

PLASTINDIA'90

INTERNATIONAL PLASTICS EXHIBITION AND CONFERENCE

PRAGATI MAIDAN, NEW DELHI, INDIA ■ MARCH 1-7, 1990



Organised by:



PLASTINDIA FOUNDATION

In association with:

NOWEA



INTERNATIONAL

Nuclear power plant



Mechanised farming



Advanced jet fighters



India on the fast track...

Since India's independence in 1947, extraordinary economic progress has been achieved. In this short span of four decades, India has emerged as one of the fastest developing nations in the world and a major economic force in South and South-East Asia (*Table-I*).

With the deployment of capital and resources of gigantic proportions through a series of five-year economic plans, there have been some significant changes in the Indian economy. The current five-year plan will witness an overall growth rate of 7% with a total outlay of a staggering US \$ 232 billion (*Table II*).

Today, self-sufficient in agriculture and in the manufacture of plant and machinery needed by its major industries, India is now geared towards improving the standard of living of its large population. Also, India is among the world's six leading nations capable of manufacturing complex equipment like nuclear power plants, jet fighters and satellites.

Yes, India has come a long, long way in a mere 40 years.

As India enters the last decade of this century the petrochemical industry, particularly plastics, has contributed significantly in this phenomenal progress and is poised to play a predominant role in the nation's progress during the 90s.

Table-I
India's ranking in the world

SECTOR	RANK
Gross Domestic Product	12
Electricity Generation	11
Nitro Fertilizer Consumption	4
Railway (Passenger KM)	3
Civil Aviation (Passenger KM)	14
Radio Receivers	8
Scooter Production	2
Long Films Production	1
Scientific and Technical Manpower (R&D)	9
Trained Manpower	3
Industry	10

Bombay High oil production facility

Table-II
Plan Outlay

Public
Private

Agriculture

Industry

Power

Transport & Communications

Others

US \$ BN



Plastics – the sunrise industry

The start of the Plastic Industry goes back to the mid-twenties. But the Plastic Industry in India really had a very small beginning in 1941, when the first thermoplastic processing unit was set up. Then, in 1945, Phenol Formaldehyde, a thermoset plastic, was first produced. And, it was only in 1957 that any major effort was made to industrialise plastics, with the commissioning of the first Thermoplastic Polystyrene Plant in Bombay.

The pioneering thrust to the petrochemical industry and thus to the growth of the plastic industry came through the commissioning of the two Naphtha crackers, in the 60s, in the private sector. This pioneered some enduses of plastics and created a new awareness for the use of plastic in agriculture, industry as well as the household sector.

The discovery of oil and gas on the west coast was one of the major events on the Indian economic scene in the 70s. It opened up

prospects for various downstream sectors. Among these, petrochemicals was in a choice position. And the existence of a potentially large domestic market could but reinforce its future.

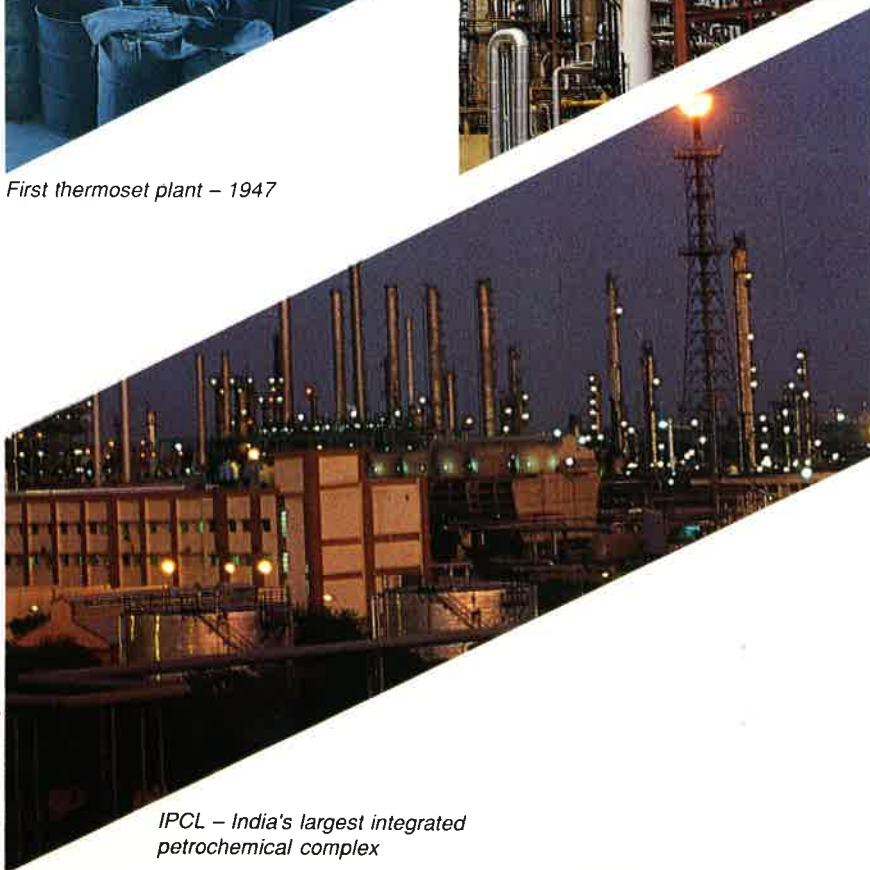
Thus the year 1978 saw the commissioning of one of Asia's most integrated large Naphtha cracker and petrochemical complexes in the public sector. These ventures made available substantially large quantities of plastics and thus the 80s saw a rapid growth in



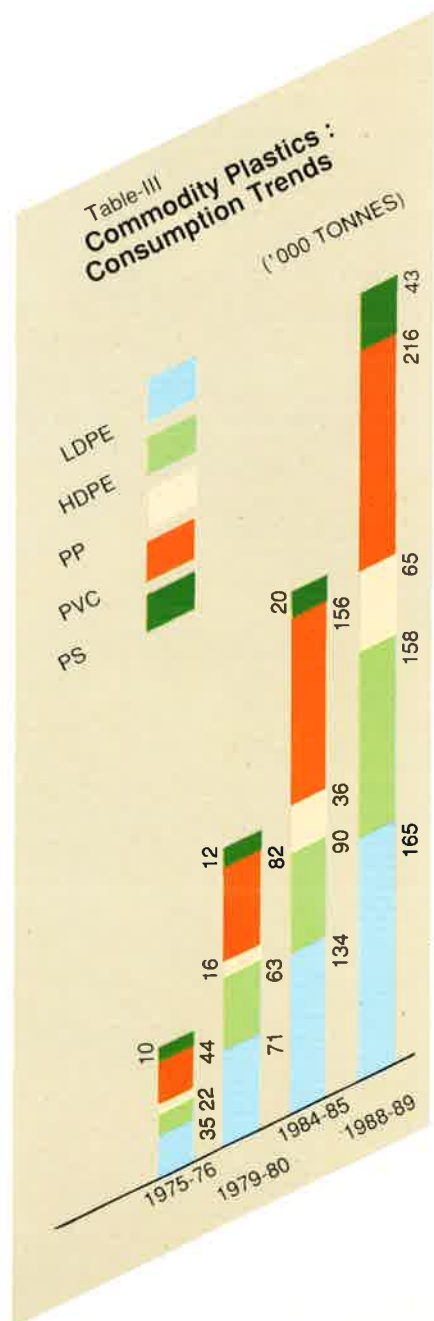
First thermoset plant – 1947



NOCIL's petrochemical plant near Bombay



IPCL – India's largest integrated petrochemical complex



consumption (Table III) in existing applications and also in newly developed applications.

In India, the substitution era for plastics had already begun in the 60s, to which the large quantities available from these plants gave a further fillip. Plastics have undoubtedly replaced conventional materials like metals, wood, paper in agriculture, industry and the household sector.

The uses of plastics in India today are as diverse as the range is wide (Table IV). There is a large variety of plastics, both thermoplastic and thermoset.

The major thermoplastics are: LDPE, LLDPE, HDPE, PP, PVC, and PS.

The thermosets of special interest in the Indian context are: Phenolics, UF, MF, Epoxy and unsaturated polyesters.

Besides these, there is an increasing demand for a large variety of engineering plastics such as polyamides, polycarbonate, polyacetal, polyesters and speciality polymers for critical applications.

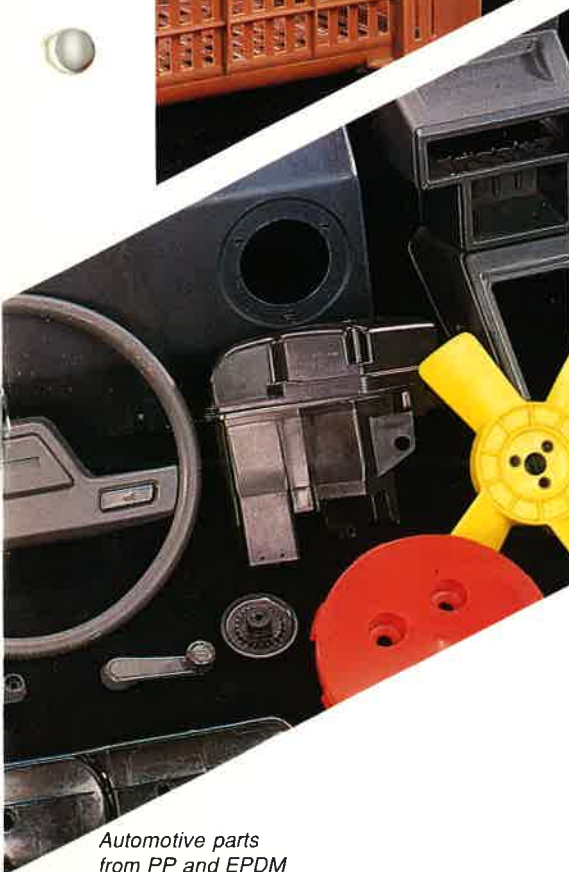
Injection moulded crate from PP and HDPE



Monofilaments from HDPE and PP



Automotive parts from PP and EPDM



Range of moulded houseware from LDPE, HDPE, PP



Table IV

Enduse Consumption Patterns

LDPE/LLDPE

Enduse	('000 TONNES)	
	1984-85	1988-89 (Estimate)
1. Film		
A) Food	26.8	41.0
B) Non Food	39.0	38.0
C) Other Packaging	37.8	42.5
2. Extrusion Coating	11.5	17.5
3. Rotation Moulding	0.5	3.0
4. Wire and Cable	2.5	7.0
5. Injection Moulding	10.0	12.5
6. Others	5.9	3.5
Total	134.0	165.0

HDPE

1. Injection Moulding	22	27
2. Blow Moulding	18	27
3. Woven Sacks	27	65
4. Monofilament	8	15
5. HMHDPE Film	7	16
6. Pipes & Others	6	8
Total	88	158

PP

1. TQ Film	15.9	30.0
2. BOPP Film	1.3	5.0
3. Monofilament and Ropes	3.0	4.0
4. Fibre/Filaments	1.1	4.0
5. Other Extrusions	4.0	6.0
6. Injection Moulding	10.7	16.0
Total	36.0	65.0

PVC

1. Pipes & Fittings	66.3	93.0
2. Wire & Cables	32.0	42.0
3. Calendering	19.0	26.0
4. Footwear	19.0	24.0
5. Others	19.7	31.0
Total	156.0	216.0

PS

1. Refrigerators	3.5	5.3
2. Electronics	8.5	21.7
3. Packaging	2.2	4.5
4. Automotive	0.6	1.3
5. Household & Misc.	5.2	10.2
Total	20.0	43.0

Plastic processing industry

The plastic processing industry in India has undergone a phenomenal change during the 80s with the increased availability of several types of grades of various raw materials.

Many vital applications which could not be promoted earlier due to non-availability of right grades in sufficient quantity started gaining momentum.

With this, suitable machineries for processing and post processing operations were imported and developed indigenously to cope with the increasing demand.

There was a visible shift towards sophistication both in terms of machinery usage and end-product development.

Presently, there are about 12,500 units with a rated capacity to process 1.5 million tonnes of different polymers and with an investment of about US \$ 1325 million (*Table V*).

For the 90s, the following high growth sectors have been identified for plastics:

- * Agriculture, forestry and water conservation
- * Automobiles and transportation
- * Building, construction and furniture
- * Electronics and telecommunication
- * Medicare and personal care products
- * Food processing and packaging
- * Power distribution
- * Exports

Table-V
Processing Industry-Profile

	1979-80	1988-89	2000 AD (Estimate)
No. of Units	6,500	12,500	22,000
No. of Machines	21,500	60,000	1,10,000
Investments (US \$ MN)	51	1,325	3,000
Processing capacity ('000 tonnes)	329	1,500	4,500
Employment	25,000	7,00,000	15,00,000



Collapsible tubes from LDPE



Plastic processing unit in operation

To cater to these sectors, processing techniques which employ sophisticated machinery using state-of-the-art technology from developed countries will play a very crucial role. A beginning has already been made towards this end

by way of the following processing techniques:

- Multilayer co-extrusion
 - Processed food packaging
- Mono and bi-axially oriented films
 - Laminations and overwrappings
- Crosslaminated films
 - Packaging of fertilizers and chemicals
- Wavelock films
 - Tarpaulins, fumigation cover and green houses
- Mono and Multilayer sheet extrusion
 - Spectacle frames, security glazing and thermoforming
- Twin screw extruders
 - Pipes for agriculture and potable water distribution, sewage systems
- Multilayer combi tube
 - Collapsible tubes for toiletries
- Red mud PVC corrugated sheet
 - Low-cost housing
- PP fibre and filaments
 - Industrial filters, geotextiles, carpets, upholstery, soft luggage, diapers, etc.
- Circular and air jet looms
 - Sacks for fertilizer, cement and chemical packaging
- Stretch blow moulding
 - Packaging of oil, mineral water and detergents
- Injection blow moulding
 - Pharma bottles and squeeze tubes
- Blow moulding (30 to 220 ltrs.)
 - Industrial packaging
- Injection moulding (50-3750 tonnes)
 - Furniture, luggage, crates and automotive components
- Structural foam and PIP moulding
 - Furniture, business machines and automotive components

As a natural fallout, the related sectors of auxiliary equipment, instrumentation, quality control and testing equipment will gear themselves to complement the

Medicare products from PVC and PP



Low tunnel from LDPE

Ever-widening gap

growth in the plastic processing industry. Similar growth will also be witnessed in the area of moulds and dies. The above sectors of the industry are presently in the embryonic stage.

Petrochemicals, particularly plastics, has now been recognised by the Indian Government as a "SUNRISE" Industry and has been accorded the highest developmental priority.

At today's level, the demand for major commodity thermoplastics, LDPE, LLDPE, HDPE, PVC, PP and PS stands at 755,000 tonnes. This, when compared to availability of 327,000 tonnes, leaves a glaring gap of over 57%, not a small volume by any standard (*Table VI*).

Realising this, the Indian Government views the petrochemical industry, of which plastics takes the major share, as a thrust area.

This has been largely influenced by:

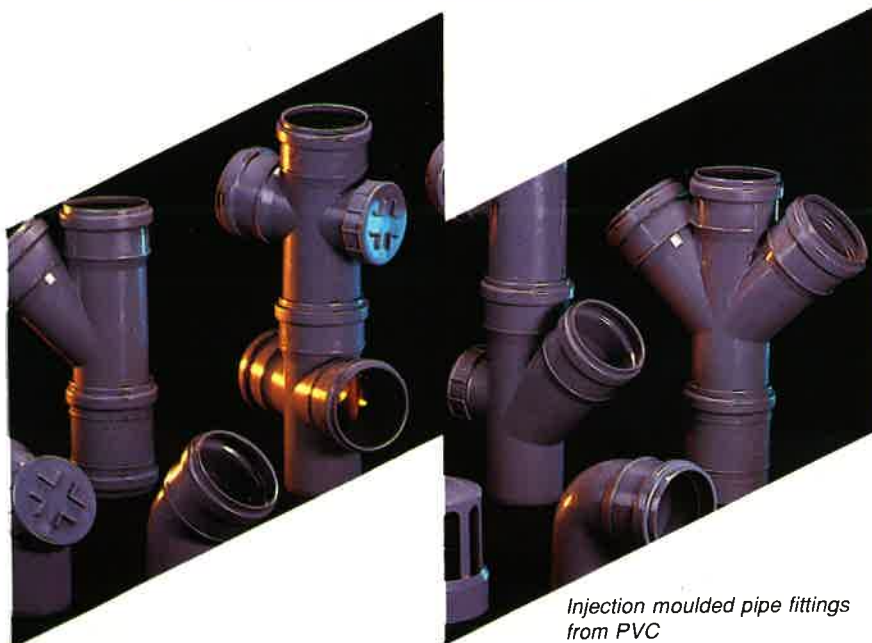
- Enhanced availability of crude oil, associated gas and natural gas from on and offshore fields.
- Appreciation of the impact of petrochemical products on the day-to-day life of the consumer.
- Realization that petrochemical materials complement and not compete with traditional items where output has more or less reached a plateau.

To meet the ever-growing demand, the Indian Government has licensed capacities which, when commissioned, will provide substantially greater facilities. In order to finance these various projects, agreements with international organizations are increasingly being signed.

Table-VI
Demands vs. Supply Analysis(Estimates)

Product	Year	Demand	Availability	Gap
LDPE	1989-90	200	80	120
	1994-95	482	420	62
	2000 A.D.	708		
HDPE	1989-90	160	40	120
	1994-95	378	255	123
	2000 A.D.	555		
PVC	1989-90	280	130	150
	1994-95	485	287	198
	2000 A.D.	713		
PP	1989-90	70	55	15
	1994-95	286	255	31
	2000 A.D.	420		
PS	1989-90	45	22	23
	1994-95	82	71	11
	2000 A.D.	120		
Total	1989-90	755	327	428
	1994-95	1713	1288	425
	2000 A.D.	2516		

*Moulded luggage
from HDPE, PP and ABS*



*Injection moulded pipe fittings
from PVC*



Moulded furniture from filled PP

Exports

Yet by the turn of the century, the projected demand figure will touch 3,000,000 tonnes. Will the country be able to meet these needs, or even come close?

The decade of 90s thus holds a promise for an investment potential of US \$ 17 billion in the primary petrochemical sector, of which a substantial percentage is to be earmarked for the growth of the plastics industry (*Table VII*).

In the past, supplies of processed goods have been primarily directed towards satisfying the local demand. On the export front the performance of this industry has remained at a somewhat unimpressive level of around US \$ 45 million during the last five years.

Significantly, the processing capacity of almost 130,000 tonnes has been identified as available for export production valued at US \$ 270 million in the international market after conversion to various enduse applications using the five basic polymers viz. LDPE, PP, HDPE, PVC and PS. A typical example is the woven sacks industry with an installed capacity of 100,000 tonnes (largest outside China) of which 60,000 tonnes can be spared for exports valued at US \$ 72 million. Besides woven sacks, some of the products having a good export potential are listed below:

Films –

Heavy Duty, Multilayer, Stretch/Shrink, BOPP, HMHD, Wavelock, Crosslaminated.

Moulded Products –

Thermoware, Toys, Luggage, Houseware, Furniture & Industrial Components.

Others –

Pipes & Fittings, Corrugated Sheets, Drip/Micro Sprinkler Systems, Medicare Items, Structural Foam, Profiles, Red Mud Sheets, Special Compounds/Colour Concentrates, etc.

Yes, we are talking of a high growth market with a compounded annual growth rate of 10-15% compared to 4-6% growth rate of the developed countries where the acceptance of plastic as a means of progress is a thing of the past. This projected high growth rate has, to say the least, an aura of optimism with a high level of confidence. The confidence that comes from a promise of other high growth areas on the Indian economic horizon like automobiles, construction, telecommunications, electronics, consumer durables and exports.

Table VII
Investment Potential

Product Group	Additional Capacity '000 mt	No.of Units	Total Investment US \$ mn
Feed Stock			
Ethylene	2290	6 Crackers	1935
Propylene	1045		
Butadiene	190		
Thermoplastics			
LDPE/LLDPE	763	8	815
HDPE	644	11	688
PP	495	8	511
PVC	751	7	1021
PS	124	3	116
Other Petrochemicals	5458	114	11914
Total	11760	157	17000



*Circular looms for
Raffia from HDPE, PP*



*Injection moulded TV cabinets
from HIPS*

PLASTINDIA'90

In short the 90s will see:

- a) An investment potential of US \$ 17 billion in the primary petrochemical sector, of which plastics will command the lion's share.
- b) India as a large volume importer of thermoplastics.
- c) A quantum leap in the plastic processing capacity from 1.5 million tonnes to 4.5 million tonnes.
- d) Sophisticated processing techniques and machines with state-of-the-art technology installed on a large scale.
- e) Consumption of plastics increasing from 700,000 tonnes to 3,000,000 tonnes and per capita consumption going up from 0.7 kg. to 3 kg.
- f) Employment in the processing sector increasing from 7,00,000 at present to 15,00,000.
- g) Contribution to the exchequer increasing from US \$ 990 million to US \$ 3350 million.

PLASTINDIA FOUNDATION, together with its international associate NOWEA, will endeavour to unite technocrats, designers and manufacturers from various disciplines related to plastics. A number of manufacturers and experts from leading international organisations in the U.S., Europe and the Far East will participate: to share experiences and exchange information through seminars and forums, display products, equipment and technology by way of well-laid exhibition premises. And swap views, needs and ideas on the international and local plastic scene.

PLASTINDIA'90 is expected to attract participants from India and abroad. Processors... Machinery manufacturers... Raw material suppliers... Endusers... and Trade promotional bodies are expected to make a beeline for this event.

International participants will have the advantage of effective penetration and sale of products

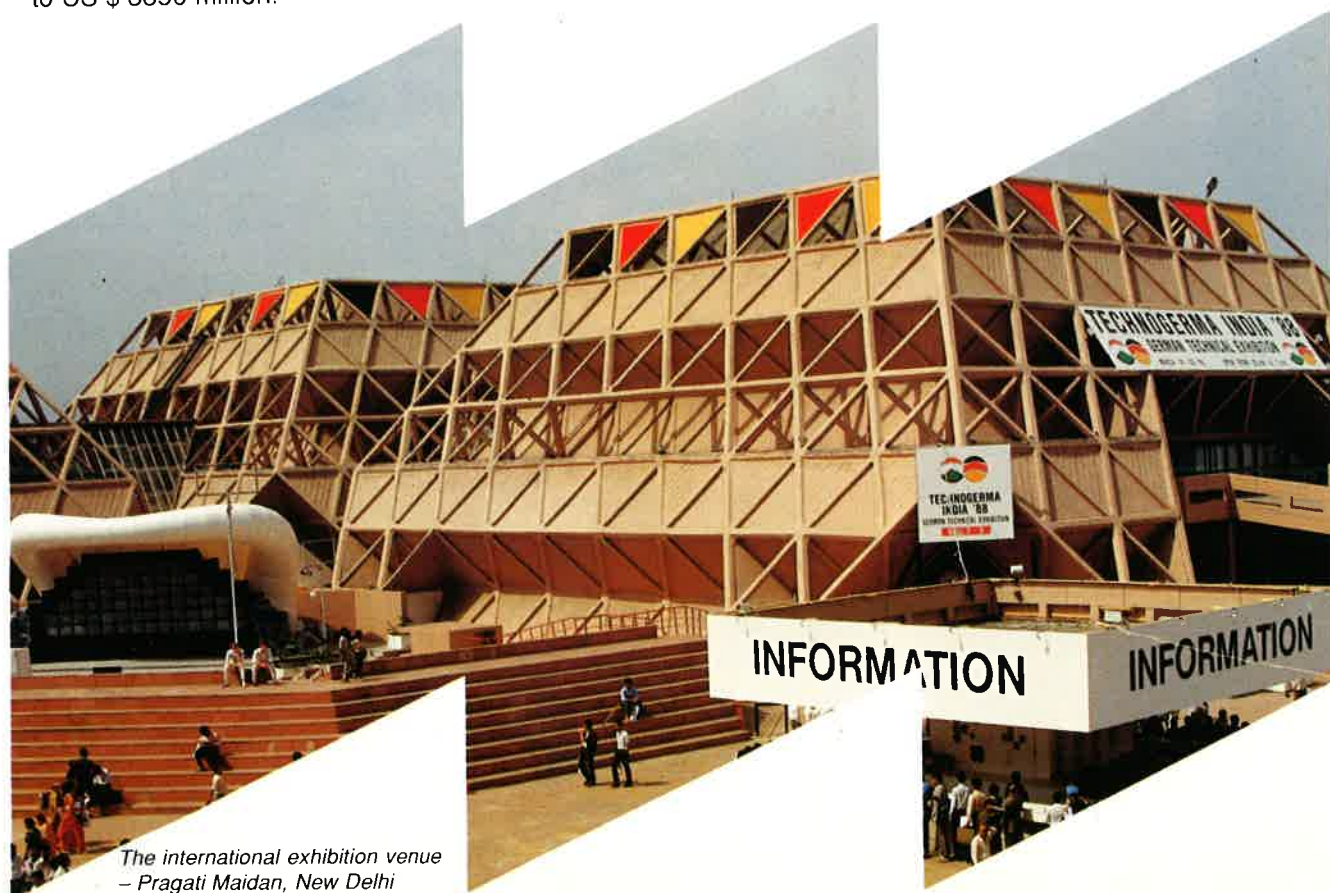
in an ever-expanding market. By meeting potential Indian partners... Suppliers of raw materials... and Machinery manufacturers. As well as exposure to visitors from developing countries belonging to South-East Asia.

National exhibitors at PLASTINDIA'90 will also stand to benefit. Apart from imbibing information on achievements and new developments related to design, technology and machinery manufacture, interaction with foreign exhibitors and delegates may lead to new collaborations and export possibilities.

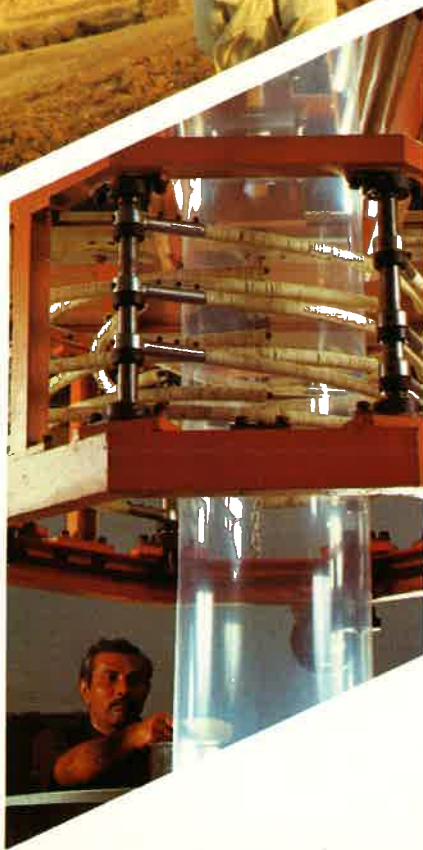
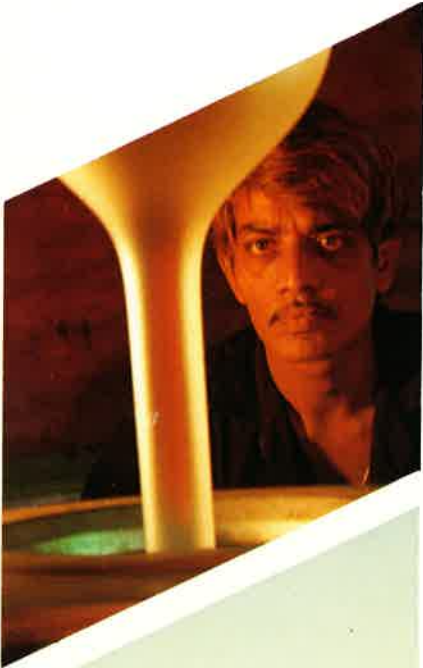
PLASTINDIA'90 will happen in the first week of March 1990 at Pragati Maidan, New Delhi.

PLASTINDIA'90 will be a global venture, a forerunner of things to come, a look at the world of plastics today and a glimpse of the world of plastics tomorrow.

Come, be a part of us.



The international exhibition venue
— Pragati Maidan, New Delhi



Details of costs and conditions of participation are available from:

(For Indian Participants)



PLASTINDIA FOUNDATION

Rajabahadur Mansion
2nd Floor, 14 Ambalal Doshi Marg
Bombay 400 023
Telephones: +91(0)22-693251/52,
696670, 274441
Telex: 1171057,
Fax: +91(0)22-2020691

(For International Participants):

NOWEA  INTERNATIONAL

NOWEA International GmbH
P.O. Box 32 02 03,
D-4000 Düsseldorf 30
Telephone: (211) 45 60-02
Telex: 8588351 now d
Fax: (211) 4560-740