

**Minutes of the Meeting of the Core Group of RuTAG - IITD held on
September 15, 2014 in the CRDT Committee Room, Block-III,
Room No. 290, IIT Delhi.**

A Meeting of the Core Group of RuTAG, IIT Delhi was held on September 15, 2014 in the CRDT Committee Room, IIT Delhi under the chairmanship of Prof. R. R. Gaur. Following were present:

1. Prof. R. R. Gaur, Chairman, Core Group, RuTAG, IIT Delhi.
2. Major S. Chatterjee, Senior Project Consultant and Member, Core Group, Office of the PSA, Vigyan Bhavan Annexe, New Delhi.
3. Prof. V. K. Vijay, Member, Core Group Co-PI. RuTAG, IIT Delhi.
4. Prof. P.M.V. Subbarao, PI of the Project on “Technology Standardization and Testing cum Training Facility for Ultra-micro (Pico) Hydrel Power Package for Rural Applications.”
5. Prof. Sangita Kohli, PI of the project on “Improvement of Furnace for Bangles Making and Improving the Working Conditions of Artisans.”
6. Prof. M.R. Ravi Co-PI of the project on “Improvement of Furnace for Bangles Making and Improving the Working Conditions of Artisans.”
7. Dr. Jitendra P. Khatait, Co-PI of the project on “Design of Treadle Pump using Solar Power.”
8. Dr. D. Raghunandan, CTD, New Delhi (NGO Expert)
9. Prof. Rajendra Prasad, Co-PI. RuTAG, IIT Delhi.
10. Mr. Yogeshwar Kumar, Special Invitee.
11. Mr. Raj Kumar Gupta, Senior Project Assistant, RuTAG, IIT Delhi.
12. Mr. Davinder Pal Singh, Senior Project Assistant, RuTAG, IIT Delhi.
13. Mr. Mangal Sharma, Project Attendant, RuTAG, IIT Delhi.
14. Prof. S. K. Saha, Coordinator/PI and Convener, Core Group, RuTAG, IIT Delhi.

Prof. S. K. Saha, Coordinator/PI and Convenor, Core Group, RuTAG, IIT Delhi welcomed the Chairman and Members of the Core Group and the participants. In response to Prof. Gaur’s comment about the External Review Committee (ERC) meeting held on Dec. 26-27, 2014, Major S. Chatterjee briefly explained the important points of the meeting.

With the permission of the Chairman, Prof. Saha started the proceedings of the meeting.

Agenda item No. 1. : Confirmation of the minutes of the last meeting of the Core Group:

The minutes of the meeting of the Core Group of RuTAG, IIT Delhi held on March 14, 2014 were already circulated to all the members/participants of the Core Group. No comments were received. The minutes of the last meeting were deemed as confirmed.

Agenda item No. 2. : Reporting and planning of the activities since last meeting:

Prof. S. K. Saha presented the brief status of all the projects of RuTAG-IIT Delhi project, as attached in Appendix A. Detailed presentations were followed after this.

A. Projects:

i) Treadle Pump (PI: Prof. S. K. Saha): Improved Design to Reduce Drudgery in Operation of the Human-operated Treadle Pump for Irrigation

Prof. Saha told the committee that this project was completed in Mar. 31, 2013. Six treadle pumps have been fabricated by *Gramodaya Rachnatmak Vikas Samiti, Deoria. U.P.* and two will be field tested in the coming month. Here, Major S. Chatterjee added that he and Mr. C. P. Kushwaha from *Gramodaya Rachnatmak Vikas Samiti, Deoria. U.P.* had a meeting with *Mr. Abhay Bakre, Executive Director, Petroleum Conservation Research Association (PCRA), Bhikaiji Cama Place, New Delhi* in which PCRA showed interest in installing about 100 treadle pumps in rural areas. It was suggested by PCRA to Mr. C. P. Kushwaha that a joint project proposal be submitted with IIT Delhi. IDEI, New Delhi is also field testing the treadle pump in their R&D centre in Bhubaneswar.

Decision: Committee appraised the above said work. The chairman indicated that treadle pump should be made with replaceable parts. Prof. S. K. Saha explained that such components would be use in future developments of treadle pumps, e.g., the one with solar powered.

ii) ADPM Applications (PI: S. K. Saha): Utilization of the Standardized Animal Driven Gear Box for Multiple Rural Applications

Prof. Saha told the committee that this project was completed in Mar. 31, 2014. A team of three persons from RuTAG project visited Karoli, Kanpur on March 28, 2014, collected data and suggested modification. No further activity at this moment. A final report is ready to be sent to the PSA office. Therefore this project should be considered closed.

Decision: No discussion took place.

iii) Micro-hydel (PI: P.M.V. Subbarao): Technology Standardization and Development of Testing-cum-Training Facility for Ultra-Micro (Pico) Hydel Power Package for Rural Applications

Prof. P. M. V. Subbarao told the committee that project was officially completed on March 31, 2014 after taking one year extension. Some work is still pending, which should be over by Oct. end 2014 after some on-going testing. A report was sent to the PSA's office on July 09, 2014 (soft copy).

Decision: The chairman insisted that the Review Committee Meeting Prof. Subbarao agreed should be called in the first week of Nov. 2014 with the date.

iv) Fru-wash machine: (PI: H.M. Chawla): Facilitating the Use of ‘Fru-wash’ Technology for Extending Shelf Life of Fruits and Vegetables

Since Prof. H. M. Chawla was not available, Prof. Saha told the committee that this project was completed in June 30, 2014, Changes were made in the machine as per the modifications suggested by Prof. R. R. Gaur. Prof. S. K. Saha showed the photos of fully modified and commissioned Fru-wash machine. Fru-wash machine was demonstrated on July 23, 2014 in the presence of users (Mr. Ranvijay Pratap Singh and Mr. Surender Singh from Pratap Garh district, U.P) with water and bricks without fru-wash liquid. The users were agreed to take the machine. It was sent to Pratapgarh on August 28, 2014. Mr. Mangal Sharma has installed and tested the machine at ITI Gobri, Pratapgarh, U.P.

Decision: The chairman suggested that Fru-wash liquid be made available to Pratapgarh either through payment by the Pratapgarh people or by RuTAG IIT Delhi. After only field testing of the machine with Fru-wash the project should be considered successful.

v) BDT (PI: Ajit Kumar, IGNOU): Improving the Design of Bullock Driven Tractor to make it more users friendly

Since Prof. Ajit Kumar was not present, Prof. Saha told the committee that this project was completed in June 30, 2014 and need to be extended because the modifications suggested during the field visit on April 29, 2014 are still pending. New design with the axle has been developed in CAD and is also under consideration.

Decision: The chairman suggested that Mr. Raj Kumar Gupta should call Prof. Ajit Kumar explain the concern of the chairman and other members.

vi) Bangles Making (PI: S. Kohli, M.R. Ravi, S.K. Saha): Improvement of Furnace for Bangles making and improving the working conditions of Artisans

Prof. Saha told the committee that this project is till Feb. 2015,

Furnace:

Prof. M. R. Ravi and Prof. Sangita Kohli told the committee that their team has already conducted a number of tests with rammed saw dust in a bucket and found that the temperature was not attainable. It was found that the addition of fuel was required. To address this problem, briquettes were made using different binding agents like cow dung, water, used engine oil, used cooking oil etc., which were fed continuously to the

furnace. It increased the temperature of glass to red hot on June 19, 2014. In view of the above observations mathematical analysis of the furnace and chimney has been done.

CAD Model of the existing furnace and improved furnace have been made. Casting of furnace according to CAD model has been completed. Insulated canopy and modular chimney were fabricated. Mathematical calculation of chimney height is in the pipeline. Briquettes using saw dust sizing of 16mm have been made in Micro model lab. Firing of furnace is expected in coming week. After successful firing, artisan will be called for trials of the furnace, tools and seating in Micro Model Lab. of IIT Delhi.

Decision: The Chairman suggested and pointed out that the change in the fuel should be done taking opinions of the artisans. Since first proposed model of individual furnaces were not successful new model with single pot and multiple users should be tested first before calling the artisans for trail.

Seating arrangement and tools design:

Prof. S. K. Saha showed the newly designed and indigenously fabricated ground chair at IIT Delhi. He also showed the photos of the two prototype which were sent to the field for testing on July 16, 2014. Mr. Davinder Pal Singh explained about observations taken regarding seating arrangement during Bharatpur visit. He also showed the newly designed working device of bangles sizing spindle (Kalbhoot). This will be tested soon.

Decision: The Chairman suggested and pointed out that due fire risk in the bangle making industries, ground chair material must be fire resistant and economically cheap. He also suggested to study the ergonomics of the fabricated ground chair.

vi) Solar operated treadle pump (PI: V. Dutta and J. Khatait): Design of Treadle Pump using Solar Power

Prof. Saha told the committee that a concept note of the Solar Power Operated Treadle Pump with a budget of Rs.1.00 lakh has been submitted to the PSA's office on August 24, 2014. He also told that the existing solar power treadle pump developed by IDE in Bhubaneswar and he has asked IDEI to send the existing solar treadle pump to IIT Delhi for further study. He also mentioned that four members will visit Bhubaneswar on October 28, 2014.

Decision: Dr. Raghunandan (the NGO expert) and the chairman had observations on the real utility of the system particularly, when the cost of such system is close to Rs.50,000. The PI and staff members of the RuTAG IIT Delhi were asked to study the problem from broader application point of view. The same can be kept in mind during the team's visit to Bhubaneswar.

B. Workshops:

i) Akhil Bhartiya Vanvasi Kalyaan Ashram (ABVKA) Jashpur Nagar, Chattisgarh (June 3-4, 2014)

Prof. Saha explained about the workshop in Jashpur Nagar held during June 02–04, 2014. It was highlighted that 2-3 organizations were interested with IIT Delhi's technologies on Micro-hydel, Treadle pumps and ADPM. Prof. Subbarao at RuTAG IIT Delhi office will coordinate with them. No new project could be formulated.

ii) RuTAG-IIT Delhi Regional Workshop at Indian Institute of Rural Development (IIRD), Jaipur, Rajasthan on November 6, 2014

Prof. Saha told that Invitation letter along with tentative programme have been send to Mr. Pramod K. Paliwal at IIRD, Jaipur and is expecting to get the list of selected NGOs in coming week.

C. Training:

Five ladies from Bharatpur to Madurai for Sanitary Napkin (Tentative: Oct. 15, 2014)

Prof. Saha told that five ladies from Lupin Foundation, Bharatpur will be undergoing a training programme on Sanitary Napkin by Oct. 15, 2014 in Madurai.

D. Future activities of RuTAG after Feb. 15, 2015

i) Adaptation of sheep hair shearing machine developed by IIT Delhi.

The need of the above was expressed by Major S. Chatterjee during one of the RuTAG meetings held in IIT Roorkee. This was also discussed during the internal meeting of all PIs held on August 04, 2014. Major S. Chatterjee called Mr. Yogeshwar Kumar from one of the NGOs who are working in Utrakhnad region. After listening to above the committee asked Prof. Saha to explain about the performance of sheep hair shearing machine developed during 2008 at IIT Delhi. After listening to the detailed description of the development of the committee insisted if the mass production of the machine could be considered by RuTAG-IIT Delhi. In parallel a field trial must be arranged before submitting the concept note to PSA office.

E. Any other item with the permission of the chair.

i) Tulsi-mala (PI: S.K. Saha): A Device for Making *Tulsi Mala* Beads

Prof. Saha told the committee that this project was completed in June 30, 2013, Low cost improvised spindle or job holder using EDM and CNC wire cut operations have been developed. Ten Pieces of spindle or job holder have been sent to Lupin Foundation on July 16, 2014 for the feedback from the artisans. Sixteen tulsi mala devices already have been sold and demand is increasing. Contactless switch is under development. A paper was presented in Indo-Dutch International Conference in IISc, Bangalore on June 12-14, 2014.

Decision: The chairman appraised the work.

The meeting ended with a vote of thanks.

(Prof. S. K. Saha)
Coordinator/PI, RuTAG-IITD
