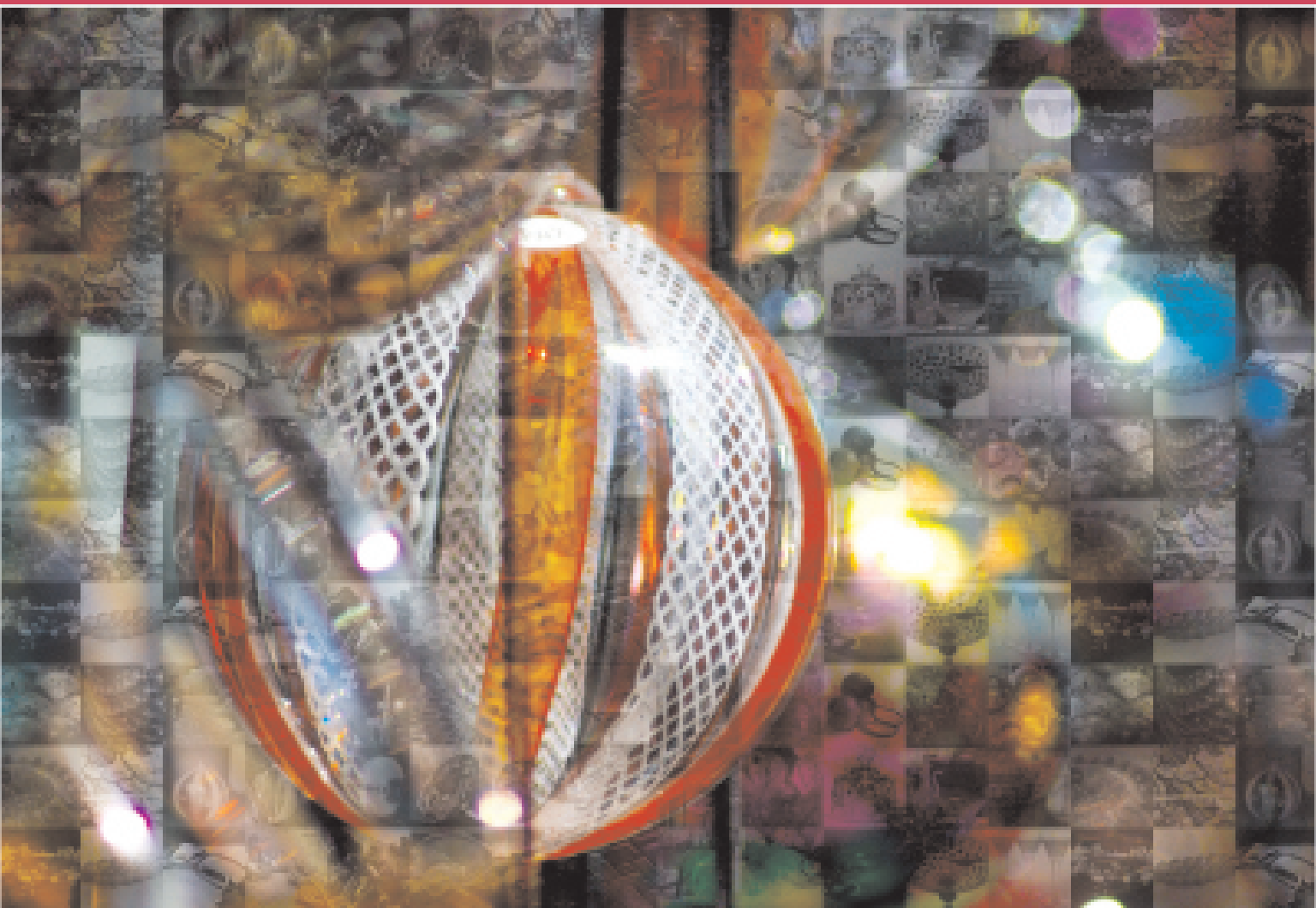


# INTERNATIONAL

Seminar on

**Inclusive Development of Firozabad  
Glass Art Ware Industry**

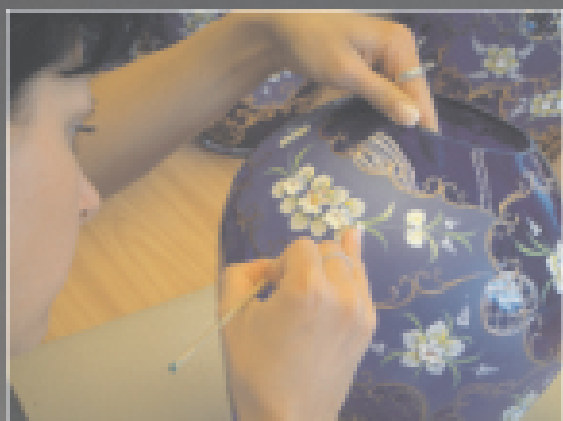
**Adoption of Advanced Technology  
& Design Innovations**



**Radisson Hotel, Agra**

**27th - 28th AUGUST 2011**





## INTERNATIONAL

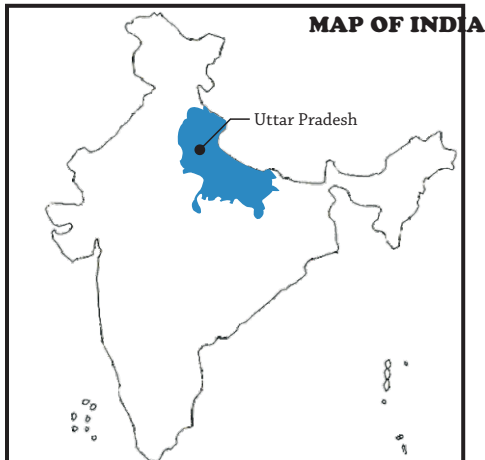
Seminar on

**Inclusive Development of Firozabad  
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**Adoption of Advanced Technology  
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# Firozabad:

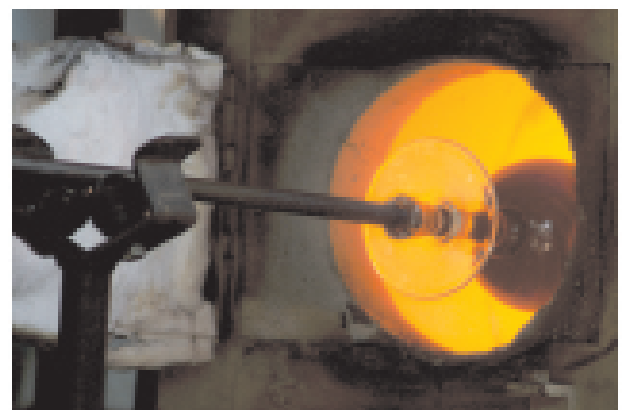
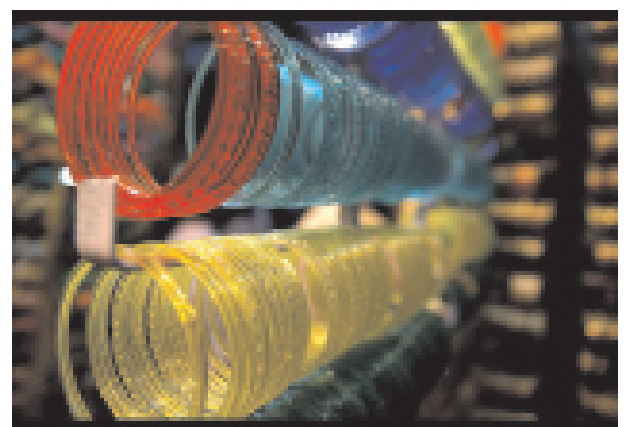
## a Background



Firozabad, a city in Uttar Pradesh in India, has been famous since 17<sup>th</sup> century for its exquisite production of glass works. Popularly known as the Glass City, Firozabad is located about 240 km from Delhi, the capital of India, and about 40 km from Agra, the city that has Taj Mahal.

The city is steeped deep in the culture of making utility and decorative items of glass. The population of this city has been engaged in this for generations and the city has become synonymous with glassware. Today, it is the premier centre of glassware manufacturing in India. Some of the glass products manufactured are glass toys, candle stand, Christmas hangings, flower vase glass, chandeliers, bangles, automobile ware, street ware, scientific lab products, etc. Firozabad also has an international reputation of being the world capital for beads manufacturing. These beads are exported outside India and are used in clothing, shoes and other accessories.

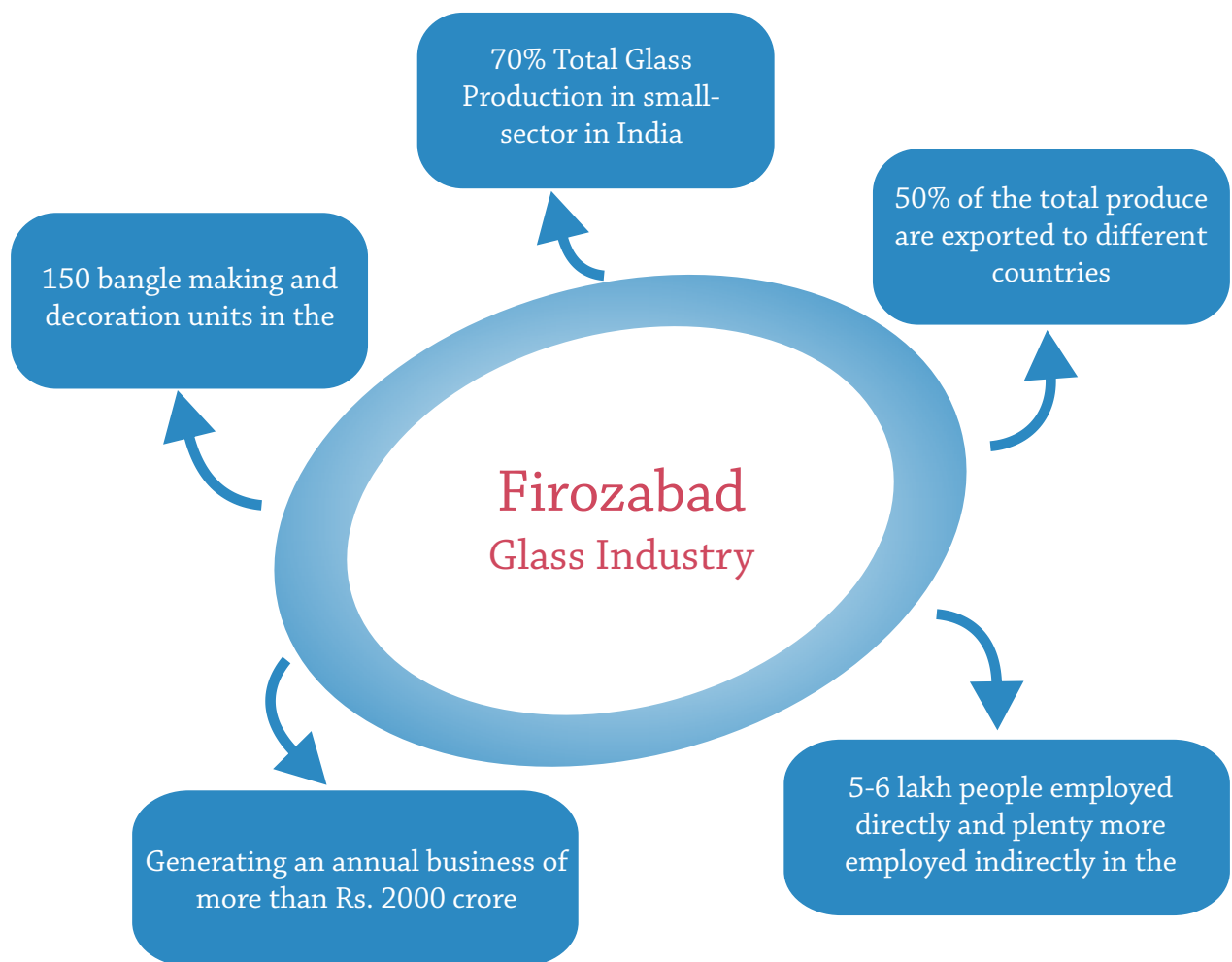
Engaging in glass works has been a way of life for the most of the population who are employed in this profession. Visiting this place, one will surely get struck by the presence of beautiful products made of glass everywhere in the city. The whole economy of this city is dependent on this industry. One can easily say that if it had not been for glass, this city would never have become famous.



# Glass Industry

## Overview

Accounting for about 70% of the total glass production in small-sector in India, Firozabad glass industry is India's biggest glass industry cluster with nearly 5-6 lakh people employed directly and plenty more employed indirectly with this sector. The cluster holds a unique position of consisting of Micro, Small and Medium units located at one place and being capable of producing a variety of glass products ranging from art ware, chandeliers to multicolored bangles, generating an annual business of more than Rs 2000 crore. There is a large agglomeration of small scale units in this town, which are engaged in the manufacture of hollow wares, decorative items, glass beads, etc. Around 50% of the total produce of these units are exported to different countries.



The Firozabad glass industry has been able to cater to the indigenous need as well as international demand by way of producing variety of products. It is one of a kind cluster operating in India. It is the only cluster which is producing bangles and catering to the entire requirement of bangles in India. There are approximately 150 bangle making and decoration units in the city which provide employment to nearly 50,000 families. It is estimated that a single bangle passes through as many as 45 to 50 hands before it is transformed from a mere lump of glass into the piece of disposable jewellery.

Firozabad cluster specializes in making a variety of exclusive hand made products. The cluster has easy availability to trained and skilled workers. There are estimated a thousand registered skilled craftsmen whose generations have been engaged in the skillful tradition of making glassware. The cluster has the advantage of having strong work specialization due to presence of specialized units for each kind of value addition.

**INTERNATIONAL SEMINAR ON INCLUSIVE  
DEVELOPMENT OF  
FIROZABAD GLASS ART WARE INDUSTRY -  
ADOPTION OF ADVANCED TECHNOLOGY AND  
DESIGN INNOVATIONS**

**AT A GLANCE**

**DATE:** 27<sup>th</sup> & 28<sup>th</sup> August, 2011

**VENUE:** Radisson Hotel Agra

**TIME:** 10:00 a.m.

**TECHNICAL SESSIONS:**

- I) Present-day situation of glass tableware manufacture in the Czech Republic
- II) Crystal glasses and their compositions: melting, fining, decolorizing
- III) Improvement of the glass melting technology
- IV) Glass decorating techniques
- V) Glass design and product development

**INAUGURAL SESSION:** 7:00 p.m. to 9:00 p.m.

**TECHNICAL SESSION:**

Conclusion and Recommendation

**NUMBER OF EXPERTS:**

International: 5 (Czech Republic)

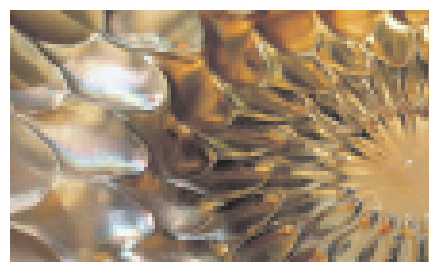
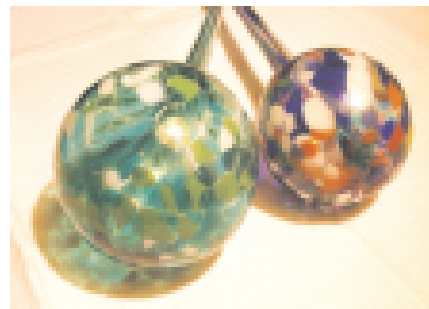
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**CRITICAL ISSUES TO  
BE DISCUSSED:**

- I) Inclusive development of Firozabad glass art ware industry
- II) Study the bottlenecks in the area of technology
- III) Glass decorating techniques
- IV) Design and product development
- V) Setting up of Glass Training School on the lines of Novy Bor

**WHO SHOULD PARTICIPATE:**

Glass Manufacturers/ Exporters  
Glass Decorators  
Technical Experts  
Designers  
SHGs/ Artisans/ Craftperson  
Related Institutions  
Trade and Industry/ Policy Makers



# Summary of the Units in the Firozabad Cluster

## Glass Melting Units

Total number of units :	190
Units not working (Due to shortage of Gas):	33
Entrepreneurs (Owners/ Partners):	540
Investment on Plant & Machinery:	213 Crore
Total Investment:	413 Crore
Total Natural gas Consumption Glass Industry:	950,000 m <sup>3</sup> /day
Glass Drawing Capacity (All Type):	1920 MT/ day
Finished Glass:	1230 MT/ day
Percentage of Finished Glass:	65%
Share of Tableware & Container production:	49%
Share of bangle production:	46%
Share of glass Art ware & Misc. production	05%
Annual Turn Over*	Rs. 2326 Crore
(*Source- Commissioner, Sales Tax, Firozabad)	

## Design & Decoration Units (Glassware)

### Table Glassware & Art ware:

Number of Units:	39
Technology:	Traditional
Employment:	1165
Total Investment on plant & Machinery:	Rs.3.9 Crore
Average Investment on Plant & machinery:	0.10 Crore/Unit
Total Investment :	Rs. 6 Crore
Annual Turnover:	Rs.33 Crore

### Breakup:

Indigenous:	Rs.6 crore
Export:	Rs.27 crore

### Decoration by Metalizing Units:

Number of Units	50
Investment per Unit	Rs.10 Lac
Total Investment on plant & Machinery	Rs.4.40 Crore
Average Investment on Plant & machinery	0.09 Crore/Unit
Total Investment	Rs. 5.50 Crore
Employment	1000
Annual Turnover	Rs.17 Crore

## Micro Units

These units are engaged in the activities which are post production works of glass bangles such as bangles straitening, joining, bangle cutting, frosting, painting, decoration by Zari, Mina, Moti & heat treatment of bangles after application of gold polish, glass color, etc.

Number of Units:	8550
Investment on Plant & Machinery: (Covering all above mentioned activities)	13.06 Crore
Total Investment :	9.65 Crore
Level of Technology:	Primitive with some modifications
No. of Persons involved:	82,000
Annual Turnover:	Rs.221 Crore
Annual Turnover:	Rs.221 Crore

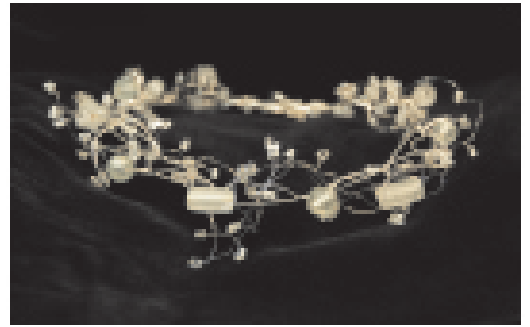


# Need for Change

Firozabad has not been able to establish a strong reputation in the international market due to a clear lack of the availability of most modern technology, promotion and a lack of product innovation/ variation. There is a continued use of primitive technology in glass melting, forming and shaping. So, clearly, there is a lack of investment in the industry. In order to be competitive in the world market it has to improve its infrastructure, undertake more rigorous marketing and brand building activities. The industry needs to be cost competitive as compared to other markets such as China and Thailand. In fact, the industry for chandeliers and fancy light is facing stiff competition from Chinese market. Before 2002, this market used to account for approximately 30% of the total market share (Rs 80 to 100 Crore), but presently the market has reduced to mere Rs 1 crore. The relative difference in prices and regulatory regime makes India uncompetitive with Chinese products.

Both fuel and raw material constitute 35% each of the total cost of operations, the remaining being the labour cost. The fuel, though subsidised, costs Rs 6,500 per 1,000 cubic metres as compared to Rs 3,600 per cubic metre in Gujarat. Further, a whopping Rs 23 per cubic metre is charged upon exceeding the fixed quota of gas (which comes through the pipeline). Raw material, soda ash is also priced high and has escalated from Rs 8,000 per tonne a couple of years ago to INR 13,000 a tonne presently. In China, soda ash costs Rs 4,500 a tonne. Only a handful of companies such as Tata, Birla and Gujarat Heavy Chemicals make soda ash.

There is a clear need for better quality raw material in order to increase the quality of glass production. Besides, Firozabad glass industry has great need for a change in the present practices in the area of batch making, mixing, pot making, preheating and transfer of pot in the furnace, batch charging and discharging the melts, shaping and annealing. Also, there is no specialized design development practice followed in the area of product development by the industry and the value addition is not tuned to market demand. Due to lack of innovative design, modification and variation in the handicraft products, it is also losing the charm in the international market. Therefore, there is great need for design development and quality improvement in the utility and decorative items.



# Critical

## Issues

The Firozabad glass industry has witnessed robust growth in the last ten years. However, there exist a large gap between the industry in Firozabad and that in countries such as Czech Republic & Italy. Therefore, the challenge is to study the gap and find out how value addition can be undertaken keeping the global benchmark in the mind.

The technology is one the key areas where potential development and collaboration can take place that would lead to development in design and skill sets.

A complete roadmap for the future development of Firozabad glass industry with a focus on new technology, development of skill sets better raw material composition and setting up of a glass Training School.

# Objective

## of the seminar

The basic objective of the seminar is to bring new technology for the Indian glass industry as the industry has centuries- old tradition of glassware manufacturing in India, as today there is a need to change the traditional manufacturing style to international standard as per the international consumer requirement so as to enhance the exports from the country.

### • Road map to the Inclusive Development of Firozabad Glass

• To study the present bottlenecks in the areas of the technology (furnace designing & production process) and the suggested measures for their

• Batch mixing & batch preparations (upgrading the

• Design & product

• Technology for the manufacturing of crystals glasses and their compositions: melting, fining,

• Glass design and product development - Improvement of glass melting technology (pot &

• Glass decorating

• Glass cutting, engraving and polishing

• Setting up of Advance Glass Training School on the lines of

Focus Area



# Participating

## International Experts:

**Five International experts/resource persons** with proven credibility in different areas of glass technology shall be coming from Czech Republic and will interact with the participants viz. budding entrepreneurs, manufacturers, exporters and artisans / craftsmen in various technical sessions spread over two days. They will share their experience in the areas of their expertise and will put forward their ideas in brainstorming sessions as well as in the one to one meeting with the



1. **Miroslav SYNEK**, Specialization : Glass Technology

Czech Republic

**Education:**

Institute of Chemical Technology, Faculty of Inorganic Chemistry, Prague (1956-1961)

**Professional Expertise:**

Glass Technologist, Kavalier Glassworks, Sazava

Senior Glass Consultant, Designing Institute of Glassworks, Prague

Independent Glass Consultant for UNIDO Vienna and for Prague Institute of Chemical Technology



2. **Miroslav RADA** , Specialization: Technology of Silicates (Glass making)

Czech Republic

**Education:**

Technical University (Institute of Chemical Technology), Prague (1974 – 1979)

M. Sc. from Institute of Chemical Technology (1979 – 1984)

**Professional Expertise:**

Professor in the Institute of Glass and Ceramics, Institute of Chemical Technology, since 1987

Expert in R&D of new types of glasses (especially the crystal glasses), fining and decolorizing of glasses

Expert in investigation into the relationship between the chemical composition and the glass properties.

Author of 18 Czech patents

Have been indulged in contractual collaboration with Czech and foreign glassworks



3. **Vladimir LAZNICKA**, Specialization: Glass Technology  
Czech Republic

**Education:**

1985 – 1989 Institute of Chemical Technology, Department of Silicate Technology, Prague specialization – Glass Technology

**Professional Expertise:**

Designing, erection and operation of small and medium-sized glass melting furnaces

Selection of raw materials and batching process

Working in Vocational glass school, responsible for the operation of the glass

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4. **Ervin CERNY**, Specialization: Art Glassware  
Czech Republic

**Education:**

Vocational Glass School, Novy Bor (1992 – 1998)

**Professional Expertise:**

Glass Decoration Specialist

Professor at the Vocational Glass School, Novy Bor (Glass Painting)

Independent Consultant in the field of Glass Manufacture & Decoration

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5. **Rony PLESL**, Specialization: Glass Design  
Czech Republic

**Education:**

Residency at studio Franco Raggi and Daniela Puppa, Milano, Italy in 2004

Residency at Tittot, Taipei, Taiwan in 1997

Residency at La Villa Arson. Nice, France

Academy of Applied Arts, Prague

**Professional Expertise:**

Head of Glass Department of Applied Arts in Academy of Arts Architecture and Design, Prague

Designer for Preciosa, Czech Republic

Designer for Denizli by Pasabahce, Turkey

Awards & Honors:

Good Design Award 2010 – the glass collection Erie designed for the company Sahm

Best Czech Design of 2006, automated brand design glass

Best Czech Design of 1999, the vase “Twiggy”



**National Centre for Design and Product Development**

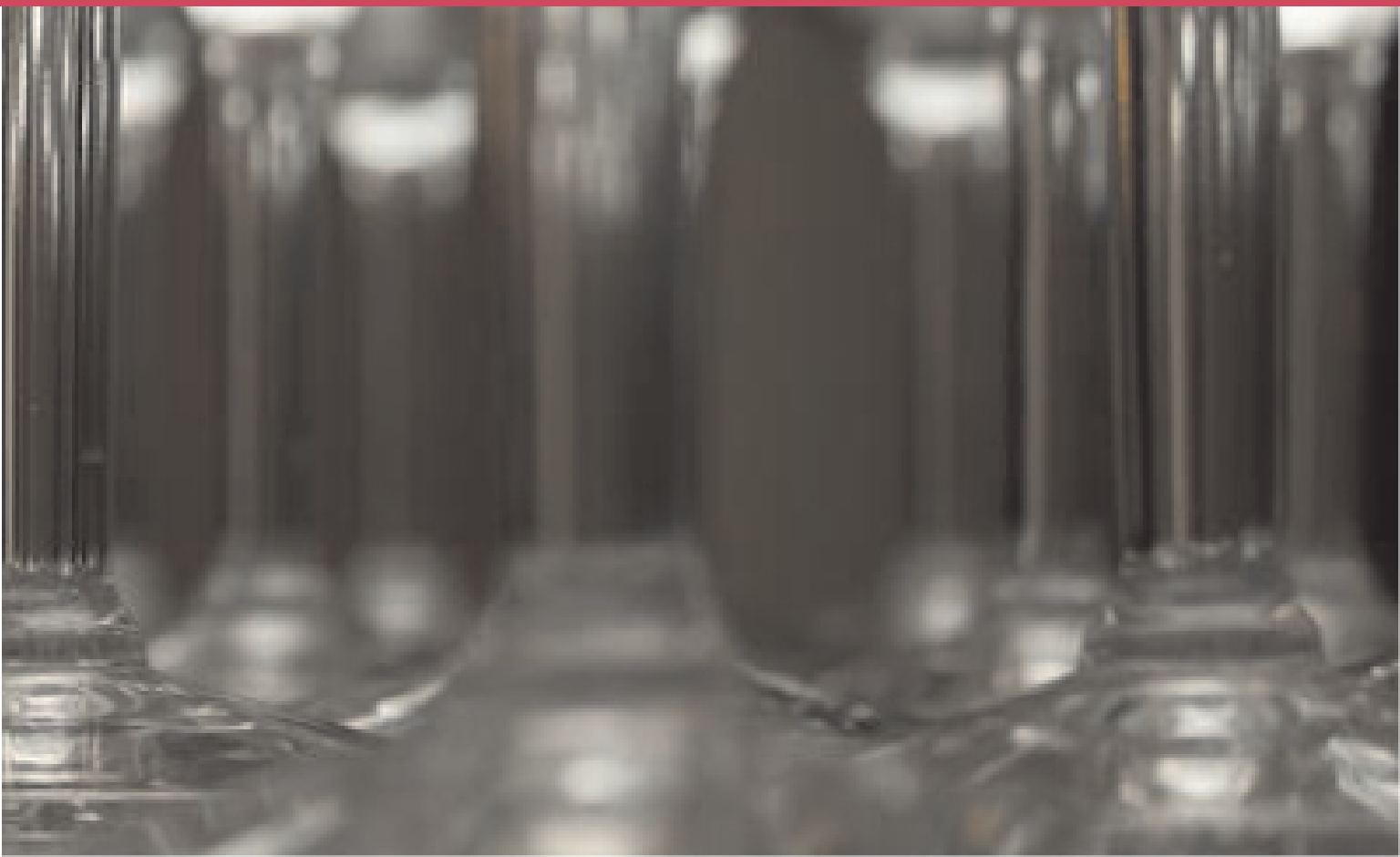
*(Set-up by Ministry of Textiles, Govt. of India)*

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(Set-up by Ministry of Textiles, Govt. of India)

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