

## II B. TECHNOLOGY DEVELOPMENT AND INNOVATION PROGRAMME

The programme has two sub-components, viz. Technology Development and Demonstration Programme to support technology development efforts of industry-R&D system and Technopreneur Promotion Programme (TePP) to nurture the innovative spirit of individuals.

### 1. TECHNOLOGY DEVELOPMENT & DEMONSTRATION PROGRAMME

#### 1.1 Objectives

The programme aims at catalyzing and supporting activities relating to technology absorption, adaptation and demonstration including capital goods development, by involving industry and R&D organizations. The specific objectives of the programme are :

- supporting industry for technology development, demonstration and absorption of imported technology
- building indigenous capabilities for development and commercialization of contemporary products and processes of high impact.
- involvement of national research organizations in joint projects with industry
- technology evaluation in selected sectors.

#### 1.2 Activities

The Department provides on a selective basis partial financial support to research, development, design and engineering (RDDE) projects proposed by industry in the following areas:

- Development and demonstration of new or improved product and process technologies including those for specialised capital goods, for both domestic and export markets.

- Absorption and up-gradation of imported technology.

The partial financial support by DSIR in the above areas, primarily covers prototype development and pilot plant work, test & evaluation of products from such R&D, user trials, etc. Bulk of the cost of the project is met from industry's resources.

The Department, under this activity has so far supported about 165 R&D projects of Industrial units. These projects cover products and processes in various important industries such as metallurgy, electricals, electronics, instrumentation, mechanical engineering, earth moving and industrial machinery, chemicals and explosives etc.

During the year, 80 Technology Development & Demonstration projects supported under the scheme were reviewed for progress. Out of these 80 projects, 15 projects were completed successfully, 19 projects were nearing completion and 46 projects were under progress. Since inception of the scheme, 81 projects have so far been completed and over 45 technologies developed under the scheme have been commercialized or under commercialization.

The details of the various projects of industrial units are given below:

### CHEMICALS AND FERTILIZERS

#### *Completed Projects*

*Carbon Resources Pvt. Ltd., Giridih, Jharkhand*

The project for 'Development of Technology for State of the Art Coal Tar Pitch and Carbon Paste' was supported with a grant of Rs.37.00 lakhs, out of a total project cost of Rs.86.00 lakhs. Coal Tar Pitch is used in steel plants,

aluminium plants, refractories, etc. while carbon paste is used as an electrode in aluminum industries, ferro alloys and other alloys industries. The objective of the pilot plant is to generate the data for optimisation of parameters like resistivity, plasticity, conductivity, temperature, ratio, calcined petroleum coke and coal tar pitch, etc. for having better performance. The development of better quality product will ultimately reduce the resistivity of carbon electrode resulting in savings of electricity since the user industries are heavily dependent on electricity.

*IBP Co. Ltd., Gurgaon*

The project of *IBP Co. Ltd., Gurgaon* (with the assistance of CMRI, Dhanbad) on 'Development of Heat Resistant Explosives' has been supported with a financial support of Rs. 18.5 lakhs out of a total Project outlay of Rs. 65.4 lakhs. Field trial of Heat Resistant Explosive has been completed at 80° C and 100° C. Field trial of Heat Resistant Explosive at 120° C is in progress.

*Organic Coatings Limited, Mumbai*

The project for (i) Water-based flexo inks used for absorbent stock (craft paper) and coated stock (art paper, etc.); and (ii) UV radiation curing inks used for coated stock and non-absorbent substrates such as PVC, Polyester, etc. taken up by M/s Organic Coatings Ltd., Mumbai, has been supported with a grant of Rs.25.00 lakhs. The total project cost is Rs.91.585 lakhs. The flexo inks will be used in packaging materials, composite films, aluminum foils, plastic and paper labels, wall covers, envelopes decoration materials and other specialized papers.

***Projects nearing Completion***

*Castron Technologies Ltd., Dhanbad*

The Project of *Castron Technologies Ltd., Dhanbad* in collaboration with Central Fuel Research Institute for "Development of Indigenous Technology for Phenanthrene and 9:10 Phenanthrenequinone" has been supported with a grant of Rs.35 lakhs, out of total project cost of Rs.77 lakhs. The pilot plant is operational. The Pilot Plant involves solvent extraction of Phenanthrene from Crude Anthracene and oxidation of Phenanthrene. The process of upgradation of Phenanthrene (60%) to around (70%) by chemical method has been developed in the lab and tested in the pilot plant.

*Elkay Chemicals Pvt. Ltd., Pune*

The project of *Elkay Chemicals Pvt. Ltd., Pune* for 'Development of Next Generation Amino Silicon based on hydrosilation technology' has been supported with a grant of Rs.30.00 lakhs out of a total project cost of Rs.83.00 lakhs. The hydrosilation process avoids import of silicones – a prohibited costly material. The formulations of amino silicones find applications in textile finishing, personal hygiene, etc. The company has developed a better route for the production of the product resulting in four products to be used for textiles, personal hygiene etc.

*Solaris Chemtech Ltd. (Formerly Bilt Chemicals Ltd.,) Gurgaon*

The project of *Solaris Chemtech Ltd. (Formerly Bilt Chemicals Ltd.,) Gurgaon* for "Development of Technology for Tetra Bromo Bisphenol-A (TBBA) on a Pilot Plant level" has been supported with a grant of Rs.350 lakhs, out of the project cost of Rs.1447 lakhs. The batch process at the Pilot Plant at Ankleshwar based on the technology developed in-house has been successfully completed. The Continuous Process at Pilot Plant at Karwar has been completed. The product TBBA is a fire retardant chemical and

has considerable potential abroad and in the country.

*NATCO Pharma Ltd., Hyderabad*

The Project of *NATCO Pharma Ltd., Hyderabad* for "Development of Pilot Level Anaerobic Reactor to Pharmaceutical Waste" in collaboration with Indian Institute of Chemical Technology (IICT), Hyderabad has been supported with a grant of Rs.30 lakhs, out of total project cost of Rs.98 lakhs. Laboratory work, the basic process design of the Pilot Plant and detailed engineering have been completed. Pilot Plant at NATCO Pharma has been assisted by IICT. The performance trials and test have been completed.

*Pennwalt India Ltd., Mumbai*

The Project of *Pennwalt India Ltd., Mumbai* on "Coating of Chemical Process Equipment with Fluoropolymers and other High Performance Powders" has been supported with a grant of Rs.20 lakhs, out of a total project cost of Rs.67.05 lakhs. The company has undertaken the coating trials of the fluoropolymers. The Oven has been installed and coating experiments are underway.

*TCM Ltd., Bangalore*

The Project of *TCM Ltd., Bangalore* for "Development of Carnon-di-oxide Route for the Manufacture of Barium Carbonate" based on the use of lecofines with Barytes in the continuous rotary kiln, has been supported with a grant of Rs.30 lakhs, out of a total project cost of Rs.140 lakhs. The flue gases from the rotary kiln have been treated and the carbon dioxide obtained has been successfully employed for precipitation of barium sulphide to get barium carbonate. The quality of the product has been improved to 98.5%.

## **Projects under Progress**

*Anirox Pigments Limited, Kolkatta*

The project of *Anirox Pigments Limited, Kolkatta* for 'Development of Stable Oil in Water Ink Emulsion, based on Water Reducible Nigrosine Dyes for Ink Jet Computer Printers' has been supported with a grant of Rs.50.00 lakhs out of a total project cost of Rs.147.00 lakhs. The firm at present is engaged in the production of Nigrosine Dye which finds many applications, one of which is in ink industry. The Company has developed the jet ink; but there are problems regarding choking of the refield cartridges. The Company is trying to meet the desired quality solving the problems with the help of laboratories such as University Institute of Chemical Technology (UICT), Mumbai

*Anu's Laboratories Ltd., Hyderabad*

The project by *Anu's Laboratories Ltd., Hyderabad* on "Development of process for manufacture of 1-Bromo-3-Chloro Propane (BCP) and 1-Bromo-3-Chloro Propane (BCP) in Pliot plant" has been supported with a grant of Rs.64.00 lakhs out of a total project outlay of Rs.130.00 lakhs. The process developed at the lab scale involves the step of hydro bromination using hydrogen bromide gas. The company is in the process of installing pilot plant. Bromo-3-Chloro Propane (BCP) is a basic chemical used for manufacture of several intermediates for bulk drugs and other chemicals. 1-Bromo-3-Chloro Propane (BCP) is used for manufacture of other chemicals.

*Engineers India Ltd., Gurgaon*

The Project of *Engineers India Ltd., Gurgaon* in collaboration with Indian Institute of Chemical Technology (IICT), Hyderabad on

"Development of Membrane Technology for Natural gas Separation" has been supported with a grant of Rs.42 lakhs, out of total project cost of Rs.148 lakhs. Efforts are on to setup a Pilot Plant at ONGC, Hazira assisted by IICT. The technology is environment friendly

*Forest Research Institute (FRI), Dehradun*

The project by *Forest Research Institute (FRI), Dehradun* on "identification, Development and Utilization of Natural Dyes from the forest plants of Uttranchal" has been approved by DSIR with a financial support of Rs.25.16 lakhs, out of a total project outlay of Rs.61.32 lakhs. The project is based on forest waste, which is available in plenty. Under the project, natural dyes are proposed to be extracted from five plant materials viz. *Populus deltoids, Pinus roxburghii, Eucalyptus hybrid, Cassia tora, and lantana camara*. FRI is in the process of procuring & erecting pilot plant and testing equipments for the project. Ministry of Environment and Forests (MoEF), New Delhi is also supporting the project with an equal financial support. The application includes natural dyes for textile manufacturers, dyers, paper and pulp industry etc.

*General Exports & Credits Ltd., New Delhi and Dalmia Centre for Research & Development (DCRD), Coimbatore*

The project in collaboration with Dalmia Centre for Research & Development, Coimbatore and Indian Institute of Chemical Technology, Hyderabad, on 'Development of Azadirachtin-A Technical from Neem Seeds Kernels and its Formulations' has been supported with a grant of Rs.65.00 lakhs, out of a total project cost of Rs.248.97 lakhs. IICT, Hyderabad has been entrusted with the task of designing and engineering of the pilot plant. Due to demand shrinkage the company

has pruned the size of the pilot plant the product is being tested in the field.

*Haryana Leather Chemicals Ltd., Jind, Haryana*

The Project on "Development of Technology for Cross linked polyurethane Dispersions" has been approved with a financial support of Rs.50 lakhs, out of a total project cost of Rs.136.65 lakhs. The company has completed the design of the pilot plant, which is under installation.

*Schevaran Laboratories Pvt. Ltd., Mysore*

The project of *Schevaran Laboratories Pvt. Ltd., Mysore* on 'Development of product for control of Psychrophilic and Psychrotrophic Food Spoilage Micro-organisms in Cold Storages' with the help of Central Food Technological Research Institute, Mysore has been supported with a grant of Rs.8 lakhs out of total project cost of Rs.23 lakhs. The Company intends to develop and test eco-friendly disinfectant formulations especially for cold storages, cold storage careers and refrigerators. This product will be effective at temperature below 8° C and will not be toxic to human beings. This will also be degradable by normal soil micro-organisms.

## **DRUGS & PHARMACEUTICALS**

### ***Completed Projects***

*Bharavi Laboratories Pvt. Ltd., Bangalore*

The Project on 'Development of Novel Resins for use in Solid Phase Organic Synthesis and Combinatorial Chemistry' has been supported with a grant of Rs.20.45 lakhs, out of a total project cost of Rs.66.05 lakhs. The company has developed synthetic route for the preparation of isotonic anhydride resin and PEG grafted resins. The resins developed

under the project would be useful for solid phase peptide synthesis.

*Gland Pharma Ltd., Hyderabad*

The project on 'Pilot Scale Manufacture of Hyaluronic Acid Formulations' has been approved with a financial support of Rs.46 lakhs, out of a total project cost of Rs.139.05 lakhs. The company has installed the pilot plant for making Hyaluronic Acid from Rooster comb. The different grades of Hyaluronic Acid are claimed to be cheaper compared to the other products in the market. Hyaluronic Acid is used in rheumatology, (osteoarthritis), cosmetics and optalmology.

*SPIC Ltd., (Pharmaceutical Division), Chennai and CECRI, Karaikudi*

The joint project on 'Development of Technology for 3-Chloromethyl-D3-Cephem Ester from Pen GK' has been supported with a grant of Rs.66 lakhs, out of a total project cost of Rs.149.45 lakhs. The company is in the process of installing a pilot plant for five step chemical synthesis of 3-Chloromethyl- $\Delta^3$ -Cephem ester which is an intermediate for cephalosporin, from "Pen GK". One of the steps in the process is electro-chlorination which has been developed by the collaborating agency namely Central Electro-Chemical Research Institute (CECRI), Karaikudi.

### **Projects nearing Completion**

*Lifecare Innovations Pvt. Ltd., New Delhi*

The project on 'Scaleup Process Development of Liposomal Amphotericin B, Awareness Programme and Clinical Performance Trials' has been approved with a financial support of Rs.50 lakhs, out of a total project cost of Rs.149.76 lakhs. Amphotericin B is a macrolide polyene antibiotic produced by strain of *Streptomyces nodosus*. It shows a

high order of *in vitro* activity against many species of fungi viz. *Histoplasma capsulatum*, *Cryptococcus immitis*, etc. Liposomal Amphotericin B is used for treatment of Kala-Azar.

### **Projects under Progress**

*Punjab Chemicals & Pharmaceuticals Ltd.*

The project of *Punjab Chemicals & Pharmaceuticals Ltd., Chandigarh* on "Development of process for the manufacture of Ethyl 2-(2-aminothiazol-4-yl)-2-methoxyiminoacetate and 2-formylamino-4-thiazole acetic acid ethyl ester in Pilot Plant" has been supported with a grant of Rs.65 lakhs out of total project cost of Rs.141 lakhs. It is proposed to develop process for manufacture of Ethyl 2-(2-aminothiazol-4-yl)-2-methoxyiminoacetate and 2-formylamino-4-thiazole acetic acid ethyl ester. These two are key raw materials for the manufacture of a large number of cephalosporins based antibiotics.

*SMS Pharmaceuticals Ltd., Hyderabad*

The project of *SMS Pharmaceuticals Ltd., Hyderabad* on "Development of Active Pharmaceutical Ingredients (API), API Intermediates and Metal Acetylacetonates" has been supported with a grant of Rs.135 lakhs out of total project cost of Rs.475 lakhs. The company intends to scale up processes for manufacture of Active Pharmaceutical Ingredients (API), API Intermediates and Metal Acetylacetonates. The API proposed to be developed are : Diltiazem Hydrochloride (API), Zolmitriptan (API) and Taxol C-13 side chain (API intermediate). The process makes use of heterogeneous catalyst developed by IICT, Hyderabad, which is recoverable and reusable. Diltiazem is used for hypertension and anti-angina. zolmitriptan is used for alleviating migraine. Metal Acetylacetonates are used as catalysts, glass

coating agents, paints, ink etc

*TTK Healthcare Ltd., Bangalore and Sree Chitra Tirunal Institute for Medical Sciences and Technology, (SCTIMST), Trivandrum*

The project on *TTK Healthcare Ltd., Bangalore (SCTIMST), Trivandrum* on 'Development of an Improved Tilting Disc Heart Valve Prosthesis' has been approved with a financial support of Rs.40 lakhs, out of a total project cost of Rs.90.42 lakhs. The company in collaboration with SCTIMST, Thiruvananthapuram intends to develop an improved tilting disc heart valve prosthesis. The improvements in the valve will provide better performance characteristics (functional and durability); the new valve will be MRI compatible with improved thrombo resistance and with presence of radio-opaque marker for fluoroscopic visualization. The reduction in the production cost is expected to make the product more cost effective.

*Central Institute for Research on Goats (CIRG), Mathura*

The project by Central Institute for Research on Goats (CIRG), Mathura for "Development of inactivated vaccine using native isolates of Mycobacterium avium subspecies Paratuberculosis against Johne's disease in goats and sheep" has been supported with a grant of Rs. 4 lakhs. It is proposed to develop a vaccine for Johne's disease in goats and sheep.

## **ELECTRICAL, ELECTRONICS & COMMUNICATIONS**

### ***Projects Completed***

*Aishwarya Telecom Pvt Ltd, Hyderabad*

The project of *Aishwarya Telecom Pvt Ltd, Hyderabad* for 'The project development of Optical Test and Measuring Equipments

(Optical Talk Set, Optical variable attenuator, Optical Power Meter – Type A' has been supported with a grant of Rs. 18 lakhs out of a total Project outlay of Rs. 43.80 lakhs. This project will facilitate availability of accurate, calibrated test instruments for field and operational people installing fibre.

*Ashok Leyland Ltd., Chennai and Electronics Research Development Centre of India, Thiruvananthapuram*

The joint project of *Ashok Leyland Ltd., Chennai* and *Electronics Research Development Centre of India, Thiruvananthapuram* for 'Development of Hybrid Electric Vehicle With Vector Controlled Induction Motor for Propulsion' has been approved with a financial support of Rs. 45 lakhs out of a total Project outlay of Rs. 134 lakhs. Prototypes have been developed and the company exhibited the Hybrid Electric Vehicle in the Auto Expo 2002 in Delhi. The prototypes have undergone endurance test for about 10000 Km. The technology has been patented and the metro bus developed is world's first Hybrid Electric large capacity (55 passengers) bus.

*Mak Controls and Systems (P) Ltd., Coimbatore*

The project by *Mak Controls and Systems (P) Ltd., Coimbatore*, on 'Design, Development and Trial and Testing of Mak World Tracker' has been approved with a financial support of Rs. 92 lakhs out of a total project outlay of Rs. 253.88 lakhs. Prototypes have been developed and the system demonstrated in USA.

*Pan India Electromech Pvt Ltd, Gurgaon*

The project of *Pan India Electromech Pvt Ltd, Gurgaon* for 'development of CASH' has been

supported with a grant of Rs 8 lakhs out of a total project outlay of Rs 18 lakhs..

*Semiconductor Complex Ltd., Chandigarh and Shree Pacetronix Ltd., Indore*

The Project by *SCL, Chandigarh and Shree Pacetronix Ltd., Indore*, on 'Design & Development of Indigenous Pacemaker Based on Single Chip and The Programming Unit' has been approved with a financial support of Rs. 40 lakhs out of a total Project outlay of Rs. 90 lakhs. Prototypes (ASIC and Pacemaker) have been tested found not suitable in view of the higher current drawn..

*Webel Mediatronics Ltd., Kolkata and Jadavpur University, Kolkata*

The project of *Webel Mediatronics Ltd., Kolkata and Jadavpur University, Kolkata* on 'Development of Computerised Braille Transcription Systems for automatic and speeded transcription of English and Indian language texts' has been supported with a grant of Rs. 16 lakhs out of a total Project outlay of Rs. 32 lakhs.. The reading material for blind people is made in the Braille script. The printing of Braille transcription is currently done by Braille printers and the speed of the printing is slow. The printers are available only in English. There was a need to incorporate Indian languages in Braille and also make the process computer friendly. This project has made it possible to use Indian language texts for Braille transcription through a personal computer. The project activities have been completed and the products are under testing with NIVH, Dehradun.

### ***Projects nearing Completion***

*Abacus Softech Ltd, New Delhi*

The project of *Abacus Softech Ltd, New Delhi*

for 'Development of upgraded digital voice logger with 32 channels, E-1 and FAX compatibility' has been approved with a support of Rs.75 lakhs out of total project cost of Rs.215 lakhs. This equipment meets the needs of security agencies.

*APTECH Ltd, Mumbai*

The project of *APTECH Ltd., Mumbai* in collaboration with IIIT, Allahabad for 'development of Learning Content Management System (LCMS)' has been supported with a grant of Rs 60 lakhs out of a total project outlay of Rs 260 lakhs.

*Coral Telecom Limited, Noida*

The project of *Coral Telecom Limited, Noida* for development of STM-1 based customer premises equipment (CPE) has been approved with a financial support of Rs. 80 lakhs out of a total Project outlay of Rs. 227 lakhs. This is a broadband access terminal to be made as per TEC specifications.

*Farcom Cable Systems (P) Ltd., Bangalore and Central Power Research Institute, Bangalore*

The project of *Farcom Cable Systems (P) Ltd., Bangalore and Central Power Research Institute, Bangalore* on 'Development of Flame Retardant Low Smoke Material For Wires and Cables for Sheathing Applications' has been supported with a grant of Rs. 50 lakhs out of a total Project outlay of Rs. 104.5 lakhs. The Flame Retardant Low Smoke Material for cabling purposes is currently imported in the country. The Central Power Research Institute had a laboratory scale technology for making indigenous FRLS material. The process has been scaled up by Farcom Cable Systems (P) Ltd., Bangalore successfully. There is a large requirement of FRLS cables and wires in the construction industry, power stations, telephone exchanges etc.

*Goldstone Teleservices Ltd, Secunderabad*

The project of *Goldstone Teleservices Ltd, Secunderabad* for 'Development of technology for manufacture of EHV Composite Insulator for application in 132 KV, 220 KV and 400 KV electrical power T&D lines' has been supported with a grant of Rs. 202 lakhs out of a total project outlay of Rs. 404 lakhs. This project will deliver a new generation insulators to power transmission and distribution utilities greatly minimizing the breakdowns due to insulator failure/ replacement.

*MIC Electronics Ltd, Hyderabad*

The project of *MIC Electronics Ltd, Hyderabad* for 'development of Fraud Management and Control Centre' has been supported with a grant of Rs. 33 lakhs out of a total project outlay of Rs. 76 lakhhs.

*NED Energy Limited, Hyderabad*

The project of *NED Energy Ltd., Hyderabad* for 'development of High Energy Density Valve regulated Lead acid batteries' in collaboration with IISc, Bangalore has been approved with a financial support of Rs 46 lakhs out of total project cost of Rs 121 lakhs.

*SM Telesys Ltd (SMTL) and Atal Bihari Vajpayee Indian Institute of Information Technology and Management (ABV-IIITM)*

The joint project of *SM Telesys Ltd (SMTL)* and *Atal Bihari Vajpayee Indian Institute of Information Technology and Management (ABV-IIITM)* for 'development of CTI (Computer Telephony Integration) based Call Centre Software' has been supported with a grant of Rs. 30 lakhs out of a total project outlay of Rs. 85 lakhs. The software package will facilitate adoption of customer friendly marketing practices by small businessmen and professionals.

*Transasia Biomedicals Ltd., Mumbai*

The Project by *Transasia Biomedicals Ltd., Mumbai*, on 'Development of Fully Automatic High Speed Blood Chemistry Analyser, Model XL-100' has been supported with a grant of Rs. 90 lakhs out of a total project outlay of Rs. 226 lakhs. Three prototypes have been developed..

***Projects under Progress***

*BEL Optronics Devices Limited, Pune*

The project of *BEL Optronics Devices Limited, Pune* for 'development of SUPERGEN Image Intensifier tube' has been approved with a financial support of Rs 71 lakhs out of a total project outlay of Rs 353 lakhs..

*Bharat Heavy Electricals Ltd., Electro Percellain Division, Bangalore*

The project by *Bharat Heavy Electricals Ltd., Bangalore* and *National Chemical laboratory, Pune* on " Design and manufacture of prototype ceramic membrane filtration unit for production of safe domestic drinking water" has been supported with a grant of Rs.69.50 lakhs out of the total project cost of Rs.149.00 lakhs.

*Bharat Heavy Electricals Ltd., Bangalore and Semiconductor Complex Ltd., Chandigarh*

The project on 'Development of ASIC Based Energy Meter' by *Bharat Heavy Electricals Ltd., Bangalore* and *Semiconductor Complex Ltd., Chandigarh* has been supported by DSIR. The metering of electricity for bulk industrial users with accurate kind of meters has been considered important. Until now the meters used in this area were of electro mechanical type with maintenance requirements and accuracy limitations. The aim of the above project is to manufacture indigenous meters based on the indigenous ASIC. The ASIC has



been developed by Semiconductor Complex Ltd., Chandigarh. The meter fabricated could not meet the accuracy requirements of 0.5% due to technological limitations. In the meanwhile faster micro controllers have emerged making the digital signal processing faster and more accurate. The company is going ahead with the changed technology from the experience gained in the project.

*Rajasthan Electronics & Instruments Ltd., Jaipur*

The project of *Rajasthan Electronics & Instruments Ltd., Jaipur* for development of Animal Identification system through RFID has been supported with a grant of Rs.20 lakhs out of the total project cost of Rs.52.75 lakhs. The project will help dairy farmers.

*Rishabh Instruments (P) Ltd., Nasik*

The project 'Design, Development and Manufacturing of 5<sup>3/4</sup> and 6<sup>3/4</sup> digit multimeters' by *Rishabh Instruments (P) Ltd., Nasik* has been approved with a financial support of Rs. 55 lakhs out of a total project outlay of Rs. 135 lakhs. The company has been manufacturing high accuracy digital metering systems and is exporting its products to Europe. The company wanted to manufacture high-end digital multimeters for Indian as well as export market on their own during the project. The conceptualisation of the meters under development is completed and the first prototypes are under fabrication.

*S B Electro-Mechanicals (P) Ltd., Pune*

The project on 'Development of RADAR Level Gauging Systems' by *S B Electro-Mechanicals (P) Ltd., Pune* has been supported with a grant of Rs. 16.49 lakhs out of a total Project outlay of Rs. 34.62 lakhs. The company had expertise in manufacturing of level gauge systems. The system under development is computer friendly and based on radar principles giving simplicity of the

operation and the accuracy requirements. The system for fixed roof tank has already been developed and the variant for floating roof operation is currently under fabrication.

## **MECHANICAL ENGINEERING**

### ***Completed Projects***

*Atcom Technologies Ltd., Mumbai*

The project of *Atcom Technologies Ltd., Mumbai* to 'develop higher capacity (200 gm) micro balance with one milligram accuracy' at lower cost has been supported with a grant of Rs. 28.5 lakhs out of a total project outlay of Rs. 76.3 lakhs. It involves design and development of mechanical sensor, components, magnetic circuit, force coil, analog-to-digital converter, needing mechanical CAD solutions, hybrid/ASIC development and EMI protection techniques. The prototypes have been developed and tested at NPL and at other agencies as per the specifications and suggestions of Project Review Committee.

*Atcom Technologies Ltd., Mumbai*

The project of *Atcom Technologies Ltd., Mumbai* for 'design and development of different types and capacities of load cells' has been supported with a grant of Rs. 68 lakhs out of a total project outlay of Rs. 149 lakhs. It involved software development, toolings, identification of materials, generation of technical specifications, design and fabrication of prototypes/components, testing and performance trials, etc. About 100 prototypes have been successfully developed and tested at NPL.

*Steel Strip Wheel Ltd., Chandigarh*

The project of *Steel Strip Wheel Ltd., Chandigarh* is to 'develop improved technology for the manufacture of automotive

wheel discs for cars' has been supported with a grant of Rs. 50 lakhs out of a total project outlay of Rs.130.60 lakhs. By improving and smoothening the existing forming process, leading to reduction of input raw material, improvement of wheel life, reduced manufacturing cost and increase in productivity. The manufacturing process technology developed through the project has been successfully established and demonstrated. The project has been successfully completed.

### ***Projects nearing Completion***

*Bharat Pumps and Compressors Ltd., Allahabad*

The Project by *Bharat Pumps and Compressors Ltd.*, on 'Development of Twin Casing Fly Ash Slurry Pump' has been supported with a grant of Rs. 25 lakhs out of a total Project outlay of Rs. 60 lakhs. The prototype of the pump has been hydraulically successfully tested and achieved the design objectives. The project has been declared completed and final completion report is awaited.

*Central Electronics Ltd, Sahibabad*

The Project by *Central Electronics Ltd., Sahibabad* on 'Development of Digital Axle Counter' has been supported with a grant of Rs. 70 lakhs out of a total project outlay of Rs. 146 lakhs. Single section digital axle counter has been completed and approved by RDSO. The complete system now is being supplied to Indian Railways. The prototype of the multi section axle counter has already been developed and offered to RDSO and installed at Faridabad for testing and inspection. The project is likely to be completed by April 2005.

*P S G Industrial Institute, Coimbatore*

The Project by *PSG Industrial Institute, Coimbatore*, on 'Development of Frequency

Converter/ Controller and High Frequency Submersible Motor Pump Sets For Irrigation' has been supported with a grant of Rs. 6 lakhs out of a total project outlay of Rs. 13 lakhs. The motor for this pump has been specifically designed, fabricated and tested at full load. The pump and controller has been designed and developed. This project is likely to create a good demand in the agricultural sector. The project is likely to be completed by end of this financial year.

### ***Projects under Progress***

*Klas Technology Ventures Ltd., Bangalore*

The project of *Klas Technology Ventures Ltd., Bangalore* proposes to 'design and develop seamless Aluminium cylinders for liquified gasses' for automotive, domestic, medical and defence applications has been supported with a grant of Rs. 60 lakhs out of a total Project outlay of Rs. 140 lakhs. Advantages of Al cylinders include significant reduction in weight, reduced testing frequency, economic and easy handling and increased life. Computer modeling, fabrication of tools/jigs/fixtures, establishing of welding process, heat treatment, quality parameters, testing procedures etc are some of the activities to be undertaken. About 20 Aluminium, LPG Cylinders for domestic application alongwith toolings have been designed and fabricated.

*Mecpro Heavy Engineering Ltd., New Delhi*

The project of *Mecpro Heavy Engineering Ltd., New Delhi* to "Design, development and demonstration of Technology for continous Hydrogenation system in the Fatty Acids and Oleo Chemical Plant" has been supported with a grant of Rs.75 lakhs out of total project cost of Rs.145 lakhs. The project aims at developing a new continuous hydrogenation process technology to improve upon the conventional process, its process efficiency,

savings in energy and consumption of vehicle catalysts and reducing the wastes generating in the process besides improving product quality and productivity. The design of equipments and system has been completed. The bill of materials for development of prototype and other critical equipments has been completed.

*Parag Fans and Cooling Systems Ltd., Dewas*

The Project by *Parag Fans and Cooling Systems Ltd.*, on 'Development of Energy Efficient Fan System' has been supported with a grant of Rs. 28 lakhs out of a total Project outlay of Rs. 72 lakhs. The prototype fans of 1400 and 1600 mm sizes have been designed and fabricated using the FRP. Both the fans have been tested on the conventional fan systems. The fabrication of 1400 mm fan system has been completed and tested in-house and fabrication of 1600 mm fan system has also been completed and tested in-house. The completion report is awaited.

*Priya Klay Pvt. Ltd., New Delhi*

The project of *Priya Klay Pvt. Ltd., New Delhi* aims at developing a manufacturing system at par with international technologies for production of large diameters (600-1000 mm) and long stoneware/ vitrified pipes of 1.5 to 2.5 meters has been supported with a grant of Rs.60 lakhs out of total project cost of Rs.148 lakhs. This involves design, prototype development and fabrication of pipe extruder, pipe trimming attachment, pipe handling units, pan mill and electric control panels. Specifications and engineering designs for extruder and the pan mill have been completed. The castings for shafts, gear box housing and other components have been fabricated. Sub-assembly design details for extruder and other equipments have been finalized and procured.

## **METALLURGY**

### ***Project nearing Completion***

*Fluidtherm Technology Pvt. Ltd., Chennai*

The project of *Fluidtherm Technology Pvt. Ltd., Chennai* on 'Developing a Novel Heat Treatment Furnace' has been supported with a grant of Rs.50 lakhs out of the total project cost of Rs.149.30 lakhs. for design and development of a versatile heat treatment/ carburising furnace which will combine the advantages of both batch sealed quench furnaces and continuous conveyor belt furnaces. The fabrication of the furnace has been completed and trials are expected shortly.

### ***Projects under Progress***

*Orient Software Pvt. Ltd., Bangalore*

The project of *Orient Software Pvt. Ltd., Bangalore* in collaboration with *Indian Institute of Science, Bangalore* on 'Development of system for aiding in the intelligent computer aided design for casting' has been supported with a grant of Rs. 25 lakhs out of a total Project outlay of Rs. 53.68 lakhs. The project is to develop a unique software that would greatly facilitate the designers for designing components which are amenable for development using casting process.

*Sankar Sealing Systems (P) Ltd., Chennai*

The project of *Sankar Sealing Systems (P) Ltd., Chennai* on 'Development and Indigenising of Asbestos Free Cylinder Head Gaskets for TATA Indica Diesel Cars' has been supported with a grant of Rs. 22 lakhs out of a total project outlay of Rs. 69.70 lakhs. For the project, the graphite sheets are being manufactured and supplied by ARC-I, Hyderabad, to Sankar Sealing Systems (P) Ltd., who in turn are developing the gaskets.

The gaskets made from these sheets have passed most of the prescribed tests.

*Tamilnadu Zari Ltd., Kancheepuram*

The project of *Tamilnadu Zari Ltd., Kancheepuram* in association with NFTDC, Hyderabad on 'Establishment of a Technology Demonstration Facility for Super Fine Wire Drawing of Silver Alloy for ZARI Application' has been supported with a grant of Rs. 19 lakhs out of a total project outlay of Rs. 69.96 lakhs. The technology and the design of the stands has been provided by NFTDC. NFTDC has also fabricated the stand and has transferred the same to Tamilnadu Zari for trials and for training of manpower.

## MISCELLANEOUS

### *Projects nearing Completion*

*Maharashtra State Seeds Corporation Ltd. (MSSCL), Akola and National Chemical Laboratory (NCL), Pune*

The project of *Maharashtra State Seeds Corporation Ltd. (MSSCL), Akola and National Chemical Laboratory (NCL), Pune* on 'Development and Testing of Mini Dry HCL Gas Cotton Seed Delinting Plant' had been supported with a grant of Rs. 31 lakhs out of total project cost of Rs.93 lakhs. The existing processes for delinting cotton seeds both by HCL gas as well as concentrated sulphuric acid are polluting processes. To overcome the problem, MSSCL, Akola and NCL, Pune had jointly applied for the project based on the NCL process for producing HCL gas pollution free. The fabrication of the plant is completed. The plant has already delinted cotton seeds for one season. The delinted seeds are under test marketing.

### *Projects under Progress*

*Bharat Heavy Electricals Ltd. (Ceramic Business Unit), Bangalore and National Chemical Laboratory, Pune*

The project of *Bharat Heavy Electricals Ltd. (Ceramic Business Unit), Bangalore and National Chemical Laboratory, Pune* on 'Design and manufacture of prototype Ceramic Filtration Unit for production of safe domestic drinking water' has been supported with a grant of Rs. 70 lakhs out of the total project cost of Rs. 149 lakhs. The existing water filters available in market use various kinds of technologies like membrane filtration, UV technology etc. for purification of water. The proposal of using a ceramic water filter ensures removal of bacteria and viruses from the drinking water. NCL, Pune is to validate and test the membranes produced by BHEL. The final product will be fabricated by BHEL under NCL guidance. The work involving optimisation of the testing procedure and the process parameters for fabrication of support membrane has already been completed.

*MATA Foundation, New Delhi and CFTRI, Mysore*

The project of *MATA Foundation, New Delhi and CFTRI, Mysore* on 'Integrated pilot demonstration plant for fruit processing' has been supported with a grant of Rs.100 lakhs out of the total project cost of Rs.319.79 lakhs. North-Eastern states grow a variety of quality fruits namely oranges, pineapples, passion fruits etc. The fruits do not have adequate market because of poor connectivity and transportation problems. CFTRI, Mysore had an innovative technology of concentrating fruit juices by reverse osmosis process which has been scaled up in the project. The machinery has already been delivered on site and the erection and commissioning of the same is underway.

*Rajasthan Government, Udaipur Chamber of Commerce & Industry, Udaipur and Central Road Research Institute, New Delhi*

The project of the *Rajasthan Government, Udaipur Chamber of Commerce & Industry, Udaipur and Central Road Research Institute, New Delhi* for construction of a 750 meter Demonstration Test Road Stretch using marble slurry dust (MSD) in Kotela Village of Rajsamand District under District Poverty Initiative Project (DPIP) has been supported by DSIR with a financial support of Rs.9 lakhs out of the total project cost of Rs.19.67 lakhs. The marble mining and cutting activity has been the main livelihood of southern Rajasthan. The marble miners and gangsaw cutters have produced phenomenal quantity of marble dust as a waste material posing a problem for the administration for its disposal. The Collectorate of Rajsamand, Rajasthan had approached Secretary, DSIR for an advice on the issue. Keeping the request in mind, the DSIR had earlier funded two studies for gainful utilisation of marble dust and also for finding out products like tiles, bricks, building blocks, distemper etc. which could be made out of the marble waste.

### **1.3 Customs Duty Exemption Certificate**

In pursuance to Customs Notification No.50/96 Customs dated July 23, 1996 for Customs Duty Exemption on components, consumables, equipments etc. used in R&D projects supported by Government, 6 Customs Duty Exemption certificates for nearly Rs. 52.6 lakhs worth of components and consumables under one technology development project supported under TDDP have been issued.

## **2. TECHNOPRENEUR PROMOTION PROGRAMME (TePP)**

Technopreneur Promotion Programme (TePP) is jointly operated by DSIR under its

Technology Development and Innovation Programme of TPDU Scheme and DST under its Home Grown Technology Programme (HGTP) of TIFAC, to tap the vast innovative potential of the citizens of India. Financial support is provided to individual innovators having original ideas to convert them into working models, prototypes etc. The details of the completed, on-going and approved projects supported under TePP during the year under report are given in Annexure-7.

## **3. OTHERS**

**3.1** DSIR participated in a number of exhibitions to showcase the strengths and capabilities of R&D projects supported under TDDP and TePP.

- *“TECHNICHE 2004” at Indian Institute of Technology Guwahati, North Guwahati (Assam) from 3<sup>rd</sup> – 5<sup>th</sup> September, 2004*
- *“Uttranchal International Trade Fair” at Dehradun from 5<sup>th</sup> – 12<sup>th</sup> December, 2004*
- *“Pride of India-Science Expo 2005” during Indian Science Congress at Ahmedabad from 3<sup>rd</sup> – 7<sup>th</sup> January, 2005.*

The aim of these exhibitions was to disseminate various information on DSIR activities to its clientele. Apart from TDDP (earlier PATSER) supported companies, a number of innovators supported under TePP scheme exhibited their achievements with the help of prototype/models, charts etc. during the exhibitions held at Ahmedabad.

**3.2** DSIR has also supported a workshop in association with Indian Institute of Management (IIM), Ahmedabad entitled *“Inventors of India : Knowledge Network for Incubating into enterprises” during 24-26 September, 2004 at Ahmedabad* to help innovators to commercialize their technologies.

**3.3** The projects such as *Technological up-gradation and safety certification of 10 H.P. tractor, Low cost solar cooker, Auto air kick pump, Design cutting machine, Solid bio-mass fired furnace, DC MCBs* are further being scaled up towards commercialization.

#### **4. EXPECTED OUTPUTS AND BENEFITS**

The completed technology development projects supported under Technology Development & Demonstration Programme under TPDU Scheme have resulted in significant technological and commercial

returns to the industries concerned such as cost reduction, higher quality, improved products and processes as well as foreign exchange savings, while building up the R&D capabilities of the industrial units. The on-going projects are expected to result in high commercial/societal impact and will lead to commercialisation and utilisation of 'state of the art' technologies. There have been useful interactions and linkages with other concerned Government departments, National Research Organisations and users during evaluation, approval and implementation of various projects supported under the scheme.



10 HP Tractor



Innovative Cotton Stripper



Ferro-cement Catamaran



Auto Air kick Pump