



16th Annual Report 2013-2014



SARDAR SWARAN SINGH
NATIONAL INSTITUTE OF RENEWABLE ENERGY
(An Autonomous Institution of Ministry of New and Renewable Energy)

12 K.M. Stone, Jalandhar- Kapurthala Road, Wadala Kalan,
Kapurthala-144 601 (Punjab)

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1. INTRODUCTION

Sardar Swaran Singh National Institute of Renewable Energy, Kapurthala is an autonomous Institution of the Ministry of New and Renewable Energy, Govt of India devoted to Bioenergy Research, Design and Development. The Governing Council under the Chairmanship of Secretary, MNRE has been directing and monitoring the activity of the Institute. The Institute has 10 nos. of sanctioned posts only, all of which are occupied at present. The Institute has prepared vision documents for research and created five research divisions including all aspects of biofuel and bioenergy research. The 16th meeting of the Governing Council approved the vision document and creation of 16 nos. of new scientific posts for smooth running of the R&D activities under different divisions. The proposal has been submitted to Ministry of Finance for Approval.

2. OBJECTIVES AND FUNCTIONS

VISION:

To become an apex Institution for carrying out **state-of-the-art** research and developmental activities in the area of bio-energy.

MISSION:

- To be a knowledge based R&D Institution of high quality and dedication.
- To impart the training to professionals of bio-energy sector
- To provide the services and optimum solutions for the major stakeholders across the entire spectrum of the bio-energy sector.
- To support bio-energy sector in developing the knowledge for promoting new technologies.
- To develop Human Resources for the bio-energy sector at all levels.

OBJECTIVES:

- To carry out and facilitate research, design, development, testing, standardization and technology demonstration eventually leading to commercialization of RD&D output with a focus on:
 - a. Bioenergy, biofuels and synthetic fuels in solid, liquid and gaseous forms for transportation, portable and stationary applications; and
 - b. Development of new technologies for effective utilization of different type of wastes and production of value added products
- To undertake and facilitate human resource development and training including post-doctoral research in the area of bioenergy.
- To create facilities for operationalization of the Institute.

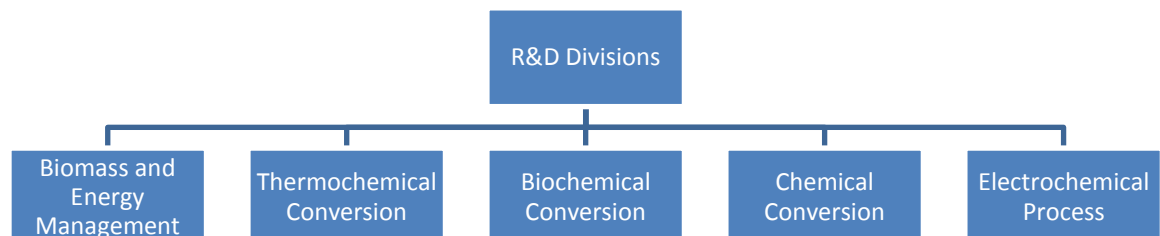
FUNCTIONS:

- Conduct resource surveys and Assessment of potential across the country in the bioenergy sector.

- In-house R&D programmes in all emerging fields of bioenergy.
- Joint technical programmes with other national institutions and testing centres.
- Testing and certification of devices and systems.
- Techno-economic evaluation of bioenergy equipments and systems.
- Creating data base for bioenergy including information on patents.
- Compilation and dissemination of information on resources, technologies, products and applications.
- Providing technical support to industry on new product design and development and up-gradation of products and manufacturing processes.
- Providing technical support to the biomass energy project in achieving and sustaining quality such that systems of highest quality and reliability are installed.
- Organization of training programmes, seminars and workshops.
- Cooperation with scientific and technical Institutions abroad under bilateral and multilateral agreements and MoU.
- Assistance in curriculum development in renewable energy and undertaking concrete programmes for human resource development.
- Consultancy and advisory services in the bioenergy sector.
- Providing technical support to MNRE in policy planning and implementation.
- Cookstove dissemination projects through Carbon Financing (CDM).
- Information, Communication and Education (ICE).

3. RESEARCH DIVISIONS AND LABORATORY SETUP

There are total five R&D divisions as given below:



The R&D laboratories of the Institute and facilities are subdivided under the following headings as per application point of view.

- i R&D Block-I (Chemical and Electrochemical Conversion Laboratory, viz. Biodiesel, Hydro processing, Catalysis and Fuel Cell).
- ii R&D Block-II (Biochemical Conversion Laboratory viz. Bioethanol, Biobutanol, Biogas, Biohydrogen, Metabolic Engineering).
- iii R&D Block-III (Thermochemical Conversion Laboratory, viz. Biomass Characterization, Gasification, Pyrolysis, Cookstoves, New and Hybrid Energy Systems).
- iv Common Facility Building (Computer Lab, Library, Conference Hall and Canteen).
- v Workshop (Common Workshop Machines & Tools and Test Engines).

vi Gasifier shed (Biomass Gasification and Testing Facilities).

4. CHARTER

With a view to manage, administer, direct and control the affairs of SSS-NIRE, an environment and culture conducive to achievement of excellence, will be created by ensuring:

- i **Commitment to the mission:** sense of purpose and direction to policies, programmes & activities to achieve the aims and objectives;
- ii **Commitment of staff members:** liberal, positive and people-sensitive personnel policies, training and management development with special reference to advance technologies equipment and result orientation;
- iii **Commitment to excellence:** professional competence, encouragement to creativity, innovation, initiative and career development; and
- iv **Commitment to society:** application of the state-of-the-art research and development to national/social priorities.

5. LABORATORY DEVELOPMENT- FACILITY CREATED

The *state-of-the-art* research facility is being developed for biodiesel, bio-ethanol, gasification, biogas, cook stoves research & testing and for other areas in Bio-energy. About 25 laboratory equipments worth Rs 2.0 Crores have been installed during this period. The consumables including chemicals, glass wares and plastic wares have also been procured for experimental work in the laboratories.

Chemical Conversion

The equipment facilities available under this division includes Gas Chromatograph dedicated for biodiesel analysis viz. % Fatty acid methyl ester conversion, monoglyceride, diglyceride, free glycerol content in biodiesel, Rams bottom Carbon Residue, Oxidation Stability Apparatus, High Pressure High Temperature Reactor, True Boiling Point Distillation Apparatus, Automatic Density Meter, Flash point apparatus (automatic open cup), Radleys Reactor, Rotary Vacuum Evaporator, Computerized Diesel Engine Test Rig and 5 gas analyser, etc. A few equipments are in the process of procurement to complete the analysis facility as per ASTM or BIS Standards for green diesel and biodiesel testing.

Biochemical Conversion

Biochemical Conversion Division has been established in R&D-II with the facilities of Analytical, Bioprocess, Microbiology and Molecular Biology Laboratories. Analytical laboratory contains the equipments such as HPLC, Gas Chromatography UV-vis spectrophotometer and Fibretech; Bioprocess laboratory contains the equipments such as Bioreactor (3.0 & 7.5 L), Refrigerated Centrifuge, Water Purification System, Lyophilizer,

Microdisintegrator, Water Bath, Autoclaves, etc.; Microbiology laboratory contains the equipments such as Environmental Shaker, Microscope with camera, Incubator, CO₂ Incubator-cum-shaker, BOD Incubator, Hot Air Oven, Horizontal Laminar Flow, Automatic Colony Counter, Deep Freezer and Refrigerators and Molecular Biology laboratory contains the equipments such as Gradient PCR, Real Time PCR, Biophotometer, SDS-PAGE, 2-D gel Electrophoresis, Horizontal Gel Electrophoresis, Gel Documentation and Electroporation Unit.

Thermochemical Conversion

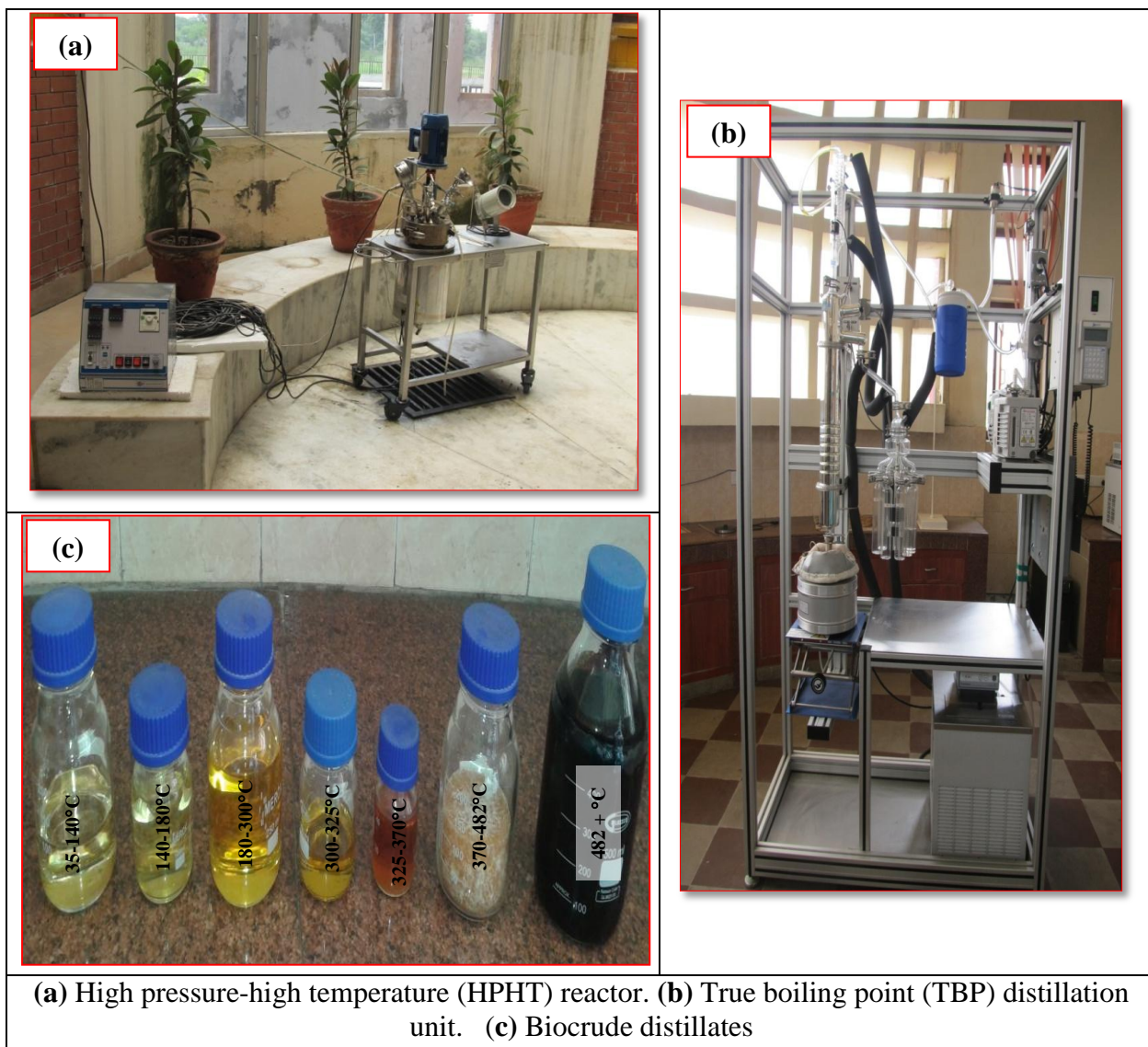
The basic testing facilities for biomass characterization, biomass gasification and cookstove testing, etc, have been created for thermochemical conversion of biomass including gasification, combustion, pyrolysis, etc. and some of the important equipments like Differential Scanning Calorimeter, Stack Monitoring system (for SPM Measurement) and testing hood for biomass cookstove. Besides, few important instruments such as, CHNO analyzer, TGDTA, Bomb calorimeter, etc. have been procured and installed in the respective laboratory.

6. RESEARCH ACTIVITIES

Ongoing Projects

- *The work activities under the project Biocrude Production: Hydrocracking of Nonedible vegetable oil (PI/Co-PI: Dr. AK Sarma/Dr. Sachin Kumar) (MNRE, Govt. of India)*

In continuation to our previous year work the R & D activities in the project “Biocrude Production: Hydrocracking of non-edible vegetable oil” is ongoing. The GC MS analysis of the different fractions obtained from the hydrocracking of non edible vegetable oils were carried out at Central University of Punjab, Bathinda. The analysis showed a spectrum of different compounds mostly straight and branched chain hydrocarbons, similar to the fractions of petrochemicals. The unsaturated bonds predominated in triglycerides got saturated and the properties of the fractions such as density, viscosity, carbon residue, flash point etc. were also observed in accordance with ASTM limits prescribed for petroleum distillates. Two types of waste material based heterogeneous catalysts were used: One derived from Musa Balbisiana Colla Underground Stem (MBCUS) while the other from the fly-ash of a biomass based power plants (Industry) ; both of which are found as **nano-range** material. The first i.e. MBCUS has already been reported for tranesterification. The positive attributes of these two materials are that the ashes mostly consists of potassium, calcium, magnesia and aluminium oxides including silica as the primary component. These catalysts activate at relatively high temperature and catalytic efficacy accelerated with the liberation of water during the Hydroprocessing reactions. There is very low quantity of heavy metals in these two types of catalyst as reported earlier, in the other conventional hydroprocessing catalyst and hence can be regarded as GREEN Catalyst. There lies the novelty of these processes. Further, economic feasibility study of lab scale processes are also carried out.

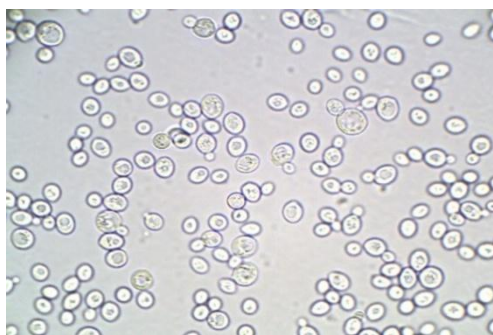


- ***Process development for bioethanol production from agricultural residues, Phase-I: Development of process for co-fermentation of hexose and pentose sugars of agricultural residues (PI/Co-PI: Dr. Sachin Kumar/ Dr. AK Sarma) (MNRE, Govt. of India).***

MNRE funded research project on ‘Process development for bioethanol production from agricultural residues, Phase-I: Development of process for co-fermentation of hexose and pentose sugars of agricultural residues’ is undergoing since May 2012. The total cost of the project is INR 132.19 Lakhs for two years. Different thermophiles/thermotolerant strains have been isolated from soil and water samples using the rich media such as nutrient broth and yeast extract, peptone and dextrose (YPD), etc. at 50°C. Two thermotolerant yeasts namely NIRE-K1 and NIRE-K3 have been found efficient for utilization of both pentose and hexose sugars to produce ethanol. However, the rate of pentose sugar utilization was found to be slow and ethanol yield was low. The fermentation conditions (pH, temperature, inoculum size, initial sugar concentration) have been optimized.

Different components of Basal Salt Medium (glucose, ammonium sulphate, potassium dihydrogen orthophosphate, disodium hydrogen orthophosphate, yeast extract, magnesium chloride, and trace metal chlorides) are being designed for optimum growth and fermentation of the screened isolates. The isolated yeasts have been processed for identification and deposition in MTCC, Chandigarh. The work has also been extended for optimization of parameters such as sugar concentration, adaptation of ethanologens for xylose utilization with high conversion rate and product yield, etc.

The review committee of the project suggested identifying the xylose transporters in the isolates. The methodology has been prepared for identification of xylose transporters. The further study is in progress. The isolated thermotolerant yeasts have also been targeted for genetic modification for increasing the rate of xylose utilization and ethanol yield. For further study, whole genome analysis of the yeast would be required.



Microscopic view of thermotolerant ethanologen isolated at NIRE K3

➤ ***Biomass Cookstoves Testing and Certification Center at NIRE, Kapurthala (PI: Dr. S. K. Tyagi) (MNRE, Govt. of India).***

A project entitled “Biomass Cookstoves Testing and Certification Center at NIRE, Kapurthala” has been sanctioned with an outly of Rs. 97.908. The work in this direction has started with the main objective is to develop a Testing and Certification Center for the State of Punjab, Haryana, HP and J&K and also to carry out the basic RD&D activities in the area of biomass cookstove with higher efficiency besides, to provide necessary technical assistance to different stakeholders in this region of the country. The detailed objectives of the project are as follow:

- i) Establishment of well-equipped laboratory facility for carrying out performance testing of biomass improved cookstove per latest BIS norms (August 2013).
- ii) Development of standards and test protocols for cookstove and fuel.
- iii) Technical assistance/testing to biomass cookstove stakeholders in the region.

- iv) To conduct training on operation and maintenance for SNA's, NGO's, Project developers, Industry etc. engaged in the implementation and promotion of cookstove in consultation with MNRE.
- v) To carry out random field performance monitoring and evaluation biomass cookstove including indoor air quality near the kitchen space in the consultation with MNRE.
- vi) Any other activities assigned by MNRE.

The establishment of the testing and R&D facilities for improved biomass cookstove is in process and likely to be completed soon. However, the design and development of low cost durable and locally acceptable biomass cookstoves is going on. In this regard, few cookstoves models have been developed at the Institute and the testing is underway using Bureau of Indian Standard (BIS) water boiling test.



Cookstove testing facility with necessary equipments

In-house Ongoing R&D Activities

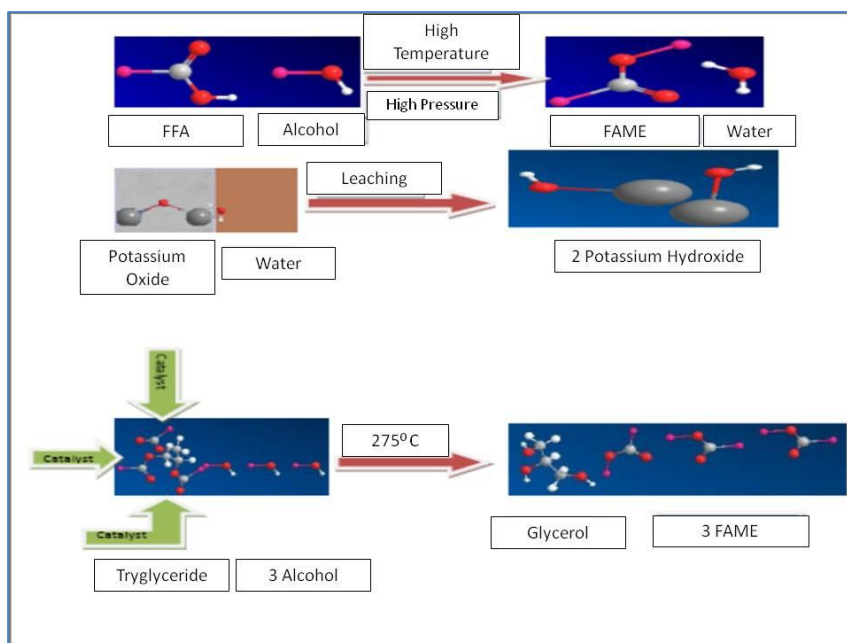
Algal biomass to biodiesel production

Four numbers of microalgae species isolated from and near Kapurthala considering climatic sustainability and inherent adaptability concern, were sent for 18S r RNA sequence study and three were properly identified and the gene sequence have been submitted to gene bank for confirmation of the identity. Out of these, two were normal algae already reported in literature while one of them is a novel microalgae strain *Chlamydomonas debaryana* (KJ210856),. 18S rRNA gene sequences proved the novelty of the species and indicated that strain NIREMACC03 fell within the evolutionary radiation occupied by the genus *Chlamydomonas* and has shown higher similarity with *C. debaryana* (FR865523.1) and *C. debaryana* (JX456467.1). *C. debaryana* was grown in 30 L indoor photobioreactor and complete physicochemical characterization of biomass was performed. It showed a higher biomass

productivity (1.45 g l^{-1}) and two fold increase in lipid productivity (504.36 mg l^{-1}) with 34.2% lipid content under nitrogen deficient condition. The fatty acid composition of the lipid dramatically changed in nitrogen deficient condition as compared to the normal nitrogen environment. The pyrolytic behavior of the whole biomass was also studied using thermo gravimetric analyzer (TGA) and kinetic parameters were estimated using different methods. The results have been communicated for publications. Algal Gene Sequence submitted to Gene bank : Sanjeev Mishra, A.K. Sarma, *Chlamydomonas debaryana* isolate NIREMACC03 18S ribosomal RNA gene, par-Nucleotide-NCBI, April.2014 (Accepted).

Continuation of biodiesel production process using heterogeneous catalyst:

Biodiesel production and characterization using heterogeneous catalyst generated from waste biomass was studied in depth. A proposed mechanism for utilizing such waste biomass ash having high percentage of K_2O have been reported first time. The mechanism is applicable for conversion of low grade high free fatty acid containing *Jatropha curcas* and *Mesua ferrea* L oil to biodiesel using **ash catalyst** derived from *Musa balbisiana* Colla stem, agricultural residue based thermal power plants etc. under elevated temperature and pressure. The continuity of the work is maintained for modification of surface activity of the catalyst and to study the engine performance with biodiesel and blends etc.

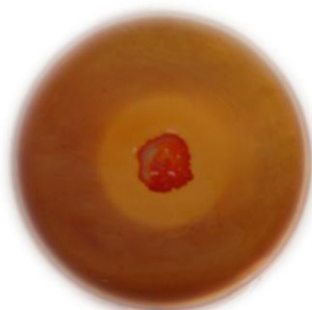


Proposed mechanism for biodiesel production and characterisation using heterogeneous catalyst

Lignocellulolytic thermozyymes production at high pH condition

Some of the alkalophiles have been isolated for cellulases and hemicellulases activity. The enzyme assay and enzyme production is under progress. A bacterial culture was isolated at high pH 8.0 which is positive in the production of the cellulase enzyme having super cellulose

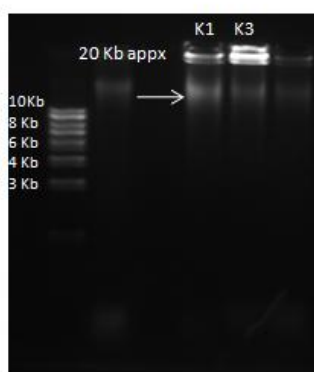
activity about 17 mm zone of clearance. The enzyme assays for isolated alkaliphilic cellulases and xylanases were carried out. The alkaliphilic thermozymes were tested for their activities using raw materials such as anaerobically digested paddy straw, wheat straw, and water hyacinth, etc. The optimization of enzyme production is under progress.



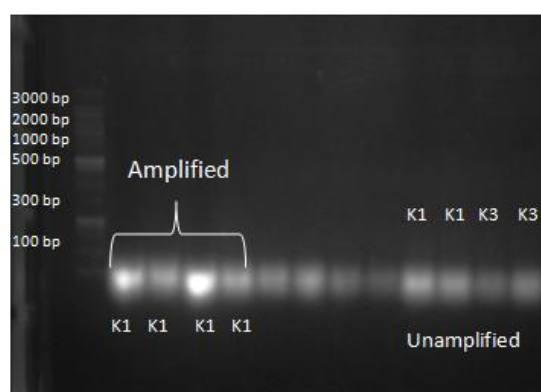
Zone of clearance showing the cellulases activity

Genetic engineering of yeast for utilization of pentose sugar for bioethanol production

Experiments have been conducted through the utilization of pentose sugar for the production of ethanol using isolated yeast NIRE-K1, NIRE-K3 and NIRE-5. An experiment was conducted for the modification of the yeast through genetic engineering which has the capability of utilizing both pentose and hexose sugars simultaneously. Still the ethanol productivity from the pentose is low. The ethanol yield from xylose can be increased by using metabolic tools. Therefore, the study was carried out for isolation of the genomic DNA and further PCR study.



DNA isolation of NIRE-K1 and NIRE-K3



PCR of genomic DNA

Genomic DNA isolation and PCR of the genomic DNA

Biogas production from paddy straw

A consortium of thermophiles was isolated from the soil samples. The thermophilic consortium of microbes was able to digest water hyacinth and crop residue such as wheat straw anaerobically at 50°C and able to produce with 60-65% methane composition. The same consortium has been employed for the digestion of paddy straw at 50-55°C. The

consortium is able to produce biogas with 60-65% methane composition. Further optimization and identification of microorganisms is going on.

However, project entitled 'Biogas production and utilization for heat and power generation applications using potential alternative feed-stocks' has been approved by MNRE after revision as per the comments from the experts.

Biomass Characterization and Generation of Database

Under this activity the variety of biomass samples such as *Prosopis juliflora*, *Eucalyptus*, *Albizia procera*, *Melia sp.*, *Pigeon pea* (Arhar Dal), *Mulberry sp.* wood stalks and mixed variety of mango seeds have been characterized for macroscopic analysis including proximate analysis, ultimate analysis, determination of particle size, bulk density, calorific value, ash, fusion temperature, etc. and microscopic analysis including thermal properties, chemical kinetics, and mineral data, etc.

Proximate analysis data showed the moisture contents of biomass samples varied between 5 to 8% (by weight), which is under the range of Small Scale downdraft Gasifier biomass feedstock. Volatile Matter of *Melia* wood stalk was found to be maximum (83.79 %) and it was observed lowest for (77%) mango seed. Maximum (16.32%) fixed carbon content was observed for mango seeds whereas *Pigeon pea* has the lowest (7.44%). Ash of biomass samples observed was in the range of 0.7 to 2.5%. The generation of database for different biomass is also in process for future RD&D activities.

Development of Biomass Gasifier Testing Centre

The comparison of three different biomass feed stocks has been investigated for 10 kW Downdraft Gasifier. The biomass feed stocks such as, mango seed, eucalyptus and melia wood stalks were selected. Mango seed was selected as it is a waste material available in abundance in India and also possesses high dry density, high HHV value and high fixed carbon content. Eucalyptus and *Melia* wood stalks are also selected because of their availability in bulk, high calorific value and comparatively low activation energies.

The gasifier system was operated as close as possible to the typical operation conditions with Mango seed, Eucalyptus and *Melia* feedstock as the fuel. The operation of Ankur WBG-20 gasifier was quite smooth and easily manageable with minimum man power requirement. Steady state syngas composition for each feed stock was determined by GC.

Dissemination of Cookstoves through Carbon Financing

The Program of Activities (PoA) on National Program on Improved Cookstoves in India along with the very first CPA (CPA₁) was prepared in coordination with MNRE, GIZ, New Delhi and South Pole Carbon Consultant, New Delhi and submitted to UNFCCC and Gold Standard and finally registered and eligible for EUETS.

Furthermore, the Institute as the Coordinating and Managing Entity (CME) with technical support from GIZ, New Delhi has initiated the inclusion of more CPAs with a target of minimum 03 CPAs by the end of 2014. The CPA from SEWA is under process and is likely to be included in due course of time. The earned carbon credits (CERs) may help the CPA implementers to make the technology more affordable by reducing the cost of improved cookstoves to end users and the development of end user micro credit solutions. Also the carbon revenues shall be used to increase technology, business and marketing capacities of stove producers and distributors, provide maintenance and after-sale services, and raise awareness among users about the benefits and correct long-term utilization of the improved stove products. Socio-cultural mobilization of communities will be the key for increasing the acceptance and long-term use of the new cookstoves technologies.

Projects submitted for funding

- Setting-up Biodiesel Production Pilot-Plant Facility at Solar Energy Centre, Gwalpahari (PI: A.K. Sarma) (MNRE, Govt. of India)
- Studies on synthesis, physical and electrochemical properties of anion exchange membrane for alkaline fuel cells (PI: A.K. Sarma) (MNRE, Govt. of India)
- Biogas production, purification and utilization for heat and power generation applications using potential alternative feed-stocks (PI/Co-PI: Dr. Sachin Kumar /Dr. SK Tyagi) (MNRE, Govt. of India)

7. COLLABORATION WITH OTHER ORGANIZATIONS

The Institute is having active R&D and academic collaboration with the following organizations:

- ✓ Punjab Technical University, Jalandhar
- ✓ National Institute of Technology, Jalandhar
- ✓ Punjab University, Chandigarh
- ✓ Punjab Agriculture University, Ludhiana

Three B.Tech and one M.Sc and eight M. Tech., students with NIT Jalandhar have completed their projects while, five Ph. D. students are working for their Theses in collaboration with NIT, Jalandhar and PTU, Kapurthala.

8. IMPORTANT EVENTS

The Institute has organized events of National importance and pride such as, National Conference on Recent Advances in Bioenergy Research, National Training Program on Bioenergy Technologies, Hindi Divas and Pakhwada Celebration, Vigilance Awareness Week etc. The details of these important events are given as below:

Celebration of Hindi Divas and Pakhwada

The Institute has celebrated Hindi Divas and Pakhwada during 14-28 September, 2013. The program was coordinated by Hindi Officer, Dr. Abhishek Gupta, Sh. Vir Parkash and Sh. Rajan Sharma. The formal inauguration by lighting the lamp by the guests followed by Saraswati Vandana. Dr. Yogender Kumar Yadav, Director of the Institute chaired the function. Dr. Rajneesh Arora, Vice Chancellor, Punjab Technical University and Dr. Rajesh Grover, Director, Pushpa Gujral Science City was invited as Chief Guest and speakers.



हिंदी के अधिक प्रयोग के लिए किया प्रोत्साहित

► सरदार स्वर्ण सिंह अक्षय ऊर्जा संस्थान में हिंदी पखवाड़ा समापन समारोह आयोजित



डा. रजनीश अरोड़ा को सम्मानित करते गणमान्य (दाएं) मंच पर उपस्थित स्वर्ण सिंह व अन्य गणमान्य।

(तिलकराज)

कपूरथला, 27 सितंबर (पाठक) : नवीन एवं नवीकरणीय ऊर्जा मंत्रालय, भारत सरकार के स्वायत्त संस्थान सरदार स्वर्ण सिंह राष्ट्रीय अक्षय ऊर्जा संस्थान, कपूरथला में शुक्रवार को हिंदी पखवाड़ा समापन समारोह आयोजित किया गया, जिसका शुभारंभ संस्थान के निदेशक प्रो. (डा.) योगेन्द्र कुमार यादव, मुख्यातिथि डा. रजनीश अरोड़ा उप कुलपति पंजाब टैक्निकल यूनिवर्सिटी व विशिष्ट अतिथि डा. राजेश ग़ोवर, निदेशक पुष्पा गुजराल साइंस सिटी द्वारा दीप प्रज्वलित कर तथा सरस्वती वंदना स्तुति के साथ किया गया। संस्थान के निदेशक डा. यादव ने राष्ट्र भाषा के महत्त्व की सराहना करते हुए संस्थान के

वैज्ञानियों व कर्मचारियों को हिंदी के अधिक प्रयोग के लिए प्रोत्साहित किया। उन्होंने कहा कि संस्थान के अधिकतर परिपत्र हिंदी में अनुवादित हो चुके हैं और हिंदी में कार्य करने की प्रत्येक अधिकारी को पुणतः स्वंत्रता है। मुख्यातिथि डा. रजनीश अरोड़ा ने हिंदी की महत्ता को सृष्टि से जोड़कर विस्तृत बहुमूल्य जानकारी दी। उन्होंने कहा कि अगर कोई वैज्ञानिक किसी अंग्रेजी भाषा की पुस्तक को हिंदी में अनुवादित करता है तो पी.टी.यू. वित्तीय सहायता अवश्य प्रदान करेगा। हमें अपनी दिनचर्या के छोटे-छोटे कार्य हिंदी में करने चाहिए। उन्होंने कहा कि बहुत से देश सभी तकनीकों को अपनी मातृ भाषा में ही लिखते हैं। इस

दौरान डा. राजेश ग़ोवर तथा संस्थान के वैज्ञानिक डा. एस.के. त्यागी ने कहा कि भाषा एक ऐसा माध्यम है जो लोगों को जोड़ती है तथा कविता के माध्यम से देश की एकता व अखंडता पर जोर दिया। इसके अलावा अहिंदी भाषी क्षेत्रों से आए कर्मचारियों व विद्यार्थियों ने भी हिंदी को बढ़ावा देने के लिए आह्वान किया। संस्थान के निदेशक प्रो. योगेन्द्र कुमार यादव ने डा. रजनीश अरोड़ा तथा डा. राजेश ग़ोवर को स्मृति चिन्ह देकर सम्मानित किया। इस अवसर पर डा. अभिषेक गुप्ता, डा. ए.के. शर्मा, डा. सचिन कुमार, कुमारी सिंपल, वीर प्रकाश, राजन शर्मा, परमिंदर सिंह बेदी व अन्य मौजूद थे।

Few Photographs and Press Release of Hindi Divas and Pakhwada

3rd National Conference on ‘Recent Advances in Bio-energy Research’

A three days 3rd National Conference on ‘Recent Advances in Bio-energy Research’ was organized during Nov 22-24, 2013. Dr. Narendra Singh Rathore, the Vice Chancellor, SKN Agriculture University, Jobner- Jaipur inaugurated the event as Chief Guest by lighting up the lamp followed by Prof. B.S. Pathak, Former Director, SPRERI, Vallabhvidya Nagar as Guest of Honour, Shri Anil Kumar Dhussa, Adviser, MNRE and Dr. D.P. Singh, Former Vice-Chancellor, Jawaharlal Nehru Krishi Vishwavidyalay, Jabalpur as Distinguished Guests and Dr. Y.K. Yadav, Director, NIRE as Presiding Chair of the conference. The prominent among them were Prof. N.A. Rahim and Dr. Jeyraj, University of Malaya, Malaysia, Dr. K.C. Pandey, Project Coordinator, All India Coordinated Research Project on Renewable Sources of Energy for Agriculture & Agro-industries, Prof. A.K. Jain, Former Director, NIRE and Dean, School of Environment & Earth Sciences, Central University of Punjab, Bathinda, Dr. A. R. Shukla, Former Adviser, MNRE.

About one hundred and eighteen abstracts were received for the presentations including the invited speeches. Out of these, eighty-five papers were presented during the different technical session of the conference from various Institutions/ Universities across the country. About fifteen invited speeches were delivered by the invitees on the field of national interest.

Recommendations of the Conference:

The following recommendations were noted based on presentations and discussions held during the conference by eminent scientists and academicians:

1. Need to develop a minimum 10 year plan for the evaluation, technological demonstration for biofuels by utilizing the best available technology globally, apart from supporting the R&D activities on biofuels.
2. The mandate and needs for pilot level field studies on integrated technological developments for sustainable development at all levels.
3. Design, development and dissemination of low cost improved biomass cookstove based on the need and requirements of end users.
4. Integration of different technologies and hybridization of renewable energy technologies for sustainable developments.
5. Molecular approach for identifying novel cellulolytic enzymes.
6. Engineering microbes for converting C5/C6 sugars to ethanol and other fuels.
7. Development of biorefinery concept for utilization of lignocelluloses for biofuels and other value-added products.
8. Utilization of paddy straw for biofuels production.
9. Similar to compulsory blending of 5 % bioethanol with gasoline Govt. of India should take appropriate decision for blending 5-10% biodiesel with petroleum diesel

10. with immediate effect, which will definitely increase the seed oil production as well as biomass production. The added benefit will go to the farmer. Moreover, the common people will understand the value of non-edible seed oil.
11. Besides, thrust should not be restricted to *Jatropha* and *Pongamia* only. All types of oil seed bearing trees having high percentage of oil in their kernel should be promoted in a region specific manner. For example, *Mesua ferrea* L seed which contain about 75% oil in their kernel should be promoted in the north eastern region, *Madhuca Indica* which is widely grown in the central India like Orissa, MP etc. may be promoted in the region. This will benefit in dual mode: conservation of the existing ecosystem and biomass, oilseed production.
12. Strategy should be developed for non-edible oilseed market at village level. To get more output community based small scale biodiesel production unit may be promoted by the Govt. with incentives similar to the solar devices for mass applications. Captive power generation for rural village electrification using biodiesel, application of biodiesel in farm machinery, utilization of oil cake for biogas production etc. activities should be promoted strategically.
13. Biofuel cell research activities should be emphasized such that it can provide economically viable solution to the waste biomass with net zero waste and energy in multiple forms such as electricity, biogas and alcohol production.



'ऊर्जा पूर्ति का एकमात्र उपाय बायो एनर्जी'



कांफ्रेंस को संबोधित करते योगेन्द्र कुमार यादव तथा (दाएँ) कांफ्रेंस में उपस्थित वैज्ञानिक व अन्य। (तिलकराज)

कपूरथला, 23 नवम्बर (सुखजिंदर, सूद) : बायो एनर्जी कांफ्रेंस के दूसरे दिन डा. योगेन्द्र कुमार यादव निदेशक सरदार स्वर्ण सिंह राष्ट्रीय अक्षय ऊर्जा संस्थान ने कहा कि केवल बायो एनर्जी आने वाले कुछ वर्षों के बाद देश में ऊर्जा पूर्ति का एकमात्र सस्ता, सरल व कृषि आधारित उपाय होगा। आज जट्टोफा, तिल, नीम, रीटे, गन्ने की फास, फसलों के चारे, गोबर आदि से काफी मात्रा में ऊर्जा प्राप्त की जा सकती है। केवल हमें अपने प्रयासों

में तीव्रता लाने की आवश्यकता है। संस्थान ने बीजों से तेल व ऊर्जा प्राप्त करने की विधि बना ली है और अब संस्थान इन्हें पूर्णतः उपयोग में लाने पर कार्य कर रहे हैं। तेल निकालने की तकनीक को जल्द व्यवसायीकरण के लिए भी कार्य करना होगा। संस्थान में वैज्ञानिक लगातार बायो एनर्जी, बायो ऑयल, बायो मास पर अनुसंधान कर रहे हैं। इस क्षेत्र में देश के सभी संस्थान अपनी गति को अधिक करने की कोशिश करें। उन्होंने कहा कि देश में

खाना बनाने से लेकर वाहनों को ऊर्जा की आवश्यकता होती है और जिस तरह से जनसंख्या बढ़ रही है ऐसे तो हमें जल्द ही बायो एनर्जी के महत्व को समझना होगा और हर घर तक पहुंचाना होगा। मंत्रालय ने भी 12वीं पांच वर्षीय योजना में 30,000 मेगावाट बिजली, बायो एनर्जी, सोलर एनर्जी से पैदा करने का लक्ष्य रखा है और इस योजना में संस्थान अहम भूमिका निभाएगा। आज के तकनीकी स्तर में बलौर सिंह निदेशक पंजाब एनर्जी डिवेलपमेंट

कांफ्रेंस, प्रो. बी.एस. पाठक पूर्व निदेशक एस.पी.आर.ई.आर.आई. एवं जे.एस. सैनी पी.ए.यू. लुधियाना, डा. डी.के. अधिकारी, डा. शमस याजदानी, डा. वी.के. विजे, डा. सचिन कुमार, रीचा सिंह, डा. आर.के. बहल, डा. डी.के. साह सहित कांफ्रेंस में आए 70 से अधिक विशेषज्ञों, शोधकर्ताओं एवं विद्यार्थियों को घरों में उपयुक्त होने वाले गैस सिलेंडरों में बायो गैस की संभावना, उत्पादन, रसोई के कचरे से ऊर्जा बनाने विषय पर विचार पेश किए।

Need to educate people on use of bioenergy: Expert



A souvenir being released at the third bioenergy conference, held in Kapurthala. A TRIBUNE PHOTOGRAPH

OUR CORRESPONDENT

KAPURTHALA, NOVEMBER 23 The Ministry of New and Renewable Energy had set a target of 30,000 MW in its 12th Five Year Plan and the SSS-NIRE will play an important role to achieve the same during this period. This was stated by Director, SSS-NIRE, Yogender Kumar Yadav, on the second-day of the 3rd National Conference on recent advances in bio-energy research, being held at the Sardar Swaran Singh National Institute of Renew-

able Energy (SSS-NIRE). He said scientists at the institute were working on projects making full utilization of biocrode, biomass and biogas and would be able to develop a technology, which would be beneficial for the society. "Areas like Punjab, Haryana and Uttar Pradesh are full of resources to generate bioenergy and there is a need to educate people on the importance of bioenergy. It will be a boon for agriculture industry since bioenergy can be generated from seeds and corps waste," he added.

ऊर्जा संकट का एकमात्र समाधान बायो एनर्जी : डा. योगेन्द्र यादव

3 दिवसीय तीसरी राष्ट्रीय कांफ्रेंस सम्पन्न

कपूरथला, 24 नवम्बर (सुखजिंदर, सूद) : बायो एनर्जी अनुसंधान में हाल की उपलब्धियों पर 3 दिवसीय तीसरी राष्ट्रीय कांफ्रेंस सफलतापूर्वक व नवीं एवं नवीकरणीय ऊर्जा मंत्रालय की वित्तीय सहायता से सम्पन्न हुई। डा. योगेन्द्र कुमार यादव निदेशक एस.एस.एस. नीरे कपूरथला ने कहा कि कांफ्रेंस का उद्देश्य देश भर के वैज्ञानिक, विशेषज्ञों, शोधकर्ताओं और साधियों को एक मंच पर लाकर बायो एनर्जी, बायो मास, बायो ऑयल पर चर्चा, ऊर्जा की आवश्यकता के परिदृश्य से बाहर निकलने का रास्ता, समाज में जागरूकता और बायो एनर्जी के क्षेत्र में किए गए सभी कार्यों पर विचार करना था। ऐसे सम्मेलन से संस्थान ने ऊर्जा क्षेत्र की चुनौतियों, पर्यावरण हितैषी उपकरण व उन्नत अर्थव्यवस्था का निर्माण करने के लिए हमारी राष्ट्रीय प्रतिबद्धता को बनाए रखने के लिए खुली बातचीत के लिए एक शानदार मंच प्रदान किया। प्रतिभागियों ने ऊर्जा संकट की जड़ पर संभव समाधान गतिशील मुद्दों एवं चुनौतियों के साथ विशेष रूप से बायोगैस, बायो हाईड्रोजन, बायो डीजल ईंधन की कोशिकाओं और व्यर्थ कचरे व पानी विषय पर आकर्षक विचार रखे।

डा. यादव ने कहा कि ऊर्जा संकट का एकमात्र समाधान बायो ऊर्जा है तथा इसकी पैदावार के लिए उसी दृष्टिकोण



कांफ्रेंस को संबोधित करते डा. योगेन्द्र कुमार यादव। (तिलकराज)

को अपनाया होगा जोकि अन्न के पैदावार के लिए देश ने अपनाया था। पैदावार में आत्मनिर्भर के लिए जिस तरह देश में क्रांती आई थी उसी तरह हमें आज बायो एनर्जी क्षेत्र में हरित क्रांती लाकर देश को ऊर्जा के क्षेत्र में आत्मनिर्भर बनाना होगा। उन्होंने कहा कि हम एक समाज और राष्ट्र के रूप में अपने आसपास उपलब्ध विशाल बायो मास से ऊर्जा उत्पन्न कर ऊर्जा के क्षेत्र में आत्मनिर्भर बन सकते हैं। बायो एनर्जी, अपशिष्ट जल, फसलों के अवशेष, गोबर, बेकार फल, बीज, प्लास्टिक कचरे, पेड़-पौधे, रसोई घर के कचरे आदि से उत्पन्न की जा सकती है। बायो एनर्जी क्षेत्र किसानों एवं देश की आर्थिक उन्नति के लिए एक वरदान है। उन्होंने भारत में बायो एनर्जी की प्रयोजनाओं पर ज्यादातर वित्तीय

सहायता प्रदान करने के लिए नवीं एवं नवीकरणीय ऊर्जा मंत्रालय ने भारत सरकार का धन्यवाद किया। उन्होंने बताया कि आने वाले समय में बायो गैस, रसोई गैस का एक मात्र विकल्प होगा। हाईड्रोजन ऊर्जा उत्पन्न करने के लिए एक उत्तम स्रोत है और संस्थान एक उच्च स्तर पर हाईड्रोजन को संरक्षित कर ऊर्जा व बिजली उत्पन्न करने की दिशा में कार्य करने जा रहा है। बायो एनर्जी से समाज केवल लाभान्वित ही नहीं होगा बल्कि इस क्षेत्र में व्यवसायीकरण को भी एक नई दिशा मिलेगी। उन्होंने प्रतिभागियों को कहा कि नई तकनीक विकसित करने की दिशा में उन्हें अपनी गति को तोड़ करना होगा तथा सभी संस्थानों को एक साथ मिलकर चलना होगा। उन्होंने सभी संस्थाओं एवं प्रतिनिधियों का धन्यवाद किया और बायो

एनर्जी के क्षेत्र में संस्थान के साथ कार्य करने को भी आमंत्रित किया। सम्मेलन में 68 मौखिक प्रस्तुतियां, 20 पोस्टर प्रस्तुतियों के साथ 23 प्रख्यात वैज्ञानिकों एवं बायो एनर्जी के क्षेत्र के प्रो. बी.एस. पाठक पूर्व निदेशक एस.पी.आर.ई.आर.आई. ए.के. दुसा सलाहकार जैव ऊर्जा नवीं एवं नवीकरणीय ऊर्जा मंत्रालय, प्रो. डी.पी. सिंह पूर्व उप कुलपति जवाहरलाल नेहरू कृषि विश्वविद्यालय, डा. ए.आर. शुक्ला पूर्व सलाहकार एम.एन.आर.ई., डा. ए.के. जैन पूर्व निदेशक एस.एस.एस. नीरे, डा. के.सी. पांडे भारतीय कृषि अनुसंधान परिषद, डा. डी.के. अधिकारी प्रमुख आई.आई.पी. देहरादून, डा. शमस याजदानी आई.सी.जी.ई.बी. नई दिल्ली, डा. आर.के. बहल, डा. वी.सी. वासुब्रामनियम पी.ई.आर.सी. चेन्नई, डा. एम.वी.आर. प्रसाद वायुगिड बेंगलूर, प्रो. एम.एम. गांगरेकर आई.आई.टी. खड़गपुर, डा. के. मोहनती आई.आई.टी. गोहाटी, डा. डी.के. साह आई.एम.टी. चंडीगढ़, डा. पियाली दास टेरी नई दिल्ली, प्रो. एन.ए. रहीम, डा. हेराज सेल्वारज मलाया विश्वविद्यालय मलेशिया आदि ने भाग लिया। डा. यादव ने राष्ट्रीय सम्मेलन को सफल बनाने का श्रेय अपने संस्थान के वैज्ञानिकों और कर्मचारियों को देकर उनका धन्यवाद किया।

Press release of 3rd National Conference held during Nov 22-24, 2013

Training Programs Organized:

1. National Training Programme under Chemical Conversion Division

A three day National Training programme, on "Practical hands for processes of bio-fuel production from non-edible vegetable oils and fundamental characterization" was organized during March 03-05, 2014 at the Institute. Practical hands on training for lab scale production of bio-diesel and basic characterization techniques were imparted to scientists, academicians, M.Tech. & Ph.D. research scholars. During the programme, sophisticated analytical equipments/techniques required particularly for characterization of liquid bio-fuels like gas chromatography, flash/fire point tester, density meter, oxidation stability unit, kinematic viscometer, TBP distillation unit and titrimetric methods etc. were displayed and demonstrated successfully. The trainees gained hands on experience by working in the laboratory and handling the equipments. Three numbers of expert talks were delivered by eminent scientists working in the area of biofuels during the training programme. Prof. Yogender Kumar Yadav, Director, SSS-NIRE, delivered an inaugural speech followed by the talk of Dr. A.K. Sarma, convener of the training programme. Prof. Yadav stated that young scientists should be encouraged to gain practical hands on experience so that they may contribute in research activities in the field of bio-fuel production and its characterization. The objective and aim of such training programmes is to encourage Human Resource Development and finally the development in the field of bio-energy technologies in the country. Dr. Rajesh Grover, Director, Pushpa Gujral Science City, Kapurthala felicitated the valedictory function. He appreciated the efforts of the scientists of SSS-NIRE for developing such world class advance research facilities at the Institute in the field of bio-energy. The research and technical team under the chemical conversion demonstrated the existing production and characterization technologies of bio-fuel in the laboratories and personally interacted with research scholars particularly from IIT, Ropar, SLIET, Longowal, BIT, Mesra (Ranchi), NIT, Jalandhar, GNDEC, Ludhiana, Jiwaji University, Gwalior (M.P) and LPU, Phagwara. He appreciated the involvement and the interest shown by the scientists, academicians and research scholars in this training programme. During the closing day function of this training the participants had shown their satisfaction and narrated that the research facilities at SSS-NIRE are of world class and they got the opportunity to practically see the working of the equipments which they saw only in the books.

Programme on bio-fuel begins



Prof Yogender Kumar Yadav delivering a lecture at Sardar Swaran Singh National Institute of Renewable Energy in Kapurthala.

DP CORRESPONDENT
Kapurthala
A three-day National Training Programme on "Practical hands for processes of bio-

fuel production from non-edible vegetable oils and fundamental characterisation" started on Monday at Sardar Swaran Singh National Institute of Renewable

Energy situated in Kapurthala. The Programme was inaugurated by Prof Yogender Kumar Yadav, Director, Sardar Swaran Singh National Institute of Renewable Energy. Yadav stated that bio-energy research has received tremendous attention all over the world due to the steep hike in petroleum prices and their uncertain supply coupled with environmental concerns.

He also emphasised that to maintain agriculture production in the country, alternate liquid fuels can play an important role.

DAILY POST

DATED: 04.03.2014

शिक्षा : राष्ट्रीय प्रशिक्षण कार्यक्रम में विभिन्न युनिवर्सिटियों के स्कॉलर जुटे

बायो तेल पर अपना ज्ञान बढ़ाया

प्रोत्साहन
• युवा वैज्ञानिकों को किया जा रहा प्रोत्साहित : डॉ यादव
• जैव ईंधन उत्पादन पर हुआ अनुसंधान



जागरण संवाददाता, कपूरथला : सरदार स्वर्ण सिंह राष्ट्रीय अक्षय ऊर्जा संस्थान में नैत्र खाद्य जनस्थिति तेल से बायो ईंधन के उत्पादन पर जारी तीन दिवसीय राष्ट्रीय प्रशिक्षण के दूसरे दिन पंजाब व अन्य प्रदेशों के छात्रों का कार्य में लगे विभिन्न युनिवर्सिटियों के विद्यार्थियों ने बायो तेल संबंधी प्रशिक्षण, सत्र अपना सत्र चलाया। संस्थान के डायरेक्टर डॉ. योगेंद्र कुमार यादव ने प्रवचन का शिखर के दौरान युवा वैज्ञानिकों को प्रोत्साहित किया जा रहा है। इस प्रशिक्षण कार्यक्रम के दौरान वैज्ञानिकों व शोध विद्यार्थियों को प्रयोगशाला में प्रशिक्षण व परिष्कृत उपकरणों के प्रयोग संबंधी जानकारी भी दी जा रही है।

सरदार स्वर्ण सिंह अक्षय ऊर्जा संस्थान में तीन दिवसीय प्रशिक्षण प्रोग्राम के दौरान बायो तेल टेस्टिंग की जम्बोपरी देते हुए डॉ. एके शर्मा।

ऊर्जा को प्रायोगिकियों का प्रदर्शन किया। प्रशिक्षण शिबिर में आइआइटी रोपड़ से पटेल अमित, रात लोकोबाल अभियांत्रिकी एवं प्रायोगिकी संस्थान लोकोबाल के एसीसिस्टेंट प्रो. डॉ. पुष्पत झा, इयसी प्रोफेसरल यूनिवर्सिटी के अश्विनी शर्मा, शिक्षा एच. डॉ. चेतन भाट्ट, जिलाजी यूनिवर्सिटी म्यथिलर (रसमे) से प्रियंका शर्मिल थे।



Few Photographs of Training Programme held during March 03-05, 2014

2. National Training Programme under Biochemical Conversion Division

A three days 2nd National Training Programme on 'Hands on Analytical and Molecular Techniques: Biochemical Conversion Technologies for Advanced Biofuels' was organized during March 10-12, 2014 at the Institute. Faculty members, young scientists, research scholars, master students from all over the country participated in the programme. During the programme, techniques for isolation and screening of thermophiles, production & characterization of lignocellulolytic enzymes, process for biogas production, bioreactor handling and kinetic studies, and molecular techniques such as DNA isolation from bacterial cells and metagenome isolation from soil samples were demonstrated successfully. Equipments such as HPLC, GC, UV-vis Spectrophotometer, SDS-PAGE, Agarose gel electrophoresis, Geldoc and RT-PCR were also demonstrated.



Few Photographs of Training Program held during March 10-12, 2014

जैव रासायनिक प्रौद्योगिकियों के इस्तेमाल पर राष्ट्रीय प्रशिक्षण कार्यक्रम शुरू

कपूर थला, 10 मार्च (सुबांजिंदर) : उन्नत जैव ईंधन के लिए जैव रासायनिक प्रौद्योगिकियों के इस्तेमाल के विश्लेषणात्मक एवं आर्थिक तकनीकों पर 3 दिवसीय राष्ट्रीय प्रशिक्षण कार्यक्रम का उद्घाटन प्रोफेसर डा. योगेन्द्र कुमार यादव निदेशक सरदार स्वर्ण सिंह राष्ट्रीय अक्षय ऊर्जा संस्थान (भारत सरकार के नवीन एवं नवीकरणीय ऊर्जा मंत्रालय का एक स्वायत्त संस्थान), कपूर थला एवं प्रो. ए.के. जैन डीन सेंट्रल यूनिवर्सिटी ऑफ पंजाब भटिंडा द्वारा किया गया।

कार्यक्रम का उद्देश्य जैव रासायनिक रूपांतरण प्रौद्योगिकियों में काम करने तथा उन्नत जैव ईंधन के क्षेत्र में सक्षम मानव संसाधन और शोधकर्ताओं को विकसित करने के लिए शिक्षाविदों और अनुसंधान अध्येताओं को प्रशिक्षित करना है। ऐसी उम्मीद है कि यह कार्यक्रम युवा एवं साक्षर शोधकर्ताओं के बीच विचारों और विशेषज्ञता का आदान-प्रदान करने का अवसर प्रदान करेगा। प्रो. यादव ने कहा कि अक्षय ऊर्जा बहुतायत वित्त पोषण होने के बावजूद कुछ कार्यों से उपर नहीं पा रही है।



समागम दौरान मंच पर उपस्थित मुख्यातिथि व अन्य। (तिलकराज)

हालांकि नवीन एवं नवीकरणीय मंत्रालय के प्रयासों से बिजली उत्पादन के क्षेत्र में अक्षय ऊर्जा का 13 प्रतिशत योगदान है। यह संस्थान मूल रूप से मंत्रालय द्वारा प्रदत्त जैव ऊर्जा पर विशेष शोध के लिए समर्पित है। प्रो. यादव ने एन.आर.ई.एल., अमरीका के आधार पर इस संस्थान को जैव ऊर्जा के क्षेत्र में अग्रिम अनुसंधान के लिए विकसित करने पर प्रतिबद्धता प्रकट की है। प्रो. जैन ने संस्थान की प्रगति एवं अनुसंधान सुविधाएं उद्घाटन करने पर वैज्ञानिकों एवं निदेशक की सराहना की। उन्होंने कहा कि राष्ट्रीय स्तर पर एक उन्नत अनुसंधान संस्थान के रूप में विकसित हो चुका है। इसकी विश्व स्तरीय अनुसंधान सुविधाओं से प्रशिक्षण सम्मेलन में सम्मिलित हुए प्रशिक्षुओं को लाभ होगा। प्रशिक्षण कार्यक्रम के समन्वयक डा. सचिन कुमार ने बताया कि देश भर की विभिन्न संस्थाओं एवं महाविद्यालयों से आए शिक्षाविद एवं अनुसंधान अध्येता प्रशिक्षण कार्यक्रम में शामिल हुए हैं। कार्यक्रम दौरान प्रस्तुतियां, व्याख्यान, प्रयोगशाला में प्रौद्योगिकी प्रदर्शन एवं व्यक्तिगत-मुलाकातों पर जोर दिया जाएगा। संस्थान के ही अन्य वैज्ञानिक डा. एस.के. त्यागी एवं डा. ए.के. शर्मा ने भी जैव ऊर्जा अनुसंधान पर अपने विचार व्यक्त किए। प्रो. यादव ने वैज्ञानिकों द्वारा संस्थान में की गई इस पहल पर संतोष व्यक्त किया।

बायो एनर्जी बनेगी डीजल का विकल्प : डॉ. कंवर

♦ एलपीयू के वीसी डॉ. आरएस कंवर ने स्कॉलरों को दिए मंत्र



जागरण संवाददाता, कपूर थला : सरदार स्वर्ण सिंह राष्ट्रीय अक्षय ऊर्जा संस्थान में विभिन्न विश्वविद्यालयों के स्कॉलरों को संबोधित करते हुए लवली प्रोफेशनल यूनिवर्सिटी के वाइस चांसलर डॉ. आरएस कंवर ने कहा कि भविष्य में लिक्वेड फ्यूल की कमी पैदा होने वाली है। इस समस्या का हल सिर्फ बायोएनर्जी से मिल सकता जो डीजल का बदल बन सकती है।

डा. कंवर ने संस्थान में आयोजित तीन दिवसीय जैव रासायनिक रूपांतरण कार्यक्रम के समापन समारोह के दौरान बतौर मुख्य अतिथि शिरकत करते हुए कहा कि यह संस्थान रिन्यूएबल एनर्जी के क्षेत्र में बहुत बड़ा कार्य कर रहा है जिसका आने वाले दिनों में भारत ही नहीं दुनिया के अनेक देशों को लाभ मिलने लगेगा। संस्थान के निदेशक

डॉ. योगेन्द्र कुमार यादव ने मुख्य अतिथि डॉ. कंवर व देश की विभिन्न यूनिवर्सिटीयों से आए वैज्ञानिकों व स्कॉलरों का धन्यवाद किया। डॉ. कंवर व डॉ. यादव ने प्रतिभागियों को प्रमाण पत्र वितरित किए। प्रशिक्षण कार्यक्रम में आइआइटी दिल्ली, पीएचयू लुधियाना, एलपीयू थापर यूनिवर्सिटी, राजस्थान विश्वविद्यालय और एमएनआरई, नई दिल्ली से युवा वैज्ञानिकों और शोधकर्ताओं ने भाग लिया।

News clips of Training Program held during March 10-12, 2014

3. A one day training was specifically organized for 15 Nos. of students and faculty members (on request) of Govt Girls Polytechnic College, Jalandhar during 17th April, 2013 on the theme “processing of waste cooking oil for biodiesel production”. During this training program practical experiments for processing waste cooking oil for biodiesel production and characterization were demonstrated.



9. PUBLICATIONS

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1. S. R. Park, A. K. Pandey, V. V. Tyagi and S. K. Tyagi, Energy and exergy analysis of typical renewable energy systems, Renewable and Sustainable Energy Reviews, Vol.30 (2014) pp.105-123 (IF = 6.082).
2. A. K. Pandey, P. C. Pant, O. S. Sastry, A. Kumar and S. K. Tyagi, Energy and exergy performance evaluation of a typical solar photovoltaic module, Thermal Science, Vol.18 (2014) pp.147-147 (IF = 1.450).
3. S. Anand, A. Gupta and S. K. Tyagi, Comparative thermodynamic analysis of a hybrid refrigeration system for promotion of cleaner technologies, Journal of Thermal Analysis and Calorimetry (In Press, 2014) (IF 1.752).
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5. S. Anand, A. Gupta, S. K. Tyagi, and Y. Anand, An absorption chiller system using Lithium bromide and water as working fluids: exergy analysis, ASHRAE Journal (In Press, 2014).
6. S. Anand, A. Gupta and S. K. Tyagi, Critical analysis of a biogas powered absorption system for climate change mitigation, Clean Technologies and Environmental Policy (In Press, 2013) (IF 1.753). (DOI: 10.1007/s10098-013-0662-y) (IF 1.753).

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11. S Kumar, P Dheeran, SP Singh, IM Mishra and DK Adhikari, Kinetic studies of ethanol fermentation using *Kluyveromyces* sp. IPE453. *Journal of Chemical Technology and Biotechnology* Vol. 88 (2013) pp.1874-1884.

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12. V. Kumar, S. K. Tyagi, and R. Kothari, Application of CSTR and UASB reactors for industrial waste water treatment in present scenario: a review, *International Conference on Environmental Technology and Sustainable Development: Challenges & Remedies*, BBA University, Lucknow during 22-24 Feb., 2014.
13. A. K. Pandey, V. V. Tyagi, and S. K. Tyagi, Thermodynamic analysis and mass flow rate optimization of solar air heater with extended thermal energy storage, *International Conference on Environmental Technology and Sustainable Development: Challenges & Remedies*, BBA University, Lucknow during 22-24 Feb., 2014.
14. S. Anand, A. Gupta and S. K. Tyagi, An exergetic analysis and assessment for biogas as an energy source in a hybrid refrigeration system, *International Conference on Environmental Technology and Sustainable Development: Challenges & Remedies*, BBA University, Lucknow during 22-24 Feb., 2014.
15. S. K. Tyagi, A. K. Pandey and K. Pal. Performance evaluation, technical and environmental aspects of biomass cookstoves: an exergy approach, *Energy Technologies and CO2 Management*, 132th Annual TMS Meeting and Exhibition, during 16-20 Feb., 2014, California, USA.
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17. A. Gupta, A. Sawhney, S. Anand and S. K. Tyagi, Thermodynamic analysis of evacuated tube (ETC) based hybrid ammonia-water refrigeration system, International Congress on Renewable Energy (ICORE 2013), 27-29 Nov., 2013, KIIT University, Bhubaneswar, Odisha, pp.251-260.
18. A. K. Sarma, M Aslam and P Saxena, Green Technology for Biodiesel Production from *Mesua Ferrea* L seed oil, APCSEET July 5-8, 2013, Narita, Japan.
19. R Arora, S Behera, R Singh and S Kumar, Evaluation of ethanol production by yeast strains isolated from soil samples. World Renewable Energy Technology Congress (WRETC-2013) on Sep 25-27, 2013, New Delhi (India).
20. Y. K. Yadav attended the 3rd International Conference on Human Values in Higher Education and made presentation on “Ethics in Education” at PTU, Kapurthala on 28.2.2014.
21. Y. K. Yadav made presentation as invited speaker on “Greater Needs of Research in Science of Sustainability” during 17th Punjab Science Congress 2014 at PTU, Kapurthala on 14.02.2014.
22. Y. K. Yadav delivered a key-note lecture on “Energy Conservation, Energy Efficiency and Pollution Control” during Energy Olympiad at Pushpa Gujral Science City, Kapurthala on 03.02.2014.
23. S. K. Tyagi and A. K. Pandey, Second law evaluation, parametric study and environmental impact assessment of biomass cookstoves, 101st Indian Science Congress Feb., 2-5, 2014, Jammu.
24. Y. K. Yadav and S. K. Tyagi attended the Workshop on “India Clean Cookstove Forum” organized by MNRE & GIZ at New Delhi on 26.11.2013.

BOOK CHAPTERS/CONFERENCE PROCEEDINGS

25. K. Pal, A.K. Pandey, P Gera and S. K. Tyagi, Comparative study of different biomass cookstove model: An experimental study, Chapter-9 in Recent Advances in Bioenergy Research (Eds. S. Kumar and S. K. Tyagi, et al.) (ISBN 978-81-927097-2-7) Vol.3 (2014) pp.79-97.
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27. S Mishra and AK Sarma. Potential of microalgae biofuel production using wastewater as key resources. Book Chapter (2013), Industrial and Environmental Biotechnology, Studium press LLC, USA.
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29. R Arora, S Behera and S Kumar (2014) Comparative study of fermentation efficiency for bioethanol production by isolates. In: Kumar S, Sarma AK, Tyagi SK and Yadav YK (Eds.) Recent Advances in Bioenergy Research. Vol. III, SSS-NIRE, Kapurthala, pp. 149-155.
30. S Behera, R Arora, NK Sharma and S Kumar (2014) Fermentation of glucose and xylose sugar for the production of ethanol and xylitol by the newly isolated NIRE-GX1 yeast. In: Kumar S, Sarma AK, Tyagi SK and Yadav YK (Eds.) Recent Advances in Bioenergy Research. Vol. III, SSS-NIRE, Kapurthala, pp. 175-182.
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32. NK Sharma, S Behera and S Kumar (2014) Genetic modifications in yeast for simultaneous utilization of glucose and xylose. In: Kumar S, Sarma AK, Tyagi SK and Yadav YK (Eds.) Recent Advances in Bioenergy Research. Vol. III, SSS-NIRE, Kapurthala, pp. 194-207.
33. S Behera, RA Sehgal and S Kumar, Bioprospecting the Cellulases and Xylanases Thermozyms for the Production of Biofuels. AICHE 2013 Annual Meeting.

EDITED BOOKS/CONFERENCE PROCEEDINGS

34. S Kumar, AK Sarma, SK Tyagi and Yadav YK (2014) Recent Advances in Bioenergy Research. Vol. III, SSS-NIRE, Kapurthala (ISBN 978-81-927097-2-7).

ELECTURE DELIVERED/MEETING ATTENDED

35. Dr. Y. K. Yadav attended first weekly Operational Review Meeting (ORM) at MNRE, New Delhi on 09th April, 2014.
36. Dr. A. K.Sarma attended as a JURI member at Pushpa Gujral Science City, for selection of innovated scientific model for award and promotion on 18, March,2014.
37. Dr.Y. K. Yadav attended 8th Finance Committee Meeting at MNRE, New Delhi on 14.03.2014.
38. Dr. Y. K. Yadav was invited as Chief Guest during the celebration of 7th South Asian University Festival organised by Association of Indian Universities (AIU), New Delhi at Lovely Professional University, Phagwara, Punjab on 13.03.2014.
39. Dr. Y. K. Yadav attended 1st Governing Council Meeting of National Institute of Solar Energy (NISE) at MNRE, New Delhi on dated 15.01.2014.
40. Dr Y. K. Yadav participated and made presentation on Research Contributions of SSS NIRE in the field of Bioenergy during the Stakeholder's Consultative Conference on Paddy Straw Utilization under the Chairmanship of Hon'ble Chief Minister of Punjab at Punjab Bhawan, Chandigarh on 03.01.2014.

41. Dr. Y. K. Yadav and Dr. A.K. Sarma attended the Brain Storming Session on “Biofuels to Power Indian Agriculture” organised by National Academy of Agricultural Science (NAAS), ICAR, New Delhi on 23.12.2013.
42. Dr. A. K.Sarma delivered a lecture as resource person in TEQIP sponsored Short Term Training Programme on ‘IC Engine Fuels and Combustion Technologies’ in the Department of Mechanical Engineering(14-18th Dec, 2013, Dr BR Ambedkar NIT Jalandhar).
43. Dr. Sachin Kumar delivered a guest-lecture in TEQIP sponsored Short Term Training Programme on ‘Bioenergy Technologies for Power & Environmental Applications’ in the Department of Mechanical Engineering, SLIET, Longowal on Dec 19, 2013.
44. Dr.Y. K. Yadav attended the 36th GC Meeting of PushpaGujral Science City at Punjab Bhawan, Chandigarh on 18.12.2013.
45. Dr. Y. K. Yadav was invited as Chief Guest of the TEQIP programme on “Bioenergy Technologies for Power and Environmental Applications” at SantLongowal Institute of Engineering and Technology, Longowal, Sangrur on 16.12.2013.
46. Dr. Y. K. Yadav was invited as Guest of Honour and Key-note Speaker at the closing ceremony of STC on “IC Engine Fuels & Combustion Technologies (ICEFCT-13)” at NIT Jalandhar on 14.12.2013.
47. Dr S. K.Tyagi delivered invited talk on “Renewable Energy for Sustainable Development” at NIT Jalandhar on 21st Oct., 2013.
48. Dr S.K. Tyagi delivered invited talk on Renewable Energy and CDM systems at Sardar Patel Renewable Energy Research Institute (SPRERI), Anand (Gujarat) on Sept., 11, 2013.
49. Dr. A. K. Sarma delivered a lecture as resource person in TEQIP sponsored Short Term Training Programme “Renewable Energy for Sustainable Development” at NIT Jalandhar on 21st Oct., 2013.
50. Dr. A. K. Sarma attended as a JURI member at Pushpa Gujral Science City, for selection of innovated scientific model for award and promotion on 18, March, 2014.
51. Dr Sachin Kumar delivered a Lecture in TEQIP sponsored Short Term Course ‘Energy and Environment Management’ organized by Department of Chemical Engineering, Dr B.R. Ambedkar National Institute of Technology, Jalandhar, Oct 21, 2013.

10. AWARDS & HONOURS

Ms. Richa Arora bagged Best Paper Award to the research paper entitled ‘Evaluation of ethanol production by yeast strains isolated from soil samples’ in the World Renewable Energy Technology Congress (WRETC-2013) on Sep 25-27, 2013, New Delhi (India).

11. ABROAD VISITS/CONFERENCES/WORKSHOP/TRAINING

1. Dr. S. K. Tyagi attended the Fourth Workshop on Enhancing Regional Distribution of Clean Development Mechanism (CDM) Projects during 4-5 Sept., 2013 (Manila) Philippines.
2. Dr. S. K. Tyagi attended the Training on Program of Activities and Standardized Baselines under the Clean Development Mechanism (CDM) during 2-3 Sept., 2013 (Manila) Philippines.
3. A. K. Sarma attended 9th Asia Pacific Conference on Sustainable Energy & Environmental Technology (APCSEET 2013) July 5-8, 2013 held in Narita, Japan.

12. DOCUMENTATION CENTRE

A documentation centre has been established, having collection of large number of recently published books, journals, periodicals, newsletters, reports, conference proceedings, etc. on various aspects, relating to renewable energy. The further strengthening of the documentation centre is in progress. About 50 Books and 50 Scientific Journals have been purchased for Documentation Centre in this FY.

13. PROGRESS OF CONSTRUCTION

The following construction activities are in progress:

- (a) Construction of road connecting to Common Facility Block
- (b) Construction of road connecting to Hostel Block to Sub Station.
- (c) Construction of Meter Room for Installation of 992.80 KVA Electricity Load Extension.
- (d) Renovations/Painting for campus houses.

14. HORTICULTURE ACTIVITIES

With a 'GO GREEN' motto, SSS-NIRE follows an integrated approach towards development of Forestry & horticulture by paying attention technically as well as institutional issues and targeting social causes as global warming etc to support the horticulture and silviculture. More than two hundred ornamental and forestry plants has been planted during the year. Around the campus office, hostel block, housing 3500 sq mtr area has been developed with selection no. 1 and Korean grass. The Institute has also purchased the necessary fertilizers, machinery and agricultural tools for the development of campus to meet the objectives of GO GREEN campus.

Bamboo and Jatropha for biofuel applications

Bamboo plantation: Near about 300 bamboo saplings were planted along the boundary wall near Jatropha field. In the year 2011 the Bheema bamboo saplings were provided by Ms/ Grow More Pvt. Ltd. Bangalore based company. Bamboo plants are growing at a good pace and many plants have attained the height of 20-24 feet. The foliage of

bamboo plants is also lush green in colour. Diameter of bamboo trunk is also healthy. Sprouting of new bamboo saplings takes place in each season.

Jatropha plantation: Jatropha plants go to dormant stage from Dec to April, every year. All the branches of the plant dried during this season and from the root structure and lower parts of the stem new seedlings / sprouting arises in the middle of April. Thus the actual flowering season is shattered. The same was communicated to NBRI Lucknow, who supplied the seedlings. In the 2nd year of plantation (2011-12) about 20 kg of raw seeds were harvested while in the subsequent years (2012-13, 2013-14) there was no seed production at all. The plantation requires utmost care during winter season to protect it from fog coverage and regular water supply which are proposed to be studied for the season 2014-15 to reach at a concrete decision on Jatropha plantation at SSS-NIRE.

15. ADMINISTRATIVE ACTIVITIES

- Five Meetings of the Purchase Committee of SSS-NIRE were held during the year for procurement of scientific equipments, furniture and fixtures, construction activities etc.
- 7th Finance Committee meeting was held on 29th October, 2013 at MNRE, New Delhi.
- 8th Finance Committee meeting was held on 14th March, 2014 at MNRE, New Delhi.
- 21st Meeting of the Governing Council of SSS-NIRE was held on 18th November, 2013 at MNRE New Delhi
- The Institute has received ISO 9001:2008 certification. ISO 9001:2008 certification is one of the international standards which recognize the organization to maintain the international norms and systems, for the smooth and goal oriented working. This quality management system is applicable to provision of research, design, development and testing activities for new and renewable energy especially bioenergy including human resource development and other administrative activities.



Director, SSS-NIRE receiving ISO 9001:2008 certificate.



Celebration of ISO 9001:2008 success at the Institute.

16. AUDITED ANNUAL ACCOUNTS FOR THE F.Y 2013-14

Audited Annual Accounts for the F.Y 2013-14 have been prepared and appended ahead.

K. BHAGAT & CO.

Chartered Accountants
16-Brij Nagar
Jalandhar.

Phone : (O) 2282829,2212471
(R) 2282830
(M) 98142-03435

FORM NO. 10B
[See rule 17B]

Audit report under section 12A(b) of the Income-tax Act, 1961

We have examined the balance sheet of SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY (SSS NIRE), KAPURTHALA as on 31.03.2014 and Income & Expenditure Account as on that date which are in agreement with the books of account maintained.

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of the audit. In our opinion, proper books of account have been kept by the Society so far as appear from our examination of books subject to notes to accounts annexed herewith.

In our opinion and to the best of our information, and according to explanations given to us.

- (i) In the case of the balance sheet, of the state of affairs of the above named society as at 31.03.2014,
- (ii) In the case of Income & Expenditure of the transaction of the society for the period ended on 31.03.2014.

Place : Jalandhar City

Dated : September 30, 2014

For K. Bhagat & Co.
Chartered Accountants



SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

BALANCE SHEET AS AT 31ST MARCH 2014

(Amount in Rs.)

PARTICULARS	SCHEDULE	31st MARCH, 2014	31st MARCH, 2013
A. CAPITAL FUND AND LIABILITIES			
Corpus/Capital Fund	I	151,235,530.00	3,769,155.00
Reserve & Surplus	II	403,439,782.23	576,204,372.70
Current Liabilities & Provisions	III	10,154,229.40	5,092,304.00
TOTAL		564,829,541.63	585,065,831.70
B. ASSETS			
Fixed Assets	IV	314,243,464.40	353,650,027.18
Current Assets, Loans & Advances	V	103,119,702.23	231,415,804.52
Investments (Corpus Fund)	VI	147,466,375.00	
TOTAL		564,829,541.63	585,065,831.70
Contigent Liabilities And Notes on Accounts	VII		

For SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY

As per our Audit Report Attached

FOR K. BHAGAT & CO.

Chartered Accountants

MEM. NO. 17902

(K. BHAGAT)

Partner

Firm Reg. No. 006797N

Place: Jalandhar
Date: 30.09.2014


Administrative-cum-Accounts Officer


Director


Chairman

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
 (An Autonomous Institution of Ministry of New & Renewable Energy)
 Kapurthala (Punjab)- 144601

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDING 31.03.2014

(Amount in Rs.)

PARTICULARS	31st MARCH, 2014	
INCOME		
Grant Received from MNRE during the year		
General	68,000,000.00	
Salaries	<u>12,000,000.00</u>	80,000,000.00
Interest Received on FDR		5,291,268.00
Interest Received from Saving a/c		8,913,752.21
Licence Fees		54,035.00
Tender Fees		86,450.00
Hostel Fees		39,000.00
Other income		82,684.00
TOTAL	A	94,467,189.21
EXPENDITURE		
Audit & Legal Fees		104,723.00
Bank Charges		18,875.00
Consumable Laboratory Workshop Exp.		2,415,024.50
Depreciation		36,320,899.00
Electricity & POL		2,363,162.00
Horticulture Expenses		349,318.00
Insurance Exp.		13,119.00
Meeting, Seminars, Workshop & Conference		767,507.00
Misc. Exp.		158,741.00
office Exp.		172,195.00
Printing & Publications		118,872.00
Refreshment		158,543.00
Rentals, Hiring of Prof. Services		10,798,541.00
Repair & Maintenance		532,713.00
Salaries		6,453,081.00
Stationary (Including Software Exp.)		417,228.00
Telephone & Internet Exp.		309,043.00
Travelling Exp.		303,362.00
TOTAL	B	61,774,946.50
Surplus Transfer to Reserve & Surplus	A-B	32,692,242.71

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

(Amount in Rs.)

PARTICULARS	31st MARCH, 2014	31st MARCH, 2013
I. CORPUS/CAPITAL FUND		
Opening Balance	3,769,155.00	3,769,155.00
Add: Transfer From Reserve & Surplus	147,466,375.00	-
	151,235,530.00	3,769,155.00
II. RESERVE & SURPLUS		
Opening Balance	562,047,499.00	412,047,499.00
Add: Grant Received from MNRE during the year	-	150,000,000.00
Add: Surplus for Current year	32,692,242.71	-
Less: Pre operative Exp.	(67,498,170.18)	-
Less: Transfer to Corpus/Capital Fund	(147,466,375.00)	-
Sub Total	379,775,196.53	562,047,499.00
EARMARKED FUNDS		
Opening Balance Bio Diesel Project (Dr. A.K. Sarma)	6,855,573.00	7,769,277.00
Add: Grant Received from MNRE during the year	-	-
Less: Expenses for Bio Diesel Project (Excluding Fixed Assets)	-	(913,704.00)
Less: Unspent Balance Transfer to MNRE	(2,383,420.00)	-
Sub Total	4,472,153.00	6,855,573.00
Opening Balance Bio Crude Project (Dr. A.K. Sarma)	2,561,928.00	2,816,842.00
Add: Grant Received from MNRE during the year	1,700,000.00	-
Less: Expenses for Bio Crude Project (Excluding Fixed Assets)	(271,854.00)	(254,914.00)
Sub Total	3,990,074.00	2,561,928.00
Opening Balance Bio Ethenol Project (Dr. Sachin Kumar)	4,675,028.70	6,360,306.00
Add: Grant Received from MNRE during the year	5,000,000.00	-
Less: Expenses for Bio Ethenol Project (Excluding Fixed Assets)	(537,014.00)	(1,685,277.30)
Sub Total	9,138,014.70	4,675,028.70
Opening Balance ICRISAT Project (Sh. R.A. Singh)	13,929.00	9,427.00
Add: Grant Received from MNRE during the year	-	25,000.00
Less: Expenses for ICRISAT Project (Excluding Fixed Assets)	-	(20,498.00)
Sub Total	13,929.00	13,929.00
Opening Balance National Renewable Energy Program Project	50,415.00	50,415.00
Add: Grant Received from MNRE during the year	-	-
Less: Expenses for National Renewable Energy Program Project (Excluding Fixed Assets)	-	-
Sub Total	50,415.00	50,415.00
Opening Balance Bio Mass Cook Stove Project (Dr. S.K. Tyagi)	-	-
Add: Grant Received from MNRE during the year	6,000,000.00	-
Less: Expenses for Bio Mass CookStove Project (Excluding Fixed Assets)	-	-
Sub Total	6,000,000.00	-
	403,439,782.23	576,204,372.70



SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY

(An Autonomous Institution of Ministry of New & Renewable Energy)

Kapurthala (Punjab)- 144601

(Amount in Rs.)

PARTICULARS	31st MARCH, 2014	31st MARCH, 2013
III. CURRENT LIABILITIES & PROVISIONS		
Cheques Issued But not Presented		
SBOP, Jalandhar	5,176,594.00	103,260.00
UBI, Jalandhar	-	233,228.00
OBC, Mand	63,939.00	239,453.00
Salary Payable	489,046.00	385,450.00
Office Expenses Payable		
Electricity Expenses	73,333.00	42,395.00
Telephone & Other Expenses	12,607.00	7,493.00
Travelling	-	8,331.00
Refreshment Expenses	4,678.00	-
Printing & Publication	6,406.00	-
Professional Fees Payable		
Internal Audit Fee	86,966.00	86,966.00
Statutory Audit Fee	7,645.00	7,750.00
Repair & Maintenance Payable	258,744.00	
Security	90,695.00	90,000.00
Edutek Equipments	-	1,498,000.00
Stylo Steel Works	-	85,380.00
Fairdeal Agency	1,494.00	1,494.00
Biochrom Ltd.	-	320,893.00
Synoptics Ltd. UK	-	253,066.00
Airport Handeling Services, New Delhi	67,369.00	67,369.00
Varun Associates	800.00	931,300.00
Employment News New Delhi	8,720.00	8,720.00
TDS Payable	45,600.00	45,761.00
The Indian Express Ltd.	29,122.00	29,122.00
Rental, Hiring & Proff. Fees	829,587.00	432,226.00
Office expenses	13,749.00	-
Stationary Including Software Expenses	1,004.00	-
Horticulture Expenses	129,000.00	148.00
Shankar Book Agency Pvt. Ltd.	14,499.00	14,499.00
M/s Manohar Auto Diesel	9,900.00	-
Anton Paar India Pvt. Ltd.	165,169.00	-
National Service Station	33,652.00	-
Thames Chemicals	124,441.00	-
Newage Furniture Innovations Pvt. Ltd.	42,293.40	-
Amar Equipments Pvt. Ltd.	13,500.00	-
Nova Trading Co.	1,985,677.00	-
EMD	368,000.00	200,000.00
	10,154,229.40	5,092,304.00

[Handwritten Signature]
30/9/14


SARDAR SWABAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY, KAPURTHALA
[A Society Registered Under the Registration of the Societies Act, 1860]

Sl. No.	Rate	Particulars	GROSS BLOCK		LESS THAN 180 DAYS	DEDUCTIONS/ ADJUSTMENT	TOTAL COST AS ON 31.03.2014	D. PRECATION		WRITTEN BACK AS ON 31.03.2014	SCHEDULE IV	
			COST AS ON 31.03.2013	ADDITIONS MORE THAN 180 DAYS				DEP UP TO 31.03.2013	DEP FOR THE YEAR		W.D.V AS ON 31.03.2013	W.D.V AS ON 31.03.2014
7%		Land	7,500,000.00	-	-	-	7,500,000.00	-	-	-	7,500,000.00	7,500,000.00
7%		Land & Site Related Dev Works	1,285,066.00	-	-	-	1,285,066.00	-	-	-	1,285,066.00	1,285,066.00
15%		Plant Mach & Equip Office-I	657,280.00	-	-	-	657,280.00	508,399.00	22,347.00	-	126,634.00	148,981.00
80%		FURNITURE & FIXTURE & OFFICE & HOSTEL EQUIPMENTS										
80%		Computer & Printer	190,651.00	58,700.00	1,103,553.00	-	1,353,904.00	85,185.00	430,156.00	-	838,553.00	105,466.00
10%		Furniture & Fixtures	3,944.00	-	-	-	3,944.00	197.00	375.00	-	3,720.00	3,747.00
15%		Office Equipments	477,055.00	544,804.00	-	-	1,021,859.00	52,662.00	145,360.00	-	823,817.00	424,395.00
15%		Project Bio-Crods Assets										
15%		TBP Bio-Crods project	2,342,574.00	-	-	-	2,342,574.00	208,886.00	320,051.00	-	1,813,635.00	2,133,686.00
15%		Project Bio Ethanol Assets										
15%		Diesel Engine Test Rig	1,498,000.00	-	-	-	1,498,000.00	112,350.00	207,848.00	-	1,177,802.00	1,389,550.00
15%		Foundation Stone	85,380.00	-	-	-	85,380.00	6,004.00	11,846.00	-	67,130.00	78,976.00
15%		Oxygen Gas Cylinder	8,000.00	-	-	-	8,000.00	600.00	1,710.00	-	6,290.00	7,400.00
15%		Fluor Point Apparatus	579,707.00	-	-	-	579,707.00	160,869.00	62,876.00	-	356,012.00	418,838.00
15%		Kinematic Viscometer	433,709.00	-	-	-	433,709.00	120,354.00	47,003.00	-	266,352.00	313,355.00
15%		Mechanical Stirrer	63,224.00	-	-	-	63,224.00	17,545.00	6,852.00	-	38,827.00	45,679.00
15%		Petroleum Density Meter	1,164,611.00	-	-	-	1,164,611.00	323,180.00	126,215.00	-	715,216.00	841,431.00
15%		Rotary Vacuum Evaporator	548,570.00	-	-	-	548,570.00	152,228.00	59,451.00	-	336,891.00	396,342.00
15%		Soxhlet	90,952.00	-	-	-	90,952.00	25,239.00	9,857.00	-	55,656.00	65,713.00
15%		Project Bio Ethanol Assets										
15%		Bio reactor	3,322,144.00	-	-	-	3,322,144.00	249,161.00	460,947.00	-	710,108.00	2,612,036.00
15%		Cell Electrophoresis	253,066.00	-	-	-	253,066.00	18,980.00	35,113.00	-	196,973.00	234,086.00
15%		Real Time PCR	1,440,000.00	-	-	-	1,440,000.00	108,000.00	199,800.00	-	307,800.00	1,332,000.00
15%		SDS Page Electrophoresis	320,893.00	-	-	-	320,893.00	24,067.00	44,524.00	-	68,591.00	296,826.00
15%		Gas Cylinder	13,705.00	13,705.00	-	-	13,705.00	-	2,056.00	-	2,056.00	-
15%		Scientific & Laboratory Equipments (1,2,3)										
15%		Cook Stove	480.00	-	-	-	480.00	36.00	67.00	-	103.00	444.00
15%		Fume Hood	96,694.00	-	-	-	96,694.00	14,504.00	12,379.00	-	26,813.00	82,190.00
15%		Photo Bireactor	13,997.00	-	-	-	13,997.00	1,050.00	1,942.00	-	2,992.00	12,947.00
15%		Weight Scale 100 kg	7,962.00	-	-	-	7,962.00	1,194.00	1,015.00	-	2,209.00	6,766.00
15%		Weight Scale 30 kg	5,607.00	-	-	-	5,607.00	853.00	775.00	-	1,578.00	4,834.00
15%		Plant & Machinery Equipments										
15%		Air Compressor Machine	29,672.00	-	-	-	29,672.00	8,234.00	3,216.00	-	11,450.00	18,222.00
15%		Fixed Drill Machine RM 20mm	38,191.00	-	-	-	38,191.00	10,598.00	4,138.00	-	14,737.00	23,454.00
15%		Gas cutting Set	42,358.00	-	-	-	42,358.00	11,755.00	4,590.00	-	16,345.00	26,013.00
15%		Grinder Angle 100mm(Hand Grinder)	5,064.00	-	-	-	5,064.00	1,406.00	546.00	-	1,955.00	3,109.00
15%		Hydraulic Power Hacksaw Machine	58,447.00	-	-	-	58,447.00	16,219.00	6,334.00	-	22,553.00	42,228.00
15%		Lab Machine	401,047.00	-	-	-	401,047.00	111,291.00	45,465.00	-	154,754.00	280,756.00
15%		Puma Machine(Arc Welding Set)	92,745.00	-	-	-	92,745.00	25,737.00	10,051.00	-	35,788.00	56,957.00
15%		Professional Grinder 300mm	36,397.00	-	-	-	36,397.00	10,101.00	3,944.00	-	14,045.00	26,296.00
15%		Tractor, Trolley & Equipments	906,224.00	5,350.00	-	-	913,574.00	252,033.00	99,231.00	-	351,264.00	656,191.00
15%		Borewell with 2HP Submersible Pump	49,800.00	-	-	-	49,800.00	10,645.00	5,873.00	-	16,518.00	39,155.00
15%		Drill Machine (CBM 10 MM Heavy)	4,431.00	-	-	-	4,431.00	480.00	-	-	1,770.00	3,201.00
15%		Fire Edginghar	58,013.00	66,385.00	-	-	124,398.00	16,099.00	16,245.00	-	32,440.00	41,914.00
15%		Grass Moving Machine	1,900.00	-	-	-	1,900.00	527.00	206.00	-	1,167.00	1,371.00
15%		Impv Filling Lamp	70,980.00	-	-	-	70,980.00	19,697.00	7,692.00	-	27,400.00	51,283.00



15%	Leveler	9,700.00	-	-	-	9,700.00	2,073.00	1,144.00	3,217.00	6,483.00	7,627.00
15%	Projector	177,975.00	-	-	-	177,975.00	49,388.00	19,288.00	68,676.00	109,299.00	128,567.00
15%	Tiler	13,500.00	-	-	-	13,500.00	2,865.00	1,592.00	4,477.00	9,023.00	10,615.00
15%	Vehicle Car Ambassadors (New)	575,813.00	-	-	-	575,813.00	159,788.00	62,404.00	222,192.00	353,621.00	416,025.00
15%	Workshop Tools	503,485.00	-	-	-	503,485.00	120,738.00	57,412.00	178,150.00	355,335.00	482,747.00
15%	Drill Hammer Rotary 26(hand Grinder)	17,555.00	-	-	-	17,555.00	4,871.00	1,903.00	6,774.00	10,781.00	12,684.00
15%	Gas & Four Cylinders	11,333.00	-	-	-	11,333.00	2,422.00	1,337.00	3,759.00	7,574.00	8,911.00
15%	Electrical Equipments	42,173.00	-	-	-	42,173.00	10,355.00	4,773.00	15,128.00	27,045.00	31,818.00
10%	Guest Houses Assesst Office Equipment	170,498.00	-	-	-	170,498.00	30,492.00	14,001.00	44,493.00	126,005.00	140,006.00
10%	Ledger	33,908.00	-	-	-	33,908.00	6,443.00	2,747.00	9,190.00	24,718.00	27,465.00
10%	Plant Mach & Equip Office-II	40,414.00	-	-	-	40,414.00	33,817.00	600.00	34,477.00	5,937.00	6,597.00
Scientific & Laboratory Equipments											
15%	Air Oven (250 degree)	47,250.00	-	-	-	47,250.00	13,111.00	5,121.00	18,232.00	29,018.00	34,139.00
15%	Bomb Calorimeter	594,731.00	-	-	-	594,731.00	165,038.00	64,454.00	229,492.00	365,239.00	428,693.00
15%	Circ.Rifing.ELI(Std)Auto Clave)	129,331.00	-	-	-	129,331.00	35,862.00	14,005.00	49,867.00	79,464.00	93,369.00
15%	Data Acquisition System	415,618.00	-	-	-	415,618.00	114,393.00	45,184.00	159,577.00	296,041.00	301,225.00
15%	Digital Ph Meter	58,212.00	-	-	-	58,212.00	16,154.00	6,309.00	22,463.00	35,749.00	42,058.00
15%	Incubator Bacteriological	49,162.00	-	-	-	49,162.00	13,642.00	5,328.00	18,970.00	30,192.00	35,520.00
15%	Kern Analytical Balance (220gm)	57,499.00	-	-	-	57,499.00	15,956.00	6,211.00	22,167.00	35,332.00	41,543.00
15%	Laboratory Refrigerator	126,000.00	-	-	-	126,000.00	34,965.00	13,655.00	48,620.00	77,380.00	91,035.00
15%	Laminar Airflow Horizontal	61,149.00	-	-	-	61,149.00	16,969.00	6,627.00	23,596.00	37,553.00	44,180.00
15%	Magnetic Stirrer	38,137.00	-	-	-	38,137.00	10,583.00	4,133.00	14,716.00	23,421.00	27,554.00
15%	Platform Scale(Platform Balance)	16,200.00	-	-	-	16,200.00	4,995.00	1,951.00	6,946.00	11,054.00	13,005.00
15%	Precision Laboratory Balance(610gm)	12,019.00	-	-	-	12,019.00	4,496.00	3,558.00	8,054.00	20,165.00	23,704.00
15%	Water Bath	15,760.00	-	-	-	15,760.00	4,370.00	1,707.00	6,077.00	9,673.00	11,800.00
15%	Automatic Sieve	322,843.00	-	-	-	322,843.00	69,008.00	38,075.00	107,083.00	215,760.00	253,835.00
15%	Bi-Diesel Preparation Unit(England)	748,911.00	-	-	-	748,911.00	160,079.00	88,325.00	248,404.00	500,507.00	588,832.00
15%	Biomass Gassifier	986,278.00	-	-	-	986,278.00	210,817.00	116,319.00	327,136.00	659,142.00	775,461.00
15%	CHN Analyzer (Germany)	2,213,974.00	-	-	-	2,213,974.00	614,378.00	289,939.00	854,317.00	1,359,657.00	1,599,396.00
15%	Firetech Apparatur	234,772.00	-	-	-	234,772.00	50,183.00	27,688.00	77,871.00	156,901.00	184,599.00
15%	Incubator Shaker(USA)	856,900.00	-	-	-	856,900.00	237,790.00	92,867.00	330,657.00	526,243.00	619,110.00
15%	Microspette	64,611.00	-	-	-	64,611.00	17,930.00	7,002.00	24,932.00	39,679.00	46,681.00
15%	Refrigerated Centrifuge (Germany)	394,165.00	-	-	-	394,165.00	109,381.00	42,718.00	152,099.00	242,066.00	284,744.00
15%	TG DTA (STAR000)(Singapore)	1,227,747.00	-	-	-	1,227,747.00	340,700.00	133,057.00	473,757.00	753,990.00	887,047.00
15%	Ultra Low Freezer(Dep Freezer)(USA)	466,927.00	-	-	-	466,927.00	129,571.00	50,603.00	180,175.00	286,752.00	337,335.00
15%	U V Vis Spectrophotometer(Singapore)	659,152.00	-	-	-	659,152.00	140,893.00	77,739.00	218,632.00	440,520.00	518,293.00
15%	Autoclave	144,776.00	-	-	-	144,776.00	39,946.00	17,075.00	48,021.00	96,755.00	113,830.00
15%	Auto Emission Analyzer	432,581.00	-	-	-	432,581.00	92,465.00	51,017.00	143,482.00	289,099.00	340,116.00
15%	BOD Incubator	590,988.00	-	-	-	590,988.00	126,240.00	69,654.00	195,894.00	394,704.00	464,358.00
15%	Carbon Monoxide Indicator	17,600.00	-	-	-	17,600.00	3,762.00	2,076.00	5,838.00	11,762.00	13,838.00
15%	Circulatory Water Bath	214,512.00	-	-	-	214,512.00	45,852.00	25,299.00	71,151.00	143,361.00	168,600.00
15%	Gas Chromatography	3,377,215.00	-	-	-	3,377,215.00	462,046.00	437,290.00	899,336.00	2,477,979.00	2,915,269.00
15%	Microscope	199,091.00	-	-	-	199,091.00	42,556.00	23,480.00	66,036.00	133,055.00	156,535.00
15%	Muffle Furnace 1200 (1400)	55,125.00	-	-	-	55,125.00	15,297.00	5,974.00	21,271.00	33,854.00	39,828.00
15%	Muffle Furnace 1100 (1400)Degree	40,950.00	-	-	-	40,950.00	11,363.00	4,538.00	15,901.00	25,149.00	29,587.00
15%	Vacuum Oven	190,800.00	-	-	-	190,800.00	40,784.00	22,502.00	62,286.00	127,514.00	150,016.00
15%	Water Purification System	662,317.00	-	-	-	662,317.00	141,570.00	78,112.00	219,682.00	442,835.00	520,747.00
15%	Scientific & Laboratory Equipments (For Bio-Diesel Project)	25,000.00	-	-	-	25,000.00	1,875.00	3,469.00	5,344.00	8,256.00	25,125.00
15%	Circular Saw Machine	3,333,347.00	-	-	-	3,333,347.00	250,001.00	462,502.00	712,503.00	1,101,756.00	1,311,756.00
15%	Differential Scanning Calorimeter	1,190,301.00	-	-	-	1,190,301.00	178,545.00	157,763.00	330,308.00	508,788.00	600,000.00
15%	Cell Documents	4,435,000.00	-	-	-	4,435,000.00	331,875.00	613,969.00	945,844.00	1,495,708.00	1,748,000.00
15%	High Heat Light	545,017.00	-	-	-	545,017.00	81,753.00	69,490.00	151,243.00	296,574.00	348,000.00
15%	Homogenizer	545,017.00	-	-	-	545,017.00	81,753.00	69,490.00	151,243.00	296,574.00	348,000.00



15%	HPLC	2,112,293.00	-	-	-	2,112,293.00	316,844.00	269,317.00	-	586,161.00	1,526,132.00	1,795,449.00
15%	Lyo-hydrizer	884,632.00	-	-	-	884,632.00	66,347.00	122,743.00	-	189,090.00	695,542.00	812,265.00
15%	Oxidation Stability Apparatus	1,221,014.00	-	-	-	1,221,014.00	183,157.00	155,679.00	-	338,831.00	882,183.00	1,037,862.00
15%	Ramsbottom Carbon Residue Apparatus	1,062,752.00	-	-	-	1,062,752.00	159,413.00	135,901.00	-	294,914.00	767,838.00	900,339.00
15%	Street Light	4,888,000.00	-	-	-	4,888,000.00	366,600.00	678,210.00	-	1,044,810.00	3,843,190.00	4,521,400.00
10%	Furniture & Fixture	15,555,516.00	-	-	-	15,555,516.00	2,430,931.00	1,647,624.00	-	4,078,556.00	15,896,434.40	12,724,584.00
80%	Computer/Peripherals	2,214,586.00	-	-	-	2,214,586.00	2,095,127.00	82,813.00	-	2,177,940.00	3,041,526.00	119,459.00
15%	Library Books	1,799,727.00	-	-	-	1,799,727.00	376,498.00	250,326.00	-	626,824.00	1,418,515.00	1,363,239.00
15%	Cycle	2,890.00	-	-	-	2,890.00	2,653.00	36.00	-	2,689.00	201.00	237.00
60%	Misc Equipments (Cellphone)	59,400.00	-	-	-	59,400.00	59,399.00	1.00	-	58,400.00	11,550.00	1.00
10%	Misc Fixed Assets	58,937.00	-	-	-	58,937.00	46,104.00	1,283.00	-	47,387.00	11,550.00	12,833.00
100%	Misc Fixed Assets Ports Cabin	487,700.00	-	-	-	487,700.00	487,700.00	-	-	487,700.00	-	-
100%	SPV Power Plant	2,442,924.00	-	-	-	2,442,924.00	2,442,924.00	-	-	2,442,924.00	-	-
10%	Guest House Misc Assets	192,938.00	-	-	-	192,938.00	149,329.00	4,361.00	-	153,690.00	39,248.00	43,609.00
15%	Guest House Equip Mach-I	156,741.00	-	-	-	156,741.00	144,857.00	1,783.00	-	146,640.00	10,101.00	11,894.00
10%	Guest House Equip Mach-II	729.00	-	-	-	729.00	603.00	13.00	-	616.00	113.00	126.00
15%	Land Site Relined Dev Tubewell	250,000.00	-	-	-	250,000.00	216,471.00	5,029.00	-	221,500.00	28,500.00	31,529.00
10%	Civil Works Building & Built Up Space	121,738,476.00	-	-	-	121,738,476.00	270,893,104.00	26,974,083.00	-	26,974,083.00	243,919,021.00	211,738,476.00
15%	Mobile	6,850.00	-	-	-	6,850.00	2,959.00	584.00	-	3,543.00	3,307.00	3,891.00
10%	Inauguration of Gate	15,000.00	-	-	-	15,000.00	-	1,500.00	-	1,500.00	13,500.00	-
15%	Air Conditioners	77,900.00	-	-	-	77,900.00	17,991.16*	11,670.00	-	11,670.00	1,853,246.00	-
15%	Hair refrigerator 601 Ltr	65,000.00	-	-	-	65,000.00	65,000.00	9,750.00	-	9,750.00	55,250.00	-
15%	Digital Electronic Balance ML 204	99,852.00	-	-	-	99,852.00	99,852.00	14,978.00	-	14,978.00	84,874.00	-
15%	Gas Regulator	7,639.00	-	-	-	7,639.00	7,639.00	1,146.00	-	1,146.00	6,493.00	-
15%	Helium Gas Cylinder with Regulator	30,364.00	-	-	-	30,364.00	30,364.00	4,555.00	-	4,555.00	25,809.00	-
15%	Online UPS 15KVA	230,625.00	-	-	-	230,625.00	230,625.00	34,594.00	-	34,594.00	196,031.00	-
10%	Development of Gate	2,476,082.00	-	-	-	2,476,082.00	123,804.00	123,804.00	-	123,804.00	2,352,278.00	-
15%	Panasonic Fax	7,700.00	-	-	-	7,700.00	7,700.00	578.00	-	578.00	7,122.00	-
15%	Washing Machine	24,600.00	-	-	-	24,600.00	24,600.00	1,845.00	-	1,845.00	22,755.00	-
15%	Gas Purification	70,480.00	-	-	-	70,480.00	70,480.00	5,286.00	-	5,286.00	65,194.00	-
15%	Liquid Nitrogen	73,900.00	-	-	-	73,900.00	73,900.00	5,543.00	-	5,543.00	68,357.00	-
15%	Bike Passion	50,486.00	-	-	-	50,486.00	50,486.00	3,786.00	-	3,786.00	46,700.00	-
25%	ISO 9001:2008	240,000.00	-	-	-	240,000.00	30,000.00	30,000.00	-	30,000.00	210,000.00	-
15%	LG refrigerator	14,950.00	-	-	-	14,950.00	14,950.00	1,121.00	-	1,121.00	13,829.00	-
10%	Sign Board	104,650.00	-	-	-	104,650.00	104,650.00	7,849.00	-	7,849.00	96,801.00	-
15%	Water Purifiers	293,636.00	-	-	-	293,636.00	293,636.00	14,682.00	-	14,682.00	278,954.00	-
10%	Stainless steel Doors	-	-	-	-	-	-	-	-	-	-	-
	Sub-Total	206,106,923.00	-	-	-	206,106,923.00	17,446,794.00	36,320,899.00	-	53,767,693.00	314,243,464.40	108,660,129.00
	Capital WIP	164,989,898.18	-	-	-	164,989,898.18	17,446,794.00	36,320,899.00	-	53,767,693.00	314,243,464.40	164,989,898.50
	Total	371,096,821.18	-	-	-	371,096,821.18	368,011,157.40	36,320,899.00	-	107,535,386.00	628,486,928.80	313,650,027.50

* Depreciation not claimed as asset is not put to use.



SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

(Amount in Rs.)

PARTICULARS	31st MARCH, 2014	31st MARCH, 2013
V. CURRENT ASSETS, LOANS & ADVANCES		
A. CURRENT ASSETS		
Cash in Hand	2,912.00	28,913.00
Bank Balances		
In Saving A/c	345,919.16	17,908.15
In Deposit A/c	88,658,952.88	196,923,074.18
In Current A/c	217,330.70	221,940.70
Total (A)	89,225,114.74	197,191,836.03
B. LOANS, ADVANCES & OTHER ASSETS		
Advances Recoverable in Cash or in kind or for value to be received		
Deposit with CPWD	4,644,409.00	29,239,000.00
Pre Payments		
M/s Casa, New Delhi	300,000.00	300,000.00
M/s Deejay Corporation	25,437.00	162,286.00
M/s PEDDA Chandigarh	1,742,000.00	1,742,000.00
M/s Indian Journals Com	105,225.00	105,225.00
M/s Central News Agencies	51,485.00	51,485.00
M/s Nova Trading Co.	-	1,564,628.00
M/s MTS Eng. Pvt. Ltd.	617,527.00	617,527.00
M/s Manohar Auto Diesel	-	36,765.00
M/s Ram outsourcing Pvt Ltd	-	4,480.00
M/s NIFM	-	25,000.00
M/s Ambika Computers	29,000.00	-
M/s Can & Able Telecom	13,510.00	-
M/s M.C. Enterprises	74,961.00	-
M/s Bits Infotech, Ludhiana	250,000.00	-
M/s Virdi Electronics	46,900.00	-
M/s Quadrant Televentures Ltd.	10,000.00	-
Guru Nanak Iron & Steel Mfg. Co.	5,992.00	-
Sundry Advances	4,099.49	10,990.49
Securities Telephone	2,000.00	2,000.00
Security Gas	7,100.00	7,100.00
Advance to Staff	121,738.00	57,610.00
Prepaid Expenses	3,263.00	1,624.00
Seminar Conference Exp. Receivable	50,000.00	50,000.00
Interest Accrued on FDR	4,762,030.00	-
Cheque Deposited but not Presented	13,625.00	5,000.00
Postal Stamps in Hand	2,954.00	724.00
TDS Recoverable previous years	240,524.00	106,531.00
TDS (AY 2014-15)	770,808.00	133,993.00
Total (B)	13,894,587.49	34,223,968.49
GRAND TOTAL (A+B)	103,119,702.23	231,415,804.52




SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

(Amount in Rs.)

PARTICULARS	31st MARCH, 2014	31st MARCH, 2013
VI Investment (Corpus Fund)		
FDR with Punjab National Bank	70,000,000.00	--
FDR with Indian Overseas Bank	77,466,375.00	--
	147,466,375.00	--



SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
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RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR 2013-14

RECEIPTS	31st MARCH, 2014	31st MARCH, 2013
A. OPENING BALANCES	196,621,619.03	77,380,158.51
Cash in Hand	28,913.00	3,834.00
Bank Balances		
In Saving A/c	17,908.15	74,713,463.00
In Deposit A/c	196,923,074.18	41,075.00
In Current A/c	221,940.70	13,045,776.51
Add: Cheque deposited but not credited	5,000.00	55,000.00
Less: Cheque issued but not presented	(575,941.00)	(10,479,316.00)
Stamps	724.00	326.00
B. GRANT RECEIVED	92,700,000.00	160,025,000.00
Bio- Diesel Production Project	-	-
Bio- Mass Power Project	-	-
From Govt. of India	80,000,000.00	160,000,000
Bio Crude Project	1,700,000.00	-
ICRISAT Project	-	25,000
NREP Project	-	-
Bio- Mass Cook Stove Project	6,000,000.00	-
Bio- Ethanol Project	5,000,000.00	-
C. INTEREST RECEIVED	14,205,020.21	7,466,374.88
On Bank Deposits	5,291,268.00	7,440,912.88
On Saving Banks	8,913,752.21	25,462.00
D. OTHER INCOME	430,864.00	349,011.00
Security Deposit	695.00	50,000.00
Tender Fees	86,450.00	67,000.00
Licence Fees	54,035.00	-
Hostel Fees	39,000.00	-
EMD	168,000.00	200,000.00
Misc. Income	82,684.00	32,011.00
E. OTHER ADJUSTMENTS	6,167,118.40	37,644,166.00
Expenses Payable/Creditors Outstanding During the Year	4,333,797.40	4,226,363.00
Advances of Last Year Adjusted During the Year	1,833,321.00	33,417,803.00
	310,124,621.64	282,864,710.39

For SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY

[Signature]

As per our Audit Report Attached



(K. BHAGAT)
Partner
Firm Reg. No.- 006797N

Place: Jalandhar
Date: 30.09.2014

[Signature]
Administrative-cum-Accounts Officer

[Signature]
Director

[Signature]
Chairman

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab)- 144601

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR 2013-14

PAYMENTS	31st MARCH, 2014	31st MARCH, 2013
A. PAYMENT MADE AGAINST FUNDS FOR VARIOUS PROJECTS		
Out of Capital Grant		
Revenue Expenditure	25,454,047.50	16,342,743.06
Expenditure During the Year	61,774,946.50	23,764,352.06
Less: Depreciation	(36,320,899.00)	(7,421,609.00)
Capital Expenditure	35,173,506.40	32,355,750.00
Fixed Assets	35,173,506.40	32,355,750.00
Out of Grant for Projects	3,192,288.00	2,874,393.30
Expenses Under Bio- Diesel Project	2,383,420.00	913,704.00
Expenses Under Bio- Mass Project	-	-
Expenses Under Bio- Ethenol Project	537,014.00	1,685,277.30
Expenses Under ICRISAT Project	-	20,498.00
Expenses Under NREP Project	-	-
Expenses Under Bio- Crude Project	271,854.00	254,914.00
B. OTHER PAYMENTS		
Advance Given During the Year	9,304,406.00	34,670,205.00
Expenses Payable/Creditors of Pre. Year paid During the Year	5,199,247.00	34,218,244.00
Expenses Payable/Creditors of Pre. Year paid During the Year	4,105,159.00	451,961.00
C. CLOSING BALANCES		
Cash in Hand	237,000,373.74	196,621,619.03
Bank Balances	2,912.00	28,913.00
In Saving A/c	345,919.16	196,923,074.18
In Deposit A/c	88,658,952.88	17,908.15
In Current A/c	217,330.70	221,940.70
Investments	147,466,375.00	-
Interest Accrued on FDR (Incl. TDS)	5,532,838.00	-
Add: Cheque deposited but not credited	13,625.00	5,000.00
Less: Cheque issued but not presented	(5,240,533.00)	(575,941.00)
Stamps	2,954.00	724.00
	310,124,621.64	282,864,710.39

For SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY

As per our Audit Report Attached

Place: Jalandhar
Date: 30.09.2014

Administrative-cum-Accounts Officer

FOR K. BHAGAT & CO.

Chartered Accountants

MEMO NO. 17902

JALANDHAR

(K. BHAGAT)

Partner

Firm Reg. No.- 006797N

Director

Chairman