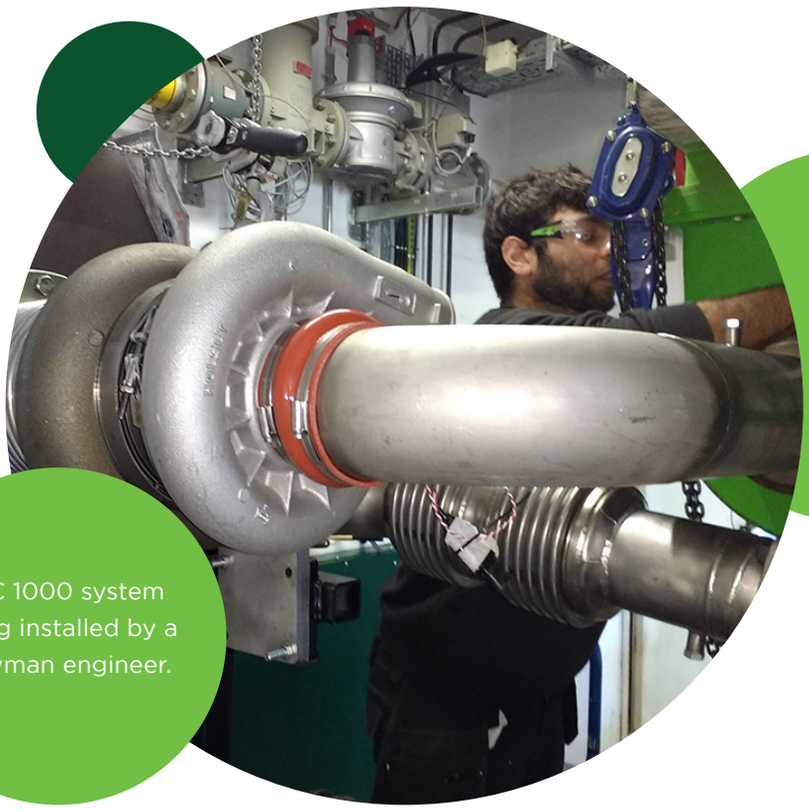
In March 2019, Bowman appointed STORM-Group with exclusive rights to sell and install the Bowman ETC 1000 system in Germany.

As the largest OEM-independent service company in Germany for combustion engines, STORM-Group provided Bowman with increased resources and sales support in the region.

Under the agreement Wulf Johannsen KG GmbH & Co (Member of the STORM-Group) and Bowman worked together on the installation at Bonnhoff, allowing Bowman to pass on their expertise for future installs.

With the engine located in a small room the space presented logistical challenges. These were overcome through planning and engineering work before the installation, along with cooperation between all parties on site.

Thanks to this cooperation the installation was seamless, with testing completed in just a few days, covering both baseline testing and results post installation.



ETC 1000 system being installed by a Bowman engineer.

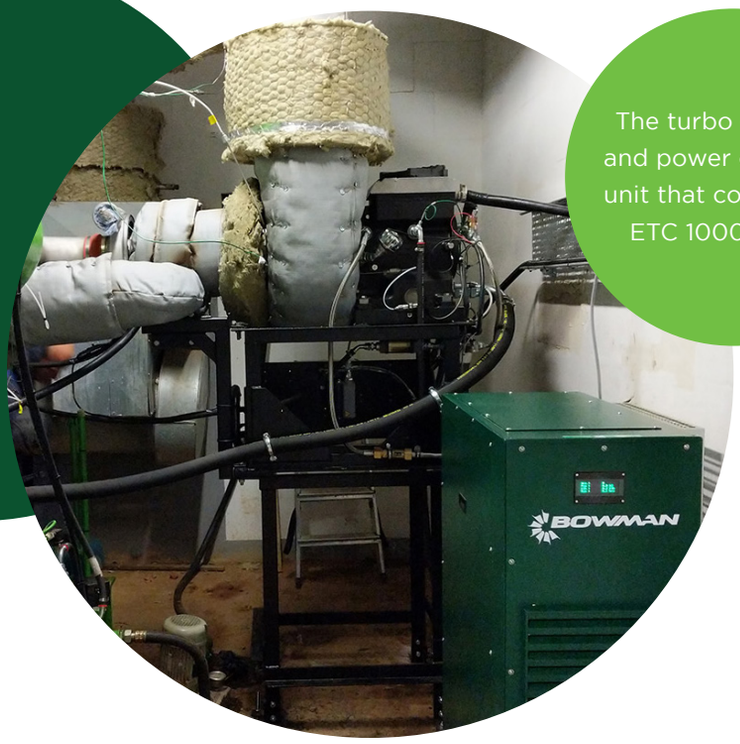
THE RESULTS

By improving power density and fuel efficiency, fuel consumption was reduced by 5.7%, along with a reduction in associated CO_2 and NO_x emissions. Volatile Organic Compound (VOC) emissions were also reduced by 30%, through reducing fuel short circuiting.

The combined CO_2 equivalent effect of these changes was an 18% reduction in greenhouses gases, and 12,000 kWh of power generated without any extra emissions being created.

Following successful initial results Bonnhoff agreed for Bowman and STORM-Group to use the site for a customer showcase to demonstrate the system to German prospects, where it received a strong level of interest.

Bowman and STORM-Group have also continued to strengthen their relationship, promoting the ETC 1000 technology through the Wulf Johannsen brand at the 3rd Norddeutscher Biogas-Branchentreff event in Rendsburg, Germany.



The turbo generator and power electronics unit that comprise the ETC 1000 system.

LESS FUEL
MORE POWER

GET IN TOUCH

To find out more about Bowman's ETC technology, or talk to our Business Development team, contact us via:

Email the team: marketing@bowmanpower.co.uk

Visit the website: bowmanpower.com