

Technology Transfer to Industries

Between August and October 2016, Technology Transfer & Collaboration Division, BARC transferred eight technologies to various industries.

A. "Cr (VI) DK: Chromium (VI) Detection Kit For Water" Technology:

This technology was developed by the National Centre for Compositional Characterization of Materials (NCCCM), Hyderabad, Chemistry Group. Chromium, especially Cr (VI) is highly carcinogenic and needs regular monitoring in drinking water due to its extensive use in various industrial process and possible release to environment. As per Indian standard IS 10500 for drinking water, the maximum permissible contamination of Cr (VI) in drinking water is 50µg/L. Using the Chromium (VI) detection kit water samples can be easily categorized as being safe, permissible or toxic for drinking from chromium (VI) point of view.

This technology was transferred to M/s LTEK Systems, Nagpur, Maharashtra.

B. "Solar Powered Portable Domestic Brackish Water Reverse Osmosis (BWRO)" technology:

"Solar Powered Portable Domestic Brackish Water Reverse Osmosis (BWRO)" technology was developed by Desalination Division, BARC. It has a capacity of 10 litres/hr (lph) which can bring down the salinity of water from 1000 - 3000 ppm (mg/lit) to 50 - 300 ppm and will be free from toxic elements, pathogens and turbidity.

This technology was transferred to M/s Dantal Hydraulics Pvt. Ltd., Gurgaon, Haryana.

C. "Arsenic Removal from Drinking Water by Ultrafiltration Membrane Assisted Process" Technology:

Arsenic (As) is very toxic element and a carcinogen. The World Health Organization's guideline for arsenic in drinking water is 10 parts per billion (ppb). In India, states like Uttar Pradesh, Bihar, Jharkhand, West Bengal, Assam, Manipur, mainly in Ganga-Meghna-Brahmaputra belt with a population of over 500 million have reported serious illnesses due to presence of arsenic in groundwater. An Ultrafiltration (UF) membrane assisted physicochemical process for removal of arsenic from ground/surface water was developed by BARC to make the water safe for drinking.

This technology was transferred to M/s Awatech Solutions (I) Pvt. Ltd., Ahmedabad, Gujarat.

D. "On-Line Domestic Water Purifier Based on Ultrafiltration Polysulfone Membrane" Technology:

This technology was developed by Membrane Development Section, Chemical Engineering Group, BARC. The "on-line domestic water purification device" is based on polysulfone ultrafiltration membrane in a unique cylindrical configuration.

The technology was transferred to M/s Aquacare Industries, Pune, Maharashtra.

E. "Partially hydrolyzed guar gum for dietary fiber applications" Technology

Dietary fibers are an important nutritive component. Guar gum, which is derived from seeds of legume plant, is widely used as thickener in food products. Guar gum needs to be depolymerized to be used as dietary fiber. Present technology details process for purification and subsequent radiation processing of guar gum to obtain partially hydrolyzed guar gum for use as soluble dietary fiber. This process is an alternative to the presently used enzymatic process of depolymerization.

This technology was transferred to M/s Veena Industries, Nagpur.

F. "Seismic Switch (Analog and Digital)":

Seismic Switch (Analog) can accurately detect of strong earthquakes and provides a safe shut down option for various Industrial Processes.

It monitors acceleration in all the three axes and triggers on detection of Peak Ground Acceleration (PGA). Trimpots are provided for easy threshold settings. The unit provides Earthquake relay and Status relay. Earthquake relay is in energised state during normal operation and de-energises on complete loss of power to ensure 'fail safe' operation of the system. On-line testability is another important feature in this system which enables the user to manually initiate the self-diagnostics of the system without removing it from the installation. Battery backup provides for 10 hrs of power. IP66 enclosure makes the system robust for all environments.

Seismic Switch (Digital) is packed with many distinctive features specially designed for meeting the standards for nuclear industries. This is helpful in highly accurate detection of a strong earthquake or a structural vibration with various safe shut down options.

It monitors acceleration in all the three axes and triggers on detection of Peak Ground Acceleration (PGA) on any axis.

The unit provides two numbers of 2 Form C (DPDT) isolated relay contacts. Relay 1 (Earth quake relay) and Relay 2 (Status relay). Coils of both these relays are in energised state during normal operation and de-energises on any fault. This ensures 'fail safe' operation of the system. On-line testability is another important feature in this system which enables the user to manually initiate the self-diagnostics of the system without removing it from the installation. Seismic Switch (Digital) can communicate to a Graphical User Interface Software through an RS-485/RS-232 link. Various features of this software include remote reset for automatic leveling, self test, password protected access, saving instrument details in EEPROM, setting trip parameters, display of battery status, real-time plots of accelerations and display of various other system parameters such as voltage and temperature. The system can be programmed for having additional triggering conditions such as Cumulative Average Velocity (CAV).

The know-how of this technology was transferred to M/s ECIL, Hyderabad.

G. "Peripheral Pulse Analyzer"

The technology was developed by Electronics Division, BARC. It is a computer based system for the study of physiological variabilities. It has unique feature that it yields heart rate variability, respiration rate variability, cardiac output variability / peripheral blood flow variability from a single data acquisition session from the patient. The data

acquisition is controlled by a PC, serially connected to the acquisition unit. The variability analysis and transfer to database is performed by the PC with the help of Peripheral Pulse Analyzer package in post processing module.

This technology was transferred to M/s Sanjeevani Electromedicals, Navi Mumbai.

H. MoU was signed for "Setting up of DAE Technologies Dissemination & Display Facility" in National Institute of Technology, Trichy and with Gitam University, Visakhapatnam, Andhra Pradesh.

I. With ACTREC, Kharghar, Navi Mumbai, an MoU was signed for "Development of New Cancer Therapeutics based on novel formulations of known therapeutic compounds".

J. MoU for "Setting up and operation of DAE Litchi technology demonstration cum treatment facility and centre of excellence (DLTF-CoE)" signed with Indian Council of Agricultural Research (ICAR), National Research Centre on Litchi (NRCL), Mushahari, Muzaffarpur, Bihar.

K. MoU for "Development of gold reference standard" signed with Indian government Mint (IGM), Mumbai and CSIR-National Physical Laboratory (NPL), New Delhi.