Breaking new ground

The Central Electrochemical Research Institute is a national laboratory under the Council of Scientific and Industrial Research, with a unique ambience that is congenial for R&D

B.S. WARRIER

IN FOCUS

Electrochemical science and technology has a wide variety of applications in several industries. There are numerous emerging trends in this discipline. Many innovative methods and techniques emerge in electrochemistry and relative fields, which offer immense professional scope for researchers with an innovative mind and a passion for breaking new ground.

The mainstay of electrochemical industry in our country is the CECRI.

Central Electrochemical Research Institute (CECRI), Karaikudi, Tamil Nadu

The institute has three regional centres in Tamil Nadu.

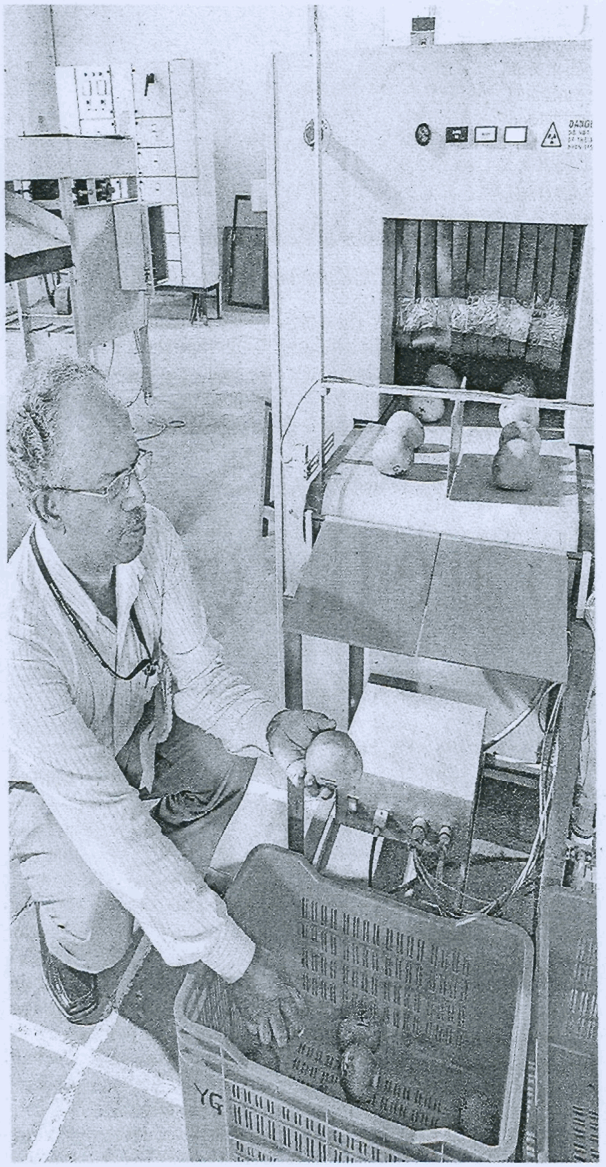
- CECRI Chennai Unit, CSIR Complex, TTTI, Taramani, Chennai
- CECRI Corrosion Research Centre, Mandapam Camp
- CECRI Tuticorin Unit, Harbour area, Tuticorin

CECRI, founded in 1948, is the twelfth national laboratory under the CSIR. It has more than 400 employees, nearly one-third of whom are scientists. It is the largest research establishment for electrochemistry in South Asia.

It maintains a unique ambience congenial for R&D work. A rich infrastructure including scientific equipment and machinery is available in the institute. Ph: 04565-227550; Web: www.cecri.res.in

CECRI has blossomed into a launching pad for several technologies in the Indian electrochemical industry. The institute works on problems covering almost all facets of electrochemical science and technology, such as corrosion science and engineering, electrochemical materials science, functional materials and nanoscale electrochemistry, electrochemical power sources, electrochemical pollution control, electrochemicals, electrodics (study of electrified interfaces) and electrocatalysis, electrometallurgy, industrial metal finishing, computer networking and instrumentation.

The activities aim at developing new and improved products and processes as well as novel innovations in electrochemical science and technology. There is international collaboration as well. CECRI conducts B.Tech and M.Tech programmes in Chemical & Electrochemical Engineering of the Anna University



GOOD SHOW: *The Central Electronics Engineering Research Institute Chennai Centre (CEERI) has gained a reputation in developing indigenous technologies for the automation of Indian processing industries*

Divisions

- Chlor-Alkali
- Development of cation-exchange membrane process for the electro-synthesis of tetra alkyl ammonium hydroxide from the respective halide.
- Development of electrodes for electrochemical destruction of non-biodegradable organics.
- Development of bipolar cells for electro-winning of copper.
- Nano platinum-coated titanium electrodes
- Development of cathode and process for the electro-reduction of carbon dioxide to useful organic chemicals.
- Corrosion Science and Technology
- Electrochemical Materials Science
- Electrochemical Power Sources
- Electrodes and Electrocatalysts
- Electrohydro Metallurgy
- Electroplating and Metal Finishing Technology
- Electropyro Metallurgy
- Electro Inorganic
- Electro Organic
- Functional Materials Division
- Industrial Metal Finishing
- Instrumentation

Central Electronics Engineering Research Institute, Pilani, Rajasthan

Electronics has spread its tentacles to all human activities in one way or another. The spellbinding leaps in communication and the omnipresence of the computer in modern life are the gifts of electronics. One significant aspect of this discipline is its fast growth that needs intensive and continuing research activities.

CEERI is a pioneer in research and development in the field of electronics engineering. It was established in 1953. As a centre of excellence, the institute has developed numerous products and processes.

It has established facilities to meet the emerging needs of the electronics industry.

Consultancy

The institute offers consultancy services for new designs, and upgradation and absorption of technology in industry, R&D units, and project engineering organisations.

Research in CEERI focuses on three areas – microwave tubes, semiconductor devices, and electronics systems.

- Microwave tubes: Communication tubes and industrial tubes
- Semiconductor devices: IC design, power devices, device processing, microwave devices, opto-electronic devices and semi-conductor materials
- Electronics systems: Digital systems, agri-electronics, speech technology, industrial electronics, instrumentation systems and communication engineering, development of smart systems for agro and food processing applications, satellite interaction, global positioning systems and remote powering, design and development of smart embedded system for societal purposes, automated integrated sensor test set-up for characterisation, and calibration of the developed gas sensors.

Studies in digital systems cover a wide area, including the following: image processing-based smart system for human gesture identification, development and implementation of advanced image processing algorithms, sensor characterisation and development of intelligent measurement systems, and wireless sensor networks.

R & D efforts focus on embedded systems and power electronics as well. Work on electron tubes and semiconductors is also undertaken. Under electron tubes come gyrotron, klystron, magnetrons, plasma and terahertz devices, and travelling wave tubes.

Semiconductor research includes domains such as hybrid mircro-circuits, IC Design, MEMS and microsensors, sensors & nanotechnology, and photonics and optoelectronics

CEERI Chennai Centre

The Chennai centre, established in 1974, grew as a full-fledged R&D centre by 1979. It has gained reputation in developing indigenous technologies for the automation of Indian process industries.

The centre has helped pulp & paper, food, leather, chemical and plastic industries to a large extent.

Further, it ventured into the development of machine vision systems for societal needs. The designs use technological gifts such as image processing, fiber-optic, and near-infrared instrumentation. You can work in technical areas such as quality control systems, process automation systems, and advanced photonic sensor (including NIR). Ph: 044-22541889; Website: www.ceerichennai.org.

The thrust areas of research include the following:

- Advanced Sensor Technologies
- Process Control Instrumentation and Automation
- Machine Vision Technologies