Technology Transfer to Industries

During the period between May 2015 and July 2015, BARC has transferred Eleven technologies to various industries. Technology Transfer & Collaboration Division (TT&CD) co-ordinated these technology transfers. The details are given below:


- Solar Energy Driven Portable Domestic Brackish Water Reverse Osmosis (BWRO)* Technology:

The technology has been developed by Desalination Division, BARC. This technology is based on solar photovoltaic (PV) system hence it is battery-less, off-grid/stand-alone. It has capacity of 10 liters/hr (lph) which can desalinate contaminated water of salinity 1000 - 3000 ppm (mg/lit) to provide drinking water of 50 - 300 ppm. The product water will be devoid of toxic elements, pathogens & turbidity too. It is best suited for remote/rural areas where electricity is not available or the voltage is not stable. It can be used in urban areas also. As it is portable, it will be of great help for the people working in desert areas especially in the case of defense personnel.

- “Stand-Alone Solar Photovoltaic (PV) Driven Battery-Less Ultra-Filtration (UF) Units For Water Purification” Technology:

The technology has been developed by Desalination Division, BARC. These units are solar photovoltaic (PV) driven, battery-less, off-grid, stand-alone Ultrafiltration (UF) systems for water purification. On sunny days, they can be operated for 9 – 10 hours/day. They are capable of removing un-dissolved species such as, dust, turbidity, microorganisms etc. from drinking water. These units are best suited for remote/rural areas where electricity is not available or the voltage is not stable. They can be used in urban areas also. As they are portable, they will be of great help for people working in desert areas, as in the case of defense personnel.


Electronics Division has developed compact low cost devices used in case of any distress like fear of attack or medical emergency to send information to near and dear ones including police. The devices have been developed with two different technologies.

- “Distress Alarm Device – NIRBHAYA” Technology:

As the name indicates The NIRBHAYA device is for safety and security of individuals. This Compact (2.2" x 1.4" x 0.7") device weighs only 45gms, can be carried in pocket or purse and is paired with user’s cell phone via Bluetooth link. Since the device has on board GPS chip, it can be used in conjunction with a basic mobile handset. The device is very easy to use having only one switch. In case of need, when the switch is pressed, the device sends SMS alerts through user’s mobile to pre-selected five cell phone numbers. The SMS alert contains user information and GPS location of the device. The device is rugged and cannot be destroyed easily.

- “Distress Alarm Device – NIRBHAYA-GSM” Technology:

BARC has developed a GSM based Distress Alarm Device called “NIRBHAYA-GSM”. The user can send an SMS to his/her near and dear ones, when in distress
using this instrument. The instrument can be programmed to send SMS to up-to five user-defined numbers. The Distress SMS includes the users name, age, sex, blood group, and specific medical condition if any, in addition to the current GPS location of the user. User can also include conditions like “allergies to a particular medicine” in the medical condition while programming the instrument. The instrument can also respond to the queries from any one of the predefined numbers regarding the current user location. This is very useful in case of children or young persons who might be kidnapped or under distress but cannot use the instrument. It can be used for tracing goods & vehicles. This would also be beneficial for old persons suffering from memory loss conditions like Alzheimer or Parkinson.

Photograph after signing the agreement with M/s AUTOSYS, Mumbai, seen from left to right, Shri V. K. Upadhyay, TT&CD, Shri S. N. Dutta, TT&CD, Shri S. K. Sahu, TPD, Shri A. M. Kasbekar, TPD, Shri Rabib Dutta, TPD, Shri V. Natraj, TPD, Shri R. B. Ingle, TPD, Shri P. S. Sarode, Proprietor, M/s AUTOSYS, Shri G. Ganesh, Head, TT&CD, Dr. S. L. Chaplot, Director, Physics Group, Dr. S. K. Gupta, Head, TPD, Shri M. M. Gulhane, TPD, Shri R. G. Ochani, TPD.

D. “Preparation of Composite Polyamide Reverse Osmosis Membrane for Brackish Water (BWRO) Desalination” Technology was transferred to M/s Aqua Dynamic Solution, Malkapur (M.S), on June 26th 2015 and M/s Osmotech Membranes Pvt. Ltd., Rajkot (Gujarat), on July 03rd, 2015.

This technology of was developed by Membrane Development Section, Chemical Engineering Group, BARC. Reverse osmosis (RO) is an efficient desalination technology for providing safe drinking water from brackish and sea water. Brackish water desalination is very common nowadays as most of the surface water available is brackish water. With proper collection and utilization, the reject stream can also be beneficially utilized. Membrane is the key component of the desalination process. BARC is engaged in the research and development of membrane preparation, assembling in different configurations and applications in various fields. Earlier BARC has developed and transferred the technologies for UF membranes. Technology for rolling of these membranes in spiral module has also been transferred. Present technology is developed for thin film based composite polyamide membranes and prototype 2512 spiral module. These membranes are capable of removing 90% salinity from brackish water (~feed concentration up to 3000 ppm). Using the developed technology, commercial size flat sheet membranes can also be made.
on computer with User Interface Software. Optical spectrometers find applications in various fields of science & technology.

E. “Optical Spectrometer” Technology was transferred to M/s Prisms India Pvt. Ltd., Pondicherry, on July 8th 2015 and M/s New Age Instruments & Materials Pvt. Ltd., Gurgaon, Haryana on July 28th, 2015

The optical spectrometers developed by Precision Engineering Division are for 600-1100 nm & 700-900 nm wavelength range. These spectrometers are based on Diffraction Grating and Linear Image Sensor. As there is no mechanical scanning through rotation of grating to capture the spectrum, it makes such spectrometers fast and wear free. The spectrum can be seen in graphical format, recorded & analyzed

F. “ChemoMechanical Magneto Rheological Finishing Machine (CMMRF)” Technology was transferred to M/s WENDT (India) Limited, Hosur on July 14th, 2015.

Precision Engineering Division has developed a novel nanofinishing system which is named as ‘ChemoMechanical Magneto Rheological Finishing (CMMRF) Machine’ for achieving surface finish in order of few angstroms to few nanometers in various engineering materials. It is a hybrid finishing technology of chemical mechanical polishing (CMP).
and magneto-rheological finishing (MRF) technologies. CMMRF has capability to generate atomistic surface with flexibility of the process itself. CMMRF has polishing capacity of typically 0.5nm surface finish (Ra) in 50mm surface area of silicon material. It finds applications in General optics, LASER Optics, Soft X-ray Optics, Hard X-ray Optics, LINAC RF Cavity etc.

H. Nisargruna Biogas Technology based on biodegradable waste has been developed by NA&BTD. The plant processes biodegradable waste into biogas and weed free manure. It was transferred to the following six parties:

- M/s. PriMove Engineering Pvt. Ltd., Pune, on 05.06.2015
- M/s. Amalgan Ecotech LLP, Thane on 10.07.2015

I. BARC through its Centre for Incubation of Technology has signed the MoU with M/s Innovative Drug Research Solutions, Labs, Bangalore for incubation of “Development of Radioprotector Drug” technology on July 10th, 2015.

RB&HSD has developed a novel radioprotector compound with promising laboratory results. M/s IDRS Labs shall collaborate with BARC in the development of a marketable drug using various formulations of the compound.

The company is a winner of “Indian Leadership Award for Industrial Development” for the year 2014 - awarded by AIAF, Delhi, India and works.

Excess utilization of chemical insecticides has reduced fertility of soil, caused pollution of water and given rise to resistant pest varieties. To counter ill effects of chemicals on environment, bio-pesticides are being used on large scale. One such bio-pesticide is fungus-Trichoderma. Currently, sorghum or bajra grains are using agriculture waste.

**G. Mass Multiplication Medium for Biofungicide Trichoderma Spp.” Technology was transferred to M/s. Borlong Biotechnologies Pvt. Ltd., Lucknow on July 30th, 2015.**

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