



NERDC NEWS

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NERDC Granted an Exclusive License for Manufacturing of Coconut Dehusking Machine

The Industrial Coconut De-husker is an ideal solution for the labour shortage which is common in coconut plantations. This machine is capable of de-husking 1200 coconuts per hour. NERDC signed an exclusive license agreement for manufacturing & commercializing of industrial coconut de-husker with the Ramaco Industries of Dankotuwa. This was the first time that NERDC granted an exclusive license in its history. The license is valid for forthcoming ten years and the value of exclusive license is 2 Million LKR. The licensee gets the exclusive rights of manufacturing & selling of industrial coconut dehusker for ten years continuously and NERDC will not grant the same license to any other party during the said time period.

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NERDC at “BUILD SL 2020” Exhibition

Sri Lanka’s premier housing and construction exhibition; organized by the Chamber of Construction Industry (CCI) was held from 2nd to 4th Oct 2020 at BMICH. The Chief guests were Hon. Minister of Urban & Rural Development, Dr.Nalaka Godahewa and the Hon. State Minister Mr. Indika Anurudda.

NERDC had a 600sq.ft stall in the exhibition “hall C” & had a fully fledged display of NERDC Cost Effective Building Technologies. NERDC has been delivering various engineering solutions for the industry for building houses at affordable cost, without compromising quality & aesthetic aspects of the same. During the period of exhibition, NERDC received more than 3000 foot prints.



NERDC Holds Training Programme to Improve The Skills of Professionals

A special training programme was held at NERDC during the month of August on PLC Programming. This was a one-day rapid course, premises and there were around 30 participants, including engineers, technical staff. The course was conducted by experienced internal professionals.



Two days training workshop on Hydraulic & Electrohydraulic control systems for Industrial Machinery was held at NERDC in the last August. There were approximately 20 participants and the training workshop was conducted by NERDC professionals.

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NERS 2020 for Engineering innovations & developments towards vistas of prosperity: **NERDC holds its' seventh annual National Engineering Research Symposium**

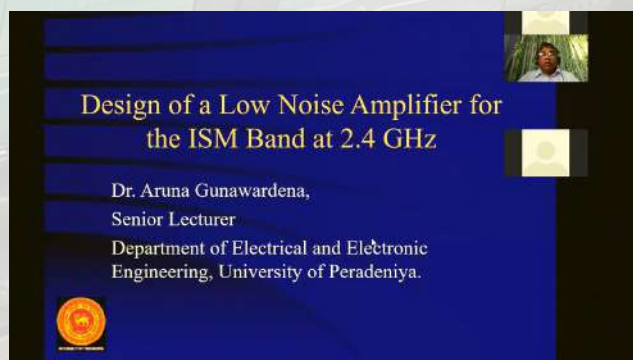


The National Engineering Research Symposium (NERS 2020), enriched with the theme of “Engineering innovations & developments towards vistas of prosperity”, was held on 10th December 2020 at NERDC. This symposium extended its’ opportunities by making a wide platform to external stake holders such as researchers, university academics, technologists, inventors and other industrialists to publish their findings, share their experiences and ideas. There were 53 papers presented and out of those 37 were selected as full papers and 16

papers were selected as extended abstract presentations.

The reviewing panel comprised of 29 external reviewers 18 internal reviewers bare different categories of professions. The presenters and the participants joined in physical as well as virtual modes and this is the first time that NERDC held annual symposium in hybrid modes. The Chairman of NERDC, Professor Leelanada Rajapaksha, addressed all physical and virtual gatherings during the inauguration. The sessions

were scheduled under various engineering disciplines such as; Chemical & Process and Materials engineering, Civil engineering, Computing, Electrical, Electronics and Communication engineering, Energy and Environmental engineering and Mechanical engineering. And the professionals participated for the symposium revealed that it was a fine opportunity supported them for intra and inter-sector networking and collegial interactions among themselves.



NERDC Granted an Exclusive License for Manufacturing of **Coconut Dehusking Machine**

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The agreement was signed by the Director General of NERDC, Eng. D.D. Ananda Namal and Managing Director of Ramaco Industries, Ms. M.A. Yahathugoda on the 27th of November 2020. The Deputy Director General (R&D), Eng. J.A.A. D. Jayasuriya, Director of Agriculture Engineering & Machine Development Department, Eng. K.Y.H.D. Shantha, inventor of the machine, Eng. Shalinda Silva and Head of Department of Techno Marketing Department, Eng. Yamuna Pathiraja were also present at the occasion, held at the board room of the NERDC premises.

NERDC Introduces an Imperious Solution for Domestic Waste Disposal: Small Scale **Rapid Compost Bins**

Nowadays with our busy schedules disposal of domestic waste is an extra burden. Especially residents of urban & semi-urban areas are facing this problem more than the rural residents who have larger home gardens. Anyway the traditional practice in composting is, having a compost pit in the home garden and filling it up with the domestic organic waste. The waste will take at least three months to become mature compost. For domestic purposes, it is not suitable due to the limitations of space & time; adaptation of traditional methods are not practical in urban & semi-urban residential areas. To provide a solution whilst getting an extra benefit for users, rapid compost bins were designed by NERDC. Using this unit, compost can be taken out within 30 days' time period. Each household has to have a pair of these units and are fed separately during 15 days. Initially 500g of compost should be fed into the first bin that is started to use and then 100g of dry leaves as well as 500g of food waste should also be fed. In order to mix the materials properly, the bin should be rotated about 3 times a day. Feeding process can be continued for 15 days & while feeding if the content is too dry, a little water should also be added to keep the microbes alive. After 15 days, the second bin should be started to be fed whereas the feeding into the first bin is stopped. While feeding the second bin in the same way of the first bin, the first bin should also be rotated 3 times a day to make sure to enhance the composting process. After completion of 30 days, matured compost can be obtained from the first bin and the process can be continued using two bins alternately. This method can be recommended as a good practice of composting with minimal effort, resources and time. This method is convenient, does not emit any bad odours and occupies a lesser space. Also it provides organic fertilizer for home gardening without additional cost. Test run conducted by NERDC has proved that 4 to 5 kg of compost can be obtained within 01 month using 15 kg of food waste and dry leaves.



NERDC Introduces a “Tree Leaves” Pulverizing Machine to Enhance The Composting Process



Getting rid of high volumes of dry leaves accumulated in backyards is an overwhelming issue. Composting is a suitable and economical method in disposing those but the process takes a longer period. If plant leaves, small trunks and other plant debris could be crushed into small parts, the composting process will be enhanced & speeded up as the surface area of the particles is increased with particle size reduction making a better contact with microbes. This simple tree leaves pulverizing machine has been developed by the Development and Projects Department of NERDC. The Tree leaves pulverizing machine provides a solution by crushing the feedstock of the compost process to a desirable size which could be adjusted by the size of the mesh underneath. The machine crushes approximately 01 ton of dry tree leaves per hour. This machine can be used domestically or institution wise such as botanical gardens, recreational parks, hotels and many more places.

NERDC, Combating Against Excessive Aquatic Growth in Inland Waters

Growth of aquatic weeds in natural & man made canals has become a major issue that creates many problems. Most commonly it causes the drains to disturb the equilibrium of natural water habitats, causing an adverse impact on farming, fishing & other daily activities, of the general public. Currently, this problem is managed by placing dredges on pontoons which is very slow, costly and it makes the canals more deepened too.



These issues came across mainly from areas nearby Nilvala river & Hambantota fishery tanks. By addressing the issue, the NERDC developed a power aquatic weeding machine using a hydraulic power transmission system attached with a cutting bar. This machine is powered by a two-wheel tractor engine (8 hp) and is placed on three fiberglass boats (canoes), and it clears about 50 to 75 square meters per hour.

NERDC Professionals Share Their Expertise on Boosting up Research Skills to Take up Future Challenges

A few steps further taken by NERDC, for continuous improvement of its research culture by holding experience & knowledge sharing sessions of internal professionals. NERDC works on a collaborative project with Coconut Research Institute, Coconut Development Board, Export Development Board and Fibre Millers' Association. This project is formed to design and develop a coir pith dryer for medium scale coir & pith processing business. The design aspects of this project were presented by the Eng. Shalinda Silva at the Kulasinghe auditorium recently. The topic of this presentation was "A design review of the dryer for coir pith drying". Aim of the presentation was to share & review this design of this rotary type diesel fueled dryer, upon the feedback of peer engineers to develop the right product with minimal defects.



Eng. Shalinda Silva (Senior Research Engineer)



Eng. D.D. Ananda Namal (Director General)

In another presentation Director General, NERDC, shared very informative knowledge and experience on "intellectual property protection" which is critical in fostering innovations. It empowers inventors to secure their right on technical inventions, through obtaining patents. During his presentation on Intellectual property – Patents; the Director General Eng. D.D. Ananda Namal, shared constructive ideas on the importance of IP-Patents to NERDC researchers. The Chairman, Deputy Director General, Senior management, all engineers & scientists of NERDC actively participated in these sessions and interacted at experience sharing discussions which lead to enhancing the on-going research activities in NERDC.

Evolution of NERD Centre



In 1986, the energy management centre was added making a step ahead. Meanwhile continuing the operations of NERDC, general public, researchers & school children wanted to get support from NERDC to perform their activities. Hence a thought came up for establishing a technology park to showcase our products & technologies. During the year 1998 technology park of NERD Centre was established. By visiting it, the general public, school children & researchers were able to share the experiences, share the knowledge and get new ideas to support their education & research. And Technology Park supported even beyond those, by providing an additional support to conduct their experiments & some demonstrations when they required.

Year 2002 marks another milestone in NERDC life story. Establishment of the Centre of Manufacturing Excellence is another great achievement of NERDC. It was completed with the assistance of Asian Development Bank. This was established in order to provide support to inventors, small & medium entrepreneurs and other people who were involved in research activities, with their prototypes enhancement. Consultancies on new product initiation & development, providing training on CNC machinery, facilitating potential individuals with engineering consultancies were among the objectives of establishment of Centre of Manufacturing Excellence.



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The Fascinating Wheel Helps to Shape Out The Items Made by Clay: "Sakaporuwa"

Sakaporuwa is an instrument used in pottery. In preparation of clay items including pottery, this was used since the ancient time. Traditionally, Sakaporuwa is available in two types, based on the operating system; Arm sakaporuwa (hand operated) and foot sakaporuwa (foot operated). When pottery is made using hand operated one, two people are required to do the job. One is to make pottery and the other to operate Sakaporuwa. Foot operated Sakaporuwa can be handled by a single person. Sakaporuwa is made of a wooden wheel of 2.5ft. in diameter. It is mounted on a central stone in a larger stone socket fixed on the ground. While one is turning the wheel, the potter places a clay ball on the center of the turning wheel, shaping up the formation and mouth of the vessel using hands. The formation is cut off from the wheel after shaping by a spoke. When the product is completed, it is burnt in the oven or traditional system to get the final product.



NERDC Establishes a Wastewater Treatment Plant for Bhikkhu University of Sri Lanka at Anuradhapura



Wastewater is one of the major issues that all industries face when they get on with their operations. Similarly, managing wastewater is an issue even for the universities and it is not spoken over in common. It is anyway necessary to treat wastewater before discharging into the external environment, as to comply with environmental regulations and as an act of social responsibility of any organization. By adhering to the above objectives, NERDC has designed a wastewater treatment plant at Block 2 of the hostel at Bhikkhu University of Sri Lanka, Anuradhapura. This treatment plant is used to treat the sewage and wastewater generated by kitchen and washrooms by hostellers' daily activities. The hostel accommodates 500 occupancies and expected wastewater generation is 100 cubic meters per day. NERDC initiated this project during the year 2019. After successful completion, it was commissioned and handed over to the University during the year 2020. This treatment system consists of gully pits, bar screens, oil traps, equalization tank, moving bed biological reactor units, and

units for filtration and Chlorine disinfection. Generated wastewater is duly subjected to physio-chemical treatment where the treated wastewater meets the tolerance limits — which are provided for the industrial waste discharged into inland surface water — laid down by the Central Environmental Authority.

Improved Rain Water Harvesting System for Sustainable Home Gardening to Uplift The Semi-Urban & Rural Economy



Aligning with the national plan of vistas of prosperity, one of the major goals of sustainability is to achieve food security in every aspect to make a happy Sri Lankan family. NERDC has conducted a pilot project on rainwater harvesting system, which can be developed with easily found materials at a minimal cost & can be adapted even in a small land area. In Sri Lankan context, traditional farmers apply various methods to improve the soil moisture retaining ability by controlling

water runoff and to improve soil biological activities on soil by practicing the traditional concept of sub forest home gardening. This new system is also based on the same principle but it has additional improvements to enhance the benefits of the system. During the pilot project, this home garden had been arranged methodically to retain the rain water in the land. Water retaining barriers are arranged using coconut husks which are easily found without any additional cost. And it enhances the water absorbing and retaining capacity of the soil. Further, this system supports maintaining the water level of wells in the home garden. There are much more benefits involved with this system; due to the high soil moisture content in the soil, trees and plants remain fresh even in dry periods, provide with a good yield, improves the fertility condition of the soil, enhances the soil texture suited for cultivation, and even supports to retain the moisture level of the adjacent lands as well.

NERDC Strengthens, Technical Personnel Engaged in Crematorium Industry

The Energy and Environmental Engineering Department of NERDC conducted a training programme on “Crematorium Technology” on 5th Sep. 2020 at NERDC premises. This programme was aimed to introduce the latest developments in the industry to the technical officers and relevant other officials of government authorities, who are engaged in crematorium operations, strengthening their technical knowledge. The training was provided to 15 participants by an experienced panel having experience of over 25 years in the crematorium industry.



NERDC Together with Ministry of Defense to Create Own Business Start-ups on Cost Effective Building Technology among “Ranaviru Groups”

National Engineering Research and Development Center and the Ministry of Defense together initiated a series of training programme specially aimed for ex-employees attached with the Ministry of Defense. The series of training programme were exclusively formulated for the ex-employees of Tri-forces, Sri Lanka Police and Civil Security Force, supporting them to start-up their own construction business model after their retirement.



NERDC Cost Effective Building Technology is one of the ideal technologies which suited to initiate as a new business, due to the overwhelming demand for the construction industry. The model supports customers to build their own dream house at an affordable cost while enabling the contractor to meet his financial targets. The first training programme of this series was held at NERDC premises from 28th September to 30th September 2020. The chief guests were Mr. Pathum Hewage, Assistant Secretary to the Ministry of Defense and Eng. D.D. Ananda Namal, the Director General of NERDC at the inauguration. The three days training programme contained a series of lectures, seminars, discussions and individual & group practical sessions. The training programme series was coordinated by the Techno Marketing Department with the support of the Civil Engineering Department of NERDC. There were 25 participants all together and at the end of this three days programme, a certificate awarding ceremony, headed by Director General of NERDC, was held.



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