National Engineering Research and Development Centre of Sri Lanka

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NERDC NEWS

Newsletter of National Engineering Research and Development Centre of Sri Lanka

Inside this ..

Glimpse of 2023: NERDC begins New Year 2023 with new hope & new spirit

The first working day of year 2023, began on 2nd January 2023, with the blessings of the triple-gem by chanting of Pirith. As the first work of the year, all NERDC employees refreshed their thoughts by administering the oath of government servants, to render a better service to the public of this country. Prof. Sudarman Upali Adikary, the Chairman pointed out in his speech the importance of working progressively in order to achieve set goals. He also was grateful for the work that had already been done. Dr. Jayathu G. Samarawickrama the Director General, emphasized on working with the unity & integrity to achieve pre-determined targets. This ceremony was held in open space nearby Kulasinghe auditorium & followed by the annual general meeting of the Buddhist Association of NERDC.

Gather to share knowledge & learn from experts on sustainable business, during difficult time

On the 25th of January 2023, NERD Centre hold a licensee forum, aiming its' all licensees who engaged in manufacturing of NERDC technologies, except construction. NERDC's licensees who engaged in production, manufacturing and construction of crematorium participated in this forum. These licensees are small & medium scale entrepreneurs, who have got technology transfers from NERDC and manufacturing them for selling. After - sales services are also done by them and NERDC also involves whenever the consultancies are required from us. It was a half-day programme and comprised of two informative lectures. The forum started with the welcome address given by the Director General Dr. Jayathu G Samarawickrama and the general introduction was done by Deputy Director General (Projects), Eng. A.A.S.P. Jayasinghe. Mr. Srimal Jayathilake, the Provincial Director of Western Province- Industrial Development Board was the guest speaker for the event. He shared his knowledge & life experiences as an adviser for small & middle scale entrepreneurs. He mentioned that he will be extending his fullest support even in future for these SMEs. He was awarded a special token of appreciation by the Director General. Principal Research Engineer Eng. Hemantha Kumara made a presentation on new technological innovations recently developed by NERDC. The Deputy Director General (R&D), Research Fellow Eng. Nandana Edirisinghe delivered the vote of thanks, at the conclusion of the session.

Knowledge sharing presentation by an external expert

Sri Lanka, for its size, is well endowed with mineral resources. There are abundant gems, sufficient non-metallic minerals and modest quantities of metallic minerals. These include graphite, clays, limestone, mineral sands (such as Quartz, Ilmenite, Rutile, Zircon), dolomite, feldspar, apatite, silica sands, salt, mica, and other mineral ores. Unfortunately, all of these minerals have been exporting in raw forms at very low price. The real local value addition to these minerals will bring billions of dollars to the country. NERDC invited Dr. L. P. S. Rohitha to deliver a presentation on **Value Addition to Local Raw Materials.** Dr. Rohitha is a Senior Lecturer in Department of Earth Resources Engineering University of Moratuwa and he shared his knowledge in the above topic at Kulasinghe Auditorium on 24th January 2023 from 9.30am onwards. Dr. Rohitha's presentation was mainly focused on development of value added products from local mineral resources by facilitating household level craft industries and small scale industries. This will enhance the contribution share of mineral resource to the national gross domestic products.

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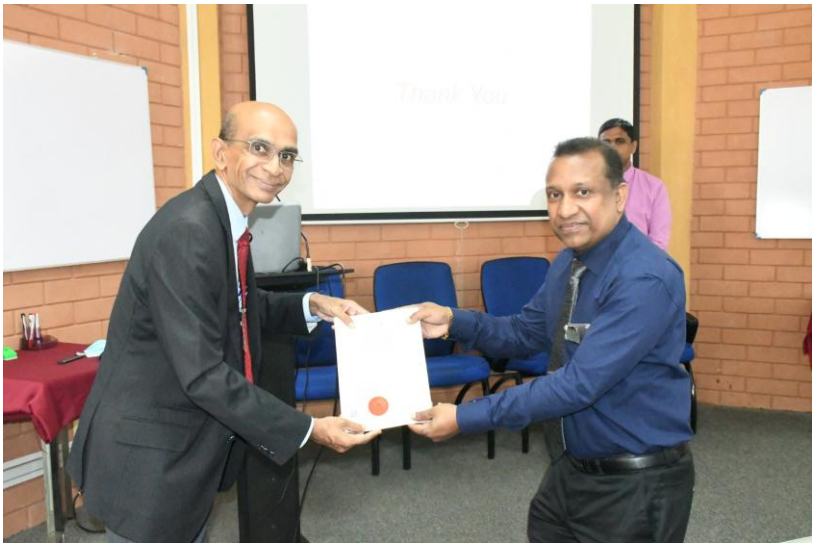
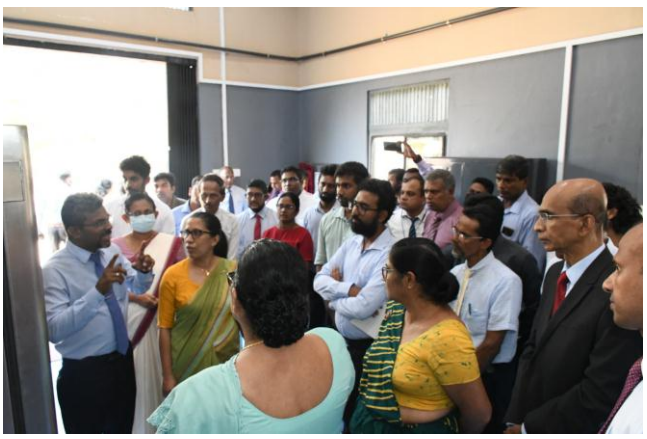
NERD Centre Pioneers IP Testing in Sri Lanka: Inaugural IP Testing Facility Opens New Avenues for Industrial Advancement

A significant milestone in Sri Lanka's technological landscape was achieved as the National Engineering Research & Development Centre (NERD) proudly unveiled the country's very first Ingress Protection (IP) Testing Facility. The grand inauguration ceremony, held on March 15, 2023, marked a momentous occasion for the nation's innovation and industrial sectors. The event was graced by the presence of distinguished guests, including Ms. Chandani Samanthi, Senior Additional Secretary (Development & Innovation) in the Ministry of Education, and Prof. S.U. Adikary, the Chairman of NERD Centre. Joining the celebration was Mrs. Kumari Meegahakotuwa, Director General (Planning) of the Ministry of Education, along with a diverse assembly of industrialists representing the electrical and electronic appliances design and manufacturing industries, as well as representatives from various government institutes. Dr. Jayathu G. Samarawickrama, Director General of NERD Centre, graced the ceremony, joined by Deputy Director Generals, Directors, Heads of Departments, Engineers, and the dedicated staff of NERD Centre. Their collective effort and dedication were instrumental in making this ambitious project a reality, setting the stage for a brighter future for Sri Lanka's industrial landscape.



The inauguration ceremony commenced with a warm welcome address delivered by Chairman of NERD Centre. He highlighted the profound impact that the IP Testing facility would have on the country's industrial ecosystem. The Director General of NERD Centre briefed the objectives of the event and he highlighted the role of IP testing in the context of modern technology with its relevance in ensuring the durability and reliability of products. Eng. A.A.S.P Jayasinghe, Deputy Director General (Services) and Eng. Roshani Costa, Research Engineer, presented the Introduction of IP Testing Facility and they detailed the equipment and methodologies that the facility houses, underlining its capability to rigorously test products for their resistance against environmental factors.

The facility's inauguration ceremony witnessed the presentation of the first-ever IP testing certificate symbolizing a strong start for this pioneering endeavor.



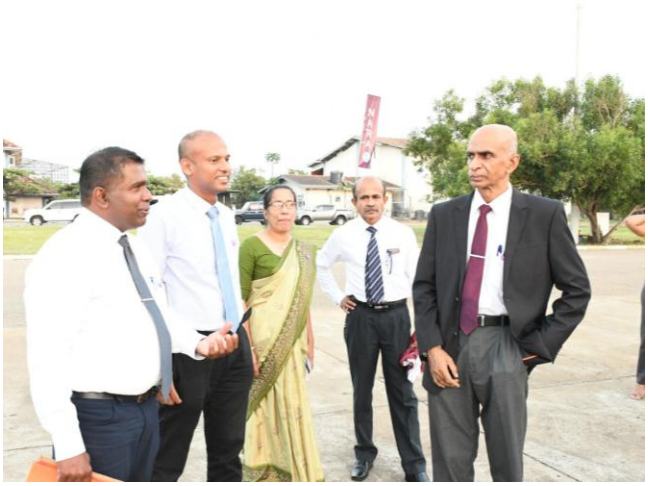
Launching ceremony of fishing boat with a Refrigeration system designed by NERDC

The launching ceremony of a modified multi-day fishing boat took place on January 3rd, 2023, at the Dik-owita fisheries harbor. The event was graced by the presence of Honorable Prime Minister Dinesh Gunawardena. This project, titled "Ensuring Food Security through minimizing Post-harvest losses in the fishery Industry," was a collaborative effort between the National Engineering Research and Development Centre (NERDC), the National Aquatic Resources Research and Development Agency (NARA) and Department of Fisheries and Aquatic Resources(DFAR) with funding provided by the Food and Agriculture Organization (FAO).

The main objective of the project was to address the challenge of post-harvest fish losses by enhancing the fishing vessels' capabilities. Specifically, a 48-feet fishing boat was modified and equipped with a comprehensive refrigeration system. This refrigeration system is designed to maintain the desired temperature conditions throughout the entire fishing trip, which can last anywhere from 40 to 60 days. By doing so, the need for excessive amounts of ice to preserve the caught fish on board is expected to be significantly reduced. The instruments fixed in the boat will provide data for evaluation, in order to take decisions on commercializing the technology.

The significance of this modification lies in the fact that these fishing trips often takes average 3 to 8 days to reach the fishing grounds and an equal amount of time to return. During this extended period, a considerable amount of ice used for preservation is lost, leading to a shortage of adequate ice to keep the caught fish in optimal condition. The introduction of the refrigeration system addresses this issue by ensuring that the fish are kept at the appropriate temperature, thereby minimizing post-harvest quality losses.

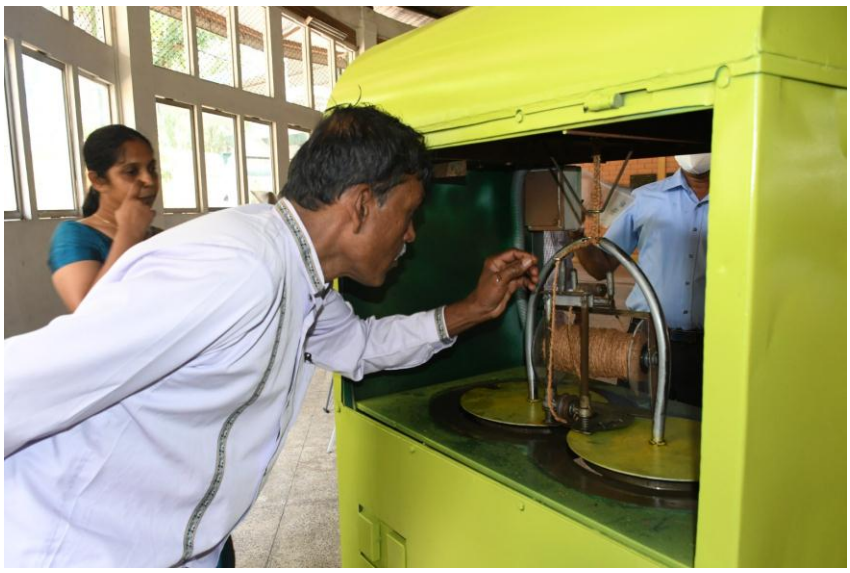
The launching ceremony was attended by key figures, including NERDC Chairman Prof. S U Adikary, Director General Dr. Jayathu G Samarawickrama, and members of the project team. This collaborative effort between NERDC, NARA, DFAR, and FAO represents a significant step towards enhancing food security in the region and minimizing post-harvest losses in the fishery industry through innovative technological solutions.



New Coir Braiding Machine launched by NERDC to facilitate flat rope manufacturing in coir industry

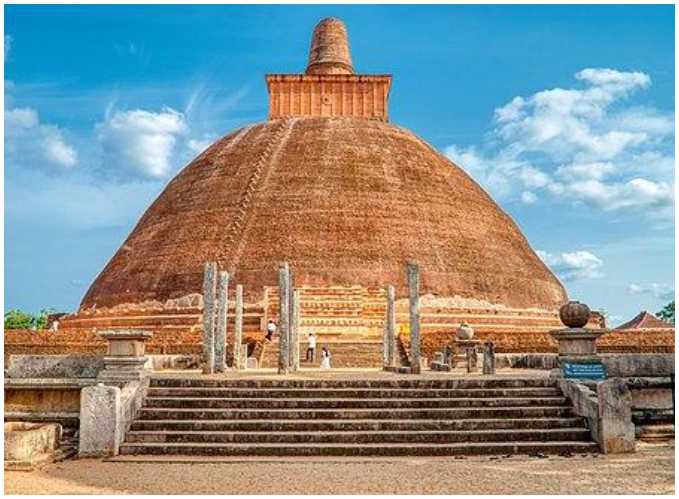
Coir and coir based products are one of the major foreign exchange earners in Sri Lankan economy. Coir door mats are commonly used product, which gains more attraction & additional foreign income to the country. These door mats are produced using machinery as well as manual labour. Flat rope is one of the major component in producing door mats and production of it manually is time consuming and very tedious process, which makes the rate of production very low. This has become a huge barrier in the production of door mats, by then efficiency has drastically come down.

As a solution to this problem, NERD Centre have developed "Coir Braiding Machine" which, makes the process of manufacturing of flat rope quite easy. High capacity of production, less power consumption, operator safety and less maintenance cost are major advantages of this machine, over the traditional processing method. Moreover, the pitch of the braid can be adjusted & performing a uniform pitch are another two major advantages which increase the levels of production as well as the quality of the production. Dimensions of the machine are 900mmx600mmx1450mm in size and the total weight of the machine is 110 Kg. The capacity of the machine is 20 meters per hour. Usage of this machine will lead to increase their income by providing quality products to the market.



Let us understand ancient construction paradigm!

The modern civil engineering construction is mainly based on reinforced concrete, steel work and timber for structural parts, which carries the external loads. Various other materials are used for internal fillings and partitions. Pure concrete has high shear strength and thus could bare high compressions as well, but much weak in tension. Therefore, the tensile requirements of the structure is provided by steel, timber or any other suitable materials.



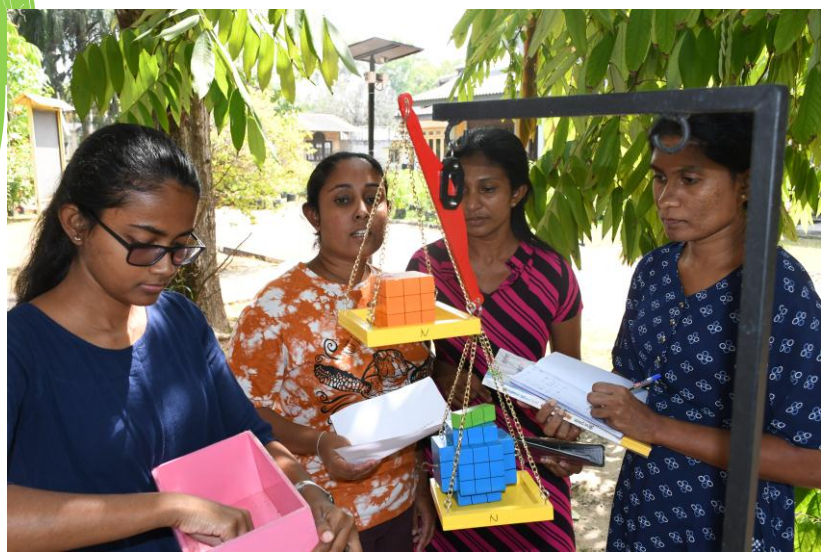
In most cases these structures are formed as rigid interconnected units, thus the forces/moments on structural members cannot be simply derived by "statics" (the branch of mechanics concerned with bodies at rest and forces in equilibrium). Therefore, the structure is "statically indeterminate". the stress strains in these structures are very much sensitive for thermal-moisture expansions small settlements, charge of properties of materials etc.

Thus the unpredictability of the system increases and proper prediction one has to dependent on highly sophisticated analytical methods - tools (software) and precise large data will be needed for reliable predictions. In contrast to this modern construction paradigm, in ancient construction paradigm the structures as well as its members has been so developed that the rigid interconnectivity was very less. The internal stresses are almost dependent on the external load and not much dependent on other conditions such as thermal -moisture expansion, small settlement change of properties of materials. In these structures always the external loads are transferred to the relevant supports through the shortest path, thus inhibiting the spreading of any mal- effect generated in a particular part throughout the structure. The classic example for such construction is separated zonal construction of ancient Dagabas with this method the equilibrium condition of parts could be analyzed easily. This procedure has minimized the formation of stress concentration; cracks and also spreading of them.

NERDC held training work shop for small scale entrepreneurs aiming to expand their business opportunities

The first training programme of the year 2023, was held by NERDC on cement soil blocks manufacturing aiming small scale entrepreneurs & job seekers in the construction industry. Through this type programs They were encouraged to start their own start- ups based on NERDC technologies. These participants were the small scale entrepreneurs who would like to expand their business opportunities in the industry. This was a one day programme which included a lecture, covering the theoretical aspects and practical sessions. The theory session was conducted by Civil Engineer Mrs. Anurudhdhika Digala and Mr. Chathuranga the Engineering Assistant serves in the Civil Engineering Department conducted practical sessions. The training program was coordinated by Techno Marketing Department and after the completion of the programme, certificates were also awarded to the participants, acknowledging their participation.

Empowering Educators: NERDC's “Maths Café” Workshop Enhances Mathematics Teaching Skills



In a dynamic initiative aimed at nurturing the talents of mathematics educators, the National Engineering Research and Development Centre (NERDC) organized a transformative workshop as "Maths Cafe" at the NERD Centre's Technology Park**.** This special endeavor, generously sponsored by the Commercial Bank of Ceylon PLC, proved to be an illuminating experience for 34 mathematics school teachers, over the course of two immersive 2-day workshops. Teachers were guided and the programme was led by Mr. Dharmasiri Hengamage, the inventor of the Maths Cafe Program. This pioneering program was designed to empower teachers and strengthen their teaching techniques, ultimately leading to increased student engagement and enriched learning experiences. The Technology Park's dedicated staff provided invaluable support and assistance throughout the program, ensuring that every teacher had the tools they needed to thrive. One of the highlights of the workshop was the emphasis on practicality. Educators were encouraged to infuse real-world applications into their teaching strategies, fostering a deeper connection between theoretical concepts and tangible experiences.