



## Greenhouse greens the grid

Load management



New revenue



Renewables friendly



STOR



Smart grid



Reduced carbon



Combined heat & power



Flexible generation



Full parallel



## One of Flexitricity's biggest clients leads a revolution in horticulture and smart grid revenue

**Kaaij Greenhouses UK reduces carbon emissions while generating six-figure revenues, thanks to Flexitricity's load management and flexible generation services.**

In 2008, Dutch commercial horticulturists Kaaij Greenhouses UK entered the massive Thanet Earth greenhouse complex in Kent – which has enough glass to cover nearly 80 football pitches – and opened the largest single-unit greenhouse in the UK.

Kaaij Greenhouses UK's greenhouse is powered by two large, gas-fired combined heat and power (CHP) generators. These supply heat and CO<sub>2</sub> to the crops. In winter, the generators supply their electricity to horticultural lighting banks, while in summer, the electricity is sold. Kaaij Greenhouses UK is one of Flexitricity's largest client sites, in both physical size and electrical capacity.

### Working with Flexitricity

Flexitricity Ltd created and now operates the first, largest and most advanced 'smart grid' system in the UK. Flexitricity brings revenue to UK businesses, reduces national CO<sub>2</sub> emissions, and helps to secure energy supplies. The relationship is win-win. Most businesses are sitting on untapped sources of revenue in their generators and electrical loads, and Flexitricity enables them to access this income.



## Key Facts

Up to 12MW of electricity consumption can be automatically turned off or down for short periods

Combined heat and power generators provide reserve services to National Grid when idle

Reduces national carbon dioxide emissions

Six-figure revenues earned every year using existing assets

No disruption to core business processes

***“Flexitricity’s smart grid approach allows us to [reduce costs and earn revenue] while we get on with our day jobs – producing great tomatoes for UK consumers.”***

## New revenues from existing assets

Kaaij Greenhouses UK’s two on-site CHP units, totalling 6.6MW of electrical output, operate when heat or carbon dioxide is required in the greenhouse, or when artificial lighting is in use. At other times, the generators stand idle. The site has a full parallel grid connection, allowing Kaaij Greenhouses UK to generate electricity at any time.

During idle periods, Flexitricity’s smart grid infrastructure has the ability to turn on the generators at short notice. This helps National Grid to stabilise the national electricity network during demand peaks, or when large power stations fail. Heat generated by the CHP units is retained in heat stores for later use.

In winter, artificial lighting consumes up to 12MW of electricity for around 15 hours per day. As the plants are not affected by occasional interruptions to the lighting, Flexitricity can turn the lights down or off for short periods, when the national electricity system is under stress.

These two complementary revenue sources – worth a six-figure annual sum – are enabled by Flexitricity, entirely from assets which Kaaij Greenhouses UK uses in its day-to-day operations.

## Reducing CO<sub>2</sub> emissions

Flexitricity’s smart grid provides Short Term Operating Reserve (STOR) electricity – the most important category of fast-acting generation or demand-reduction capacity – which is held ready for National Grid, to keep the electricity system stable during times of system stress.

Every megawatt of capacity connected to Flexitricity’s smart grid is a megawatt that does not have to be held in reserve elsewhere. This reduces the need to keep coal and oil stations on hot standby or running inefficiently at part load – reducing emissions by between 300 to 750 tonnes of CO<sub>2</sub> per megawatt per annum.

## Getting on with core business

Kaaij Greenhouses UK provides reserve electricity to National Grid only within the constraints of normal business operations. Flexitricity created elective arrangements, allowing Kaaij Greenhouses UK to opt in and opt out in accordance with its needs. Flexitricity understands that core business processes must always be protected, so the system operates only within pre-agreed limits, which are measured and checked in real time.

“We are reducing costs and earning revenue, using equipment which is already in place for our normal operations, and we’re reducing carbon emissions while we do it.” said Gert van Straalen, managing director of Kaaij Greenhouses UK.

**flexitricity**  
Unlocking smart grid revenue

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