

VIII(B). CENTRAL ELECTRONICS LIMITED

1. INTRODUCTION

Central Electronics Limited (CEL) holds a unique position among the family of Public Sector Enterprises in Electronics, with its emphasis on indigenous technology inducted both from its in-house developments and from the country's National Laboratories, for its production programmes in diverse hi-technology areas of National Relevance. The activities of CEL are sharply focussed in three thrust areas:

- (i) Solar Photovoltaic Cells, Modules and Systems for a variety of both Rural and Industrial applications.
- (ii) Selected Electronic Systems - Equipment for Railway Signalling and Safety, Cathodic Protection Equipment for Oil Pipelines, Rural Automatic Exchanges (RAX) and Very Small Aperture Terminals (VSATS).
- (iii) Selected Electronic Components - Professional (Soft) Ferrites, Electronic Ceramics, Piezo Electric Elements and Microwave Components.

CEL has been the pioneer in the country in the areas of Solar Photovoltaics, Ferrites and Piezo-Ceramics. Today, it enjoys an internationally recognised status of being among the top few producers of Single Crystalline Silicon Solar Cells in the world.

2 PERFORMANCE IN 1997-98

2.1. Operating results

The production and sales achieved during the year as compared to the previous year are given below:
(Rs. in crores)

	1996-97 (Actuals)	1997-98 (Actuals)
PRODUCTION	61.38	80.21
SALES	60.57	67.00

The Company earned a net profit after tax of Rs. 45 lakhs as against Rs. 80 lakhs in the previous year. The profit for the year has come down since a provision for interim relief for the period from 1.1.1997 to 31.3.1998 amounting to Rs. 60 lakhs was made during the year.

2.2 HIGHLIGHTS OF ACHIEVEMENTS IN 1997-98

2.2.1 Solar PhotoVoltaics (SPV)

In the Solar Photovoltaics Group, 2005.00 KWp of SPV Modules were produced and 1276.22 Kwp of SPV Modules

were sold as against 1644.87 KWp and 1774.92 Kwp respectively in the previous year. A total of 4680 Nos. SPV Power Sources were supplied to DOT for its Rural Telecom Network as against 13000 SPV power sources supplied during the last year. A further repeat order for 7000 Nos. of such systems was expected from DOT, however, the same could not be received by the end of the year resulting in increase in inventory required to execute the same.

33 Nos. of SPV power sources for the Very Low Power TV Transmitters were supplied to Doordarshan during the year. 10 Nos. of SPV Refrigerator Systems were supplied to Coir Board, Cochin.

In the 4th year of the National SPV Pump Programme of the Ministry of Non-conventional Energy Sources (MNES), the Company supplied 55 Nos. of SPV Pumps to various users through Indian Renewable Energy Development Agency (IREDA).

During the year, 1860 Nos. of SPV Lanterns as per the MNES specifications were supplied. The Company has also supplied 728.82 KWP (approx.) of SPV Modules to various customers including nodal agencies and Govt. Departments/ Public Sector Undertakings.

The Company supplied 50 Nos. Deep Well Water Pumping Systems during the year against the order for 200 pumps received from Deptt. of Rural Development (DRD). The work of site survey for the balance quantity was in progress during the year and the installation and commissioning of these systems is expected to be completed in 1998-99.

Exports

The Company has successfully executed export orders of 11.44 KWP of SPV Cells, Modules & Systems consisting of Domestic lights, Street Lights, Solar Water Pumping Systems, Solar Lanterns, etc., worth Rs. 35 lakhs to various countries namely Costa Rica, Uganda, Oman, Bangladesh, Bhutan, Cuba, Zimbabwe, Hongkong and Belgium.

During the year the efforts for the promotion of exports of the company's SPV products particularly in the African Region received further thrust through fund support under the Transfer and Trading in Technology (TATT) Scheme of DSIR.

2.2.2 Electronic Systems

The System Group produced 11983 Nos. of Charge Controllers for the SPV power systems for the DOT's Rural

Telecom Network. 209 Nos. of Universal Axle Counters were sold during the year. 6 Nos. of PTVs were also sold during the year. Against the order for 21 Nos. of VSATs, the Group produced and supplied 11 Nos. of VSATs using know-how from C-DOT to C-DOT/DST against orders received from them. For the balance quantity of 10 Nos. despatch clearance is awaited from DG, NCMRW - National Centre for Medium Range Weather Forecasting, DST, New Delhi.

The System Group has received a turnkey order worth Rs. 14.50 Crores from the Gas Authority of India Limited against Global Tender, for the supply of Captive Power Generation and Cathodic Protection System for the HBJ Pipeline Project. This Project funded by the Asian Development Bank is a Deemed Export Project. The installation work on this project has been completed. Final commissioning and handing over is in progress. The company earned foreign exchange worth Rs. 11.79 crores on this project.

After successful turnkey installations of C.P. Systems for the Chakshu-Panipat Pipeline of IOCL, the company further received from IOCL an order worth Rs. 8.54 crores for a similar turnkey C.P. Project for the Barouni-Haldia Pipeline. The project is likely to be completed in the next financial year.

2.2.3 Components

In the Ferrites Plant, in addition to the normal mix of Ferrite Cores, 2011 Nos. of C-Band Microwave Ferrite Yokes and Rods were successfully completed and supplied for the Phase Shifter Assemblies.

The Group also supplied 24000 Nos. complete PZT Electric Systems to the Defence for their 84 mm. Carl Gustaf ammunition. A further order for 10000 Nos. of the same was also received which will be supplied in the next year.

The Microwave Electronics Division supplied 1000 Nos. of C-Band and 1050 of X-Band Phase Control Modules (PCM) against the order received from Electronics Research & Development Establishment (LRDE), Bangalore of Defence Research and Development Organisation (DRDO).

The Microwave Electronics Division has also supplied during the year, 2 Nos. of Direction Finding (DF) Systems, 3 Nos. of Microwave Sub-systems, like Down/Down-up Converter and Microwave Components like 20 Nos. of Power Dividers and 20 Nos. of Phase Correlators. In addition, orders for a number of New Products for use in Electronic Warfare Systems namely Millimeter Wave Components, Detector Log Video Amplifier (DLVAs), Spiral & Biconical Antennas are under progress. MOU has been signed with LRDE, Bangalore for the manufacture of Phased Arrays for Phased Array Radars

for the Aakash Missile Programme of the Defence Research Development Organisation (DRDO).

Exports

The Component Group exported 22000 Nos. of Piezo Ceramic Tubes for the third successive year with likely further recurring export orders for 10000 Nos. for this component.

3. OTHER HIGHLIGHTS OF 1997-98

3.1 Visits of important dignitaries

The Company remained an attraction point for various important International/National dignitaries. As in the previous years, a number of VIPs visited the Company particularly the SPV Plant. These included foreign delegations from Syria, Burkinafaso, Republic of Benin, Tunisia, Kazakasthan, Zambia and Israel. The other notable visitors were:

Shri Swaran Singh Boparai, K.C, Secretary, MNES, R.Adm. SV Gopalachari, DG, Secretary, Naval (Hqrs.), Cmdr. SC Arora, Director General, DQA(N), Shri Virender P. Singh, Abassador of India, Hawana(Cuba), DR. Anil K.Malhotra, Regional Energy Adviser, World Bank, Prof. AK. Roy Choudhry, Director NPL, New Delhi, HE Dr. PV Joshi, Indian High Commissioner, Designate to Guyana, and others.

3.2 Voluntary retirement scheme

As part of continued efforts to meet its commitment in the Capital Restructuring proposal to reduce the manpower to bring down the fixed overhead costs, the company re-introduced the Voluntary Retirement Scheme during the year. The unspent grant of Rs.100 lakhs received during 1996-97 was utilised to relieve 11 employees, the balance amount will be utilised in the next year. The total manpower stood at 880 Nos. as on 31.3.1998 as against 950 before Capital Restructuring.

3.3 Memorandum Of Understanding (MOU)

The Company has been a regular signatory of MOU with the Government, since 1992-93. Based on the actual performance for the second consecutive year ending 31st March, 1998 the company has got 'Excellent' rating based on the MOU performance scoring for the year 1997-98.

4. TECHNOLOGY ABSORPTION, ADAPTATION AND INNOVATION

The Pilot Plant for the manufacture of Buried Contact High Efficiency Solar Cells based on the laboratory know how taken from University of New South Wales (UNSW), Australia, has been put up and made operational. On this plant, special type of High Power and High Power Density modules were manufactured and supplied to ONGC and WBREDA, for offshore platforms and power plant applications.

5. DESIGN & DEVELOPMENT

5.1 Solar photovoltaic group

The SPV-Diesel Hybrid Power Plant developed by CEL, with the fund support from DSIR under PATSER Schemes, was installed at Manesar Repeater Station of DOT for extensive field trials. It has been working satisfactorily without any failure and to the satisfaction of DOT. The project has now been closed after being duly certified by DOT on the satisfactory performance of the plant.

Another project funded under PATSER Scheme is the development of SPV Charger for Ni-Cd batteries using Smart Charging Technology. It is initially targeted for use by Army. First prototype of the same has been fabricated and laboratory trials are under way.

CEL had set up a pilot plant for the manufacture of Ultra High Efficiency (UHE) Crystalline Silicon Solar Cells using the Buried Contact Technique know-how obtained from UNSW, Australia. An agreement was entered into between CEL and N.A.L, Bangalore for developing a fast electroless plating process for copper deposition for the above UHE solar cell production process. This will enhance the throughput of the production line, thus making the process commercially more cost effective. This pilot plant is being further expanded into a commercial plant of 1 MW capacity at CEL.

5.2 COMPONENT GROUP

5.2.1 Professional Ferrites

With the objective of achieving diversification in Ferrite Division and to add high frequency Ferrite Components in the present range of Ferrites manufactured in the Ferrite Plant, a project has been taken up for development of Ni-Zn ferrite materials and components under S&T support from DSIR. This will result in the addition to the product portfolio of a new range of ferrite cores with higher value addition and catering to, among other things, the EMI/EMC applications which is an emerging market all over the world.

5.2.2 Microwave Electronics

Upgradation of Technology of PCM's and Phased Arrays have been taken up with the development of Multi Channel driving system. The Discrete Circuit Model of the system has been successfully demonstrated to LRDE, Bangalore. The development of ASIC of the same is being negotiated with a foreign foundry.

5.3 Electronic systems

First prototype of Solid State Interlocking System for use by Railways was developed jointly by CEL & C-DAC, incorporating the latest features and revised specifications laid down by RDSO, Lucknow. The development is supported through the PATSER scheme of DSIR. Activities for

engineering development and fabrication of the final prototype for submission to RDSO for extensive field trials and type approval were taken up during the year.

6. ROLE IN NATIONAL TECHNOLOGY MISSIONS

Company's SPV group supplied about 4680 SPV Power Sources for the DOT's VHF Rural Telecommunication Network. The Group had also supplied 50 Nos. of Deepwell Water Pumping Systems for National Drinking Water Mission under the Deptt. of Rural Development.

7. FOREIGN EXCHANGE RECEIPTS AND OUTGO

During the year 1997-98, your Company has spent Rs.3104 lakhs in foreign exchange as against Rs.1750 lakhs in the previous year towards the purchase of capital equipment, raw materials and components, travel etc.

The Company has earned foreign exchange of Rs. 1210 lakhs as against Rs. 267 lakhs in the previous year from export of its products.

8. ADVERTISEMENTS, ENTERTAINMENT EXPENSES AND EXPENDITURE ON GUEST HOUSE

A total expenditure of Rs. 0.38 lakhs was incurred during the year on commercial advertisements as against Rs. 0.55 lakhs in the previous year. An amount of Rs. 1.69 lakhs was spent on entertainment as against Rs. 1.83 lakhs in the previous year. The Company has not invested any amount on construction or maintenance of a Guest House.

9. ENERGY CONSERVATION

The Company being an electronic industry, its operations are not energy intensive. Therefore, the requirement to furnish information on conservation of energy/energy consumption under rule 2(A) of Companies (Disclosure of Particulars in the Report of Board of Directors) Rules 1988 is not applicable to the Company.

10. PARTICULARS OF EMPLOYEES

In accordance with the Companies (particulars of employees) Rules 1975 read with Sub Section 2-A of Section 217 of the Companies Act, 1956 as amended in 1988, none of the employees of the Company either employed throughout the year or employed for a part of the year under review was in receipt of remuneration more than that minimum prescribed in the Rules.

11. INDUSTRIAL RELATIONS

The Company had fairly cordial industrial relations during the year as a result of the Management's continuous dialogue with the recognised Workers Union and with the Officers/Executives Associations.

Employees participation in management continued through the forums of Shop Level and Plant Level Committees constituted for the purpose. 21 Meetings of the Shop Floor Committees and 13 of the Plant Level Committees of the different divisions of the Company were held during the year as against 12 and 4 respectively in the previous year. Other participative forums like Canteen Managing Committee, Safety Committee, IRC, Medical Committee, etc. also functioned actively.

12. HUMAN REOURCES DEVELOPMENT

In the face of global competition due to economic liberalisation programme of the Government and recognising the fact that in order to survive, the organisation has to be made a "Learning Organisation", increased emphasis was laid on the Training & Development of employees. Towards this end, all out efforts were made to impart training in the various facets of activities with the aim to broaden the skill and knowledge base of various categories of the employees.

601 Mandays Training was undertaken by organising in-house training programmes and 107 Mandays training by sponsoring employees to external training programmes for specialised courses during the year 1997-98.

13. WELFARE OF RESERVED CATEGORIES

All Government directives relating to the Reserved Categories such as, Scheduled Castes, Scheduled Tribes, the Physically Handicapped, Ex-Servicemen etc. continued to be implemented during the year. The total number of employees in these categories were 234 which represents about 26.59% of the total strength of the Company as on 31st March, 1998.

14. USE OF HINDI

With a view to ensure the proper implementation of official language policy of Government of India and the directives received from time to time in this regard, Official Language Implementation Committee, Sub-Committee and branch of Kendriya Sachivalaya Hindi Parishad emphasized on progressive use of Hindi in the Company during the year. The employees continued to be trained in Prabodh, Praveen, Pragma Hindi courses, Hindi typewriting and Hindi Computer. Hindi week was organised from 14.9.1997 to 20.9.1997. The employees are being encouraged and motivated to work in Hindi. The work for writing notes, reports and letters etc. in Hindi is in progress.