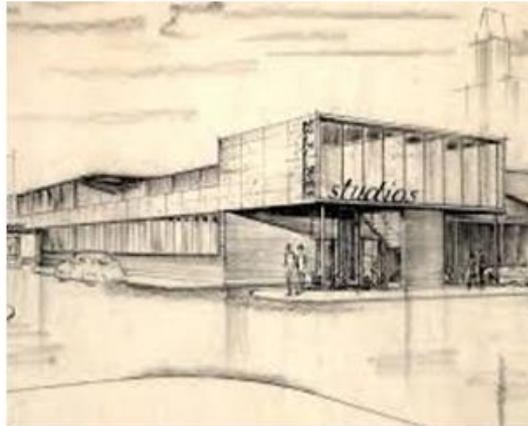


Gujarat Technological University



A Report on-

Faculty Development Program
“Glass In Architecture”

Organized under

Centre for Skill Development
(GTU-School of Glass Processing Technology)

13th to 17th June 2016

At

Gujarat Technological University,
A-2 Conference Hall, 2nd Floor, Nr. Visat Three Roads,
Visat - Gandhinagar Highway,
Chandkheda, Ahmedabad – 382424, Gujarat.

About GTU – Skill Development Center

Gujarat Technological University (GTU) is probably the only technological university in our country, which has been making continuous need based interventions to make our engineering curriculum both practice-oriented and design-based, while involving industries actively in the process. It has been working for the development of high-level skills as a part of the educational process.

GTU proposes to establish five Skill Development Centers (SDC) in nineteen trades, which are a part of the engineering curriculum. Thus GTU may establish as many as 95 SDCs by upgrading the workshops of some of the Polytechnics and Engineering Colleges.

The Skill Development programs are being set up on the basis of pedagogical innovations, which GTU has initiated for strengthening technological education through practice orientation, a close inter-action with industries and through project-based and design-oriented learning systems.

GTU – School of Glass Processing Technology

With the advent of green technology, green building concept has become very popular. Green building must minimize the demand of non-renewable resources and maximize the reuse, recycling and utilization of renewable resources. Today most of the buildings extensively use Glazing in form of Facade Glazing or in the form of large windows. The installation and Glass processing have emerged as one of the important areas of employment in Gujarat. Gujarat is facing acute shortage of Skill required for glass façade fabrication and installation Technology.

In order to develop need based skilled manpower in the emerging sector (glass façade, fenestration and glass processing industry), the Glass Academy joined hands with Gujarat Technological University to impart glass façade & processing skills and such other skills to the Diploma/ Degree students of Civil & Mechanical Engineering in the GTU premises. These trained students will be industry responsive and readily employable in the industry.

GTU is the only University in India to commence the program in Glass Processing Technology. On 6th February 2015, we started GTU-School of Glass Processing Technology. Initially the training program was of 12 weeks at GTU Gandhinagar campus.

FDP on Application of Glass in Architecture

GTU has introduced elective subject of Glass in Architecture, during the academic year 2015-16, beginning from the 8th semester BE Architecture. Glass in Architecture is a very unique and pioneering initiative of GTU and it is based on techniques, developed and used by engineers and designers all over the globe. This FDP is an industry- academia partnership workshop program scheduled on 13th to 17th June 2016.

This program, includes industrial visits and sessions by industry experts and certification of participation. Experts from the industry shall handle the training sessions. This initiative is aimed at equipping the Faculty Members with the recent trends, tools and strategies to design a sustainable and energy efficient buildings and to educate the students on the same.

FACULTY DEVELOPMENT PROGRAM - TRAINING SCHEDULE

DATE	TOPIC	INDUSTRY EXPERT
13-Jun	Glass - The building material	Manish Srivastava, President, Confederation of Construction Products and Services (CCPS)
	Fundamentals of building science involved in glass selection	
	Glass & Green Architecture (ECBC, Green Building Rating Systems)	
	Glass for segments, safety & fire protection, interiors applications	
	Innovative Glass Solutions	
	Glass for Fire Protection	Hitender Vora, National Manager, Saint- Gobain Vetrotech India (Industry Partner)
14-Jun	Float Glass Manufacturing Line Visit	Industry Partner - Saint-Gobain Glass India (Jhagadia, Bharuch)
15-Jun	Glass Processing Line Visit	Industry Partner – Mr. Shalin Shah, Mahavir Glass Enterprise, Kheda
	Fabrication Line Visit	Industry Partner – Mr. Ashit Bora, Hifab Aluminum, Sanand.
16-Jun	Design Workshop (Computational Tools)	Mr. Piyush Agarwal, IGBC AP, GRIHA Trainer & Evaluator
	Concept Of Green Buildings, Solar Structure, Design Of Proper Lighting	Ar Lita Yesudasan
17-Jun	Case Studies & Expert Session	Mr. Tarak and Mr. Aaditya Arora and Mr. Ravi Jain (Sales Head, Saint Gobain Pvt Ltd.)
	Feedback & Evaluation	Chief Patron- Dr. Rajul Gajjar, Honorable VC
	Valedictory & Awarding of certification	Chief Guest – Mr. V K Singh, Director, Gift City GTU & Glass Academy

Workshop Proceedings

13th Jun, 2016: Orientation & Introduction to Glass Technology

On the very first day, after registration, The FDP sessions were started by Glass Academy team. Information on glass in Architecture syllabus in an orientation session was taken by Mr. M Balaji (Chief Sevak, Glass Academy Foundation). He explained the basic guidelines and flow of Glass in Architecture elective subject in Architectural Engineering.

After the orientation session, Mr. Manish Srivastava, President, Confederation of Construction Products and Services (CCPS) explained the idea of Glass as building material. He also described about Fundamentals of building science involved in glass selection. He explained the characteristics of glass & how to manufacture and fabricated glass. He emphasized on Glass as a sustainable building material and its application in Green

architecture and fire protection. Also, he gave knowledge of ECBC (Energy Conservation of Building Code) for promoting energy efficiency in the building sector.

14th Jun, 2016: Industry Visit – Saint Gobain Glass Manufacturing Unit, Jhagadia

On the 2nd day, a discussion about the experience of the first day was begun and queries of the Faculty Members were solved by the Glass Academy. After discussion, the participants were taken on an industrial visit to Saint Gobain Pvt Ltd at Jhagadia GIDC, Bharuch.

In 2015, Saint-Gobain celebrated its 350th anniversary. Backed by its experience and capacity to continuously innovate, Saint-Gobain, the world leader in the habitat and construction market, designs, manufactures and distributes high-performance and building materials providing innovative solutions to meet the challenges of growth, energy efficiency and environmental protection. With 2015 sales of €39.6 billion, Saint-Gobain operates in 66 countries and has more than 170,000 employees. Saint Gobain team explained what safety precaution to be taken in plant and explained float glass manufacturing process from batch house to packaging step by step. Then all participants started plant visit for to know actually how to perform a glass process like mixing of raw material, heating in electric or CNG/LPG furnace after floating, annealing, cutting inspection and last one being packaging.

15th June, 2016: Industry Visit – Mahavir Glass Enterprise, Kheda & HIFAB, Sanand

Again the 3rd day started with a discussion about the common experience of the second day. Mr. Bala Aaditya (Lead Sevak, Glass Academy Foundation) gave an introduction of Mahavir Glass Enterprise and Hifab Aluminum Pvt. Ltd. On Dated: 15th June, 2016 morning session we visited Mahavir Glass Enterprise, Kheda and at afternoon session we visited Hifab Aluminum Pvt. Ltd., Sanand

Mr. Shalin Shah from Mahavir Glass Enterprise, Kheda discussed about the Skilled Manpower requirement in the Glass Industry and how the GTU School of Glass processing Technology is helpful to Glass industry and students make their career in the glass industry. Mr. Shalin Shah told that currently there are 200 factories of Glass processing in India. Out of them 24 factories are in Gujarat. After the success of the GTU- School of Glass Technology course, now universities at Nagpur and Rajasthan are also considering to start similar programs in glass processing Technology. Therafter all the participants are visited Mahavir Glass Enterprise Plant and practically saw the different glass processes and their applications.

Mr. Ashit Bora from Hifab Aluminum Pvt. Ltd. discussed about this FDP and briefed that they are one of the leading suppliers, fabricators and erectors of Architectural Aluminum products such as Aluminum glazing, partitioning and doors and window related work based at Ahmadabad. They are working with most of the leading corporate houses of Ahmadabad.

Hifab Aluminum Pvt. Ltd have biggest production line for uPVC windows in western region. They are producing more than 100 uPVC windows per day and have joined hands with LG Hausys (Korea) & Kommerling (Germany). After that session we visited Hifab Plant and all the participants practically saw how the company manufacture, assembles and dispatch glass windows.

16th June, 2016: Glass Design

Again the 4th day morning session started with a discussion about the common experience of the visit at Mahavir Glass Enterprise, Kheda and Hifab Aluminum Pvt. Ltd., Sanand. On the fourth day, Mr. Piyush Agarwal, IGBC AP, GRIHA Trainer & Evaluator, explained the software used in the design.

GRIHA is an acronym for Green Rating for Integrated Habitat Assessment. GRIHA is a rating tool that helps people assesses the performance of their building against certain nationally acceptable benchmarks.

It evaluates the environmental performance of a building holistically over its entire life cycle, thereby providing a definitive standard for what constitutes a 'green building'. The rating system, based on accepted energy and environmental principles, will seek to strike a balance between the established practices and emerging concepts, both national and international. The system has been developed to help 'design and evaluate' new buildings (buildings that are still at the inception stages). Also he introduced some benefits of a green design to a building owner, user, and the society like reduced energy consumption without sacrificing the comfort levels, reduced air and water pollution, limited waste generation due to recycling and reuse, increased user productivity etc.

After explaining of GRIHA tools for performance of buildings, Ar. Lita Yesudasan explained the concept of green building, solar structure, how to design with proper lighting, ventilation, design of reflective glass and the design of the double glazing glass.

17th June, 2016: Evaluation & Valedictory Ceremony

The 5th Day Started After experience sharing session with Mr. Tarak Jani expert of IGBC, He introduced about Indian Green Building Council (IGBC). He mention that the building sector in India is growing at a rapid pace and contributing immensely to the growth of the economy. This augurs well for the country and now there is an imminent need to introduce green concepts and techniques in this sector, which can aid growth in a sustainable manner.

IGBC Green New Buildings rating system[®] addresses green features under the following categories:

- Sustainable Architecture and Design
- Site Selection and Planning
- Water Conservation
- Energy Efficiency
- Building Materials and Resources
- Indoor Environmental Quality
- Innovation and Development



Last day also included, case study & experience sharing on use of Glass in buildings by Architectural Firm, Evaluation of participants and Valedictory & Awarding of certification.

Dr. Pina Bhatt, Deputy Director at Gujarat Technological University gave the Introduction of the Chief Guests and welcomed the dignitaries our Hon'ble vice Chancellor of GTU Dr. Rajul Gajjar, Mr. V.K.Singh, Director – GIFT City, Mr. Ravi Jain, Head –Gujarat region, Saint-Gobain India Pvt. Ltd. Mr. M Balaji, Chief Sevak Glass Academy Foundation and Mr. Bala Aditya, Lead Sevak, Glass Academy Foundation and Warm welcome to Faculty members of different colleges.

She shared a few words about FDP of Glass in Architecture. Glass in Architecture is a very unique and pioneering initiative of GTU and it is based on techniques, developed and used by architects and designers all over the globe. To improve the knowledge and skills of architecture Faculty members at GTU organized FDP on Glass in Architecture workshop program from 13th to 17th June, 2016. This Five day FDP included industrial visits and sessions by an industry expert with the certification. Experts from the industry gave the training sessions. This initiative is aimed at equipping the Faculty Members with the recent trends, tools, and strategies to design sustainable and energy efficient buildings and to educate this efficiently to the students.



Dr. Rajul Gajjar, honourable Vice Chancellor, Gujarat Technological University formally welcomed all participants and dignitaries. She mentioned that GTU organized this FDP on Glass in Architecture for Architecture Faculty Members. It is especially organized for the Architecture Faculty because GTU has introduced Architecture as an elective subject in Architectural Engineering. She appreciated all participants and industries for exhibiting great interest in application of glass in green building construction and interior purpose.



Mr. Ravi Jain, Sales Head, Saint Gobain Pvt Ltd, formally welcomed all participants and dignitaries. He introduced Mr. V K Singh, Director of Gift City Gandhinagar. He briefed about the different types of glasses used as building material and explained in short about manufacturing & processing of glass and Saint Gobain plant Jagadia, Bharuch



Mr. V K Singh, Director of Gift City Gandhinagar, formally welcomed all participants and dignitaries. He told that about Gift City is the India's first smart city and glass is future of Green building. Large amount of glass used in gift city and he also mention that the Gift City Ahmedabad has come up with the first glass tunnel. The major glass supply for which has been from Saint Gobain Pvt Ltd.



Mr. M Balaji, Chief Sevak, Glass Academy Foundation, formally welcomed all participants and dignitaries. He shared a few words about the Glass Academy Foundation and also expressed his vote of thanks to all the dignitaries, all the participants and expressed sincere appreciation to all the experts for giving their valuable time to this Faculty Development Program of Glass in Architecture. He thanked all the faculties for their participation in the session.

Glimpses of FDP



Felicitation of Chief Guest Mr. V K Singh Director of Gift City by Dr. Rajul Gajjar, Honorable VC, GTU

Felicitation of Guest Mr. Ravi Jain By Mr. M H Lunagaria





Glimpses of Industry Visit at Saint-Gobain Glass India (Jhagadia, Bharuch)



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