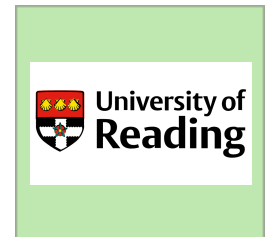


Saving Energy with Cheetah Case Study

University of Reading
August 29 2023

Net Zero on Campus Community Case Study

The [Net Zero on Campus](#) initiative, a collaborative effort between SDSN, the Climateworks Centre, and Monash University, aims to facilitate the sharing of lessons and resources to accelerate the decarbonization of university campuses around the world. The initiative consists of a “how-to” guide and accompanying online toolkit that will enable universities to accelerate the planning and implementation of net zero strategies, and act as living laboratories for testing solutions.



What is the case study trying to accomplish?

The university was introduced to the Cheetah system in 2020 as a result of an engineering doctoral thesis entitled “Energy Reduction in Commercial Food Preparation” undertaken recently at the university.

Cheetah is a demand-controlled kitchen ventilation system. It works by controlling ventilation fan speeds to match extract rates with cooking demands, thereby optimizing energy use. The fans are set to a minimum speed as default, but as smoke, high temperatures in ducts, low air flow in ducts, and high levels of carbon dioxide in the kitchen are detected, demand based extraction automatically increases.

Surveys were performed on 6 restaurants at the Whiteknights campus. The hospitality teams at the university supported its installation and initially a trial period for the system was agreed. The supply and extract

University Information

City: Reading

Country: United Kingdom

Region: Europe

Number of Staff: Medium (between 4,000 - 6,000)

Number of Students: Medium (10,000-30,000)

Type of Institute: Private

Case Study Overview

Category: Energy

Initiative: Reduce Campus Energy Demand

Type of Net Zero Solution: Physical intervention

Funding Source: University funding

Emissions Scope: Scope 2

Impact on Net Zero: Extremely large positive impact (annual energy savings of 137,418 kWh have been achieved)

Scale: \$10,000 to \$100,000

Timeframe: Short (between 6 months and 1 year)

Stakeholders: Sustainability office, hospitality teams, estates and engineering

fans of the trial kitchen ventilation system were monitored for a period with the Cheetah Energy Control system, and the same period without. The results of the initial study were very positive with an average daily energy saving of 97.79 kWh per day from the fans at one site. It was agreed to roll the Cheetah System out. Crucially, the teams were specifically hoping to achieve significant savings in the heating of associated supply air. Monitoring of this was included alongside the fan energy use at the installation of the systems to provide energy savings reports. These show an average of 57% energy reductions from supply and extract fans across the installations and a 30% reduction in the energy required from battery-heating of the supply air.

What were the key success factors in implementing the case study?

While the key driving factors for the university and its hospitality teams are carbon emissions reductions (and this project saved the equivalent of the energy consumption of over 45 average UK homes), very attractive simple payback periods of 0.71-1.43 years were also established.

The installation of the demand-controlled ventilation systems have been an exciting and successful collaboration between industry, developers, estates, hospitality, maintenance and sustainability teams and even the universities own doctoral graduate. The university is now aiming to embark upon innovative heat recovery systems from its catering facilities.

What were the challenges or barriers you had to overcome in implementing your initiative?

There are always challenges implementing new technical systems in a large organization. Demand controlled ventilation systems throttle fan speed and Cheetah is unique in its use of optical sensors detecting cooking activity. Staff can be inclined to override the system when air flow is perceived to be “too low.” This was overcome by providing staff with training in appropriate controls and providing an appreciation of the energy, cost, and emissions saving potential from such a system.

What did you learn from the process and what are your recommendations to others?

People’s interaction with technology must be carefully considered when implementing technical energy saving solutions. Working with world leading academics specializing in the specific equipment or sector to which the intervention applies increases the chances of successful emissions reductions.

What resources did you use to implement this initiative?

Resource	Why is this resource helpful?
University of Reading – Sustainable Food Policy and Framework	Provides context for the wider approach the university hospitality team takes in reducing emissions from food preparation activities.
University of Reading – Net Zero Carbon Plan	Provides context for the wider net-zero carbon approach the university is undertaking.
Electricity Use in the Commercial Kitchen	An output of the academic research which preceded the energy saving intervention.

Get Involved with Net Zero on Campus

Contribute to the Online Toolkit

- [Submit](#) your own case studies and decarbonization resources to be featured;
- Share your questions and/or feedback with us at info@unsdsn.org.

Join Our Community

- Join our global community of practice and Net Zero on Campus LinkedIn Group;
- Join global networks of academic institutions working on decarbonization: [SDSN](#), [Second Nature](#), and [EAUC](#). See our resource directory for more networks;
- Join the [Race to Zero for Universities and Colleges](#) campaign and make a net zero commitment;

- Empower your students and engage them in your campus decarbonization efforts: join [SDSN Youth](#) and see our guide for more information.

Learn More

- Explore [SDSN's free, open educational resources](#) from the world's leading sustainable development experts to use in your classrooms: MOOCs, educational videos and lectures, and global community of practice.

[Net Zero on Campus](#) is a collaboration between [SDSN](#), [the Climateworks Centre](#), and [Monash University](#), in partnership with [Second Nature](#) and the [EAUC](#) (Secretariat of the Race to Zero for Universities and Colleges).