

Achievements: Technologies developed and demonstrated

In-situ induction motor efficiency monitoring system using the latest art of instrumentation by Central Scientific Instruments Organization, Chennai Centre, CSIO- CSIR

The prototypes of induction motors efficiency monitoring system (iMEMS) were developed and tested in the lab for their performance with the help of loading arrangements fitted with induction motor. The results obtained were compared with the conventional method of efficiency measurement and found satisfactory.



View of the Power Interfacing Unit fabricated & installed at Site

Mechanized System for Effective Sett/Bud Treatment of Sugarcane by Central Institute of Agricultural Engineering (CIAE), Coimbatore and Sugarcane Breeding Institute (SBI), Coimbatore

A low pressure plant protection chemical treatment has been developed to address the issue of Red rot and smut disease management in the sugarcane setts / buds before planting. By using this equipment, the soaking time is reduced significantly by almost 90 per cent and achieved more effective penetration of the chemical in to the Sugarcane setts / buds. The scaled up model (about 20,000 sugarcane buds chips and 2000 double set buds) was developed could be hitched to the tractor and transported to the sugarcane



field, making it very convenient to use.

Multispouted Bed Roaster for Roasting Makhana and Certain Value Added Products from Makhana by Central Food Technological Research Institute, Mysore, Karnataka.

Indigenously designed and developed multi-spouted bed roaster (MSBR) eliminates the laborious, tedious unhygienic traditional processing of Makhana seeds. It increases yield & efficiency of Makhana seed processing Adds value to its various products in the form of flakes, health drink and similar roasted products



Prototype of Developed MSBR

Improved Seed Drill Choke Indicator by College of Agricultural Engineering, Jawaharlal Nehru Agricultural University (JNKVV), Jabalpur, Madhya Pradesh.

The innovated device eliminates the non-uniform distribution of seeds by online monitoring of seeding activity and removal of choking channels whenever it occurs. The improved seed cum fertilizer drill choke indicator will be an attachment to the seed cum fertilizer drill available in the market.



Device under field trail at JNKVV farm in Rabi Season



Demonstration of an improved seed drill choke indicator at “JNKVV Kishan Mela”

E Nose for detection of the optimum Fermentation point during Tea manufacturing process by Sensor Hub at Central Glass and Ceramic Research Institute, Kolkata

Proper end-point of fermentation can be determined by the generated aroma peak, which in tea industry parlance is known as second nose. This device can be used in determining this second nose (optimum fermentation end-point) during tea manufacturing process.



Handheld Electronic Nose (HEN)

Wireless Sensor Network Enabled Earlier Real Time Detection of Spoilage in Stored Grain by Velammal Engineering College, Chennai

Food grain spoilage is an important social issue faced by our country. To monitor the spoilage, a low cost and ultra low power indigenous wireless sensor node has been designed and demonstrated. The device offers features like real-time wireless sensor network based monitoring and detection of food grain spoilage by the noninvasive method, portable handheld based spoilage inspection tool with wireless data acquisition using Wi-Fi and GSM, Internet of Things (IoT) based remote monitoring of acquired data and N/W coded wireless sensor network powered information kiosk for local monitoring. It can be a good replacement for conventional less efficient temperature cables installed for food spoilage detection.



Wireless sensor node

Development of De-seeding Machine for Custard Apple Pulp by Dr. Panjabrao Deshmukh Krishi Vidyapeeth (PDKV), Akola

The de-seeding machine for custard apple pulp has been developed and demonstrated. The de-seeding machine for custard apple pulp separate the seeds from the pulp with pulp extraction efficiency 98.16 % and flakes recovery 82.85 % at optimum machine parameters. Total twenty eight (28) units of de-seeding machine for custard apple have been sold to the custard apple grower/processor in Maharashtra, Gujarat and Chhattisgarh through the manufacturer. All machines have installed and running successfully. Total 28 entrepreneurs have been developed in one and half year.



De-seeding machine for custard apple pulp

An Electronic Device for Measuring Starch Content in Cassava (Tapioca) Tuber by ICAR-Central Tuber Crops Research Institute, Trivandrum

An electronic device for measuring the starch content of cassava (tapioca) tuber has been developed which is useful in estimation of cassava starch and sago industries. The gadget was evaluated at SAGOSERVE, Salem and a high level of correlation was established between the gadget and chemical readings. During the demonstration of the gadget it is found that the gadget received good acceptability among the cassava farmers, traders, starch and sago manufacturers.



Launching of Electronic Starch Indicator by Hon'ble Minister for Agriculture on 20 October 2016 during National Conference on Tropical Tuber Crops for the Sustenance and welfare of tribal Communities (NCTTC-2016) at Thiruvananthapuram

Flexible microwave substrates for wireless communication applications by Centre for Materials for Electronics Technology (C-MET), Thrissur.

Flexible microwave substrates are extensively used for variety of high end microwave circuit applications such as high power solid state amplifiers, patch antennas, missile guidance, mobile base stations etc. More than 70% of the cost of any microwave device accounts for the base microwave circuit board and the availability of such circuit boards in the country are going to make phenomenal changes in the overall performance of microwave PCB industries.



8"x8" size Cu-cladded microwave substrates developed at C-MET through DST funding



Miniaturized patch antenna fabricated using high dielectric MW substrates



Band pass filter fabricated using indigenously developed MW substrates

Setting up of an industrial scale atmospheric pressure plasma system at Himalayan Institute For Environment, Ecology & Development (HIFEED, Ranichauri and Kullu Region to improve angora wool processing by *Facilitation Centre for Industrial Plasma Technologies (FCIPT)*, Institute for Plasma Research (IPR), Gandhinagar.

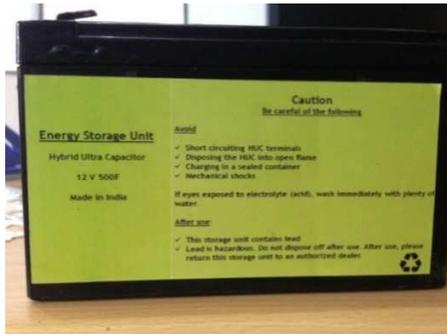
To improve cohesion among Angora wool fibres, the cost effective eco-friendly process as the plasma treatment system was developed and installed at Himalayan Institute for Environment, Ecology & Development (HIFEED), Ranichauri, Uttarakhand and Kullu Handloom & H/C Weavers Cooperative Society, Kullu, Himachal Pradesh. The developed systems are One meter wide Angora web at the processing speed of 3-4 m/min can be treated by using this system.



Atmospheric pressure plasma system for angora wool treatment

Indian Institute of Science (IISc), Bangalore has developed and demonstrated Hybrid Ultra Capacitor (HUC) lighted solar/mechanical/grid chargeable lanterns with mobile charger. HUC technology is protected by the Institute and its know-how is transferred to M/s Mesha Inc., US.

A photograph of the HUC along with some lantern units with their technical specifications is given below.



Hybrid Ultra Capacitor (HUC)

Environmentally Controlled Manufacturing (ECM) for tea processing by Central Scientific Instruments Organization (CSIO), Chandigarh

An environmentally controlled machine (ECM) system is developed for CTC black tea. It is a miniaturised tea processing unit similar to factory like processing of tea.



Environmentally controlled machine

Development of Transparent Conducting Coatings on Flexible Substrates for Electrochromic Devices by Indian Institute of Science (IISc), Bangalore, Karnataka

In this project, Indium –tin oxide films were prepared on pre-cleaned glass and flexible PET substrates by Ion Beam Assisted Deposition (IBAD) in a vacuum coater equipped with electron beam gun and home-made ion source. The experimental arrangement used is as shown in the following figure.

Schematic of Deposition System

