

Conference Report
One Day National Seminar
on
**Application of Emerging Technology of Jute Geotextiles
in Civil Engineering**

Swapan Kumar Ghosh^{1,a}, Rajib Bhattacharyya¹, Ashik Paul² & Tapobrata Sanyal³

¹Department of Jute and Fibre Technology, Institute of Jute Technology,
University of Calcutta, Kolkata 700 019, India

²Institute of Radio Physics and Electronics, University of Calcutta,
92, Acharya Prafulla Chandra Road, Kolkata 700 009, India

³National Jute Board, Ministry of Textiles, 75C Park Street, Kolkata 700 016, India

One day national seminar on ‘Application of Emerging Technology of Jute Geotextile in Civil Engineering’ was organized by the Forum of Scientists, Engineers and Technologists (FOSET) in collaboration with Department of Jute & Fibre Technology (DJFT), Institute of Jute Technology (IJT), University of Calcutta under the patronage of National Jute Board (NJB), Ministry of Textiles, Government of India at Kennedy Hall of DJFT on 9th January 2015. Seminar was started with the welcome address of Prof. A K Samanta, Head, Department of Jute and Fibre Technology, IJT, Kolkata. Dr Samanta highlighted the activities of National Jute Board, in promoting jute geotextiles (JGT) with the expectations that JGT will stand heavily on its own merit in the coming days. Parallely, he also tried to draw a line of comparison regarding the greater use of natural fibres. He emphasized on the newly developed product ‘bituminized jute paving fabric’, elucidating about its potentiality and techno-economic viability.

Welcome address was followed by an introductory speech of Dr. Ashik Pal, Honorary General Secretary, FOSET, regarding the activities of FOSET as a non-governmental organization in the field of energy management, environment management, technical education, integrated watershed management and bio-engineering in land management. His retrospective speech reflected the crucial role of FOSET in several

developmental projects of NIRD programme. He took the pride to declare that in a land resourcing project of about Rs. eight crores undertaken by nineteen different organizations of West Bengal, FOSET is counted amongst the top five organizations. In his speech he tried to illuminate the significance and dire need of such awareness programme on JGT, which will reduce the gap between the practising civil engineers and geotextile technologists in today’s context. He also briefed about the forthcoming programmes of FOSET.

Sri T Sanyal, Chief Consultant of NJB, addressed on the importance of JGT in the field of geo-tech category, after explaining in detail about the emergence of JGT in the field of technical textiles. He spoke on the dominating assertiveness of the synthetics over natural fibres in the global market but at the same time he also anticipated that continuous awareness about the use of natural fibres and potential application of JGT in different civil engineering constructions will recuperate the situation and will help to revive the eco-concordance making the world green. He appreciated the incorporation of JGT in the masters course curriculum of University of Calcutta and at the same time felt the necessity of inclusion of the same in the graduate and post graduate courses in civil engineering also for its wide application in the geotechnical engineering and consciousness amongst the civil engineers.

Mr. N Sengupta of NJB portrayed the role of NJB in promoting jute for the social cause and also expected

^aE-mail: ijtskg40@gmail.com

that a concrete road map for wide application of JGT will come out through this type of seminars.

The Chief Guest of the seminar, Prof. A K Roy, Hon'ble Vice Chancellor, Indian Institute of Engineering Science and Technology (IEST), Shibpur tried to make the audience feel the significance of interactive sessions between the different engineering disciplines and highlighted the necessity of more research and developmental activities on jute so that the environmental benefits of using JGT can be exploited in a convincing manner for reducing the carbon footprint. He also pointed out the significance of nurturing the young innovative minds and how their inventive ideas could be motivated and patronised, so that outcomes ripening and dehiscent from these ideas will prove to be the torchbearers in the days to come.

Prof. D Chattopadhyay, Hon'ble Pro Vice Chancellor (Academic Affairs), University of Calcutta in his keynote address urged towards the audience that the time has come now to join hand in hand and to give a collective effort which will really prove boon to the society. He expressed his wish that the faculties of the Department should carry out inter disciplinary R & D work for development of sustainable products for the service of the society as a whole. The inaugural session ended with the vote of thanks proposed by Dr. K K Satpathy, Vice President, Organizing Committee.

After the inaugural session, first technical session was started under the Chairmanship of Er. S P Dutta, an eminent retired Chief Engineer, PWD. Shri Tapobrata Sanyal, Chief Consultant, NJB maiden the session by portraying a comprehensive picture of JGT right from its primitive conventional application to its potential application in the field of technical textile. He spoke on the history of jute, starting with the acceptance of jute (then known as Indian Grass) by Dundee, Scotland in 1920 and later on in Strand Road, Kolkata, India in 1934. Apart from focussing the increase in gradual demand of JGT and its eco-compatibility he pointed out with special emphasis on the need for organizing awareness courses for civil engineers who are generally considered to be the main end users of geotextiles to get conversant with the attributes of the natural fibres and to have a better understanding of the mechanism of their functioning in fields. He anticipated that the extensive field trials and laboratory studies conducted with JGT should pave way for their standardization. The global geotextile market is expanding rapidly and entry of

natural fibres like jute in this emerging field will definitely augur a growth in the national economy.

Dr. (Mrs) Suman De of FOSET nicely elaborated the perspectives and work done in the field of JGT. She pointed out the benefits of using JGT in increasing the fertility of barren land—a R&D work carried out in Garbeta, West Medinipur, West Bengal.

Sri Pradeep Chowdhury, Project Co-ordinator, NJB presented different case studies, showcasing JGT in different civil engineering applications like road construction, hill slope management, river bank protection, railway construction, etc. He stated optimistically that the performances of the JGT in those application areas are quite satisfactory and encouraging.

Prof. (Dr.) S K Ghosh, faculty of the DJFT spoke on the pros and cons of JGT and on the required testing parameters of JGT in a precise and lucid manner. Along with this, Prof. Ghosh focussed on the urgent need for international recognition of the test results of the property parameters of the fabric samples, for which obtaining NABL accreditation has become mandatory for a laboratory. In such a scenario, Prof. Ghosh has elaborately shown that how a geotextile laboratory of the Department has started its journey for obtaining NABL accreditation, the hurdles that it has overcome, the changes in infrastructure that it has undergone, the installation of the new, costly, sophisticated instruments, and the experience that it is gaining every moment which has send it to the verge of completion of the process of NABL accreditation. Mr Rajib Bhattacharyya, Senior Research Fellow described the testing methodology of JGT in a comprehensive way. The concluding part of the first technical session was marked by the synopsis of the delivered speeches by the Session Chairman Er. S P Dutta.

The second technical session was the post-lunch session Chaired by Dr. K K Satpathy, Vice President, Organizing Committee. The session set off with the presentation of Ms Rumki Saha, Junior Project Executive, IJIRA. In her presentation, Ms Saha elaborated the mathematical analysis and design aspects of JGT in several civil engineering applications like road construction, river bank protection and hill slope management. She also highlighted different points to be considered for laying the JGT in different application areas.

Sri A.K. Khastagir, Project Manager, NJB delineated the market potential of JGT and its need

assessment survey followed by the actions to be taken, favouring promotion of the JGT for its sustainability globally. Sri Khastagir was followed by Sri Sourav Ganguly, Technical Officer, IJMA. In his presentation he pointed out the commercial aspect of JGT alongwith its economic and environmental benefits in detail.

The post-lunch technical session was concluded by Prof. (Dr.) S.K. Ghosh along with Shri Tapobrata Sanyal, Chief Consultant, NJB, outlining the developments of new variants of JGT. Prof. Ghosh put up the technical and commercial aspects of the developed bituminized jute paving fabric (BJPF) which has been commercially approved in the two traffic density roads and the performance reports of the field trials of this developed product are found to be very much satisfactory and encouraging. He also shared words about the potential use of jute sandwich fabric as a stress absorbing membrane layer (SAMI) to prevent crack propagation in road construction and as roof tar felt.

The second Technical Session was followed by the panel discussion and valedictory session. Sri T Sanyal, Chief Consultant of NJB shared the dais with the other distinguished dignitaries Prof. (Dr.) S K Ghosh, Dr. A K Pal, Dr. K K Satpathy, Dr. Nilanjan Sengupta and Sri A K Khastagir. The feedback of the audience has been registered in a feedback form which was circulated amongst the audience to acknowledge their valued opinion about the seminar and to have an interactive

discussion in the valedictory session. Sri Sanyal discussed and explained the several queries reflected in the feedback form, one by one in a very lucid and comprehensive manner. The seminar finally concluded with vote of thanks offered by Dr. Nilanjan Sengupta, Director (Technical), The Institution of Engineers (India). The recommendations that emanated from this seminar are stated hereunder.

Due to the unique properties of jute as explained by the speakers, its wider use in civil engineering works e.g. strengthening of subgrade of roads, slope protection and prevention of river bank erosion should be propagated due to the technical superiority and cost-effectiveness of the same. The Central and State Governments should encourage such uses. Jute, being a natural fibre and very much cost-effective, should be widely used as it will ultimately result in reduction of GHG emission. The novel way of use of jute geotextile in restoration of denuded lateritic wasteland and conversion of the barren land into arable land through people's participation should be replicated at different places in the state of West Bengal and also in the country, as it will definitely open a new vista of using vast quantity of jute in a cost-effective way. It will not only improve the livelihood of people but also will help in reviving the ailing jute industry in the country. Use of jute geotextile in Sunderban region for protection of embankment and growth of mangroves should also be tried in an experimental basis to develop a new protocol of use of jute geotextile.