

## **Cooking with sound -- Score stove enters test** stage

July 17 2009

A low-cost generator with the potential to transform lives in the world's poorest communities is now being tested across the UK and in Nepal. The Score project, led by The University of Nottingham, is developing a bio-mass burning cooking stove which also converts heat into acoustic energy and then into electricity, all in one unit.

The £2 million Score project (Stove for Cooking, Refrigeration and Electricity) brings together experts from across the world to develop the biomass-powered generator. By developing an affordable, versatile domestic appliance Score aims to address the energy needs of rural communities in Africa and Asia, where access to power is extremely limited.

Researchers in the Department of Electrical and Electronic Engineering at The University of Nottingham are working on the generator's Linear Alternator — the part which turns the sound energy into electricity. The system uses special configurations of magnets which generate electrical energy from sound. Computer simulations of the linear alternator have proved successful, and test models are currently being constructed in the department's workshops.

Nottingham researchers are working with Dai-ichi, one of Malaysia's largest loudspeaker manufacturers, to bring down production costs through good design practice. Though the Score unit does not physically resemble the average loudspeaker, it is compatible with the Dai-ichi manufacturing process.



Score has been invited by Dai-ichi to exhibit at the "Better City Better Life" EXPO 2010 in Shanghai China from May to October 2010 to showcase its new advanced technology to 70 million expected visitors.

The aim of the Score project is to make a low-cost, high efficiency generator that can be used in the world's poorest countries. The generator has a cost target of £20 per household, based on the production of a million units. The generator will weigh between 10 and 20kg. The target is to generate an hour's use per kilogram of fuel — which could be wood, dung or any other locally-available biomass material.

Dr Chitta Saha, Research Assistant at Nottingham said: "The current Linear Alternator design is very exciting for me as it solves many of the problems we had with using loudspeakers as alternators, but can still be made cheaply. My mum lives in Bangladesh — she is so proud that I am working on such a worthwhile project that she can see will help her community."

The University of Manchester, City University London and Queen Mary, University of London and the Charity Practical Action are partners in the project — from researching engine design to the manufacture and distribution of the stove in the developing world. The project will work with governments, universities and civil organisation across Africa and Asia, many of whom have already offered support. This collaboration will ensure the device is affordable, socially acceptable and that there is scope for communities to develop businesses to manufacture and repair locally.

Mark Johnson, Professor of Advanced Power Conversion at Nottingham, said: "I am particularly pleased with the way that the Score consortium, with partners from very different technical backgrounds, has developed into a cohesive research team. We now have solutions to the fundamental technical problems and the first demonstrators



delivering significant electrical power, have been realised"

The Score team is now looking for sponsorship to fund testing in the countries in which the generator will eventually be deployed. Indeed Germany's Department of International Development (GTZ South Africa) has already signed a Memorandum of Understanding to provide funding to test the stove in southern Africa.

Paul H Riley, Score Project Director says "We have had tremendous interest in the Score project from around the world and the Score community —launched a few months ago — is working extremely well. This includes entrepreneurs and volunteers that adapt the stove for local use among its members."

Practical Action, a charity which promotes the development of sustainable technology to tackle poverty in developing countries, is already leading field trials in Nepal and Kenya. The charity will expand the test sites when more units are made available.

Score community member Mark Loweth works in Tajikistan, one of the poorer countries in Central Asia. He has adapted a variation of a Score Stove to ensure it is suitable for the communities it is aimed at.

"We are very excited with the Score technology as it has the capability of bringing small scale electrical generation to households in the developing world," he said.

"We plan to field test 20 units in Tajikistan when funding is available through a jointly owned, locally registered company utilising the experience and extensive local knowledge of expatriates and nationals with strong links to rural communities."

Other members of the international Score Community are investigating



how a Score Stove could best be adapted for their local environments.

South African Score community member Rynier Ferreira said: "We are adapting a Score Stove to work with paraffin (kerosene) as many rural communities in South Africa are still highly dependant on it as a major fuel source for cooking. Adapting a Score Stove for paraffin will increase not only the safety aspect for stoves using this type of fuel, but will give the people in these rural communities the additional advantage of electricity and refrigeration."

Gorge Crowson is also testing the stove in southern Africa after joining the Score community: He said: "We have identified a number of waste materials that can be burnt in a Score Stove and are actively seeking financial support to set up assembly plants in Southern Africa and a distribution network, once the test phase is completed."

It's thought that more units will be available for testing in field trials at the start of next year, with full production of the Score generator taking place after 2012.

The Score consortium is funded by grants from the Engineering and Physical Sciences Research Council as part of its initiative on energy and international development.

Kees deBlok of Aster Thermoakoestische Systemen in the Netherlands and Scott Backhaus of Los Alamos International Laboratories are acting as consultants to the Score project.

More information is available from <u>www.score.uk.com</u>

Provided by University London and Queen Mary



Citation: Cooking with sound -- Score stove enters test stage (2009, July 17) retrieved 1 May 2024 from <u>https://phys.org/news/2009-07-cooking-score-stove-stage.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.