

Students produce pedal powered cinema

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The University of Leicester student team with the bicycle powered cinema.
Credit: University of Leicester

A team of engineering students has produced a bicycle powered generator which could power a 55 watt projector for the time required to watch a movie.

In recent times, pedal power has seen a rise in popularity as it is seen as an alternative source of clean energy and a positive step to try to tackle climate change.

Now, as part of their degree, fourth year Electrical Engineering (MEng) students at the University of Leicester have designed and built a compact bicycle powered generator that enables the user to comfortably pedal and produce enough energy to power a cinematic projector.

The students connected a single speed racer bicycle to a 250 Watt motor via a belt and to provide enough current to charge the battery, the user would need to pedal at a rate of 60 RPM (60 revolutions per minute).

The battery would then supply energy to a square wave inverter circuit – which converts the DC voltage produced from the cyclist to AC voltage which powers the projector over a long period of time – enough to watch your favourite movie.

At the end of the [project](#), the students watched the film *Mission Impossible* together using the projector, taking turns to pedal the bicycle in order to generate power.

Muhammad Arslaan Ashfak, a fourth year student in the University of Leicester's Department of Engineering, said: "Working in a project like this has been an invaluable experience. To be able to see something which started off as a design be brought to reality is definitely a great achievement. Not only did we have the opportunity to apply some of our knowledge that we have learnt in our lectures, we also developed new skills over the course of this year."

Hanqing Lyu, Project Team Leader and also a fourth year student in the University's Department of Engineering, added: "The original brief for the bicycle was to power a cinema projector but it could also be used as

a phone charging utility station in places like the University Students' Union where students can come to plug their charger in and pedal the bicycle so that they have a physical idea of the energy they use whilst charging their phones."

Dr Alan Stocker, project examiner and Senior Lecturer in the University's Department of Engineering, said: "The fourth year project module provides an opportunity for some of our most able students to design and build a substantial engineering project. Since it is a complex group project, involving typically 4-6 students, it also allows them to apply the project management skills such as time and financial management that they have been taught. As part of the project, they are also able to enhance their team working, problem solving, and presentation skills as well as their technical knowledge."

He added: "The student team who have built the pedal powered cinema have done an excellent job and produced a really worthwhile device."

Dr Fernando Schlindwein, project supervisor and Reader in Biomedical Engineering in the University's Department of Engineering, said: "This group of [students](#) applied various concepts of both Electrical and Mechanical Engineering to complete this project, which shows that our approach of a General Engineering Department produces very able Engineers."

Provided by University of Leicester

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