

Technology Powerprofile

Developing the Cat® G3520C Biogas Engine

Finning are leaders in the innovation of new technologies, specialising in gas power solutions. We don't stop at innovation either. Once we have 'proved' the new technology, we bring it to the market through our Cat to the Core service, integrating it into the industry.

The 3520 engine was originally developed by Finning in association with Caterpillar. Today of course, it is a widely-used iconic engine in the power generation world.

Power Need

Following sustained success in the biogas market with the class leading Caterpillar G3516 generator set, Finning recognised a growing trend for larger equipment.

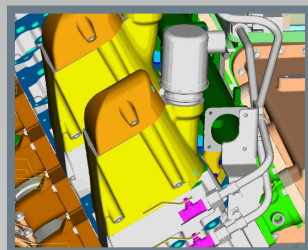
Market research showed that a single machine that could generate in the order of 2000 kW of electricity would be ideal. The existing 16 cylinder machine had grown in output over the years from around 700kWe to 1150kWe in its most recent form, but it was realised that a further increase to 2000kWe would not be possible.

At the time Caterpillar had recently launched the G3520 natural gas product, but there were no short term plans to offer this in a biogas configuration.

Solutions

Demand existed in the market so Finning approached Caterpillar and proposed that a joint development programme might be a way to produce an similar product fuelled by biogas and release it to the market.

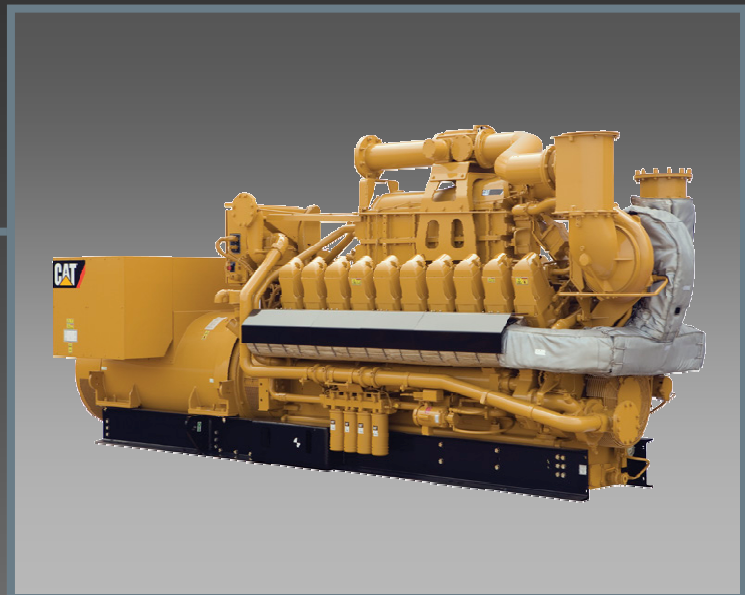
The programme would ultimately see Finning finance the development, provide aggressive gas knowledge and expertise and conduct the field testing of the units.



Caterpillar would carry out the product design and pay a royalty to Finning on the first units sold.

The first completed prototypes in 2003 consisted of two 1500 rpm (50 Hz) units, which were shipped to Finning UK for testing, and a 1200 rpm (60Hz) unit, which was shipped to Finning Canada for evaluation.

Factory design engineers followed the product and were present at initial start up. A visit six months in was also required for a partial strip down and early life component evaluation.



Results

The first prototype engines were started late in 2003 and still run to this day, having each completed over 45,000 hours.

The engine has been very popular with customers showing substantial efficiency savings over its predecessor and now accounts for the majority of engine sales in this segment. It is now proven on landfill gas, digester gas and coal mine methane.

The project gave Caterpillar engineers a direct contact with the market, and it gave Finning a direct channel to the Caterpillar design engineers, a channel through which traffic still flows.

This project was, and remains, the only occasion Caterpillar have conducted a joint development project with external funding from a third party to bring a product to market.

