

# NERDC NEWS

Newsletter of National Engineering Research and Development Centre of Sri Lanka



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## NERDC's Oxygen Concentrator launched at National Science Day Ceremony in Temple Trees

The Oxygen Concentrator, developed locally, using expertise & resources of NERDC, was unveiled at the Temple Trees during the ceremony held to commemorate “National Science Day” on 10th November 2021. The chief guest of the ceremony was His Excellency President Mr. Gotabaya Rajapaksha and the detailed booklet created on developed oxygen concentrator was handed over to him, by Honorable State Ministress Dr. Seetha Arambepola of the State Ministry of Skills Development, Vocational Education, Research & Innovation. A special video produced to show the importance and utilization of oxygen concentrator was displayed on a mega screen whilst the physical units were by aside.

Diplomats, representatives of embassies, Ministers & State Ministers of Ministries, Secretaries & other higher officials of government service, media presenters were among the distinguished gathering. His Excellency President Mr. Gotabaya Rajapaksha, State Minister Mr. Namal Rajapaksha, State Ministress Dr. Mrs. Seetha Arambepola and Mrs. Deepa Liyanage, the Secretary to State Ministry of Skills Development, Vocational Education, Research & Innovation were among the speakers. It was emphasized that the importance of developing Science & Technology to improve the economic development of the country, by the speakers. Oxygen Concentrator was developed by NERDC Centre, after the importance of this timely task was highlighted by His Excellency President Mr. Gotabaya Rajapaksha and the honorable State Ministress Dr. Seetha Arambepola. The intention of assigning this task, is engineering a pilot unit of an oxygen concentrator to examine the feasibility of manufacturing it using locally available resources. The NERDC accepted the challenge with the guidance of the Chairman, Prof. Leelananda Rajapaksha, and the Board of Directors, as well as the leadership of the Director General, Eng. D.D. Ananda Namal.

## Supply Chain Fundamentals by Mr. Suneth Kotuthenna

In order to enhance the exposure and the knowledge of Research staff of the centre into various disciplines, monthly research presentation are conducted. Another presentation was held on 16th December 2021 via Zoom platform, on the topic of “Supply Chain Management Fundamentals”. The Senior management and all engineers & executives of NERDC participated the session.

The resource person was Mr. Suneth Kotuthenna. The presentation was highly focused on fundamentals of supply chain management. Mr. Suneth Kotuthenna shared best of his expertise & experiences as the Associate Director of Industrial Global Business Unit at Ansell Lanka. He also pointed out the importance of incorporating supply chain fundamentals in research activities and in day to day activities for smooth functioning of those activities..



## Journal Club presentations to improve NERD Centre research culture

Opening a new page in NERDC history, the NERDC research fellows have formulated a Journal Club to provide engineers’ the exposure and familiarity with technical writing and thereby to increase their confidence & expertise.

There were two journal club presentations held during these two months aiming engineers & interested technical staff. First discussion was on “Impact of an Alcohol-Based hand sanitizer intervention on the spread of viruses in home” by Eng. Dulinda Jayasekara on 30th November 2021. The topic of the presentation was “Energy & Entropy: A Thermodynamic Approach to sustainability” on 20<sup>th</sup> December 2021.



Pertaining to the peer learning program, the session was conducted, by adhering to the health guidelines imposed by authorities due to Covid-19 pandemic situation.

The session was held in hybrid versions, physically & virtually and the senior management, all engineers and scientists of NERDC actively participated in this session.

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## NERDC holds National Engineering Research Symposium in the year 2021

The National Engineering Research Symposium 2021 (NERS 2021); enriched with the theme of “Engineering Innovation and Transformative Development”, was held on 11th November 2021 at Kulasinghe Auditorium in NERDC premises. There were 35 papers submitted from different academic institutions & industrial sectors, out of which 25 papers were selected. The reviewing panel comprised of 29 external reviewers and 18 internal reviewers bearing different categories of professions. The presenters as well as the participants joined either in physical or virtual mode. The inaugural ceremony was held at Kulasinghe Auditorium complying all the health guidelines imposed by the government. Chief Guest was Mrs. Deepa Liyanage, the Secretary to the State Ministry of Skills Development, Vocational Education, Research & Innovation.

Chairman of the NERD Centre, Prof. Leelananda Rajapaksha welcomed all distinguished guests, presenters, researchers and other participants. He also explained the objectives for the day. Among the guests, Commissioner of Sri Lanka Inventors’ Commission Prof. Sirimuthu, CEO of Sri Lanka Inventors’ Commission Eng. Nalin Dolawatta and Mr. Rizmin Razik, a member of NERD Centre Director Board were present. Keynote address was delivered by renowned scientist & senior lecturer Dr. Himal Suraweera on the topic of Artificial Intelligent enabled wireless for a Smart World.



Mrs. Liyanage mentioned the value of disseminating the research findings in different areas on the economic development of the country during her guest speech. NERS 2021 was held on selected thematic areas such as Aeronautical and Marine Engineering, Agricultural Engineering, Bio Medical Instrumentation Engineering, Chemical and Process Engineering, Civil Engineering, Electrical Electronics and Computing Engineering, Energy & Environmental Engineering, Indigenous Technology Development, Mechanical and Mechatronics Engineering and Social aspects/ Accounting and Policy Analysis of Technology Development and Technology Transfer.

Based on the paper authors’ & the presenters’ preference, request and Covid 19 guidelines, the technical session was conducted in 4 parallel tracks comprising one physical mode and three virtual modes. Participants to the physical mode presentations are limited only for NERDC paper authors and co-authors. All the external and interested internal participants joined in via virtual mode.

## NERDC has been recognized with the APFASL Silver Award for the Best Annual Report and Accounts Awards 2021

NERDC received a silver award for its annual financial report 2019 at the Finest Annual Report and Accounts Awards 2021 event, which recognized the best annual reports and accounts in the public sector (research institutes). This was hosted at BMICH by the Association of Public Finance of Sri Lanka (APFASL), the public sector section of Chartered Accountants (CA) Sri Lanka.

The Public Sector Best Annual Reports and Accounts awards are an effort intended to improve the quality of annual reports and accounts provided by public sector organizations, as well as emphasize the underlying need for high-quality financial reporting.



## NERDC represents an International Workshop on Innovative Strategies for Research Commercialization and Technology Transfer

The Asian and Pacific Centre for Transfer of Technology (APCTT) of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), together with the Ministry of Innovative Development of the Republic of Uzbekistan, organized an International Workshop on "Innovative Strategies for Research Commercialization and Technology Transfer" on November 24, 2021. The Workshop was hosted by the National Office for the Implementation of Innovations and Transfer of Technology in the Ministry of Innovative Development in the Republic of Uzbekistan and organized in hybrid mode (physical and virtual). The Workshop was attended by 45 scientists, researchers, academicians, policy makers and other water-sector professionals from 20 countries. A few of them are India, Indonesia, Malaysia, Pakistan, Sri Lanka, Singapore and the host country, Uzbekistan.



During this program, innovative business models and financing tools for technology commercialization, opportunities and challenges for collaboration between government-industry-academia and government-industry-academia collaboration, and incubation support systems for innovation and successful technology transfer and commercialization were some of the topics that were discussed. There was a panel discussion on "Strategies to promote regional cooperation for technology transfer and commercialization" and the Assistant Director-Marketing of the NERDC represented Sri Lanka as a panelist.

This Regional Workshop was established to bring together international and national experts to deliberate on key challenges, opportunities, strategies, and good practices that are critical for technology transfer and commercialization. The workshop would assess new and emerging policy frameworks and tools, issues related to IP management and technology licensing, and regional collaboration networks and platforms for technology transfer and commercialization.

## NERDC hosted a series of webinars in celebration of National Science Week.

The "National Innovation Mission" was unveiled by the State Ministry of Skills Development, Vocational Education, Research and Innovation during National Science Week in 2021. In line with the mission of National Science Week, NERDC organized a series of webinars free of charge to the public and industries to take part in to commemorate National Science Week-2021. This program consisted of four separate webinars conducted on different topics on four different days.

The first webinar was on the topic of "Environmental Services offered by NERDC." It was conducted as a panel discussion, and the panelists were Eng. Prabhashi Perera, Eng. Dilshan Sahardeen, and Eng. Ahsan Hapuarachchi, on November 12th, and moderated by Mr. Lalith Wimalaweera. There were about 50 participants, and this was mainly targeted at small and medium-scale industries, which are in need of proper guidance and services on their issues related to the environment. The second webinar was held on November 14th as part of an industry awareness campaign about the NERDC's energy-related services. The resource persons were Eng. Ajith Jayasooriya (DDG-R&D), Eng. K.T. Jayasinghe, Eng. M.D. Sahardeen, Eng. Roshani Costa, and Mrs. Dilrukshi Hettiarachchi. There were 30 participants altogether, and the purpose of this session was to make the industry aware of the energy-related services provided by NERDC. During the session, ways of reducing electricity bills were also discussed. The third webinar was held on November 15th to discuss the role of the incubator at the NERDC. The moderator was Mr. Lalith Wimalaweera, and the panelists were Eng. Kapila Nanayakkara, Head of Energy & Environmental Engineering Department, Eng. Vishwa Senanayake, and Eng. Lahiru Gunasekara. There were 30 participants for the session, and they were made aware of the facilities and consultancies provided for inventors. The fourth webinar in this series was held on November 16th on the topic of cost-effective construction technologies introduced by the NERDC. Resource persons were Eng. (Mrs.) J.A.C. Chrishanthi, Director of Civil Engineering Department, Eng. Wasantha Perera, and Mrs. Sisikala Weerasinghe. The session was followed by a healthy discussion in which the panel invited all 55 participants.

## NERDC establishes four new licensees by expanding their business strengths.

NERDC has developed many technologies & products that support to develop economic status of small scale & middle scale entrepreneurs. By performing this NERDC expects to increase the contribution to gross national production of the country.

Accordingly, NERDC issued four new licenses.

1. Manufacturing of Ayurveda crusher  
Mr. D.D. Morrison  
Morrison Multi Workshop - Kandana.  
Contact Number - 0771346923
2. Manufacturing of Domestic Virgin Coconut Oil Expeller  
Bureau Engineering Technology (Pvt) Ltd.  
- Ambalangoda.  
Contact Number 0772991091
3. Manufacturing of Vegetable Dehydrator  
Constructions & Energy Services Engineers. Putuhapuwa  
Contact Number 0773857855
4. Manufacturing of Compressed Cement Soil Blocks  
Lanka Eco Bricks (L.E.B. Enterprises) – Malabe  
Contact Number 0771346923

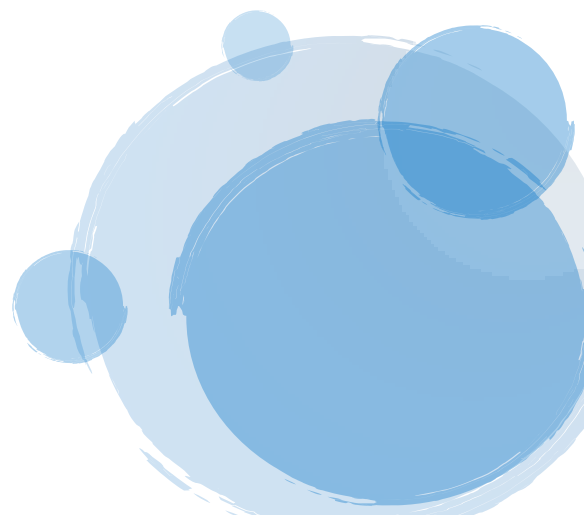


## The Traditional Bullock Cart (Bullock Carriage)

This is a system that was devised to carry goods, traditionally agrarian items, by harnessing the pulling force of one or more oxen. The cart is supported by two huge wheels with specific characteristics designed to reduce the harmful effects on the bull when traveling on uneven terrain. The two wheels are attached to the axels in such a way that if a side force is given to the cart, it will move along with the force; once it is withdrawn, it will return. The impacts that will act on the bull's neck will be lessened as a result of this feature. In addition, the impact caused by the bull's neck swinging will be reduced.

The "Pallam Polla", a dangling wooden pole at the back of the cart, is another prominent element. When ascending slopes with heavy loads on the back side of the cart, the cart will try to pull the bull through its neck by moving upward from the front side. The wooden rod will offer stability on the ground in this circumstance, preventing rising.

A one-way braking system is also available. When ascending slopes, if the bull stops pulling, the cart will immediately begin to descend. This will be avoided thanks to the one-way braking mechanism. Each component of a basic cart displays the results of major cart design trials aimed at improving safety and efficiency.



## The small and mid-size entrepreneurs of Gampaha District were made aware of new technologies developed by the NERDC during the Technology Clinic

In Gampaha District, the Vidatha Sector of the State Ministry of Rattan, Brass, Pottery, Furniture, and Rural Industry recently held a "Technology Clinic," which was held on December 6th in Gampaha Town, with over 200 people in attendance. At this one-day event led by the State Ministry of Rattan, Brass, Pottery, Furniture, and Rural Industry's Director and Assistant Director, all of the science and technology officers from the Vidatha sector of the Gampaha district also were present.

Participants were entrepreneurs currently engaged in small and medium-sized enterprises (SME) in various business areas. Snacks, dehydrated foods, processed foods, machineries, organic fertilizers are some of the areas they represent. Many female entrepreneurs were also among the participants, and they were interested in various technologies relevant to cottage industry, solid and liquid waste management, packaging technologies, and even guidance to develop their existing businesses. NERDC's Assistant Director – Marketing and Marketing Officer delivered an awareness program during the session, assisting SMEs with potential technological and marketing interventions for their businesses. After the main session, a special one-to-one discussion session also took place to provide special and customized advice to these SMEs individually.



## NERDC shares knowledge with small-scale entrepreneurs at Valikamam-North for sustainable development

Office for Reparations Sri Lanka is embarked on designing and implementing key initiatives as per the policies and guide lines that have been established by the Cabinet of Ministers. At the request of Director General Ms. Nazeema Ahamed of the Office for Reparations, NERDC held a special awareness program, including demonstrations of selected technological interventions, for empowering women entrepreneurs. Two programs were held on December 3rd and 4th consecutively. During these awareness programs, smoked fish processing units and virgin coconut oil expellers were explained in detail, and demonstrations were also carried out. Furthermore, the majority of the NERDC technologies appropriate for the Northern area were explained, which would be in their business ventures.



There were over 100 participants during these two days, and most of them were females who intended to start small-scale businesses at cottage level, and the rest were small-scale entrepreneurs who wanted to extend their businesses to fish-related products. This program is intended to identify opportunities to strengthen existing start-ups and small businesses, as well as to encourage new startups and entrepreneurship. Mr. K. Sivasudhan, Research Engineer of the NERDC, conducted these two programs in the Tamil medium, and Mr. Ruwan Indika and Mr. Rathnasiri assisted with demonstrations. Ms. Nazzema Ahamed and other higher-ranking officials from the Office of Reparations also took part in the events.

## NERDC educates newly hired Development Officers of the Northern and Eastern regions about its recent technologies

The Vidatha Sector of the State Ministry of Rattan, Brass, Pottery, Furniture, and Rural Industry has organized a special awareness programme for its newly recruited development officers. This took place over three days and was conducted in both Sinhala and Tamil.

Due to the prevailing COVID-19 outbreak, it was decided to hold these programmes in virtual mode, and participants were also divided into three groups based on their preferred language and districts. The first programme was scheduled on December 07, 2021 for development officers in four districts—Vauniya, Mullaitiv, Trincomalee, and Ampara in Sinhala medium, and there were 60 participants. This programme was conducted by Mr. Muditha Gunawardene, Marketing Officer of NERDC. The second programme was held on December 8th 2021 for development officers in four districts—Jaffna, Mannar, and Killinochchi in Tamil medium, and there were 122 participants. This programme was conducted by Eng. K. Sivasudhan, Research Engineer of NERDC. The third programme was held on December 9th 2021 for development officers in the other three districts-Batticaloa, Trincomalee, and Ampara in Tamil medium, and there were 45 participants. This programme was conducted by Mr. Paskaran Thanojan, a demonstrator of NERDC.

The Secretary, the Director and Assistant Director of the State Ministry of Rattan, Brass, Pottery, Furniture, and Rural Industry also participated in these programmes. The key note address was delivered by the Secretary in all programmes, and the Sinhala medium programme was coordinated by the Assistant Director, whereas the Tamil programmes were conducted by the Director. The objective of this was to make development officers aware of and inform them about NERDC technologies to make the general public and entrepreneurs aware of them.

## IMEchE members' awareness programme on NERDC technologies used for SMEs

At the request of the Institute of Mechanical Engineers (IMEchE), the NERDC held a special awareness programme on the technologies developed by the NERDC aimed at small and medium-scale entrepreneurs. It was a half-day programme conducted by the Techno Marketing Department on November 24, 2021, and the programme consisted of an introductory session, demonstration sessions, and a Q & A session. The Director General, Deputy Director General (R & D), the President of IMechE Colombo Chapter, and executive committee members participated. There were 25 new members who participated in the programme. The introductory session and Q & A sessions were held at Kulasinghe auditorium, whereas the demonstrations were held at Technology Park.



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