



*Some of CREEC management cut a "farewell" cake with Jo Babirye who left at the end of June for further studies. Jo was working as CREEC's accountant in the department of management. We wish you all the best Jo.*

### **Message from Editor**

CREEC's first online newsletter received a very good reception from all stakeholders. For this, we thank you all for the support you have given us. CREEC's April-June quarter has been a busy time because all departments were busy finalizing all their planned activities before the end of the financial year. The bioenergy department participated in the SE4ALL workshop of June. In addition, the department started awareness creation activities to market the MWOTO stove at a national level.

The solar PV department continues to register full growth as it markets the well equipped laboratory with solar lamps testing activities in the Solar Lamps for Health and Wealth campaign. Pico-hydro department in this quarter have geared their efforts at rehabilitating a power source for the Kagando Rural Development Community (KARUDEC). The energy management department has performed energy audits and verification exercises for various companies as highlighted in this issue. We hope to work more and grow as it promotes renewable energies now that new projects like the WWF biogas project are already on board.

Enjoy Reading.

Rehema Z Namukose

Public Relations Assistant.

## QUATERLY NEWSLETTER

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### **CREEC SIGNS A BIOGAS AGREEMENT WITH WWF**

CREEC is pleased to announce the signing of an agreement with WWF where CREEC will implement the RET component of the project WWF Project by putting up four biogas plants in two districts.

This project is being implemented with funds from United Nations Development Programme (UNDP) in partnership with the Government of Uganda and World Wide Fund for nature.

Currently, the CREEC biogas team has finalized with baseline studies and is doing site selection for areas where the plants will be installed.

## ENERGY EFFICIENCY INITIATIVES IN UGANDA'S POWER SECTOR



*Pic: CREEC Energy Management team during verification of SCOUL industries, Lugazi*

### By Geoffrey Bakkabulindi

The steady economic growth in Uganda over the last few years has led to the rapid increase in power demand, especially in the industrial sector. This demand growth has consistently outstripped the rate at which new generation is added to the power grid. This is because of the considerable capital expenditure needed to construct new generation stations. The shortfall between supply and demand has resulted into planned load shedding of grid-connected consumers.

CREEC in conjunction with the Private Sector Foundation Uganda (PSFU) initiated a project to mitigate this power shortage through the improvement of energy efficiency on the demand side. Under this scheme, energy efficient equipment would be installed in selected industries where the large consumption was expected to result into big savings on the peak power demand.

Therefore, a 'virtual power source' would be created whereby the reduced industrial demand would make more power available to other sectors. This would in turn ease load shedding especially in the domestic sector.

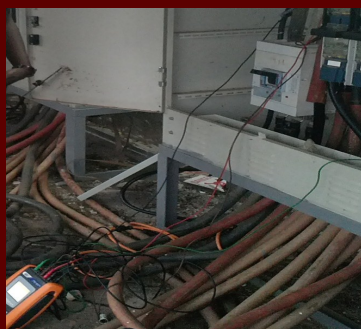
Because it is cheaper to save 1 MW of power than to add 1 MW of new generation, such energy efficiency initiatives on the demand side are in the interest of the Government of Uganda. Therefore, PSFU provides a 50% subsidy on the cost of installations for the first few selected companies as well as the full costs of the initial energy audits and the savings verifications after installation.

The goal is to realize a reduction of **10 MVA** on the grid's peak demand. Under the Memorandum of Understanding (MoU) between PSFU and CREEC, the Energy Management Department is verifying the demand savings resulting from the installation of the equipment at each factory by a third party Energy Service Company.

The energy efficiency solution identified for this phase of the project is the power factor correction capacitor (PFCC) bank. This was chosen after it was found that most industries in Uganda are currently operating their machinery at a low power factor.

Between October 2011 and July 2012, CREEC's Energy Management team has verified ten companies which have had PFCC banks installed in their factories. The team uses on-site technical measurements, interviews with technical staff and utility billing data to analyze and determine the kVA savings.

Power quality measurements are also recorded in order to determine the impact of the PFCC banks on the facility's power system. The installations were found to considerably improve the power quality and stability as well as reduce energy consumption and monthly electricity expenditure. (Continued to page 3)



*Pic: On-site transformer measurements during verification.*



### CREEC participates in SE4ALL workshop

Two CREEC staff participated in a one day stakeholders' workshop hosted by the Ministry of Energy and Mineral Development, UN and EU for the Sustainable Energy and Mineral Development for All (SE4ALL) Initiative.

Karsten Bechtel, the head of the department together with Clara Amaguru, the bioenergy assistant participated in the workshop on June 5<sup>th</sup> at Hotel Africana.

The workshop was set up to carry out a Rapid Assessment and Gap Analysis in Uganda's bioenergy sector. The results of the workshop were presented at the Rio+20 summit (20-22 June, 2012) in Brazil under the SE4ALL umbrella.

The SE4ALL is a major new initiative launched by the United Nations to make sustainable energy universally available with three proposed interlinked global targets to be met by 2030.

These targets are achieving universal access to modern energy services; doubling the rate of improvement in energy efficiency; and doubling the share of renewable energy services in the global energy mix .



*L-R: River Rwembya and interns at CREEC doing a practical session about generating power using the pico-hydro demo test rig*

## ENERGY AUDITS– From Page 2

The companies that have participated in this exercise to date are listed below together with their estimated kVA savings realized at the time of verification.

1. Luuka Plastics – 93 kVA
2. Lake Bounty Industries – 160 kVA
3. Rwenzori Commodities, Buzirasagama Factory – 233 kVA
4. Rwenzori Commodities, Hima Factory – 134 kVA
5. Uganda Clays Limited, Kamankoli Factory – 424.5 kVA
6. Ugachick Poultry Breeders Ltd. – 115 kVA
7. Munobwa Tea Factory – 142 kVA
8. Kigumba Tea Factory – 178 kVA
9. Sugar Corporation of Uganda Limited, SCOUT - 1,777 kVA
10. Uganda Tea Corporation, Kasaku – 188.9 kVA

The total estimate demand savings realized so far during this project are **3.45 MVA**. The project is on course to achieve the aforementioned target of 10 MVA.

## CREEC-KAGANDO MICRO HYDROPOWER SCHEME

By Teddy Nalubega

Since 1986, 60kW of electricity was generated by Kaganda micro-hydro system located in Kasese district on River Rwembya which flows alongside the Kagando Rural Development Community (KARUDEC) property until 2010. The electricity benefited KARUDEC and the surrounding areas. AHEAD Energy, a US-based NGO initiated discussions for the rehabilitation of the scheme by approaching CREEC for a feasible plan to do a diagnostic study to rehabilitate the 60 KW micro hydro plant. CREEC with funds from the Private Sector Foundation Uganda (PSFU) carried out feasibility studies for the rehabilitation of the hydropower system. In August 2010, the plant was shutdown, all the electricity was generated using a diesel generator until Kilembe Mines Limited (KML) extended the grid supply to the hospital creating some relief on the situation. Much as the community is currently using the electricity from the grid, this is very expensive and unreliable for the community especially the hospital.

KARUDEC community has hired CREEC as an advisory consultant to rehabilitate and scale up the scheme to about 162KW capacity. Given that their peak demand is about 160KW, the balance will be sold to the grid. Other than PSFU, Rural Electrification Agency (REA) is involved with the transmission of the generated electricity over 4.5km from the power house to the hospital as part of their contribution.



## CREEC'S INTERNSHIP PROGRAM

During this campus holiday, CREEC hosted and trained 8 interns placed in different departments of bioenergy, solar PV, pico-hydro and energy management. The interns began their industrial training in June and have been trained in fields of bioenergy, solar PV, pico-hydro and energy management engineering. They have also gained hands-on skills in these areas.

Interns in the pico-hydro department were privileged to get practical sessions when they visited some of our sites of Kagando and RMS in Kasese. The visit gave them a better understanding of our pico-hydro department projects and hydro power generation in general. CREEC is happy to have hosted interns this holiday and wishes them all the best.



**L-R: A trainee undergoing training on how to install a solar panel, right is another trainee seated in the MSI kiosk under construction**

## **CREEC TRAINS MSI GRID OPERATORS**

The training of two MSI site administrators for the Ntenjeru and Kiboga sites successfully came to an end after running for a month from 14<sup>th</sup> May to 24 June. Godfrey Lubwama and Micheal Lugeya were trained in basics of ICT, solar PV, accounting and documentation in preparation for the management of Kiboga mini grid and the solar PV kiosk in Ntenjeru.

According to the head of the solar department and lead trainer, Steffen Wassler, the training packages included basics of ICT like Microsoft Office, internet and email use, creating data bases and use of power point. In addition, basic theories about solar, accounting and documentation like report writing were also part of the training package.

Furthermore, the trainees got hands-on experience on how to use a computer and solar PV equipment in CREEC's solar PV lab.

"I acknowledge that the solar PV department has played a very big role in providing me with all required information about solar PV energy. It's interesting that am able to carry out tests and measurements as applied to electricity, for example; power, current, voltage and much more." said Micheal Lugeya, one of the trainees.

The two trainees emerged the best in the interviews that were conducted a week before the training in Ntenjeru and Kiboga districts. They will be the administrators at Kiboga mini grid site and Ntenjeru solar PV kiosk after installations are completed.

## **NEWS BRIEF:**

### **MWOTO STOVE CAMPAIGN**

The MWOTO awareness creation that kicked off at the beginning of April has been ongoing throughout the quarter. The stove has been marketed at exhibition platforms within and outside Kampala. It has been promoted through door-to-door campaigns in districts of Mbale, Kasese and Wakiso. These campaigns hope to be spread to Lira, Mbarara and Jinja districts. For more information about the campaign, visit [www.mwotostove.com](http://www.mwotostove.com). Below: MWOTO awareness creation.



## **ABOUT CREEC**

CREEC is a not-for-profit organisation for research, training and consultancy, located at the College of Engineering, Design, Art and Technology (CEDAT) within Makerere University, Kampala, Uganda. CREEC's mission is "to enhance access to modern types of energy through research, training and consultancy in East-Africa". The centre focuses on four areas: bioenergy, solar PV, pico-hydro and energy management and aims at application and adaptation of technologies to the specific Ugandan and local environment with an emphasis on systems with components that can be locally manufactured.

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