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**International Entrepreneurial Meet  
on  
Investment and Technology Promotion and Transfer for  
Manufacturing of Composites Material for Low Cost Housing  
13-16th December 1999, at CMTI, Bangalore, India**

**Final Report**

**UNIDO Project No. - XP/GLO/99/048  
UNIDO Contract No. - 99/299P**

**20 December 1999**

**Contractor:**

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### ABBREVIATION OF NAMES

<b>Abbreviation</b>	<b>Full Name</b>
ASTRA-IISc.	Application of Science & Technology to Rural Areas, Indian Institute of Science
BMTPC	Building Materials & Technology Promotion Council
CMTI	Central Manufacturing Technology Institute
CSIR	Council for Scientific & Industrial Research
CTI-BHEL	Ceramic Technology Institute, Bharat Heavy Electricals Ltd.
GOI	Government of India
HUDCO	Housing & Urban Development Corporation
ICAMT	International Centre for Advancement of Manufacturing Technology
IPIRTI	Indian Plywood Industries Research & Training Institute
ITC	International Technology Centre
ITP	Investment & Technology Promotion
RRL	Regional Research Laboratory
RV-TIFAC	Rastriya Vidyalaya - Technology Information Forecasting Assessment Council
STEM	Centre for Symbiosis of Technology, Environment and Management
UNIDO	United Nations Industrial Development Organisation

## **SUMMARY**

The aim of the sub-contract is to organize a meeting of entrepreneurs from Africa and India in order to share the experience in advances of manufacturing technologies in the area of production of alternate materials based on local resources for low cost housing and to provide organizational support for the exhibition organized by M/s. Building Materials & Technology Promotion Council (BMTPC), New Delhi.

The output expected of sub-contract is the successful organisation of the seminar by providing general logistic, administrative, technical, secretarial support as well as with local transportation for the organisation and execution of the meeting. And also, successful organisation of the exhibition by the Building Materials & Technology Promotion Council (BMTPC) by providing space, power and all other infrastructural planning & support.

**International Entrepreneurial Meet  
on  
Investment and Technology Promotion and Transfer for  
Manufacturing of Composites Material for Low Cost Housing  
13-16th December 1999, at CMTI, Bangalore, India**

**1.0 Introduction:**

The International Centre for Advancement of Manufacturing Technology (ICAMT) was envisaged as an International forum to assist the developing countries in enhancing their technological performance, quality of life and promotion of North-South and South-South co-operation and building up partnerships for sustainable development. In order to achieve this, as a first step, an International meeting of Entrepreneurs from Africa and India was organized in order to share the experiences as well as exhibit the manufacturing technologies in the area of production of alternative materials based on local resources for low-cost housing. The meeting took place from 13th to 16th December 1999 at CMTI, Bangalore, India.

The whole programme was to focus on interaction between the participants from Africa and India with a view to encourage transfer of technology and to build up industrial partnerships.

**2.0 Scope of Work:**

CMTI is to provide the following services:

- Finalize the programme of the meeting in co-operation with the ICAMT and UNIDO Programme Manager.
- Select and prepare the premises with the appropriate equipment for conducting the meeting and make them available for the duration of the event.
- Providing the participants from African countries and invited speakers with accommodation and boarding.

- Providing general logistic, administrative, technical and secretarial support as well as with local and outstation transportation for the organization and execution of the meeting. It will include copying and distribution of documents and papers among the participants.
- Prepare a Technical Report and submit it to UNIDO.

### **3.0 Work performed by CMTI:**

CMTI has provided the necessary support and facilities and executed the various tasks as specified under the Scope of Work.

#### **3.1 Seminar Program:**

The duration of the Seminar was from 13th to 16th December 1999 and was held in CMTI, Bangalore. The technical sessions were on 13th and 14th December 1999. This was followed up by visits of International Entrepreneurs (from African countries) on 15th and 16th December 1999 to the Indian enterprises and commercial production units in the area of production of composite and other materials for Low cost Housing.

CMTI has executed the following work in connection with the program:

- Finalize the programme of the Seminar.  
Annexure-1 shows the Seminar programme - Inaugural and Technical Sessions.
- Providing the Seminar Hall with necessary preparations and appropriate equipment for audio-visual presentations.
- Arranging for local transportation and communication during the Seminar.
- Providing hotel accommodation and boarding for the participants from African countries and invited speakers for the entire period of the Entrepreneurial Meet.
- Copying and distribution of Seminar papers, Handouts and other brochures to promote ICAMT and related UNIDO programmes.
- Providing logistic, technical, secretarial and administrative support.

Annexure-2 gives the list of participants of the Seminar.

Annexure-3 shows the list of papers presented in the Seminar.



### 3.2 Visits of African delegates:

Suitable logistic arrangements including transportation were made to the African participants for the visits to the Indian enterprises and commercial production units located both in Bangalore and other places outside Bangalore.

Annexure-4 gives the detailed program of the visits

### 4.0 Exhibition:

In conjunction with the Entrepreneurial Meet, an exhibition was organized to show different building materials used in construction industry for low-cost housing and demonstrated the machines producing those building materials based on local resources.

The exhibition was held in the premises of CMTI and all the needed help was provided to Building Materials & Technology Promotion Council (BMTPC). The required infrastructural facilities namely space, electric power, distribution of propagation material and administrative support were provided.

Annexure-5 shows the representative photographs covering both seminar and exhibition.

**SEMINAR PROGRAMME - INAUGURAL AND TECHNICAL SESSIONS**

**DECEMBER 13, 1999**

**VENUE: CMTI Seminar Hall**

**INAUGURAL SESSION**

**Time: 10.00 AM to 11.30 AM**

Welcome by Mr. V.K.Yadav, Project Director, ICAMT

Theme by Mr. T.N. Gupta, Executive Director, BMTPC, New Delhi

Address by Dr. Yo Maruno, Deputy to the Director General, UNIDO: Presented by Mr. V.Kozharnovich

Inaugural Address by Mr. S.S. Chattopadhyay, Secretary, GOI

Vote of thanks by Mr. Vasantha Kumar, Director, CMTI

**TECHNICAL SESSION - I**

**Time: 11.30 AM to 01.30 PM**

**Environmental Protection and Energy Saving through Disposal and Recycling of Wastes.**

- Wastes from Industry, Mines & Agriculture - Issues, Technologies and Future Possibilities.
- The National Status on R&D, Standardization, Commercialization of Waste Management and utilisation

**Chairman: Dr. Neelambar H, Professor, Dept. of Economic History  
University of Lund, SWEDEN**

**Speakers:**

<b>Sl. No.</b>	<b>Speakers</b>	<b>Country</b>
1.	Mr. V.Kozharnovich, UNIDO, Vienna	Austria
2.	Mr. Jonah M.Ichoya, Ichoya Consortium Co.	Kenya
3.	Mr. Parthasarathi, Development Alternatives	India
4.	Mr. A.Anjaiah, Managing Director, Dual Fabs	India
5.	Mr. Yogananda M R, Structural Consultant	India

**DECEMBER 13, 1999**  
**VENUE: CMTI Seminar Hall**

**TECHNICAL SESSION - II**      **Time: 02.30 PM to 04.00 PM**

**Use of Wastes - As Important Secondary Resources for Cements, Blended Cements, Concrete, Walling and Roofing Building components.**

**Chairman: Prof. K.S.Jagdish, ASTRA, IISc., Bangalore**  
**Keynote Address: Prof. K.S.Jagdish, ASTRA, IISc., Bangalore**

**Speakers:**

<b>Sl. No.</b>	<b>Speakers</b>	<b>Country</b>
1.	Mr. W.Balu Tobarro	Uganda
2.	Mr. Jones Stambuli, Correria Construction Co. Ltd.	Malawi
3.	Prof. B.Bhaskara Rao, Executive Director., STEM	India
4.	Mr. Yreinto Loureiro	Mozambique
5.	Mr. S.N.Koranne, Susanji Udyog	India

**DECEMBER 14, 1999**  
**VENUE: CMTI Seminar Hall**

**TECHNICAL SESSION - III**      **Time: 09.30 AM to 11.00 AM**

**Use of Wastes - As Important Secondary Resources for Cements, Blended Cements, Concrete, Walling and Roofing Building components.**

**Chairman: Mr. V.Suresh, Chairman & Managing Director, HUDCO**

**Speakers:**

<b>Sl. No.</b>	<b>Speakers</b>	<b>Country</b>
1.	Dr. R.Gopalan, Director & Chief Executive Officer, RV-TIFAC	India
2.	Mr. B.Chandrasekar, Deputy General Manager/CTI, BHEL	India
3.	Mr. R.L.Mbawala, Tamlet Ltd.,	Tanzania
4.	Mr. Thomas Mbao, Residential Housing Initiative	Zambia
5.	Dr. (Mrs.) Mohini Saxena, Scientist, RRL, Bhopal	India
6.	Mr. Subroto Roy, Development Alternatives	India
7.	Mr. K.V.Rao, General Manager, Hyderabad. Industries	India

**DECEMBER 14, 1999**  
**VENUE: CMTI Seminar Hall**

**TECHNICAL SESSION - IV      Time: 11.30 AM to 01.00 PM**

**Emerging Technologies for Building Materials based on Bio-Mass, Bamboo, Plantation Timbers and Fibres and Other Lignocellulosic Wastes.**

**Chairman: Mr. A.K.Bansal, Director, IPIRTI, Bangalore**

**Speakers:**

<b>Sl. No.</b>	<b>Speakers</b>	<b>Country</b>
1.	Mr. J.K.Prasad, BMTPC	India
2.	Mr. S.S.Zoolagud, IPIRTI	India
3.	Mr. Hamilton Sithole	Zimbabwe
4.	Mr. Gopal Krishna	India
5.	Mr. Tony Mathews, Director, Duraflex	India

**LIST OF PARTICIPANTS OF THE SEMINAR**

- |  |  |   |
|--|--|---|
| 1) Mr. K.L.SETHI<br>Protocol Officer<br>Dept. of Industrial Policy &<br>Promotion<br>Ministry of Commerce & Industry<br>NEW DELHI                | 9)Dr. H.B.Rudresh<br>Partner<br>M/s.Vijaya Building Materials<br>522, IV Phase, Peenya Ind.<br>Area<br>BANGALORE - 560 058                         | 17)Ms. Sumathi Bhat M<br>Architect<br>M/s.Chandavarkar &<br>Thacker<br>No.7, Palace Cross<br>Road, BANGALORE-         |
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83)Mr. V.S.Shanmugam  
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85)Mr. T.N.Gupta  
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BMTPC  
NEW DELHI

87)Mr. Kozharnovich  
UNIDO



**LIST OF PAPERS PRESENTED IN THE SEMINAR**

<b>Sl. No.</b>	<b>Title of the Paper</b>	<b>Presented by</b>
1.	Engineering Materials for the Future: Composite materials for the Building and construction industry	Eng. W.Balu-Tabaaro Principal Mineral Dressing Engineer Dept. of Geological Survey & Mines P.O.Box 9, Entebbe, Uganda
2.	A Specialised Agency of the United Nations dedicated to promoting sustainable industrial development in countries with developing and transition economics	UNIDO International Technology Centres (ITCs)
3.	Project Document of "Investment and Technology Promotion and Transfer for Manufacturing of Composite Materials for Low-cost Housing in Africa	UNIDO
4.	Establishment and Networking of UNIDO International Technology Centres	Mr. V.Kozharnovich, Programme Manager, Investment & Technology Promotion Branch
5.	UNIDO Programme to Build up Strategic Partnership Bridging Research with Industry	Mr. V.Kozharnovich, Programme Manager, Investment & Technology Promotion Branch
6.	UNIDO Investment and Technology Promotion Programme	Mr. V.Kozharnovich, Programme Manager, Investment & Technology Promotion Branch
7.	Technologies Developed at RRL, Bhopal using Industrial Wastes	Dr. (Mrs.) Mohini Saxena
8.	Use of Phospho Gypsum	M/s.India Gypsum Ltd., New Delhi
9.	Wood Substitute - An Emerging Technology based on Industrial Wastes and Vegetable fibre	Dr. (Mrs.) Mohini Saxena and Mr. J.Prabakar, RRL, Bhopal
10.	New Technologies for Utilisation of Fly Ash in Manufacture of Building Materials - A Case Study	Mr. A.Anjaiah, Managing Director M/s.Dual Buildtech Ltd., Pondicherry
11.	Development of Eco-Friendly Cost Effective Materials & Technologies - Standardisation status	Mr. J.K.Prasad Mr. J.Sengupta, BMTPC, New Delhi
12.	Information Bank of Building Products and Producers	M/s.STEM, Bangalore
13.	Construction & Key Building Material Scenario by 2011: First Decade of New Millennium	M/s.STEM, Bangalore
14.	Composites product development for Building and Construction Industry	Dr. R.Gopalan, Director & CEO M/s.RV-TIFAC-CDC, Bangalore
15.	Panels from Non-wood Lignocellulosic Material Technologies Developed at IPIRTI	Mr. Arun K.Bansal, Dr. H.N.Jagadeesh & Mr. S.S.Zoolagud M/s.IPIRTI, Bangalore

**DETAILED PROGRAM OF THE VISITS**

**VISITS TO PLANTS/ PRODUCTION UNITS /FIELD DEMONSTRATION**

**Undertaken by  
AFRICAN DELEGATES**

**DECEMBER 15, 1999**

08.40 Hrs.	Depart Hotel
09.10 Hrs.	Arrive IPIRTI
09.10 - 10.00 Hrs.	Visit facilities at IPIRTI
10.00 Hrs.	Depart IPIRTI
10.00 - 10.40 Hrs.	DR. M.R.Yogananda's Project
10.40 - 11.40 Hrs.	Visit to Khanija Bhavan-Dual Fab Project
11.40 - 13.30 Hrs.	Visit to RV-TIFAC, Composite Design Centre
13.30 - 14.15 Hrs.	Lunch at RV-TIFAC-CDC
14.15 - 16.45 Hrs.	Visit Duraflex, Hosur in Tamilnadu
16.45 Hrs.	Depart Hosur in Tamilnadu
18.15 Hrs.	Arrive Hotel

**DECEMBER 16, 1999**

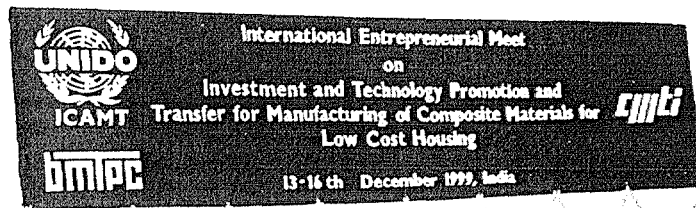
07.00 Hrs.	Depart Hotel, Bangalore for Mysore by Mini Bus (packed breakfast on the way)
09.30 Hrs.	Arrive Mysore
09.30 - 15.30 Hrs. (including time for lunch)	Visit Small & Micro enterprises manufacturing Compressed Soil Blocks, assisted by Developmental Alternatives
15.30 Hrs.	Depart Mysore
18.30 Hrs.	Arrive Hotel, Bangalore

**ANNEXURE-5**

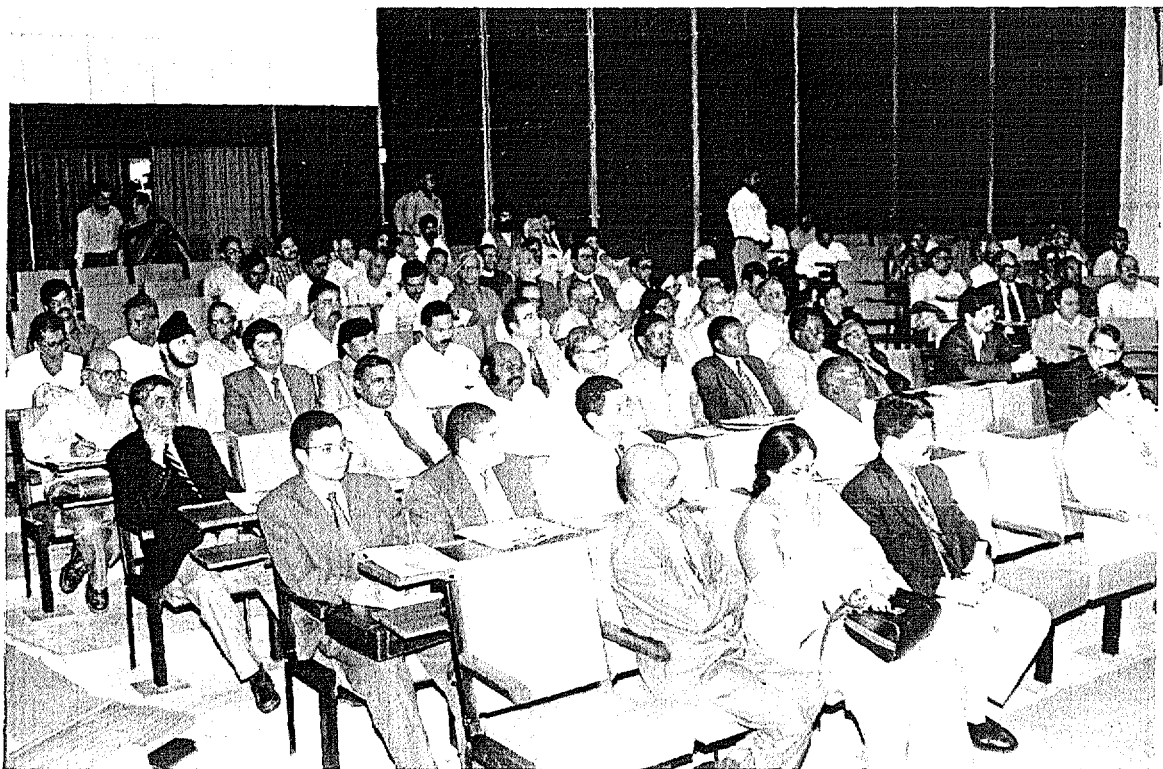
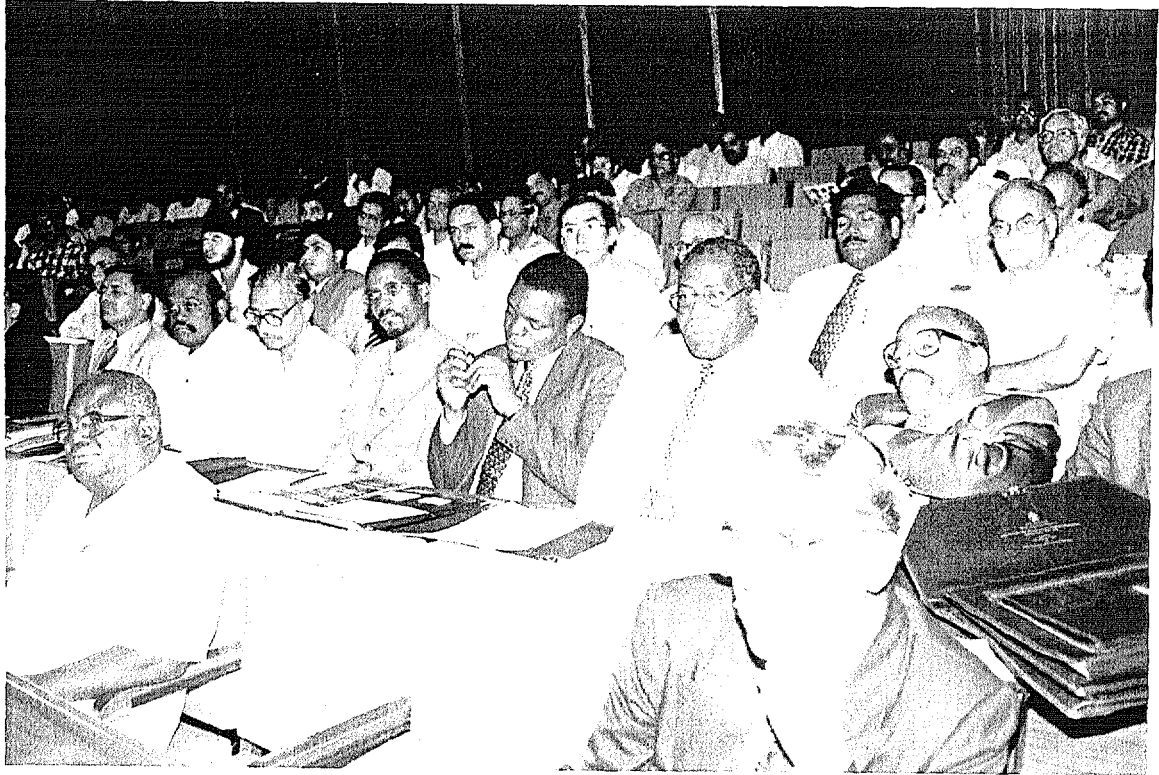
**REPRESENTATIVE PHOTOGRAPHS**  
**SEMINAR AND EXHIBITION**



INAUGURATION OF THE SEMINAR

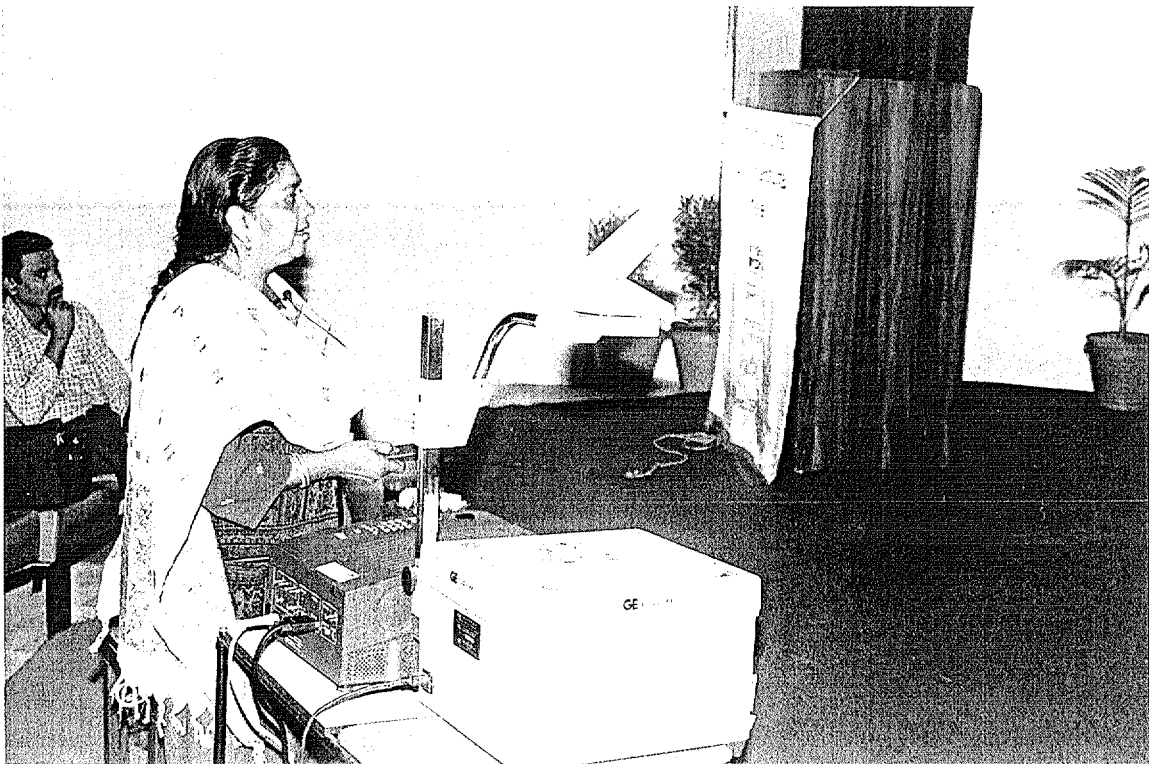


INAUGURAL SESSION - ADDRESS BY MR. KOZHARNOVICH

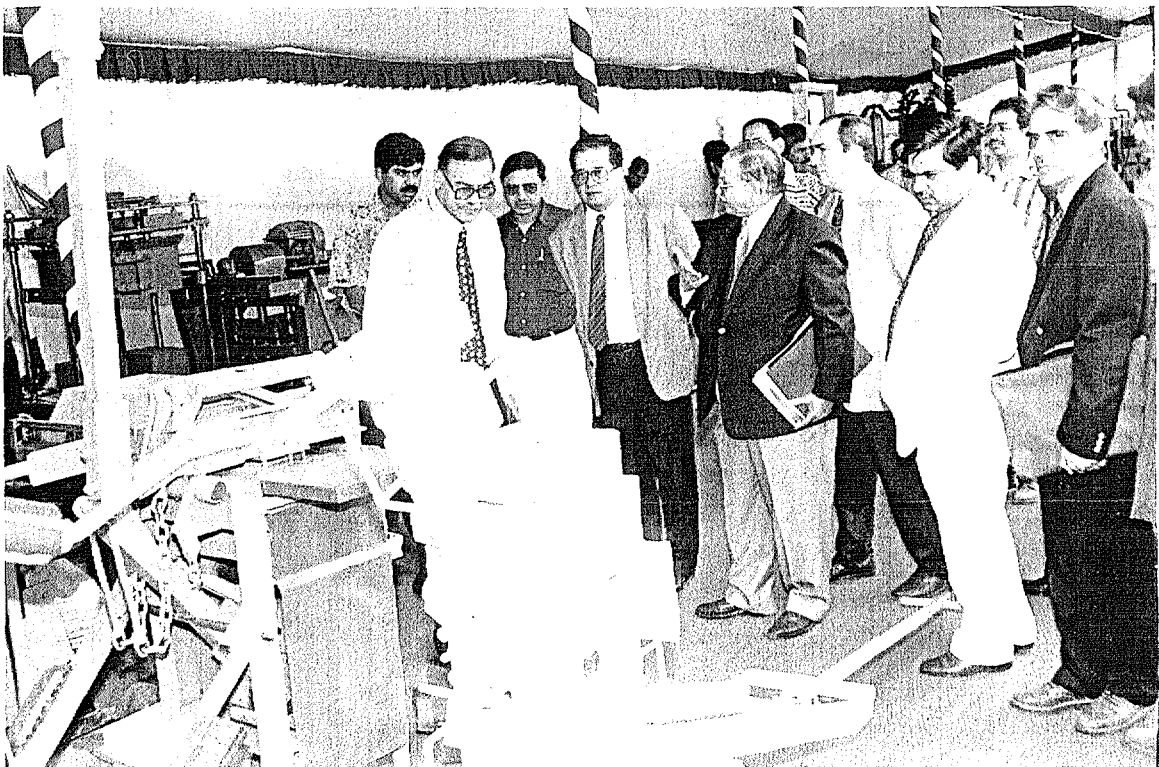
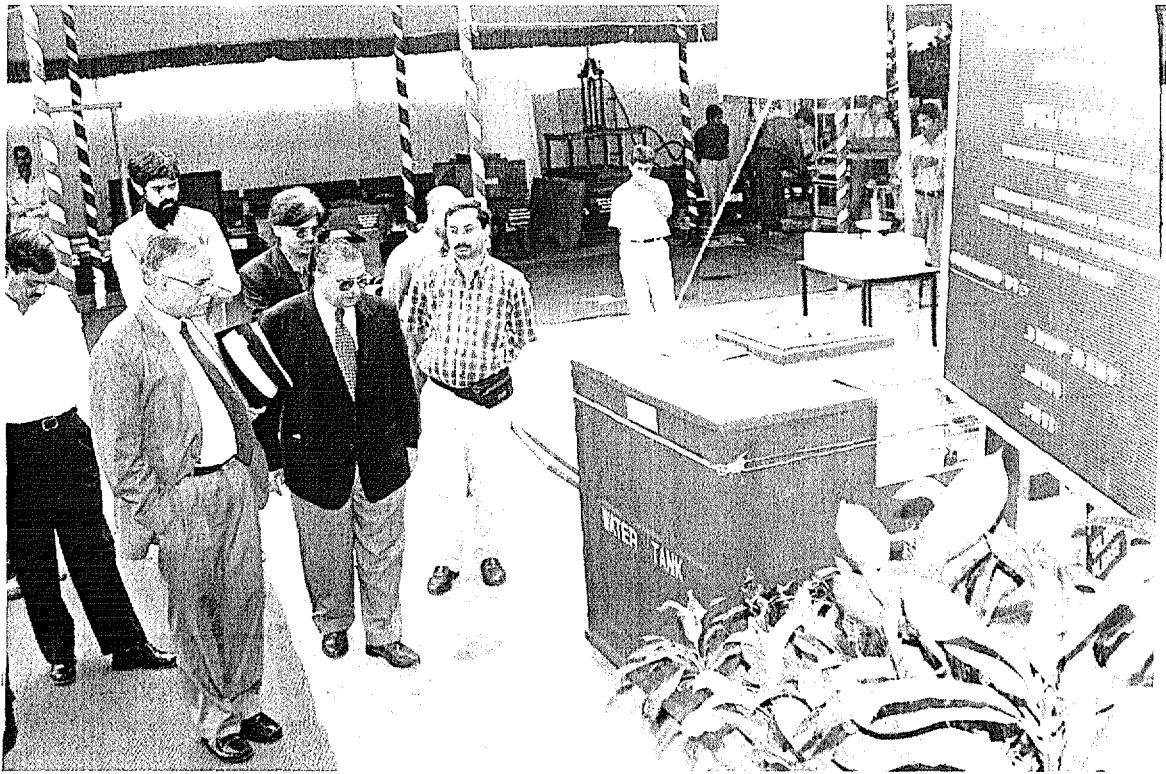


DELEGATES IN THE SEMINAR

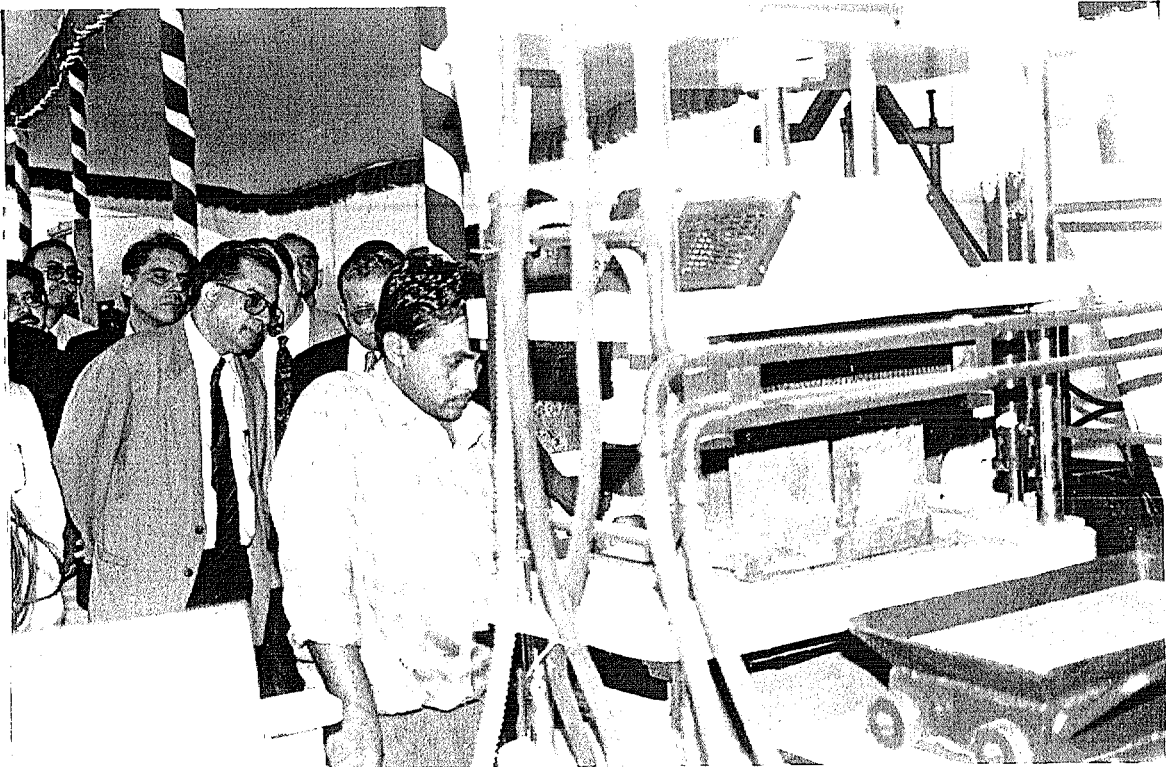
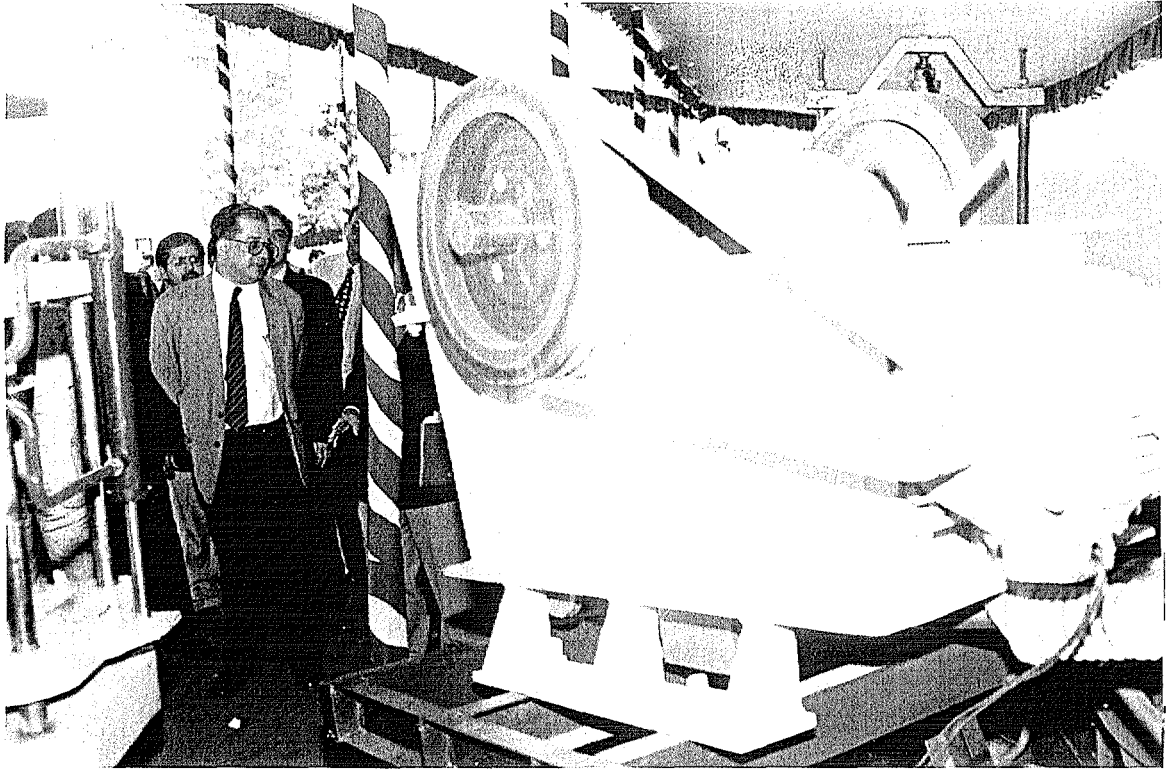
**UNIDO**  
International Entrepreneurial Meet  
on  
Investment and Technology Promotion and  
ICAMT Transfer for Manufacturing of Composite Materials for **CMTE**  
Low Cost Housing  
**BMPC**  
13-16 th December 1999, India



PRESENTATION BY DELEGATES



DELEGATES LOOKING AT THE EXHIBITS

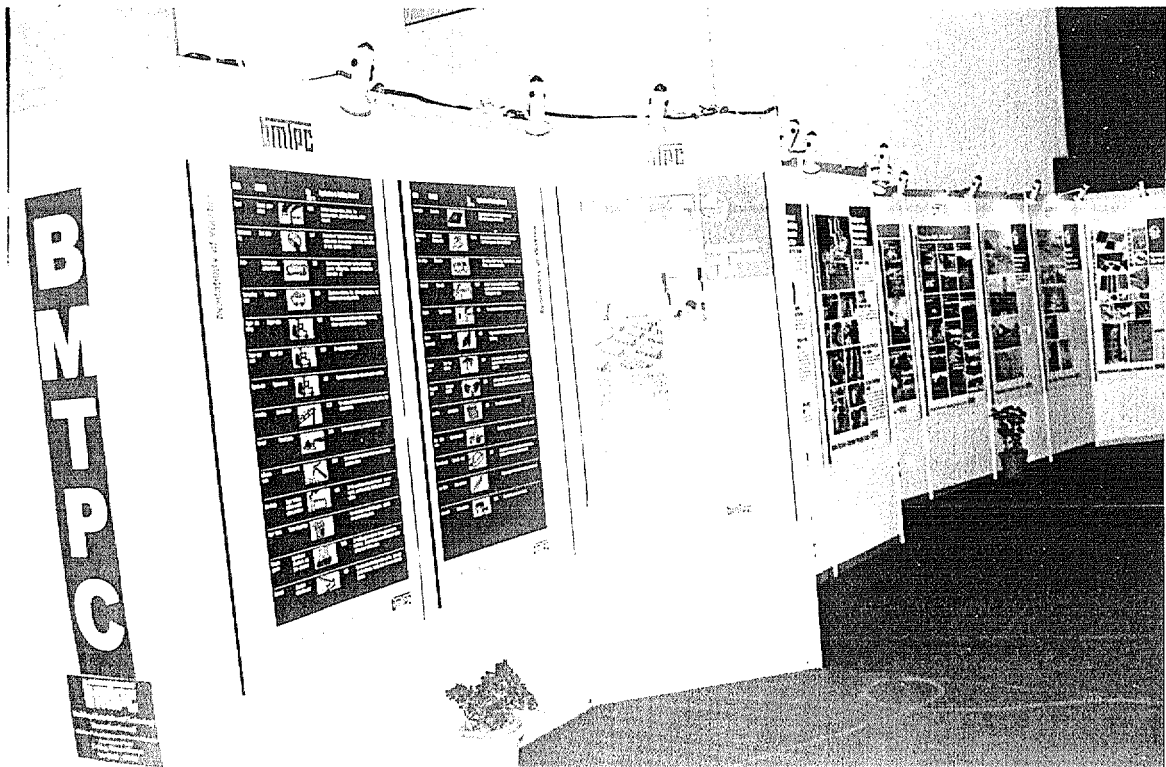


A CLOSE LOOK AT THE EXHIBITS





EXHIBITS AND DELEGATES



EXHIBITS OF MATERIALS AND SERVICES BY BMTPC