SSS NIRE

15th Annual Report
2012-2013

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)

ANNUAL REPORT

2012-2013

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

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

Phone : +91 1822-255543, 255545
Fax : +91 1822-255544
E-mail : sss.nire@gmail.com; director@nire.res.in

CONTENTS

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 bio-fuel and bio-energy 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. The Institute buildings has been formally handed over by CPWD in 2013.

2. OBJECTIVES AND FUNCTIONS

VISION:

To establish the Institute as an apex R&D institution for carrying out **state-of-the-art** research and development activities in the area of bio-energy, including human resource development at all levels, post-doctoral research and research leading to commercialization of renewable energy technologies.

MISSION:

- To be knowledge based R&D Institution of high quality and dedication.
- Providing services and seeks to find optimum solutions for the major stakeholders across the entire spectrum of the bio-energy sector.
- To support the Rural Energy sector in developing the knowledge for promoting new technology.

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 hybrid/integrated energy systems;

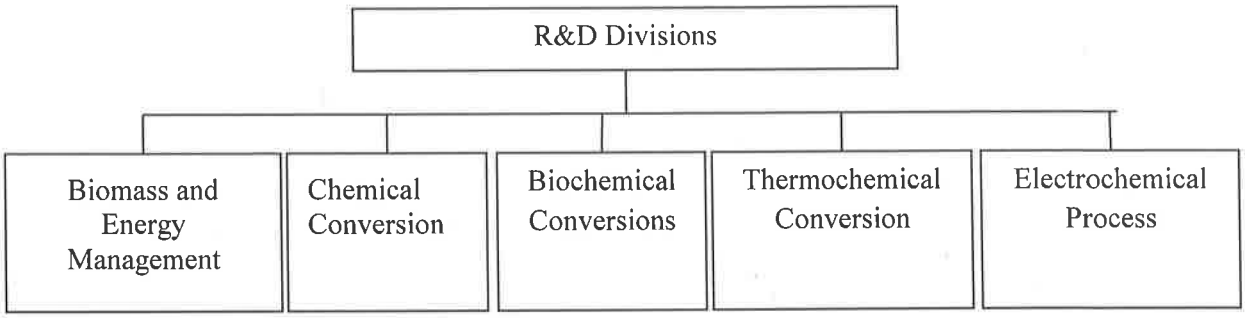
- To undertake and facilitate human resource development and training including post-doctoral research in the area of bioenergy.
- To create facilities for operationalisation of the Institute for the benefit of the masses.

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 conductive 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

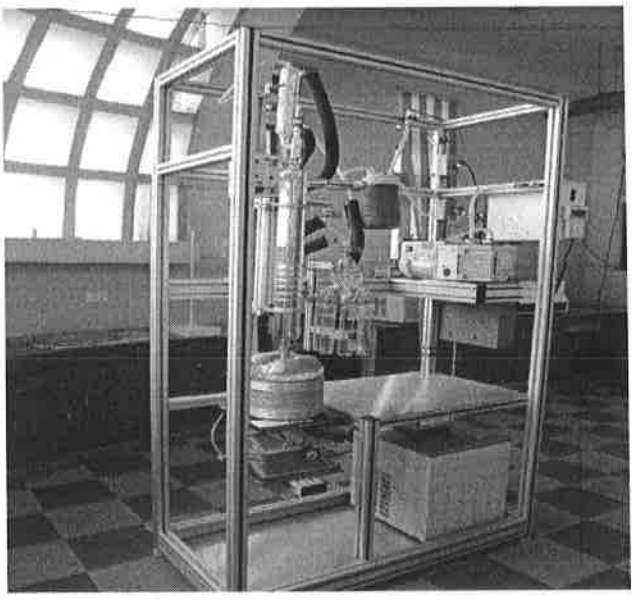
iv **Commitment to society:** application of the state-of-the-art research and development to national/social priorities.

5. LABORATORY FACILITY DEVELOPMENT

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 facilities have been created for chemical conversion of biomass including biodiesel, hydro processing, etc. Some important equipment like Gas Chromatograph dedicated for biodiesel analysis, Rams bottom Carbon Residue, Oxidation Stability Apparatus, High Pressure High Temperature Reactor, True Boiling Point Distillation, etc. have been procured and installed.

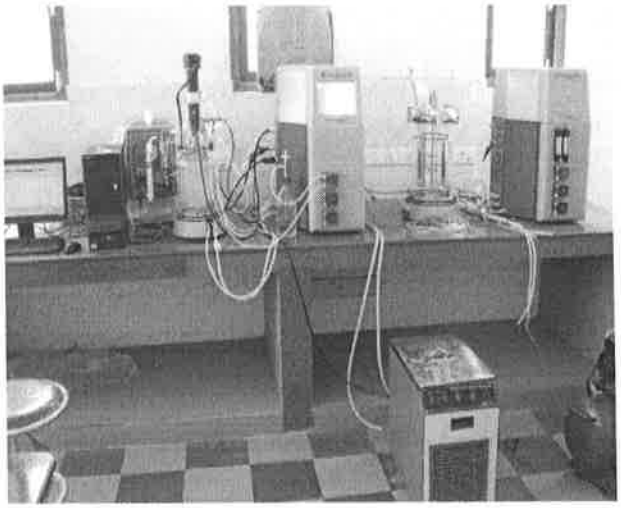


True boiling point distillation apparatus

Biochemical Conversion

The facilities have been created for biochemical conversion of biomass including bioethanol, biogas, biobutanol, biohydrogen, etc. Some important equipments like Gas Chromatograph for gas analysis, HPLC, UV-vis spectrophotometer, Water purification system, BOD Incubator, Micro Disintegrator (Homogenizer), Circulatory

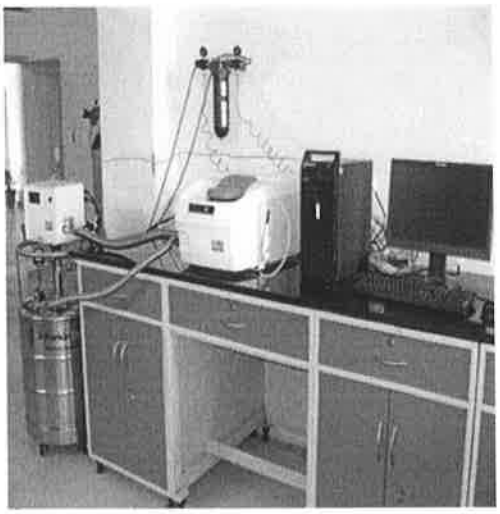
Water Bath, Vacuum oven, Gel Documentation System, Lyophilizer (Freeze Dryer), Fibre Tech, etc. have been procured and installed. Some more equipments such as, Bioreactor, Real Time PCR, Gel Doc, SDS-PAGE, Horizontal Electrophoresis, have been procured and installed in the respective laboratory.



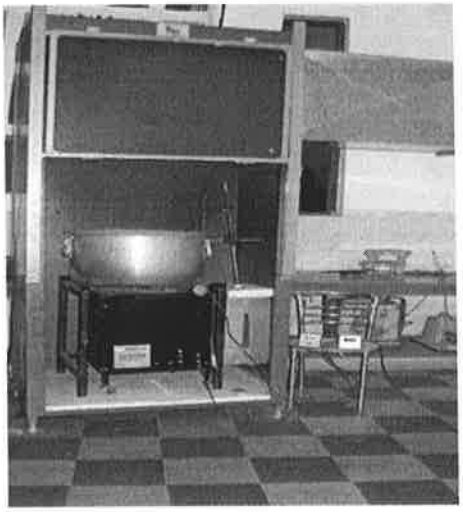
Bioreactor (3.0 L & 7.5 L) system for culturing and fermentation

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 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.



Differential Scanning Calorimeter



Cookstove Testing Hood

6. RESEARCH ACTIVITIES

Projects Completed

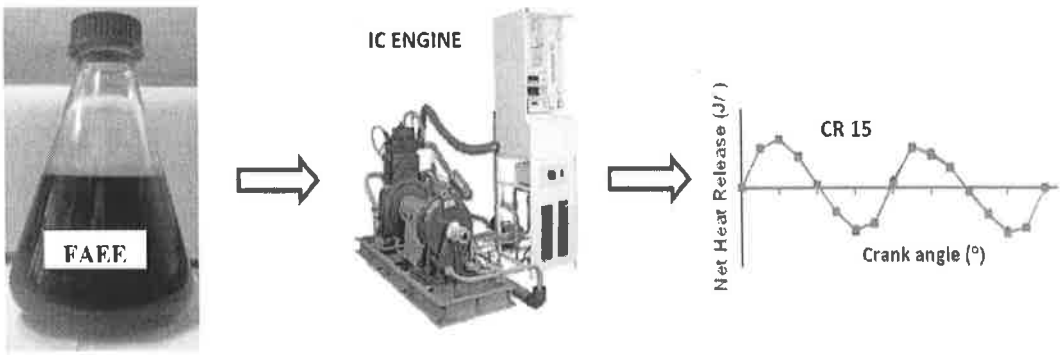
➢ ***Integrated Technology Development for Biodiesel Production using Heterogeneous Catalyst (PI/Co-PI: Dr. AK Sarma/Dr. Sachin Kumar) (MNRE, Govt. of India).***

The Integrated technology Development for biodiesel production using heterogeneous catalyst project sanctioned from MNRE has been completed and the report submitted to MNRE for review in February, 2013. The objectives under this project were to investigate new heterogeneous catalyst for biodiesel production. After extensive literature review it was found that waste material based heterogeneous mixed oxides ash catalyst received attention all over the world so as to reduce the processing cost. After screening about six numbers of such agricultural and aquatic waste material it was found that the ash obtained from Lemna perpusilla Torrey(aquatic plant) and Musa balbisiana Colla underground stem(a seed containing banana tree) hold the promise as mixed character catalyst(hybrid homogeneous and heterogeneous nature)for tranesterification. The experiments were conducted for pure Jatropha curcas L.oil(JCO) zero free fatty acids and crude JCO to determine the efficacy of the catalyst during tranesterification.

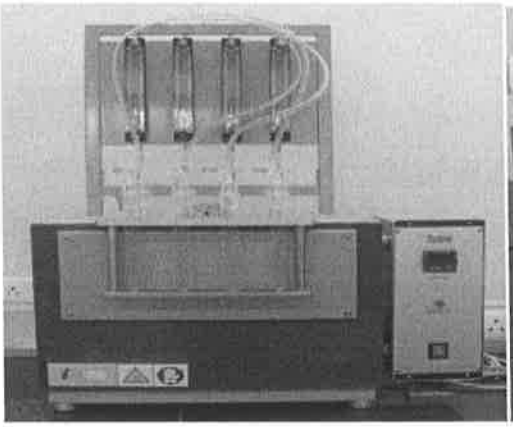
Refined JCO and methanol were used as the reactants for the tranesterification reactions in a Radleys reactor in the presence of a heterogeneous ash catalyst derived from the waste aquatic plant Lemna perpusilla Torrey. Physical characterization of the catalyst showed partly crystalline behaviour and a moderate surface area 9.622 m^2/g. The Lemna perpusilla Torrey ashes obtained from traditional combustion method were further calcined at 550 ±5 ^0C before use. In addition to other non-metal and metallic constitutes the ash contain 11.3 wt. % potassium which attributed to its catalytic behaviour. 89.43 wt. % of the oil was converted to biodiesel at 65 ± 5 ^oC in 5 hrs at 1:9 molar ratio of oil to alcohol with 5 wt. % of ash as catalyst. The Biodiesel(FAME) so obtained were characterized using appropriate ASTM methods and found within the defined standard limits. The catalyst could be reused upto 3-times but there is a reduction of efficacy by about 25% for 3rd consecutive batch reaction. The activation energy was calculated for FAME and found to be 29.49 kJ/mol. However this catalyst was not found very effective for high free fatty acid containing JCO.

A high free fatty acid (FFA) containing JCO was used for biodiesel production using Musa balbisiana Colla underground stem (MBCUS) ash catalyst, in a high

pressure high temperature reactor. The composition of the MBCUS catalyst was ascertained using XRF analysis and found that the ash obtained at 550°C contain 35.92% silica (SiO_2), 25.05 % potassium oxide (K_2O), 10% each of lime (CaO) and magnesia (MgO) and 4% each of phosphorous pent oxide (P_2O_5) and alumina (Al_2O_3) as the major component for catalytic activation. The catalyst was characterized by SEM EDX image analysis and found that the composition of the catalyst is versatile and consist of several alkali and alkaline earth metal chlorides, oxides, carbonate and silica. The BET surface area was found to be 38.710 m^2/g. The catalyst was further calcined in a TGA and observed that a maximum of 10 % losses were possible at 991°C. The catalyst structure was further characterized from TEM images and found that the structural dimensions are identical (< 100 nm length) and brick like (70nm x 20 nm x 15nm). The catalyst was found very effective during tranesterification under high temperature (275°C) and internal pressure (4.2 MPa) and 98.0 % fatty acid methyl ester (FAME) could be obtained from JCO with an initial acid value 18.4 mgKOH/g. There was a drastic reduction of FFA (acid value 3.4 mgKOH/g) in the FAME obtained. The reduction of FFA may be attributed to the high temperature and high internal vapour pressure of the reaction mixture that resulted conversion of FFA to FAME and water. Moreover, at high temperature the K_2O present in the catalyst surface reacts with the water liberated in situ forming KOH which facilitate the tranesterification. The fuel properties of the FAME were analysed as per ASTM and EN standards. We, therefore firmly recommend the use of MBCUS catalyst for industrial scale application for biodiesel production from high free fatty acid containing oil.



Diesel Engine Test Rig



Oxidation Stability Apparatus Ramsbottom Carbon Residue

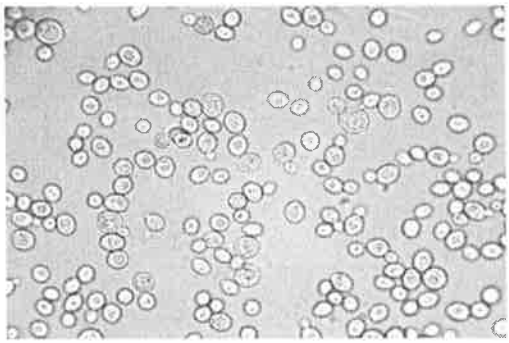
Ongoing Projects

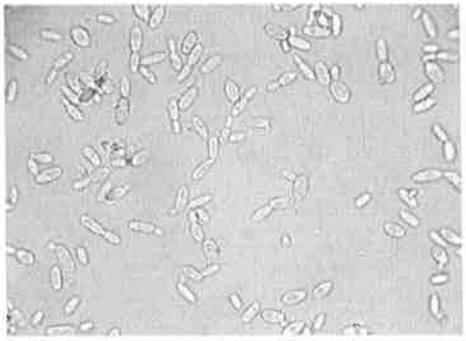
- ***The work activities under the project Biocrude Production: Hydrocracking of Nonedible vegetable oil (PI/Co-PI: Dr. A.K Sarma/Dr. Sachin Kumar) (MNRE, Govt. of India)***

Biocrude preparation using different catalysts has been completed. The fractional distillation and subsequent characterization is in progress. Jatropha curcas L. oil was hydro-processed under 7 MPa and temperature 300-400 °C in high pressure high temperature reactor using alkali (Na_2CO_3) as catalyst under different set of reaction conditions. In addition, the hydroprocessing experiments with Mesua ferrea L (MFL) seed oil at 400 °C using 1 % Na_2CO_3 catalyst have also completed. The resultant biocrude produced from MFL and JCO seed oils were separated into various hydrocarbon fractions using TBP distillation unit as applicable to petroleum refinery specifications. Moreover, there are two nos. of catalysts based on industrial and agricultural wastes derived from renewable precursor having very less percentage of heavy metal unlike the conventional hydroprocessing catalyst used in refinery have been investigated. TGA analysis of the so produced biocrudes from above experiments has been completed. The distillation characteristics and other compositions are under investigation. The biocrude production from the hydro-processing of JCO and MFL seed oils using newly investigated catalysts under different set of experimental conditions and subsequently their fractional distillation into various liquid hydrocarbon ranges are in the pipe line.

- ***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).***

A 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' has been funded by MNRE on dated January 25, 2012. The total cost of the project is INR 132.19 Lakhs for two years. For implementation of project, the vacancies were advertised for selection of manpower. The four equipments including Biorector, Real Time PCR, Horizontal Electrophoresis, SDS-PAGE under the projects have been procured and installed. The development of process for bioethanol production from Agro residue is going on and about 42 Nos. of thermophiles have been isolated so far from soil and water using rich media at 50 °C. The morphological characterization and microscopic examination of microbes based on the size, shape and gram staining have been carried out and other fermentation conditions (Physical, Chemical and Biological) for optimum growth are in process. Different thermophiles from soil and water samples have been isolated using the rich media such as nutrient broth and YPD, etc. at 50°C. About 42 nos. of thermophiles have been isolated from these samples. Morphological characterization such as appearance, forms, elevation, margins, optical density, colour & consistency of microbial colonies and microscopic examination of microbes on the basis of size, shape and gram staining. Isolates were screened for their fermentative ability using Phenol Red Broth using different carbon substrates-glucose, xylose, sucrose, lactose, maltose, cellulose, xylan and starch at 50°C. Screened isolates are being tested for their fermentation potential to produce ethanol. Other fermentation conditions (pH, temperature, inoculum size, initial sugar concentration) are being 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.





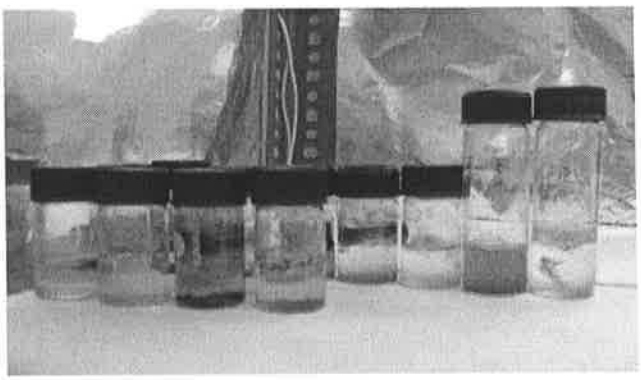
Microscopic view of thermo tolerant ethanol producing yeasts

Zone of clearance for cellulases, hemicellulases and ligninases enzyme activity

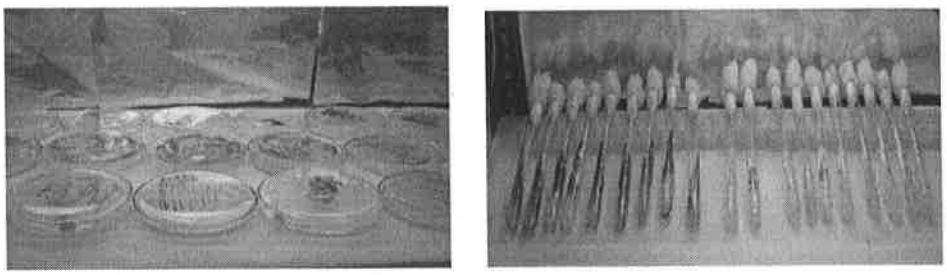
In-house Ongoing R&D Activities

Algal biomass to biodiesel production

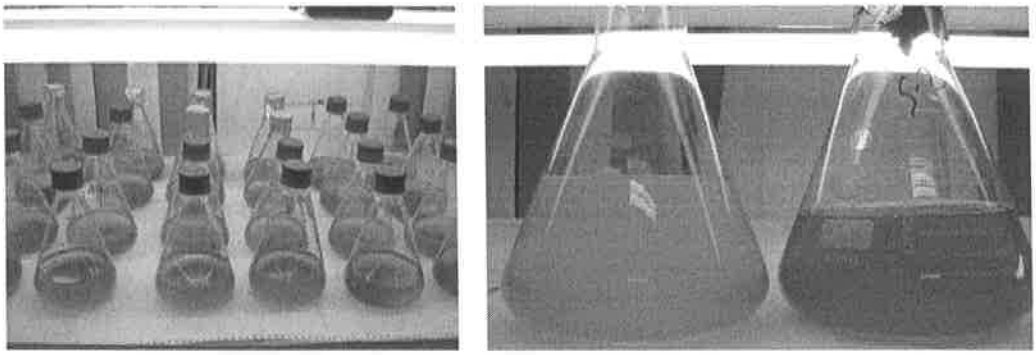
The algal biomass laboratory has been set up and got its desired shape. A few high oil yielding algal biomass species have been collected and isolated from Kanjali River, SSS-NIRE and NIT Jalandhar campus and have been propagated in the laboratory scale for further extension of the work activities. A few photographs of the laboratory in working condition are as shown under:



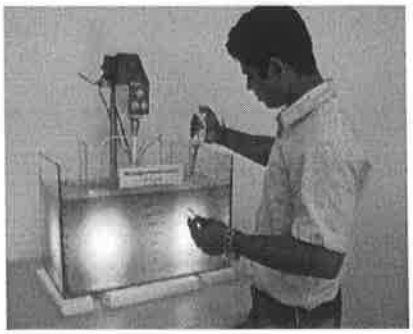
Microalgae water samples collected from local aquatic Habitat.



Pure cultures of different micro algal strains.



Microalgae culture in liquid medium and up-scaled.



Microalgae culture in "Self designed photobioreactor" of culture capacity 50L

Development of the Thermophilic Consortium for Biogas Production

Some consortium of thermophiles has been isolated from the soil samples. The thermophilic consortium of microbes is 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. Effect of nitrogen, pH and temperature on biogas production is under process. The CO_2 in the biogas have also been utilized for the production of algal biomass. Effect of methane on algal growth and rate of CO_2 utilization is under process.

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 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.

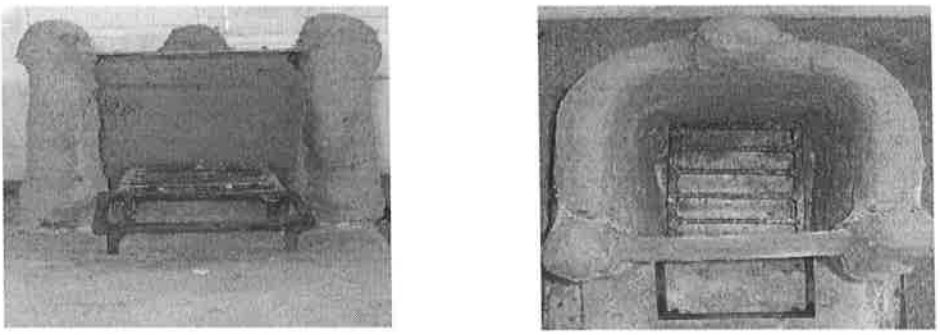
Development of Testing Centre for Biomass Cookstoves

The establishment of the testing and R&D facilities for improved biomass cookstove are 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. However the modification in the existing models and experiments on other model are underway. The details and photographic view of the designed and fabricated improved cookstoves in the laboratory is given as below:

Modified Traditional Cookstoves (NIRE-02)

Apart from the designing of new biomass cookstoves, a traditional cookstove was also modified using iron grate and it was found that efficiency of the modified cookstove increased two fold as comparison to the three stone fire cookstove. The

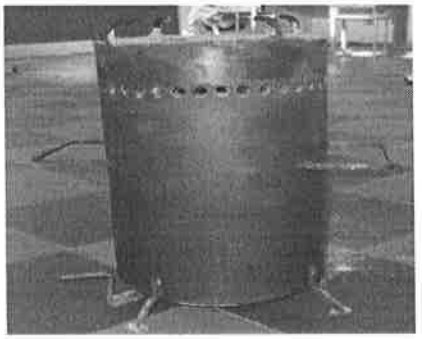
thermal efficiency of this model was found to be 26.28%. The photographic view of the modified traditional cookstove is shown as below:



Photographic views of Modified Traditional cookstove/NIRE 2

Improved Biomass Cookstoves (NIRE-03, NIRE-04, NIRE-05, NIRE-06)

Apart from modifying the traditional cookstove, few improved biomass cookstoves were also designed and fabricated based on the downdraft gasifier model using locally available material for insulation.



NIRE-03

NIRE-04

NIRE-05

Improved Cookstove Models designed at NIRE

The performance of these cookstoves was found much higher than that of the modified traditional cookstove, given above. The efficiency vary from model to model and it was found that the efficiency of these cookstove is more than 30% and could reach up to 40% if proper insulation is used. Even with the locally available insulating material the efficiency up to 37% has been achieved. The photographic view of the improved cookstove models designed and fabricated at the Institute is given as above.

Dissemination of Cookstoves through Carbon Financing

Under Indo-German Renewable Energy (IGEN-RE) Cooperation, the Ministry of New and Renewable Energy (MNRE) Govt. of India and GIZ, Germany has initiated the Clean Development Mechanism for disseminating the Improved Biomass Cookstove (ICS) through Carbon Financing. The Institute has been designated as the Coordinating and Managing Entity (CME) by MNRE for cookstove PoA to coordinate the efforts of different CPA implementers to distribute improved cookstoves in the boundary of the PoA and comply with the requirements of this PoA. In this regard, a Program of Activities (PoA) on National Program on Improved Cookstoves in India along with the very first CPA (CPA_1) has been prepared in coordination with MNRE, GIZ, New Delhi and South Pole Carbon Consultant, New Delhi. The PoA was submitted to UNFCCC on Dec., 20, 2012 with a request for registration, which was evaluated at different levels in Executive Board of the UNFCCC Secretariat and finally approved for registration w.e.f. 28.12.2012.

Furthermore, the Institute as the Coordinating and Managing Entity (CME) will use the carbon credits to 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)
- Biogas production, purification and utilization for heat and power generation applications using potential alternative feed-stocks (PI/Co-PI: Dr. SK Tyagi/Dr. Sachin Kumar) (MNRE, Govt. of India)
- Design, development and Performance Enhancement of Improved Biomass Cookstove for Rural Household in Punjab (PI/Co-PI: Dr. SK Tyagi/Dr. Sachin Kumar) (Punjab State Council for Science & Technology, Chandigarh)

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
- ✓ Panjab University, Chandigarh
- ✓ Punjab Agriculture University, Ludhiana

Few joint M. Tech. students with NIT Jalandhar have completed their projects while, few Ph. D. students are working for their Theses in collaboration with NIT, Jalandhar and PTU, Kapurthala.

8. IMPORTANT EVENTS

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

Celebration of Hindi Divas and Pakhwada

The Institute has celebrated its second Hindi Divas and Pakhwada during 14-28 September, 2012. The program was coordinated by Hindi Officer, Dr. S. K Tyagi and Mr. Vijay Bajala and Ms. Suchi Shahu, Technical Assistants. During this function an essay writing competition was also held on 24 Sept., 2012 and total eight nos. of participants including office staff and research fellows participated. The closing ceremony of the function was held in the afternoon of 27th Sept., 2012 with the

formal inauguration by lighting the lamp by the guests followed by Saraswati Vandana. Dr. N. P. Singh, Advisor, MNRE who also took charge as Director of the Institute, Chaired the function. The Chief Guest of the function was Sh. T. Veerendra, Member Rajbhasha, Govt. of India while Sh. Arvind Tyagi from Ministry of Food & Supplies was the Invited Speakers of the function.

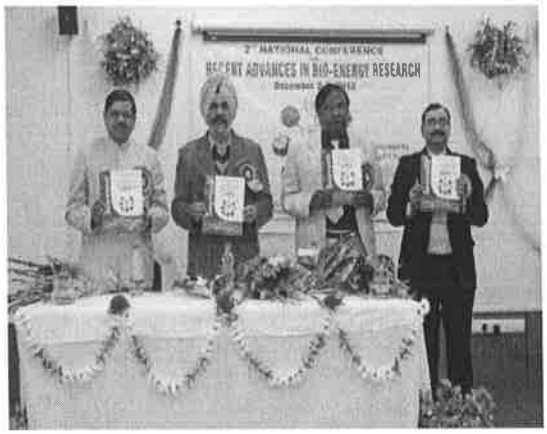
Prizes on essay writing competition were given by the Chief Guest, Sh. T. Virendra, to those who performed better in the competition such as first, second, and third prize along with the trophy and certificate while, the consolation prize along with the certificates were given to all other participants. After the formal closing of the function, all the speakers including the Chair, Chief Guest, and Invited speakers and Scientists planted the saplings of Mango in the Institute.

Few snaps of Hindi celebration

2nd National Conference on 'Recent Advances in Bio-energy Research'

A two days 2nd National Conference on 'Recent Advances in Bio-energy Research' was organized during Dec 7-8, 2012. Prof. Jai Rup Singh, VC, CUP, Bathinda as Chief Guest inaugurated the event by lighting up the lamp followed by Prof. S.K. Das, Director, NIT, Jalandhar as Guest of Honour and Dr. N.P. Singh, Director,

NIRE & Adviser, MNRE as Chairman of the conference. The key-note lectures and technical sessions including Biomass & Energy Management; Thermo-chemical Conversion: Gasification, Pyrolysis, Combustion & Briquetting; Chemical Conversion including Biodiesel, Green Diesel, Hydrocracking; Biochemical Conversion including Bioethanol, Biobutanol, Biogas, Biohydrogen; and Electrochemical Processes including Hydrogen Fuel Cells and Microbial Fuel Cells were covered during the conference. Seventy one abstracts were received for the presentation including invited speeches. Out of these fifty six presentations were presented during the different technical sessions of the Conference. About fifteen invited speeches were delivered by the invitees on their field of interest.



गैर-पारम्परिक स्रोतों से 30,000 मैगावाट बिजली पैदा करने का लक्ष

नैशनल इंस्टीट्यूट कपूरथला में 2 दिवसीय नैशनल कांफ्रेंस हुई आरंभ

MARKET WATCH

दाखिला सूचना

स. स्वर्ण सिंह नैशनल इंस्टीट्यूट में बायो एनर्जी पर नैशनल कांफ्रेंस शुरू

बायोफ्यूल के लिए ब्राजील व अमरीका की राह न चले भारत

» अनाज की कमी से जूझ रहे देश को करना होगा दूसरे स्रोतों का इस्तेमाल

» तालाब की काई-घास-गेहूं की नाइ से बायोफ्यूल बनाने पर देना होगा जोर

Few snaps and press release of 2nd National Conference (Dec 7-8, 2013)

Total twenty four oral presentations and seventeen posters were presented by different participants from various Institutions/Universities across the country. The key note lectures, invited talks and technical papers presented during the two days event was also appreciated by the delegates, who gathered from all over the country.

The conference also got wide publicity through news papers and news channels, some of the snap shot are also given above.

National Training Program on Biochemical Conversion Technologies

A two days Training Programme on '**Hands on Analytical and Molecular Techniques: Biochemical Conversion Technologies for Advanced Biofuel**' was organized during Feb 19-20, 2013 at the Institute. Faculty members, young scientists, research scholars, masters students from all over the country participated in the programme. During the programme, techniques for isolation and screening of thermophililes, 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 snaps of Training Program held during Feb 19-20, 2013

National Training Program

A national training program was organised at the Institute to facilitate setting up small scale liquid biofuels processing unit for rural applications and to develop competent human resources and researchers in the field of liquid biofuel on the theme "Production of biofuels from non-edible vegetable oils- processes and fundamental characterization" during Dec 21-22, 2012.

सेमीनार नेशनल इंस्टीच्यूट में 2 दिवसीय राष्ट्रीय ट्रेनिंग प्रोग्राम सम्पन्न

बायो डीजल तैयार करने की विधि पर चर्चा

कपूरथला, 26 दिसम्बर (रवि पाठक): सरदार स्वर्ण सिंह नैशनल इंस्टीच्यूट ऑफ रिन्यूबल एनर्जी कपूरथला में 2 दिवसीय राष्ट्रीय ट्रेनिंग प्रोगाम आयोजित किया गया। इस मौके पर खराब खाद्य तेल से गाड़ियों में इस्तेमाल होने वाला डीजल तैयार करने और इसके बुनियादी चरित्र पर प्रकाश डालने के लिए देश के विभिन्न संस्थानों से आए प्रकताओं ने अपने अमूल्य विचार प्रकट किए। ट्रेनिंग प्रोग्राम दौरान विभिन्न राज्यों से आए विद्यार्थियों ने छोटे तरल बायो फयूल प्रोसेसिंग यूनिट स्थापित करने संबंधी दी जाने वाली सहूलियतों और इसे बनाने के लिए सफल मानवी स्त्रोत पैदा करने तथा बायोफयूल की खोज बारे विस्तारपूर्वक चर्चा की गई। उक्त ट्रेनिंग प्रोग्राम दौरान विभिन्न संस्थानों से आए विद्यार्थियों ने

ट्रेनिंग प्रोग्राम के दौरान उपस्थित डा. एस.के. शर्मा एवं डा. ए.के. वर्मा। (मुकेश)

अपने तुर्शी साझे किए और वेजीटेबल ऑयल को इस्तेमाल करने के उपरांत उसे बायो डीजल में परिवर्तन करने की तकनीक समझाई। प्रबंधक सचिव व कोर्स को-आर्डीनेटर डा. ए.के. शर्मा ने पंजाब, हरियाणा, हिमाचल प्रदेश एवं उत्तराखंड के रिसर्च स्कालरों को बायो फयूल की नई तकनीक से रू-ब-रू करवाया। प्रोग्राम को सैंट्रल यूनिवर्सिटी बठिंडा के डा. सुनील गिलल, लवली प्रोफैशनल यूनीवर्सिटी के डा. हरविंदर सिंह, एन.सी. एंड एस.डी. एफ ऑफ इंस्टीच्यूशन पानीपत डा. जसिंदर मलिक, एन.आई.टी. हमीरपुर के प्रिंसिक प्रकाश मंकल ने भी संबोधित किया। प्रोग्राम का समापन डा. ए.के. शर्मा व मोहम्मद असलम के बायो फयूल के उत्पादन एवं लैबोरेटरी में तकनीकी विजन से हुआ। इंस्टीच्यूट के डायरैक्टर और सैर सपाटिक बायो एनर्जी के सलाहकार डा. एन.पी. सिंह ने इस ट्रेनिंग प्रोग्राम पर संतुष्टी व्यक्त करते हुए कहा कि इससे बुवा पीढ़ी नई तकनीक का इस्तेमाल करके बायो डीजल के क्षेत्र में सराहनीय कार्य करने को प्रेरित होगी। इंस्टीच्यूट के साइंटिस्ट-ई डा. एस.के. त्यागी एवं साइंटिस्ट-बी डा. सचिन कुमार ने भी अपने विचार व्यक्त किए। इस अवसर पर विजय याज्ञला और सुभी साहू के अलावा रिसर्च स्कोलर एवं इंस्टीच्यूट का सहायक तकनीकल स्टाफ मौजूद था।

News published for successful completion of training program.

9. PUBLICATIONS

Peer Reviewed Journals

- M. Kumar, S. Kumar, and S. K. Tyagi, Design, development and technological advancement in the biomass cookstoves: A review, Renewable and Sustainable Energy Reviews Vol.26 (2013) pp.265–285.
- A.P.S. Chouhan, A.K. Sarma, Biodiesel production from *Jatropha curcas* L. oil using *Lemna Perpusilla* Torrey ash as heterogeneous catalyst, Biomass and Bioenergy Vol. 55 (2013) pp.386-389.
- A.P.S. Chouhan, N. Singh, A.K. Sarma, A comparative analysis of kinetic parameters from TGDTA of Jatropha curcas oil, biodiesel, petroleum diesel and B50 using different methods, Fuel Vol.109 (2013) pp.217–224.
- S. Kumar, P. Dheeran, S.P. Singh, I.M. Mishra, D.K. Adhikari, Kinetic studies of ethanol fermentation using *Kluyveromyces* sp. IIPE453, Journal of Chemical Technology and Biotechnology Vol. 88(10) (2013) pp.1874-1884.
- S. Kumar, P. Dheeran, S.P. Singh, I.M. Mishra, D.K. Adhikari, Cooling system economy for ethanol production by using thermotolerant yeast *Kluyveromyces* sp. IIPE453. American Journal of Microbiological Research Vol. 1(3) (2013) pp.39-44.
- P. Dheeran, N. Nandhagopal, S. Kumar, Y.K. Jaiswal, D.K. Adhikari, A novel thermostable xylanase of *Paenibacillus macerans* IIPSP3 isolated from termite gut, Journal of Industrial Microbiology and Biotechnology Vol. 39(6) (2012) pp.851-860.

Book Chapters/Conference Proceedings

- A. K. Pandey, M. K. Chahal and S. K. Tyagi, Energetic and exergetic performance analysis of various renewable energy systems, Chapter-9 in Recent Advances in Bio-energy Research (Eds. S. Kumar and S. K. Tyagi) Vol.2 (2013) pp.99-112 (ISBN 978-81-927097-1-0).
- Md. Aslam, A.P.S. Chouhan, A.K. Sarma, Processing of non-edible vegetable oils as fuels: An Indian Perspective, International workshop and conference on renewable energy and climate change- exploring opportunity for sustainable development during 5-7th April, 2012, Madurai Kamraj University.
- S. Mishra, S. Kumar, A.K. Sarma, Identification and screening of indigenous microalgae to evaluate their potential for biofuel production, SSS-NIRE Conference7-8 Dec(2012).
- N. Narayanaswamy, P. Dheeran, S. Verma and S. Kumar, Biological pretreatment of lignocellulosic biomass for enzymatic saccharification. In: Fang Z (Ed.) Pretreatment Techniques for Biofuels and Biorefineries. Green Energy and Technology. Springer-Verlag Berlin Heidelberg, (2013) pp. 3-34.
- S. Behera, R.A. Sehgal, N. Nandhagopal, S. Kumar, Chemical pretreatment methods for bioconversion of lignocellulosic biomass: the principles and industrial applications, National Institute of Technology, Jalandhar (India), CHEMCON-2012, Dec 27-30, 2012.
- S. Kumar, Challenges in Bioethanol Production from Lignocellulosic Biomass, World Congress on Biotechnology, Bright International Conferences & Events, Hyderabad (India), May 4-6, 2012.
- R.A. Sehgal, S. Behera, N. Nandhagopal, S. Kumar, Screening of thermophillic bacteria for effective fermentation of lignocellulosic biomass-derived sugars to bioethanol, 2nd National Conference on 'Recent Advances in Bio-energy Research', SSS-National Institute of Renewable Energy, Kapurthala (India), Dec 7-8, 2012.

Edited Books/Conference Proceedings

- S. Kumar, S.K. Tyagi, Recent Advances in Bioenergy Research. Vol. II (2013), SSS-NIRE, Kapurthala (ISBN 978-81-927097-1-0).
- S. Kumar, A.K. Sarma, Recent Advances in Bioenergy Research. Vol. I (2013), SSS-NIRE, Kapurthala (ISBN 978-81-927097-0-3).

Invited Lectures

- Dr. A. K. Sarma, Scientist D delivered a talk on Estimation of free fatty acid using TGDTA, at Chemical Constellation Seminar – 2012 [CCC-2012], NIT Jalandhar,12 Sept,2012
- Dr. A. K. Sarma, Scientist D delivered a talk on Modelling and Simulation of Renewable Energy System during Teacher Training Program at NIT Jamshedpur on during June18-22, 2012
- Dr Sachin Kumar, Scientist B was chaired at the technical session 'Renewable Energy' in CHEMCON-2012, Dec 27-30, 2012 at National Institute of Technology, Jalandar (India).

10. AWARDS & HONOURS

Dr Sachin Kumar received the most coveted Institutional and Globally reputed Presentation of 'Bharat Jyoti Award' along with 'Certificate of Excellence' for outstanding contribution in R&D presented by India International Friendship Society on May 4, 2012.

11. 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 51 Books and 65 Scientific Journals have been purchased for Documentation Centre in this FY.

12. PROGRESS OF CONSTRUCTION

The first phase of the construction activities is completed and the buildings have been handed over to the Institute in the month of July 2013.

13. HORTICULTURE ACTIVITIES

Celebration of Van-Mahotsav

4th September 2012 was adhered as Van-Mahotsav day. Around 200 saplings donated by Ajit Samachar of different community were planted. Dignitaries from Punjab Energy and Development Authority, Ajit Samachar, Forest Department participated in the event. Forestry & horticulture development in SSS-NIRE campus follows an integrated approach, paying attention technical as well as institutional

issues and targeting social acceptance as well. At NIRE the forestry & horticulture is developing at a unique & unexpected high speed since 2011. At present, NIRE has taken strong steps with specific focus to promote and support the development of the horticulture & silviculture. More than two thousand plants of different varieties have been planted at the Institute during the year 2012-2013. The Institute has also purchased the necessary machinery and agricultural tools for the development of campus with the following objectives:

Statistical data on plantation

a) Total area cleaned (Weed eradication)	30 acres
b) Area levelled & prepared for plantation	20 acres
c) Area covered under road side plantation	1,500 mtrs
d) Number of trees planted along the road & around buildings	2,000
e) Number of trees planted along boundary wall	300

Bamboo and Jatropha for biofuel applications

Bamboo field

Bamboo plants in full bloom

Jatropha Field

First Jatropha fruits

14. ADMINISTRATIVE ACTIVITIES

- 18th Meeting of the Governing Council of SSS-NIRE was held on 23rd April 2012 at MNRE, New Delhi.
- 5th Finance Committee meeting was held on 17h September, 2012 at MNRE, New Delhi.
- 19th Meeting of the Governing Council of SSS-NIRE was held on 15th November 2012 at MNRE, New Delhi.

15. ANNUAL AUDITED ACCOUNTS AND AUDITOR'S REPORT FOR THE FINANCIAL YEAR 2012-13

Accounts of the Institute for the Financial Year 2012-13 have been prepared and duly audited by Internal Auditor. The Statutory Audit has been carried out by duly appointed Auditor M/s Shammi Garg & Co. (CA), the Mall, Ludhiana (Punjab). The Auditor's Report has been received and its approval has been obtained. The audited expenditure for 2012-13 is Rs. 391.22 Lakhs.

SHAMMI GARG & CO.
CHARTERED ACCOUNTANTS

RED CROSS BUILDING
THE MALL, LUDHIANA
TELE : 0161-2441285

FORM NO. 10 B

[RULE 17 B]

AUDIT REPORT U/S 12 (A) (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 at 31.03.2013 and Receipts & Payments account as on that date which are in agreement with the books of accounts maintained.

We have obtained all the information and explanation which to the best of our knowledge and belief were necessary for the purpose of audit. In our opinion, proper books of accounts 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 31.03.2013.

ii) In the case of Receipt & Payment of the transaction of the Society for the period ended on that date.

Place : Ludhiana

Date : 09.09.2013

FOR SHAMMI GARG & CO.
Chartered Accountants

(Ashok Kumar)
Partner
M.No. 081620

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

BALANCE SHEET AS AT MARCH 31, 2013

(Amount in)

	PARTICULARS	SCHEDULE	AS AT 31.03.2013 (₹)	AS AT 31.03.2012 (₹)
A	**CORPUS/CAPITAL FUND & LIABILITIES**			
	a) Corpus/Capital Fund	I	37,69,155	37,69,155
	b) Reserve & Surplus	II	57,62,04,373	42,90,53,766
	c) Current Liabilities & Provisions	III	50,92,304	1,09,71,277
	TOTAL >>		**58,50,65,832**	**44,37,94,198**
B	**ASSETS**			
	a) Fixed Assets	IV	35,36,50,028	31,25,16,921
	b) Current Assets, Loans & Advances	V	23,14,15,805	13,12,77,277
	TOTAL >>		**58,50,65,832**	**44,37,94,198**
	NOTES ON ACCOUNTS	VI		

This is the Balance Sheet referred
to in our report of even date

Place : Ludhiana

Date : 09.09.2013

FOR SHAMMI GARG & CO.
Chartered Accountants

(Ashok Kumar) CA
Partner
M.No. 081620

SHAMMI GARG & CO. FRN : 017212N CHARTERED ACCOUNTANTS

FOR SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY

Chairman

Director

Administrative-cum-Accounts Officer

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

RECEIPT & PAYMENT ACCOUNT FOR THE YEAR ENDED MARCH, 31 2013

RECEIPTS	AS AT 31.03.2013 (₹)	AS AT 31.03.2012 (₹)
I. Opening Balance		
(a) Cash in Hand	3,834	7,374
(b) Bank Balances :		
(i) In Deposit A/c	7,47,13,463	4,92,08,731
(ii) In Saving A/c	41,075	1,68,34,338
(iii) In Current A/c	1,30,45,776	17,69,706
(c) Postal Stamps	326	628
(d) Cheque Deposited but not credited	55,000	-
(d) Less Cheque issued but not presented	1,04,79,316	73,96,532
	7,73,80,158	6,04,24,245
II. Grant Received		
(a) Bio-Diesel Production Project	-	40,00,000
(b) Bio-Mass Power Project	-	-
(c) From Govt of India	16,00,00,000	4,00,00,000
(d) Bio Crude Project	-	44,00,000
(e) ICRISAT Project	25,000	34,582
(f) NREP Project	-	1,43,207
(g) Bio Ethenol Project	-	64,00,000
III. Interest Received on (As per List-C)		
(a) Deposits	74,40,913	45,61,339
(b) Savings	25,462	2,39,881
IV. Any Other Receipts		
(a) Securities Received	50,000	35,000
(b) Sale of Car	-	31,750
(c) Tender Fees	67,000	7,000
(d) License Fees	-	46,775
(e) Registration Fees	29,000	-
(f) Other Income	3,011	534
(g) EMD	2,00,000	-
TOTAL >>	**24,52,20,545**	**12,03,24,313**

This is Receipt & Payment a/c referred to in our report of even date

Place : Ludhiana

Date : 09.09.2013

FOR SHAMMI GARG & CO.
Chartered Accountants

(Ashok Kumar)
Partner
M.No. 081629

SHAMMI GARG & CO. CHARTERED ACCOUNTANTS FRN : 017212N

FOR SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY

Chairman

Director

Administrative-cum-Accounts Officer

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

RECEIPT & PAYMENT ACCOUNT FOR THE YEAR ENDED MARCH, 31 2013

PAYMENTS	AS AT 31.03.2013 (₹)	AS AT 31.03.2012 (₹)
I. Expenditure on Fixed Assets & CWIP		
(a) Capital WIP (As per List-A)	1,33,68,783	81,41,450
(b) Fixed Assets	3,23,55,750	2,93,83,658
II. Expenditure out of Grants for Projects		
(a) Expenses Under Bio-Diesel Project	9,13,704	3,67,995
(b) Expenses Under Bio-Mass Project	-	3,24,025
(c) Expenses Under Bio Ethenol Project	16,85,277	39,694
(d) Expenses Under ICRISAT Project	20,498	25,155
(e) Expenses Under NREP Project	-	92,792
(f) Expenses Under Bio-Crude project	2,54,914	15,83,158
III. Other Payments		
(a) Exe.Engineer CPWD	-	23,36,200
(b)}Outstanding Exp	-	5,95,027
(c) Security Deposit	-	55,000
(d) Prepaid Expenses	1,624	-
IV. Closing Balance		
(a) Cash in Hand	28,913	3,834
(b) Bank Balances :		
(i) In Deposit A/c	19,69,23,074	7,47,13,463
(ii) In Saving A/c	17,908	41,075
(iii) In Current A/c	2,21,941	1,30,45,776
(c) Postal Stamps	724	326
(d) Cheque Deposited but not credited	5,000	55,000.00
(e) Less Cheque issued but not presented	5,75,941	1,04,79,316
	19,66,21,619	7,73,80,158
TOTAL >>	**24,52,20,545**	**12,03,24,313**

This is Receipt & Payment a/c referred to in our report of even date

Place : Ludhiana

Date : 09.09.2013

FOR SHAMMI GARG & CO.
Chartered Accountants

(Ashok Kumar)
Partner
M.No. 081620

FRN : 017212N

FOR SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY

Chairman

Director

Administrative-cum-Accounts Officer

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

	PARTICULARS	AS AT 31.03.2013 (₹)	AS AT 31.03.2012 (₹)
I	**CORPUS/CAPITAL FUND**		**SCHEDULE - I**
	Opening Balance	37,69,155	37,69,155
	TOTAL >>	**37,69,155**	**37,69,155**
II	**RESERVE & SURPLUS**		**SCHEDULE - II**
	Capital Reserve		
	Grant from Govt of India Ministry of New & Renewable Energy		
	Opening Balance	41,20,47,499	34,70,00,000
	Add : Grant Received during the Year	15,00,00,000	6,50,47,499
	Sub Total	56,20,47,499	41,20,47,499
	Grant Received for Bio Diesel Power Project		
	Opening Balance	77,69,277	44,13,000
	Add : Grant Received during the Year	-	40,00,000
	Less Expenses Incurred (excluding fixed assets)	9,13,704	6,43,723
	Sub Total	68,55,573	77,69,277
	Grant Received for Bio Crude Project		
	Opening Balance	28,16,842	-
	Grant Received during the Year	-	44,00,000
	Less Expenses Incurred (excluding fixed assets)	2,54,914	15,83,158
	Sub Total	25,61,928	28,16,842
	Grant Received for Bio Ethenol Project		
	Opening Balance	63,60,306	-
	Grant Received during the Year	-	64,00,000
	Less Expenses Incurred (excluding fixed assets)	16,85,277	39,694
	Sub Total	46,75,029	63,60,306
	Grant Received for ICRISAT Project		
	Opening Balance	9,427	-
	Grant Received during the Year	25,000	34,582
	Less Expenses Incurred (excluding fixed assets)	20,498	25,155
	Sub Total	13,929	9,427
	Grant Received for National Energy Renewable Programme Project		
	Opening Balance	50,415	-
	Grant Received during the Year	-	1,43,207
	Less Expenses Incurred (excluding fixed assets)	-	92,792
	Sub Total	50,415	50,415
	Grant Received for Bio Mass Production Power Project		
	Opening Balance	-	3,24,025
	Add : Grant Received during the Year	-	-
	Less Expenses Incurred (excluding fixed assets)	-	3,24,025
	Sub Total	-	-
	TOTAL >>	**57,62,04,373**	**42,90,53,766**

SHAMMI GARG & CO. CHARTERED ACCOUNTANTS FRN : 012212N

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

PARTICULARS	AS AT 31.03.2013 (₹)	AS AT 31.03.2012 (₹)
III CURRENT LIABILITIES & PROVISIONS		**SCHEDULE - III**
Cheque Issued but not presented		
- SBOP, Jal	1,03,260	95,80,524
- UBI, Jal	2,33,228	91,512
- OBC, Mand	2,39,453	8,07,280
Salary Payable	3,85,450	1,09,857
Office Exp Payable		
- Electricity Exp	42,395	75,996
- Telephone Exp.	7,493	10,308
- Travelling Exp.	8,331	1,300
Proff. Fee Payable		
- Internal Audit Fee	86,966	-
- Statutory Audit Fee	7,750	7,750
Security	90,000	40,000
Edutek Equipments	14,98,000	-
Style Steel Works	85,380	-
Biochrom Ltd	3,20,893	-
Synoptics Ltd	2,53,066	-
Airport Handling Services	67,369	-
Varun Associates	9,31,300	-
Shankar Book Agency Pvt Ltd	14,499	-
Fairdeal Agency	1,494	1,494
EMD	2,00,000	-
Department of Publication	-	17,778
Employment News New Delhi	8,720	15,820
TDS Payable	45,761	12,610
The Indian Express Ltd.	29,122	78,938
Rental Hiring & Proff. Fees	4,32,226	89,120
Office Expenses	-	200
Stationary including Software Expenses	-	210
Horticulture Expenses	148	30,580
TOTAL >>	**50,92,304**	**1,09,71,277**

SHAMMI GARG & CO. CHARTERED ACCOUNTANTS FRN 017212N

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

SCHEDULE IV

W: Fixed Assets

RATE OF DEP	PARTICULARS	GROSS BLOCK: COST AS ON 31.03.2012	GROSS BLOCK: ADDITIONS MORE THAN 180 DAYS put to use in next year	GROSS BLOCK: LESS THAN 180 DAYS	GROSS BLOCK: DEDUCTIONS/ ADJUSTMENT	GROSS BLOCK: TOTAL COST AS ON 31.03.2013	DEPRECIATION: DEP. UP TO 31.03.2012	DEPRECIATION: DEP. FOR THE YEAR	DEPRECIATION: WRITTEN BACK	DEPRECIATION: TOTAL AS ON 31.03.2013	NET BLOCK: W.D.V. AS ON 31.03.2013	NET BLOCK: W.D.V. AS ON 31.03.2012
0%	Land	75,00,000.00	-	-	-	75,00,000.00	-	-	-	-	75,00,000.00	75,00,000.00
0%	Land & Site Related Dev Works	12,85,066.00	-	-	-	12,85,066.00	-	-	-	-	12,85,066.00	12,85,066.00
15%	Plant Mach & Equp Office-I	6,57,280.00	-	-	-	6,57,280.00	4,82,008.00	26,291.00	-	5,08,299.00	1,48,981.00	1,75,272.00
	FURNITURE & FIXTURE & OFFICE & HOSTEL EQUIPEMENTS											
60%	Computer & Printer	-	93,300.00	97,351.00	-	1,90,651.00	-	85,185.00	-	85,185.00	1,05,466.00	-
10%	Furniture & Fixtures	-	-	3,944.00	-	3,944.00	-	197.00	-	197.00	3,747.00	-
15%	Office Equipments	-	2,25,100.00	2,51,955.00	-	4,77,055.00	-	52,662.00	-	52,662.00	4,24,393.00	-
	Project Bio Crude Assets									-	-	-
15%	TBP Bio-Crude project	-	4,42,574.00	19,00,000.00	-	23,42,574.00	-	2,08,886.00	-	2,08,886.00	21,33,688.00	-
	Project Bio Diesel Assets											
15%	Diesel Engine Test Rig	-	-	14,98,000.00	-	14,98,000.00	-	1,12,350.00	-	1,12,350.00	13,85,650.00	-
15%	Foundation Stone	-	-	85,380.00	-	85,380.00	-	6,404.00	-	6,404.00	78,976.00	-
15%	Oxyen Gas Cylinder	-	-	8,000.00	-	8,000.00	-	600.00	-	600.00	7,400.00	-
	Project Bio Ethanol Assets											
15%	Bio reactor	-	-	33,22,144.00	-	33,22,144.00	-	2,49,161.00	-	2,49,161.00	30,72,983.00	-
15%	Gel Electrophoresis	-	-	2,53,066.00	-	2,53,066.00	-	18,980.00	-	18,980.00	2,34,086.00	-
15%	Real Time PCR	-	-	14,40,000.00	-	14,40,000.00	-	1,08,000.00	-	1,08,000.00	13,32,000.00	-
15%	SDS Page Electrophoresis	-	-	3,20,893.00	-	3,20,893.00	-	24,067.00	-	24,067.00	2,96,826.00	-
	Scientific & Laboratory Equipments (12-13)											
15%	Cook Stove	-	-	480.00	-	480.00	-	36.00	-	36.00	444.00	-
15%	Fume Hood	-	96,694.00	-	-	96,694.00	-	14,504.00	-	14,504.00	82,190.00	-
15%	Photo Bioreactor	-	-	13,997.00	-	13,997.00	-	1,050.00	-	1,050.00	12,947.00	-
15%	Weight Scale 100 kg	-	7,962.00	-	-	7,962.00	-	1,194.00	-	1,194.00	6,768.00	-
15%	Weight Scale 30 kg	-	5,687.00	-	-	5,687.00	-	853.00	-	853.00	4,834.00	-
	Plant & Machinery Equipments											
15%	Air Compresser Machine	29,672.00	-	-	-	29,672.00	4,451.00	3,783.00	-	8,234.00	21,438.00	25,221.00
15%	Fixed Drill Machine R/I 20mm	38,191.00	-	-	-	38,191.00	5,729.00	4,869.00	-	10,598.00	27,593.00	32,462.00
15%	Gas cutting Set	42,358.00	-	-	-	42,358.00	6,354.00	5,401.00	-	11,755.00	30,603.00	36,004.00
15%	Grinder Angle 100mm(Hand Grinder)	5,064.00	-	-	-	5,064.00	760.00	646.00	-	1,406.00	3,658.00	4,304.00
15%	Hydrolic Power Hacsaw Machine	58,447.00	-	-	-	58,447.00	8,767.00	7,452.00	-	16,219.00	42,228.00	49,680.00
15%	Lath Machine	4,01,047.00	-	-	-	4,01,047.00	60,157.00	51,134.00	-	1,11,291.00	2,89,756.00	3,40,890.00
15%	Pana Machine(Arc Welding Set)	92,745.00	-	-	-	92,745.00	13,912.00	11,825.00	-	25,737.00	67,008.00	78,833.00
15%	Pedestal Grinder 300mm	36,397.00	-	-	-	36,397.00	5,460.00	4,641.00	-	10,101.00	26,296.00	30,937.00
15%	Tractor,Trolly & Equipments	9,08,224.00	-	-	-	9,08,224.00	1,36,234.00	1,15,799.00	-	2,52,033.00	6,56,191.00	7,71,990.00
15%	Borewell with 2HP Submersible Pump	49,800.00	-	-	-	49,800.00	3,735.00	6,910.00	-	10,645.00	39,155.00	46,065.00
15%	Drill Machine (GBM 10 MM Heavy)	4,431.00	-	-	-	4,431.00	665.00	565.00	-	1,230.00	3,201.00	3,766.00
15%	Fire Extinguishes	58,013.00	-	-	-	58,013.00	8,702.00	7,397.00	-	16,099.00	41,914.00	49,311.00
15%	Grass Moving Machine	1,900.00	-	-	-	1,900.00	285.00	242.00	-	527.00	1,373.00	1,615.00
15%	Hmpv Fitting Lamp	70,980.00	-	-	-	70,980.00	10,647.00	9,050.00	-	19,697.00	51,283.00	60,333.00
15%	Leveller	9,700.00	-	-	-	9,700.00	727.00	1,346.00	-	2,073.00	7,627.00	8,973.00
15%	Projector	1,77,975.00	-	-	-	1,77,975.00	26,696.00	22,692.00	-	49,388.00	1,28,587.00	1,51,279.00
15%	Tiller	13,500.00	-	-	-	13,500.00	1,012.00	1,873.00	-	2,885.00	10,615.00	12,488.00
15%	Vehicle Car Ambassador	-	-	-	-	-	-	-	-	-	-	-
15%	Vehicle Car Ambassador (New)	5,75,813.00	-	-	-	5,75,813.00	86,372.00	73,416.00	-	1,59,788.00	4,16,025.00	4,89,441.00
15%	Workshop Tools	3,90,257.00	98,232.00	14,996.00	-	5,03,485.00	54,518.00	66,220.00	-	1,20,738.00	3,82,747.00	3,35,739.00
15%	Drill Hammer Rotary 26(hand Grinder)	17,555.00	-	-	-	17,555.00	2,633.00	2,238.00	-	4,871.00	12,684.00	14,922.00
15%	Gas & Four Cylinders	11,333.00	-	-	-	11,333.00	850.00	1,572.00	-	2,422.00	8,911.00	10,483.00
15%	Electrical Equipments	42,173.00	-	-	-	42,173.00	4,740.00	5,615.00	-	10,355.00	31,818.00	37,433.00
10%	Guest Houes Assest/ Office Equipment.	1,56,908.00	-	13,590.00	-	1,70,498.00	15,691.00	14,801.00	-	30,492.00	1,40,006.00	1,41,217.00
10%	Ledger	33,908.00	-	-	-	33,908.00	3,391.00	3,052.00	-	6,443.00	27,465.00	30,517.00
10%	Plant Mach & Equp Office-II	40,414.00	-	-	-	40,414.00	33,084.00	733.00	-	33,817.00	6,597.00	7,330.00
	Scientific & Laboratory Equipments											
15%	Air Oven (250 degree)	47,250.00	-	-	-	47,250.00	7,087.00	6,024.00	-	13,111.00	34,139.00	40,163.00
15%	Bomb Calorimeter	5,94,731.00	-	-	-	5,94,731.00	89,210.00	75,828.00	-	1,65,038.00	4,29,693.00	5,05,521.00
15%	Cfc,Refrig,&11,STD(Auto Clave)	1,29,231.00	-	-	-	1,29,231.00	19,385.00	16,477.00	-	35,862.00	93,369.00	1,09,846.00
15%	Data Acquisition System	4,15,618.00	-	-	-	4,15,618.00	61,236.00	53,157.00	-	1,14,393.00	3,01,225.00	3,54,382.00
15%	Digital Ph.Meter	58,212.00	-	-	-	58,212.00	8,732.00	7,422.00	-	16,154.00	42,058.00	49,480.00
15%	Incubator Bacteriological	49,162.00	-	-	-	49,162.00	7,374.00	6,268.00	-	13,642.00	35,520.00	41,788.00
15%	Kern Anatytical Balance (220gm)	57,499.00	-	-	-	57,499.00	8,625.00	7,331.00	-	15,956.00	41,543.00	48,874.00
15%	Laboratory Refrigerator	1,26,000.00	-	-	-	1,26,000.00	18,900.00	16,065.00	-	34,965.00	91,035.00	1,07,100.00

OF DEP		ON 31.03.2012	MORE THAN 180 DAYS put to use in next year	180 DAYS	ADJUSTMENT	AS ON 31.03.2013	UP TO 31.03.2012	FOR THE YEAR	BACK	AS ON 31.03.2013	AS ON 31.03.2013	AS ON 31.03.2012
0%	Land	75,00,000.00	-	-	-	75,00,000.00	-	-	-	-	75,00,000.00	75,00,000.00
0%	Land & Site Related Dev Works	12,85,066.00	-	-	-	12,85,066.00	-	-	-	-	12,85,066.00	12,85,066.00
15%	Laminar Airflow Horizontal	61,149.00	-	-	-	61,149.00	9,172.00	7,797.00	-	16,969.00	44,180.00	51,977.00
15%	Magnetic Stirrer	38,137.00	-	-	-	38,137.00	5,721.00	4,862.00	-	10,583.00	27,554.00	32,416.00
15%	Platform Scale(Platform Balance)	18,000.00	-	-	-	18,000.00	2,700.00	2,295.00	-	4,995.00	13,005.00	15,300.00
15%	Precision Laboratory Balance(610gm)	16,200.00	-	-	-	16,200.00	2,430.00	2,066.00	-	4,496.00	11,704.00	13,770.00
15%	Water Bath	15,750.00	-	-	-	15,750.00	2,362.00	2,008.00	-	4,370.00	11,380.00	13,388.00
15%	Automatic Sieve	3,22,843.00	-	-	-	3,22,843.00	24,213.00	44,795.00	-	69,008.00	2,53,835.00	2,98,630.00
15%	Bio-Diesel Preparation Unit(England)	7,48,911.00	-	-	-	7,48,911.00	56,168.00	1,03,911.00	-	1,60,079.00	5,88,832.00	6,92,743.00
15%	Biomass Gassifier	9,86,278.00	-	-	-	9,86,278.00	73,971.00	1,36,846.00	-	2,10,817.00	7,75,461.00	9,12,307.00
15%	CHN Analyzer (Germany)	22,13,974.00	-	-	-	22,13,974.00	3,32,096.00	2,82,282.00	-	6,14,378.00	15,99,596.00	18,81,878.00
15%	Fibretech Apparatur	2,34,772.00	-	-	-	2,34,772.00	17,608.00	32,575.00	-	50,183.00	1,84,589.00	2,17,164.00
15%	Incubator Shaker(USA)	8,56,900.00	-	-	-	8,56,900.00	1,28,535.00	1,09,255.00	-	2,37,790.00	6,19,110.00	7,28,365.00
15%	Micropipette	64,611.00	-	-	-	64,611.00	9,692.00	8,238.00	-	17,930.00	46,681.00	54,919.00
15%	Refrigerated Centrifuge (Germany)	3,94,165.00	-	-	-	3,94,165.00	59,125.00	50,256.00	-	1,09,381.00	2,84,784.00	3,35,040.00
15%	TG DTA (STA6000)Singapore	12,27,747.00	-	-	-	12,27,747.00	1,84,162.00	1,56,538.00	-	3,40,700.00	8,87,047.00	10,43,585.00
15%	Ultra Low Freezer(Deep Freezer)(USA)	4,66,927.00	-	-	-	4,66,927.00	70,039.00	59,533.00	-	1,29,572.00	3,37,355.00	3,96,888.00
15%	U V Vis Spectrophotometer(Singapore)	6,59,152.00	-	-	-	6,59,152.00	49,436.00	91,457.00	-	1,40,893.00	5,18,259.00	6,09,716.00
15%	Autoclave	1,44,776.00	-	-	-	1,44,776.00	10,856.00	20,088.00	-	30,944.00	1,13,830.00	1,33,918.00
15%	Auto Emission Analyzer	4,32,581.00	-	-	-	4,32,581.00	32,444.00	60,021.00	-	92,465.00	3,40,116.00	4,00,137.00
15%	BOD Incubator	5,90,598.00	-	-	-	5,90,598.00	44,295.00	81,945.00	-	1,26,240.00	4,64,358.00	5,46,303.00
15%	Carbon Monoxide Indicator	17,600.00	-	-	-	17,600.00	1,320.00	2,442.00	-	3,762.00	13,838.00	16,280.00
15%	Circulatory Water Bath	2,14,512.00	-	-	-	2,14,512.00	16,088.00	29,764.00	-	45,852.00	1,68,660.00	1,98,424.00
15%	Gas Chromatography	10,30,851.00	-	23,46,664.00	-	33,77,515.00	1,54,628.00	3,07,418.00	-	4,62,046.00	29,15,269.00	8,76,223.00
15%	Microscope	1,99,091.00	-	-	-	1,99,091.00	14,932.00	27,624.00	-	42,556.00	1,56,535.00	1,84,159.00
15%	Muffle Furnace 1200 (1400)	55,125.00	-	-	-	55,125.00	8,269.00	7,028.00	-	15,297.00	39,828.00	46,856.00
15%	Muffle Furnance 1100 (1400)Degree	40,950.00	-	-	-	40,950.00	6,142.00	5,221.00	-	11,363.00	29,587.00	34,808.00
15%	Vaccum Oven	1,90,800.00	-	-	-	1,90,800.00	14,310.00	26,474.00	-	40,784.00	1,50,016.00	1,76,490.00
15%	Water Purification System	6,62,317.00	-	-	-	6,62,317.00	49,674.00	91,896.00	-	1,41,570.00	5,20,747.00	6,12,643.00
15%	Scientific & Laboratory Equipments (For Bio-Diesel Project)											
15%	Circular Saw Ma chine	-	-	25,000.00	-	25,000.00	-	1,875.00	-	1,875.00	23,125.00	-
15%	Differntial Scanning Calorimiter	-	-	33,33,347.00	-	33,33,347.00	-	2,50,001.00	-	2,50,001.00	30,83,346.00	-
15%	Gel Documents	-	11,90,301.00	-	-	11,90,301.00	-	1,78,545.00	-	1,78,545.00	10,11,756.00	-
15%	High Mast Light	-	-	44,25,000.00	-	44,25,000.00	-	3,31,875.00	-	3,31,875.00	40,93,125.00	-
15%	Homogenizer	-	5,45,017.00	-	-	5,45,017.00	-	81,753.00	-	81,753.00	4,63,264.00	-
15%	HPLC	-	21,12,293.00	-	-	21,12,293.00	-	3,16,844.00	-	3,16,844.00	17,95,449.00	-
15%	Lyophilizer	-	-	8,84,632.00	-	8,84,632.00	-	66,347.00	-	66,347.00	8,18,285.00	-
15%	Oxidation Stability Apparatus	-	12,21,014.00	-	-	12,21,014.00	-	1,83,152.00	-	1,83,152.00	10,37,862.00	-
15%	Ramsbottan Carbon Residue Apparatus	-	10,62,752.00	-	-	10,62,752.00	-	1,59,413.00	-	1,59,413.00	9,03,339.00	-
15%	Street Light	-	-	48,88,000.00	-	48,88,000.00	-	3,66,600.00	-	3,66,600.00	45,21,400.00	-
15%	Flash Point Apparatus	5,79,707.00	-	-	-	5,79,707.00	86,956.00	73,913.00	-	1,60,869.00	4,18,838.00	4,92,751.00
15%	Kinematic Viscometer	4,33,709.00	-	-	-	4,33,709.00	65,056.00	55,298.00	-	1,20,354.00	3,13,355.00	3,68,653.00
15%	Mechanical Stirrer	63,224.00	-	-	-	63,224.00	9,484.00	8,061.00	-	17,545.00	45,679.00	53,740.00
15%	Petroleum Density Meter	11,66,611.00	-	-	-	11,66,611.00	1,74,692.00	1,48,488.00	-	3,23,180.00	8,43,431.00	9,89,919.00
15%	Rotary Vaccume Evaporator	5,48,570.00	-	-	-	5,48,570.00	82,285.00	69,943.00	-	1,52,228.00	3,96,342.00	4,66,285.00
15%	Soxhelt	90,952.00	-	-	-	90,952.00	13,643.00	11,596.00	-	25,239.00	65,713.00	77,309.00
10%	Furniture & Fixture	1,55,08,827.00	39,488.00	7,201.00	-	1,55,55,516.00	14,17,489.00	14,13,443.00	-	28,30,932.00	1,27,24,584.00	1,40,91,339.00
60%	Computer/Peripherals	22,14,586.00	-	-	-	22,14,586.00	19,15,938.00	1,79,189.00	-	20,95,127.00	1,19,459.00	2,98,648.00
15%	Library Books	16,57,831.00	-	81,896.00	-	17,39,727.00	1,43,154.00	2,33,344.00	-	3,76,498.00	13,63,229.00	15,14,677.00
15%	Cycle	2,890.00	-	-	-	2,890.00	2,611.00	42.00	-	2,653.00	237.00	279.00
60%	Misc Equipments (Cellphone)	59,400.00	-	-	-	59,400.00	59,398.00	1.00	-	59,399.00	1.00	2.00
10%	Misc Fixed Assets	58,937.00	-	-	-	58,937.00	44,678.00	1,426.00	-	46,104.00	12,833.00	14,259.00
100%	Misc Fixed Assets Porta Cabin	4,87,700.00	-	-	-	4,87,700.00	4,87,700.00	-	-	4,87,700.00	-	-
100%	SPV Power Plant	24,42,924.00	-	-	-	24,42,924.00	24,42,924.00	-	-	24,42,924.00	-	-
10%	Guest House Misc Assets	1,92,938.00	-	-	-	1,92,938.00	1,44,483.00	4,846.00	-	1,49,329.00	43,609.00	48,455.00
15%	Guest House Equip Mach-I	1,56,741.00	-	-	-	1,56,741.00	1,42,760.00	2,097.00	-	1,44,857.00	11,884.00	13,981.00
10%	Guest House Equip Mach-II	729.00	-	-	-	729.00	589.00	14.00	-	603.00	126.00	140.00
15%	Land Site Related Dev Tubewell	2,50,000.00	-	-	-	2,50,000.00	2,10,554.00	5,917.00	-	2,16,471.00	33,529.00	39,446.00
10%	Civil Works Building & Built Up Space	12,17,38,476.00	-	-	-	12,17,38,476.00	-	-	-	-	12,17,38,476.00	12,17,38,476.00
0%	Mobile	6,550.00	-	-	-	6,850.00	2,272.00	687.00	-	2,959.00	3,891.00	4,578.00
15%	Sub-Total	17,37,51,173.00	71,40,414.00	2,52,15,336.00	-	20,61,06,923.00	1,00,25,185.00	74,21,609.00	-	1,74,46,794.00	18,86,60,129.00	16,37,25,989.00
	Capital WIP (As per List-B)				-						16,49,89,898.50	14,87,90,932.00
	Total	17,37,51,173.00	71,40,414.00	2,52,15,336.00	-	20,61,06,923.00	1,00,25,185.00	74,21,609.00	-	1,74,46,794.00	35,36,50,027.50	31,25,16,921.00
	Previous Year	14,48,01,109	1,03,98,081	1,89,86,572	4,83,594	17,37,51,173	64,91,679	39,13,515	3,80,009	1,04,05,193	16,33,45,980	13,83,09,430

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

PARTICULARS	AS AT 31.03.2013 (₹)	AS AT 31.03.2012 (₹)
V CURRENT ASSETS, LOANS & ADVANCES		**SCHEDULE - V**
A CURRENT ASSETS		
Cash in Hand	28,913	3,834
Bank Balances :		
-- In Deposit A/c	19,69,23,074	7,47,13,463
-- In Saving A/c	17,908	41,075
-- In Current A/c	2,21,941	1,30,45,776
TOTAL (A) >>	**19,71,91,836**	**8,78,04,148**
B LOANS, ADVANCES & OTHER ASSETS		
Advances Recoverable in Cash or in kind or for value to be received		
- On Capital A/c		
Deposit with CPWD	2,92,39,000	2,92,39,000
- Pre Payments		
M/s Casa, New Delhi	3,00,000	3,00,000
M/s Deejay Corporation	1,62,286	2,69,853
M/s Nova Trading Co.	15,64,628	3,33,439
M/s PEDA Chandigarh	17,42,000	17,42,000
M/s Shankar Book Agency Pvt.Ltd.	-	72,887
M/s Atlantis (India) Application Engineerings	-	96,694
M/s Indian Journals Com	1,05,225	1,05,225
M/s Central News Agencies	51,485	51,485
M/s MTS Eng. Pvt. Ltd.	6,17,527	1,85,258
M/s In Touch Computers	-	3,900
M/s Retsch Gmbh	-	4,98,281
M/s Varun Associates	-	1,86,260
M/s Manohar Auto Diesel	36,765	1,34,997
M/s Ram Outsourcing Pvt Ltd	4,480	-
M/s NIFM	25,000	-
- Others		
Postal Stamps In Hand	724	326
Income Tax Refund Due AY 2009-10	1,06,531	1,06,531
TDS	1,33,993	1,563
- Securities		
Telephone	2,000	2,000
Gas	7,100	7,100
Advance to Staff	57,610	31,330
Other Advances	10,990	-
Prepaid Insurance	1,624	-
Seminar Conference Exp Receivable	50,000	50,000
Cheque Deposited but not cleared	5,000	55,000
Grant Receivable from MNRE	-	1,00,00,000
TOTAL (B) >>	**3,42,23,968**	**4,34,73,129**
GRAND TOTAL (A+B) >>	**23,14,15,805**	**13,12,77,277**

SHAMMI GARG & CO. CHARTERED ACCOUNTANTS FRN 017212N

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

PARTICULARS	AS AT 31.03.2013 (₹)	AS AT 31.03.2012 (₹)
CAPITAL WIP AS PER RECEIPT & PAYMENT A/C		**LIST-A**
Total Capital Expenditure during the year as per List-B	2,37,64,352	4,58,12,548
Less : Expenditure done by CPWD during the year	-	2,79,55,200
Less : Depreciation during the year	74,21,609	39,13,515
Less : Outstanding Liabilities	37,74,402	4,51,961
Less : Loss on sale of car	-	21,835
Less/(Add) : Advances Paid/Adjusted during the year	(8,00,441.49)	53,28,587
Total	**1,33,68,783**	**81,41,450**

SHAMMI GARG & CO. FRN 017212N CHARTERED ACCOUNTANTS

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

STATEMENT OF EXPENDITURE DURING CONSTRUCTION PERIOD — **LIST-B**

PARTICULARS	BALANCE AS ON 31.03.2012 (₹)	ADDITION DURING THE YEAR	BALANCE AS ON 31.03.2013 (₹)
Architect Fees	54,74,820	-	54,74,820
Meeting, Seminars, Workshop & Conference	26,65,207	4,67,726	31,32,933
Misc & Unforeseen Exp	57,427	-	57,427
Office Exp	29,12,976	78,576	29,91,552
Land & Site Related Development Work	9,83,96,270	-	9,83,96,270
Printing & Publications	7,08,580	3,68,249	10,76,829
Rentals, Hiring of Proff. Services	47,66,186	58,50,163	1,06,16,349
Repair & Maintenance	2,45,560	2,79,671	5,25,231
Salaries	1,92,52,474	60,12,652	2,52,65,126
Inauguration Exp	32,296	-	32,296
Rent	3,52,000	-	3,52,000
Insurance	-	11,370	11,370
Transport Expenses & POL	6,11,174	-	6,11,174
Travelling Exp	8,52,583	2,63,936	11,16,519
Visiting Faculty/Experts/Consultants	16,629	-	16,629
Annual Maintenance Exp	18,235	-	18,235
Depreciation	1,04,05,193	74,21,609	1,78,26,802
Bank Charges	30,080	88,274	1,18,354
Horticulture Exp	7,16,514	4,63,835	11,80,349
Audit & Legal Fees	1,08,860	96,216	2,05,076
Consumable Laboratory workshop Exp.	13,24,214	21,472	13,45,686
Electricity & POL	8,72,103	14,09,709	22,81,812
Frieght Charges	9,790	-	9,790
Library, Newspaper & Journal Exp.	4,312	557	4,869
Loss on Old Car	21,835	-	21,835
Refreshment	-	59,127	59,127
Seminar/Conference/Worksh ip/Training Prog	-	-	-
Stationary (including Software Exp.)	2,67,211	6,13,789	8,81,000
Telephone & Internet Exp.	2,42,629	1,86,913	4,29,542
Contingencies	-	70,508	70,508
TOTAL >>	**15,03,65,158**	**2,37,64,352**	**17,41,29,510**
Less Misc Income	1,08,202	99,011	2,07,213
Less Expenses overbooked in earlier years	4,55,000	-	4,55,000
Less Interest Received during the year	1,60,58,523	74,66,375	2,35,24,898
Add Interest Conversion into Grant in Aid (Pri	1,50,47,499	-	1,50,47,499
Net CAP WIP	**14,87,90,932**	**1,61,98,966**	**16,49,89,899**

PARTICULARS	AS AT 31.03.2013 (₹)	AS AT 31.03.2012 (₹)
INTEREST EARNED		**LIST-C**
From Scheduled Banks		
- On Term Deposits	74,40,913	45,62,902
- On Saving A/c	25,462	2,39,881
TOTAL >>	**74,66,375**	**48,02,783**

SHAMMI GARG & CO. CHARTERED ACCOUNTANTS FRN 017212N

सत्यमेव जयते
सरदार स्वर्ण सिंह राष्ट्रीय अक्षय ऊर्जा संस्थान
(नवीन और नवीकरणीय ऊर्जा मंत्रालय का एक स्वायत्त संस्थान)
12 कि.मी. पत्थर, जालन्धर-कपूरथला रोड, वडाला कलां, कपूरथला-144 601
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 (Punjab) 144 601
Telephone : 91-1822-255090, 255543 Telefax : 91-1822-255544, Email: contact@nire.res.in Website : www.nire.res.in

FORM GFR 19A
UTILIZATION CERTIFICATES (2012-2013)

S. No.	Letter No. and date	Amount (Rs.)	
1.	2-1/2009-10/NIRE/BEG (R-I)	14,00,00,000/-	Certified that Rs. 14,00,00,000/- of grants-in-aids sanctioned during the year 2012-13 in favor of Sardar Swaran Singh National Institute of Renewable Energy under this Ministry/Department Letter No. given in the margin and Rs.7,19,59,724/- on account of unspent balance of the previous year, a total of Rs. 21,19,59,724/- out of which , a sum of Rs. 3,31,09,556/- has been utilized for the purpose of institute for which it was sanctioned and the balance of Rs. 17,88,50,168/- remaining unutilized at the end of the year ~~has been surrendered to Government(Vide No.--dated)~~ /may be carried forward to the next year.
	Total	14,00,00,000/-	

Note: The above figures exclude the interest earned on the funds placed in the Fixed Deposits & Saving Bank Accounts from 01-04-2012 to 31-03-2013 amounting to Rs. 74,66,374.88 which is to be converted into Corpus Fund during financial year 2013-14.

Certified that we have satisfied ourselves that the conditions on which the grants-in-aid was sanctioned have been duly fulfilled/are being fulfilled and that we have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

Kinds of checks exercised.

1. Verification of Payment Vouchers
2. Verification of payment release advice (PRA) registered/ledger.
3. Verification of Bank Pass Books/Bank certificates.

Date: 30th Aug. 2013

Dr. Abhishek Gupta
Administrative- cum- Accounts Officer
SSS-NIRE, Kapurthala

Certified from Records Produced to us
For Arora Vikram & Associates
Chartered Accountants

C.A. Vikram Arora
Partner
M. No. 093620

30/8/2013
Dr. Praveen Saxena
Director
SSS-NIRE, Kapurthala

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab) - 144 601
Statement of Expenditure for the Financial Year 2012-13

(In Rupees)

	Particulars	Gross Expenses (1+2)	Exp.payable (1)	Expenses Paid (2)
1.0	**PERMANENT EQUIPMENT**			
	Equipments & Instruments (Including workshop & Laboratory Instruments	2,22,85,458.00	-	2,22,85,458.00
	Office equipment & computers (including Furniture, Fixtures, Gadget &	8,00,235.00	-	8,00,235.00
	Sub Total	**2,30,85,693.00**	-	**2,30,85,693.00**
2.0	**RECURRING EXPENDITURE**			
	Office Exp	47,144.00	-	47,144.00
	Printing & Publications	3,68,249.00	31,842.00	3,36,407.00
	Rentals, Hiring of Proff. Services	58,50,163.00	4,32,226.00	54,17,937.00
	Repair & Maintenance	2,79,671.00	-	2,79,671.00
	Meeting, Seminars, Workshop & Conference	1,04,028.00	-	1,04,028.00
	Board and Committee Meetings	1,61,231.00	-	1,61,231.00
	Horticulture Expenses	4,63,835.00	-	4,63,835.00
	Travelling Exp	2,63,936.00	8,331.00	2,55,605.00
	Audit & Legal Fees	88,466.00	-	88,466.00
	Consumable Laboratory Workshop exp.	21,472.00	-	21,472.00
	Electricity & POL	14,09,709.00	42,395.00	13,67,314.00
	Library , Newspaper & Journal exp.	557.00	-	557.00
	Bank Charges	88,274.00	-	88,274.00
	Stationary(Including Software Exp)	6,13,789.00	-	6,13,789.00
	Telephone & Internet Exp.	1,86,913.00	7,493.00	1,79,420.00
	Contingencies	70,508.00		70,508.00
	General Office Items	31,355.00		31,355.00
	Refreshment & Entertainment	59,127.00		59,127.00
	Insurance	11,370.00		11,370.00
	Interest on TDS	77.00		77.00
	Sub - Total	**1,01,19,874.00**	**5,22,287.00**	**95,97,587.00**
	TOTAL (A)	**3,32,05,567.00**	**5,22,287.00**	**3,26,83,280.00**
		Gross Income (1+2)	**Income Accrued (1)**	**Income Rec. (2)**
	Other Income	96,011.00	-	96,011.00
	TOTAL (B)	**96,011.00**	-	**96,011.00**
	Net Balance (A-B)	**3,31,09,556.00**	-	**3,25,87,269.00**

Date : 30th Aug. 2013.

Certified from records produced to us
For Arora Vikram & Associates
Chartered Accountants

C.A. Vikram Arora
Partner
M.No. 093620

Dr. Abhishek Gupta
Administrative-cum-Accounts Officer
SSS NIRE, Kapurthala

30/8/2013

Dr. Praveen Saxena
Director
SSS NIRE, Kapurthala

सत्यमेव जयते
सरदार स्वर्ण सिंह राष्ट्रीय अक्षय ऊर्जा संस्थान
(नवीन और नवीकरणीय ऊर्जा मंत्रालय का एक स्वायत्त संस्थान)
12 कि.मी. पत्थर, जालन्धर-कपूरथला रोड, वडाला कलां, कपूरथला-144 601
SSS-NIRE
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 (Punjab) 144 601
Telephone : 91-1822-255090, 255543 Telefax : 91-1822-255544, Email: contact@nire.res.in Website : www.nire.res.in

FORM GFR 19A
UTILIZATION CERTIFICATES (2012-2013)

S. No.	Letter No. and date	Amount (Rs.)	
1.	2-1/2009-10/NIRE/BEG (R-II)	1,00,00,000/-	Certified that Rs. 1,00,00,000/- of grants-in-aids sanctioned during the year 2012-13 in favor of Sardar Swaran Singh National Institute of Renewable Energy under this Ministry/Department Letter No. given in the margin and Rs.NIL on account of unspent balance of the previous year, a total of Rs. 1,00,00,000/- out of which , a sum of Rs. 60,12,652/- has been utilized for the purpose of institute for which it was sanctioned and the balance of Rs. 39,87,348/- remaining unutilized at the end of the year ~~has been surrendered to Government(Vide No. dated)~~ / may be carried forward to the next year.
	Total	1,00,00,000/-	

2. Certified that we have satisfied ourselves that the conditions on which the grants-in-aid was sanctioned have been duly fulfilled/are being fulfilled and that we have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

Kinds of checks exercised.

1. Verification of Payment Vouchers
2. Verification of payment release advice (PRA) registered/ledger.
3. Verification of Bank Pass Books/Bank certificates.

Date: 30th Aug. 2013

Dr. Abhishek Gupta
Administrative- cum- Accounts Officer
SSS-NIRE, Kapurthala

Certified from Records Produced to us
For Arora Vikram & Associates
Chartered Accountants

C.A. Vikram Arora
Partner
M. No. 093620

30.8.2013

Dr. Praveen Saxena
Director
SSS-NIRE, Kapurthala

SARDAR SWARAN SINGH NATIONAL INSTITUTE OF RENEWABLE ENERGY
(An Autonomous Institution of Ministry of New & Renewable Energy)
Kapurthala (Punjab) - 144 601
Statement of Expenditure for the Financial Year 2012-13

(In Rupees)

	Particulars	Gross Expenses (1+2)	Exp.payable (1)	Expenses Paid (2)
1.0	**RECURRING EXPENDITURE**			
	Salaries	60,12,652.00	3,85,450.00	56,27,202.00
	Total	60,12,652.00	3,85,450.00	56,27,202.00

Date: 30th Aug. 2013

Certified from records produced to us
For Arora Vikram & Associates
Chartered Accountants

C.A. Vikram Arora
Partner
M.No. 093620

ARORA VIKRAM & ASSOCIATES CHARTERED ACCOUNTANTS JALANDHAR

Dr.Abhishek Gupta
Administrative-cum-Accounts Officer
SSS NIRE, Kapurthala

30/8/2013

Dr. Praveen Saxena
Director
SSS NIRE, Kapurthala