National Engineering Research and Development Centre of Sri Lanka

NERDC NEWS

News Letter of National Engineering Research and Development Centre of Sri Lanka

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NEWS & UPDATES

Inside this..

NERDC Board of Directors

Page 02

Events & Exhibitions

Page 03

COVID 19 defeat innovations

Page 04

Internal OBT for NERDC new comers

Page 05

Coconut Dehusker

Page 06

Evolution of NERDC "Eth Pahana"

Page 07

Awareness programmes and Training programmes

Page 08

NERDC Cost Effective Building Technology

The NERDC Cost Effective Building Technology offers a person's dream house at affordable price. The Pocket foundation system, slip- form walls, cement stabilized soil blocks, NERDC slab system, pre - stressed columns & beams, concrete door & window frames and pre - cast staircases are the major components of this technology which collectively contribute to be cost effective. This is now becoming a trend in the field of construction due to the affordability, aesthetic appearance and less in time duration for completion. NERDC holds training programmes on this technology to support entrepreneurs and new business startups. By going through these trainings, entrepreneurs are encouraged to be NERDC licensees, where they always get the competitive advantage of using NERDC technology over the others.

NERDC Welcomes new Chairman and the Board of Directors

NERDC warmly welcomes the Chairman and the Board of Directors

Prof. Leelananda Rajapaksha

CHAIRMAN

PhD, MEng, BScEng, CEng, FIMechE, MASHRAE, MIIAR, MIESL

The new chairman of NERDC is a Professor in Mechanical Engineering attached to the University of Peradeniya, a Fellow of the Institution of Mechanical Engineering (IMechE), London and a Chartered engineer (ecuk). He has over 27 years of academic, industry and administrative experiences, including the position of Dean of Engineering Faculty in Peradeniya University for two consecutive terms (2012-2018). He has published in the areas of thermodynamics, LCA, refrigeration and energy, and has authored three books on topics on Refrigeration & Refrigerants, where one is meant as a textbook for engineering undergraduates. He holds a PhD in refrigeration from University of London and a master's degree in the field of Energy from AIT, Thailand. Currently he is on Sabbatical leave serving NERDC.

BOARD OF DIRECTORS

Mr. K. A. S. S. K. Perera MBA, PGDip., BA (Hons)

Mr. Perera is the new Board Member representing the General Treasury who is currently working as the Additional Director General of the Department of Development Finance. He has over 30 years of experience in the Government Sector in multiple disciplines of Teaching, Education, Foreign Resources, Planning, Budgeting, Trade, Investment, Banking, Projects and Development Finance. He holds an MBA in International Business from Asian Institute of Technology (Thailand), a Post Graduate Diploma in Subnational Level in Development Planning from the University of Colombo and a Bachelor of Arts Degree in Economics (Special) from the University of Kelaniya.

Mr. M. Rizmin Razik MBA, BSc. (Physical Science)

Mr. Rizmin is a seasoned business leader with diverse exposure and multiple professional and academic background. He is the Group CFO for WindForce Group of Companies, which is Sri Lanka's largest renewable energy company with operations in Sri Lanka and overseas. Prior to joining WindForce, he served as the area CFO for West and Central Africa for Maersk Shipping. He is a Fellow Member of The Chartered Institute of Management Accountants (U.K.), MBA from PIM, University of Sri Jayewardenepura, B.Sc. in Physical Science from University of Colombo and followed Executive Management Programs at Wharton Business School, University of Pennsylvania and Instead, Fontainebleau, France. Mr. Rizmin is a motor racing driver, Administrator and Organizer and current President of the Royal Automobile Club Asia.

Mr. Kapila Dodamgoda MA Economics, FCMA, Fellow CMA (Aus), CGMA, BSc Eng, AMIESL, MCIM, MSLIM

Mr. Dodamgoda is the Regional Director of ICMA (Australia) Sri Lanka Branch and Managing Director of the Academy of Finance (Pvt) Limited and Asian College of Management (Pvt) Limited; the Academic Director of the MBA conducted by Asia e University and ICMA (Australia) programmes in Sri Lanka; a National Trainer for Business Network International (BNI). He obtained his executive education in Corporate Strategy and Leadership from the faculties of Henley College of Management, Insead, Ashridge and IIM Ahamedabad. He is a faculty member of the MBA Programmes conducted in Sri Lanka by University of Moratuwa, University of Wales, Buckinghamshire University and Asia e University.

Prof. Rahula Attalage PhD, MEng, Degree of Profound Studies (D.E.A), BScEng.

Prof Attalage was the former Chairman of National Institute of Fisheries & Nautical Engineering, a former member Board of Directors of Sri Lanka Transports Board, and served as the Deputy Vice Chancellor, University of Moratuwa. In addition, Prof. Attalage serves as the Commissioner of Public Utilities Commission of Sri Lanka. He has published many research papers and holds a number of professional membership in organizations such as Sri Lanka Association of Advancement of Science and a fellow of Lanka Association of Building Services Engineers and National Academy of Sciences, Sri Lanka. Currently he is attached to the SLIIT as the Dean of the faculty of Graduate Studies & Research in SLIIT.

INNOTECH 2020

Innotech 2020 was organized by the Ministry of Higher Education, Technology & Innovation at NSBM premises Homagama. This was held from 11th to 13th March 2020, NERD Centre displayed two stalls: NERD Centre corporate stall and the stall displaying Indigenous Technologies. Although it was withdrawn due to unexpected pandemic situation, after 13th of March 2020, many school students, university students, parents, businessmen, women entrepreneurs and general public were among the visitors.

Investor Forum

NERDC represented the Investor forum which was organized by Sri Lanka Inventors' Commission on 31st May 2020, held at Gangaramaya Temple, Slave Island. The aim was to setting up a forum to meet investors and the inventors. There were about hundred numbers of participants and more than 200 investors and general public also visited. The event was opened up by the Hon. Minister Bandula Gunawardene followed by a press conference.

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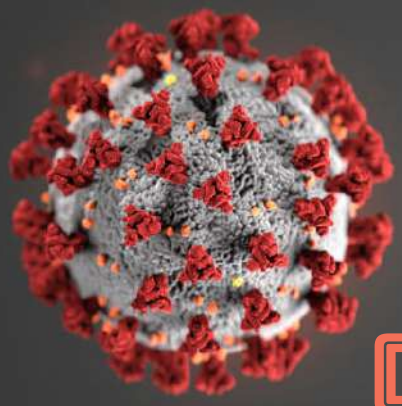

Recent Products

COVID-19 DEFEAT INNOVATIONS

FOOT STERILIZER

This was innovated based on the fact that Covid-19 virus, might stay on shoes/ slippers for a longer period than other accessories we use daily. Can be used in all public places, banks, office entrances and even in restaurants. When foot is kept in the upper part of it, it is disinfected using a disinfectant. Can be used for bare feet or with shoes/ slippers. More over this can be very useful specially in religious places like temples, kovils, mosques & churches.

AUTOMATED HAND SANITIZER

NERDC has developed a sensitive upper part of a lid. It releases consistant amount of sanitizer to sanitize the hand. When hands are kept near underneath to the lid with the senser it starts to spill the liquid at a consistent level. This can be fixed to any size of a sanitizer liquid bottle, unit can be re-charged by using even a mobile phone charger are advantages. Further more this also can be kept in public places, restaurants, shopping complexes, entrances of offices & banks, since it does not requires any technical skills to operate.

FOOT-OPERATED WATER TAPS

This is a water tap operated using a foot and being installed in public places. Hence this is a hand-free system, no transmission of hand generated microbials. Meanwhile this reduces the water wasage by about 50% and can be installed very easily in any where. It is also portable in size, minimal space is required & minimal maintenanace is sufficient. This can be used in any public places, shopping entrances, schools, cafetarias, retaurants, and in many more places. NERD Centre overlooked hereby this to reopen the country after dropping down from pandemic. Though we design this to mitigate water wastage of people, currently been familiar among innovations to defeat COVID 19 pandemic.

NERDC DISINFECTION CHAMBER

Fully automated disinfection chamber was developed by NERDC to disinfect people. During the Covid-19 pandemic situation, this idea was sprouted up to avoid people exposing to the viral conditions when reopening the country. This can be installed in any kind of public place, shopping complexes, factories, banks & other offices. The disinfection rate of this unit is 150 people per hour and requires a very low voltage for operation.

WARD ASSISTANT ROBOT

This robot unit is designed by NERD Centre to assist doctors & other medical staff who are engaged in treating of covid-19 patients. Use of this unit provides multiple advantages such as doctors or medical staff can inspect the ward through tab screen; the trolley movement can be controlled remotely; and can send medicines, food & beverages, and other required accessories to the patients directly. It can carry up to 3kg of items per one reach to the patients. Doctors and nurses can communicate with patients and vice versa via video cams. Since this unit creates an environment of high caregiving with minimal touch and physically getting closure to patients, it provides a safer mechanism in medical treatments. It allows zero threat in spreading the virus even in high-risk environments.

Internal OBT for NERDC New Comers

Two days residential OBT programme was held at Technology Park of NERDC to newcomers who joined the NERDC family recently. The objectives of this were to enhance the leadership skills, improve the team spirit, get familiarize with each other as well as the existing staff, and to improve communication skills among the participants. This programme further included orientation about NERDC and was entertained with delightful campfire at the night followed with a talent show of the newcomers. It was held on 25th & 26th of February 2020 and 26 newcomers participated.

COCONUT DEHUSKER

Eng. Shalinda Silva
Senior Research Engineer,
Agri. Engineering & Machine Development Dept.

Sri Lanka is the 4th largest coconut producer in the world and coconut is engaged very closely with Sri Lankan lifestyle. On the other hand, coconut is one of the major export agricultural produce in Sri Lanka. The coconut cultivation of Sri Lanka extends approximately 400,000 hectares and produces about 3000 million nuts per annum.

Sixty percent of coconut yield is consumed locally and the other 40% is exported to many countries worldwide as fresh nuts and other coconut-based products. Coconut de-husking is the first major post-harvest operation after harvesting. Presently, coconut de-husking is a manually performed task using a spike. Spike de-husking is very tedious and unsafe whilst causing health hazards and safety problems of the labour such as accidents, back pain and knee joint pains. Skilled labour can de-husk around 120 nuts per hour and it costs Rs. 1.50 to 1.75 per nut. Therefore, it is an urgent need to introduce an automated de-husking machine for the coconut industry to overcome these problems.

National Engineering Research and Development Centre of Sri Lanka conducted a research project to design and development of coconut de-husking machine to overcome this major problem in the coconut industry. The prime objective was to design an automated de-husking machine to minimize the involvement of labour and to increase productivity and capacity of coconut dehusking whilst reducing health and safety risks of the manual spike de-husking.

This machine design is based on gripping the husk between two webbed rollers which rotate in the opposite direction. When the rotation continues, the gripped husk part separates from the nut. The two rollers are powered by a 5.5kw electric motor coupled through a gear reducer and chain drive. There is a belt conveyor fixed under the roller mechanism to move separated husk away from the machine. The de-husked nut is then fed into a crown removing the device. This mechanism consists of two webbed rollers rotating in the opposite directions to grip the crown and spiral shaft to move the nut forward. The capacity of the developed machine is 1200 nuts per hour. It was observed that immature nuts (immature nutshell is less hard in compared to mature nutshell) could be broken during operation and hence, immature nuts should be separated before loading nuts to the de-husking machine. This machine is suitable for de-husking coconut in medium and large scale coconut manufacturing industry.

INDUSTRIAL COCONUT DE-HUSKER TO ENHANCE PRODUCTIVITY OF COCONUT INDUSTRY

Evolution of NERD Centre

"NERDC was established by an act of parliament under Special Gazette Notification (No:124/6) that was published under the Industrial Corporation Act No. 49 of 1957 on 14th August 1974.
The objective was to enhance engineering research and development activities to develop, adopt and transfer technologies to improve the livelihood of general public in this country.

NERD Centre commenced its' operations during the latter part of 1974 with the vision of Prof. K. K. Y. W. Perera being the first chairman. NERD Centre was located in a small office area of the Industrial Development Board complex at Katubedda, Moratuwa. Initially the staff was limited with few engineers and clerks.

Subsequently, NERD Centre office was located at a more spacious building at Galle road, Colombo-03. In the month of September 1978, NERDC office was permanently shifted to present location at the Industrial Estate, Ekala Ja-Ela."

(Contd. to next volume)

"Eth Pahana" (Tusker Lamp)

Eth Pahana is a wonderful creation in the times of 1153-1186 AD. This has been found during archeological diggings at Dedigama Kotawehera in Kegalle District.

In wick type lamps, it is imperative to keep the oil tank shallow enough so that the wick could absorb oil through the height of the wick. Therefore it is difficult to have bigger oil storage for the lamp itself. In Eth pahana, this issue has been addressed.

Here, the oil tank with the wick is shallow. Oil storage is the hollow tusker. Storage is filled up with oil through an opening of a leg, with the tusker at an inverted position.

When the elephant is at normal position and the opening of that leg is immersed in the oil in the lamp, the hollow oil storage does not supply oil to the lamp. Once the oil level drops due to burning of oil exposing the bottom of the leg to air, the makeup oil trickles down from the storage through the male organ of the elephant in to the lamp. If the flame goes off, the oil level rises up to that of the opening of the leg. Once the opening at the leg is closed, oil addition terminates.

This enables to keep the lamp lighting for prolong periods.

Awareness Programmes

Awareness Programme – Moratuwa

There were two separate awareness programmes held on 26th of Feb 2020 at Moratuwa Divisional Secretariat aiming school students and small scale entrepreneurs. The school students were made aware on NERDC technologies generally and the biogas technology which is one of the mandatory study area.

Entrepreneurs were educated on the NERDC technologies which can be used in their small scale business.

Awareness Programme – Kolonnawa

There were two awareness programmes held on 5th of March 2020 at Kolonnawa Divisional Secretariat aiming SMEs. Among them most were women entrepreneurs and they were educated on the NERDC technologies which can be used in their small scale business. Some of them need further assistance from NERDC to solve their minor issues in current industry.

FORTHCOMING TRAININGS

Training programme on cement stabilized soil blocks manufacturing
1 day (Aug/Sep)

NERDC building construction technology
4 days (Aug)

Training on manufacturing of bottom ash mixed cement blocks & paving blocks
1/2 day (Sep)

COST EFFECTIVE BUILDING CONSTRUCTION PROGRAMME

National Engineering Research and Development Centre recently held a training programme on Cost Effective Building Technology, which is introduced by the Centre. This is a four days training programme, which includes lectures & practical sessions. Well trained and experience panel of lectures & technical officers are involved in the programme to share their knowledge & experiences. These trainees received the certificate from NERDC & they will be starting their own businesses as new enterprenuers in construction field, with the license of NERDC.