

# Smart horticulture, smart grid

Combined heat & power



New revenue



Renewables friendly



STOR



Smart grid



Reduced carbon



Flexible generation



Full parallel



## A Flexitricity client reaps the benefit of its enlightened approach to power management

**Rainbow Growers reduces UK carbon emissions while generating substantial revenues, through its partnership with Flexitricity, the UK's leading smart grid company.**

In 2009, Dutch commercial horticulturists Rainbow Growers entered the massive Thanet Earth greenhouse complex in Kent – which has enough glass to cover nearly 80 football pitches – and opened one of the largest single-unit greenhouses in the UK.

Rainbow Growers' greenhouse is powered by two large gas-fired combined heat and power (CHP) generators. These supply heat and CO<sub>2</sub> to the capsicum pepper crop. Unlike most of Flexitricity's clients, only a small proportion of the generated electricity is needed on site; the majority is sold.

### 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

On average, 2.4MW of electricity generation capacity can be automatically turned on for short periods

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

Reduces national carbon dioxide emissions

Substantial revenues earned every year using existing assets

No disruption to core business processes

***“This is an important way to reduce operating costs and make more efficient use of our generating capacity...”***

## New revenues from existing assets

Rainbow Growers’ two on-site CHP units, totalling 5.4MW of electrical output, operate when heat or carbon dioxide is required in the greenhouse. On average, just under half of this capacity is standing idle at any time, and this spare capacity is made available to Flexitricity. The site has a full parallel grid connection, allowing Rainbow 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.

This revenue source – worth a significant annual sum to Rainbow – is enabled by Flexitricity, entirely from assets which the company uses day-to-day.

## 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

Rainbow Growers provides reserve electricity to National Grid only within the constraints of normal business operations. Flexitricity created elective arrangements, allowing Rainbow 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.

“This is an important way to reduce operating costs and make more efficient use of our generating capacity,” said Pleun van Malckenhorst, production manager of Rainbow Growers in Kent.

“We obviously need to generate our own power. However, our arrangement with Flexitricity means we are also deriving revenue from the plant, which helps towards our costs. In addition, this helps reduce carbon emissions.”

“Flexitricity’s smart grid approach allows us to do this while we get on with our day jobs – producing great crops for UK consumers.”

**flexitricity**  
Unlocking smart grid revenue

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