7 AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable and modern energy

TEACHING AND STUDENTS

The Energy Trilemma

Within the Global Sustainable Development course, students can take the Energy Trilemma, a module based on SDG 7. The teaching focuses on the key dimensions of the problem; sustainability, energy security and energy equity, and the challenges it brings to economies of different sizes and at different stages of development.

Sustainable Energy Technologies MSc

The main challenges in the shift away from fossil-fuel based energy supply lie in the development of sustainable energy technologies, ranging from the engineering of new materials to the integration of these technologies into power distribution networks. Students taking the Sustainable Energy Technologies MSc gain in-depth and advanced knowledge of a diverse range of sustainable energy technologies; including wind, solar, fuel cells and bioenergy. The course benefits from links with academic institutions, industry and research at Warwick in chemical engineering, sustainable thermal energy technologies, and power electronics.

Cut the Flow

The Cut the Flow competition educates students in on campus accommodation about energy and water saving, rewarding the blocks with the greatest reduction in consumption. The project has resulted in an average reduction in electrical consumption of 8% since 2016/17, saving over £100k. An extension of the project has been trialled in Sherbourne accommodation, where electrical consumption is displayed and explained in each block every two weeks. A similar project has been launched in Tocil accommodation.

Blackout Society

The Blackout Society was set up to educate and raise awareness about overconsumption of energy and to celebrate Earth Hour.

One of the most obvious usages of electricity is lighting; so twice a year Blackout turn off the lights on the piazza, the Student's Union and other areas of the campus and host a performance event, bringing in other societies to perform on stage turning what could to some be perceived as a power outage into a celebration of what we can all do to reduce consumption.

RESEARCH

CLEAN

As the EU pushes ahead with its energy and climate agenda, it will need a broad range of cleaner energy sources including natural gas to retain its leading position in emission reductions in a carbon-constrained world. Europe has enough gas to meet around half of its own demand for another 25 years. The public concerns of geological disaster, underground pollution, contaminated water and damage to ecosystems are major obstacles to the shale gas revolution in Europe.

The EU funded CLEAN project involving members of the Ground Engineering group aims to relieve the energy security and carbon emission issues in Europe by introducing a new environmental-friendly technique for shale gas exploitation combined with carbon storage process. The direct impact from this new technique is estimated to save 30,000 tons of freshwater, prevent the release of 150 tons of underground polluting chemicals and embed a minimum of 15,000 tons of CO2 for a typical shale gas well.

LoT-NET

The LoT-NET project is investigating how waste heat can be recovered, used and incorporated in smart, thermal and electrical energy systems. Heating and cooling produces more than one third of the UK's CO2 emissions and represents about 50% of overall energy demand. The Department for Business, Energy & Industrial Strategy has concluded that heat networks could supply up to 20% of building heat demand by 2050.

LoT-NET aims to provide a cost-effective near-zero emissions solution for heating and cooling that realises the huge potential of waste heat and renewable energies by utilising a combination of a low-cost low-loss flexible heat distribution network together with novel input, output and storage technologies.

LoT-NET

OPERATIONS

Cryfield Heat and Power

We have 3 Combined Heating and Power plants on campus which provide efficiently-generated electricity to 60% of our buildings. The excess heat generated by the plants is captured and used to generate hot water for campus via our District Heating System containing 19 km of pipes. This system saved the university £1.2m in 2018/19 and is also used by staff and students to help with research.

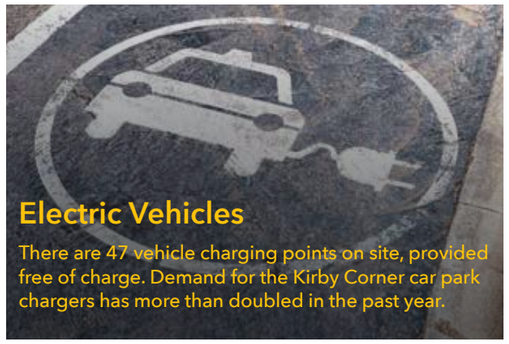
Renewables

The campus has around 2889 photovoltaic panels, covering an area of 7277 m2. The panels have a peak power of 728 kWp, with potential to generate 618,579 kWh of electricity per year - enough to supply 159 houses.

PUBLIC ENGAGEMENT

RESO

The £2.62 million RESO (Regional Energy System Operator) Project, led by Energy Capital of the West Midlands Combined Authority (WMCA), including Warwick Manufacturing Group, University of Birmingham, Coventry City Council and others, looks to explore the advantages of a new kind of energy system operating at city scale. The system will include local low carbon energy generation, storage and management and electric vehicles. It moves away from the traditional energy system approach of large power stations and one-way energy flows, if successful it will avoid the need for lots more copper in the ground, and expensive infrastructure upgrades as the energy flows will be managed at a local level. The approach is already being developed at campus scale at Warwick, the project seeks to understand whether it can be applied at a larger scale with multiple customers.



Electric Vehicles

There are 47 vehicle charging points on site, provided free of charge. Demand for the Kirby Corner car park chargers has more than doubled in the past year.