

FOREST GREEN ROVERS

PROJECT NAME: FGR – Forest Green Rovers

LOCATION: Gloucestershire, England

TYPE: Commercial Office



BACKGROUND

Forest Green Rovers is the most sustainable football club in the UK, having gained the Eco-Management and Audit Scheme (EMAS) gold standard for environmental performance in 2013, a standard no other football club in the UK has achieved.

The club's philosophy is to demonstrate a genuinely eco-friendly commitment and become the world's most sustainable football club. FGR has introduced several eco-initiatives toward this goal. Its water collection efforts make it independent of municipal water and help create an organic pitch free of

pesticides and chemicals. It operates the UK's first electric "mowbot" to mow the pitch, uses solar and wind-generated electricity to power the stadium, plants wildflowers on the ground to attract wildlife, and has taken animal products off the club menus.

Club owner Dale Vince is the founder of Ecotricity, the world's first green energy company. At the beginning of 2013, the board began considering the possibility of using Hydromx® in the club's heating system to further their ecologically sustainable status. In March 2013, the Hydromx trial began.



The New Lawn in Nailsworth, Gloucestershire, home of the UK's most sustainable football club.

CHALLENGE

The property's total floor space is 2,900 square meters and consists of a main building over three floors and a small single-story building. Two 70kW Potterton Compact Plus boilers heat the main building, and a Glow Worm 15hxi boiler heats the small building. In total, 1200 liters of water circulate throughout 73 radiators.

In March 2013, the complete heating system was drained and replaced with a 50/50 solution of water and Hydromx (600 liters of both.) The trial period for studying energy use and carbon emissions was March 2013 to March 2014. The club would compare this data to a weather-adjusted energy consumption baseline throughout 2012.

The club used a Heating Degree Days (HDD) analysis to determine energy savings, a methodology recommended by the Carbon Trust and the Chartered Institute of Building Services Engineers.

In 2012, the club consumed 11,316 kWh per month when no heating was required, and every Degree Day of heating required 139.89 kWh. These figures

were obtained from old gas bills and served as the baseline for gas energy usage with water as the heat transfer fluid in the heating system.

The HDD data for each day in the trial period was obtained from the local weather station and used the 139.89 kWh per Degree Day figure to predict that day's energy consumption. For example, if the day's temperature was 7°C, this was subtracted from the indoor thermal comfort standard of 15.5°C to estimate 8.5 Heating Degree Days. Multiply that figure by 139.89 kWh, and the analysis estimates that it would take 1,189 kWh to heat the buildings that day.

RESULTS

There was not much change in energy consumption during the summer months in the trial period. With no need to run the heating system, gas consumption continued as usual for cooking and hot water production, matching that in 2012.

However, energy savings were significant and sustained during the months of heating demand. **The analysis showed a 30% reduction in space heating energy consumption since the introduction of Hydromx.**

The HDD analysis predicted that the property would require 413,266 kWh during the year-long trial. Thanks to Hydromx, it consumed only 322,670 kWh, a difference of 90,596kWh. This efficiency saved the club £3,569 during the trial and prevented 18.3 tons of carbon dioxide emissions. That's the equivalent absorbed by 306 trees, or as FGR general manager Trevor Saunders puts it, "in football terms, over four football pitches of trees."

ABOUT HYDROMX®

Hydromx® is a nanotechnology heat transfer fluid that saves a significant amount of energy. Hydromx ethylene-based or propylene-based fluid outperforms not only other glycols, but also outperforms water. Hydromx has been proven in multiple installations to save 20–35% energy in heating and cooling systems around the world.

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