

How the Bicycle Generator Works

The bicycle generator turns human power into electricity. This is done by harnessing the energy produced by the cyclists as they pedal to turn a 24-volt electric scooter motor. This works in a similar way to a dynamo, with electrical current being generated as the bicycle wheel rotates the motor shaft. This power is then fed into a step down DC-to-DC converter. This regulates the voltage supplied to the system by the bicycle (which can range anywhere up to 50V depending on the cyclist).

Next the electricity runs into an ultra-capacitor which acts as a reservoir to store the energy, ensuring that we don't have any sudden power drops which could damage equipment. Finally the power runs into the inverter, which converts the DC current produced by the motors into 240 volt AC electricity (just like we have coming out of our wall sockets at home). The system produces a direct link between the amount of power we consume and the amount of effort the cyclists need to put in. The more power we use then the harder the cyclists need to pedal.

For this installation we have put together an 8-bicycle generator to power the amplifiers and speaker for Kaffe Matthews' piece, which will need to produce around 250 watts of electrical power to make the audio equipment work. The average cyclist can generate around 50 watts of power so we'll need people cycling at all times for the piece to run it's 9 hour duration.

Credits

Artist: Kaffe Matthews

Curator: Alice Sharp

Producer: Emma Jones

Scientific Advisor: Peter Brimblecombe

Marketing & PR Co-ordinator: Ana Vukadin

PR Consultant: Simon Steven

Invisible Dust website: Chloe Waygood and Point 35

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Magnificent Revolution: Barbora Patkova & Adam Walker

Special thanks to:

Adam Hart – Executive Director, Hackney Co-operative Developments

Marianne Porter (Head Teacher) and Jackie Twomey (Year 4 Teacher) from

Colvestone Primary School

A Space and Year 5 teachers at Shacklewell Primary School

Lucy McMenemy – Hackney Council

Jenny Paton - The Wellcome Trust

Lee Milne - Arts Council England

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www.invisibledust.com

www.magnificentrevolution.org

www.gillettsquare.org.uk

www.kaffematthews.net

www.vortexjazz.co.uk