The World’s most Net Positive Building/Environment
Of course..
We can’t go back to the Good ‘ol times..
But still let’s

Think beyond Green Buildings!

Net
Abhinav Nanda
GRIHA Trainer, IGBC AP
Manager – Key Accounts
Saint-Gobain Glass India

Towards a better Future...
The Present Day Energy Crisis

Buildings Account for:

- **40%** Energy Use
  - 80% Towards Lighting and Cooling needs
- **8%** Annual Energy Consumption
  - 5.4 Bn kWh est Increased Demand projected

Source: IGBC – CII data for building footprints
Energy generation: wiki

Depleting Environment

Today’s Buildings are Responsible for:

- **50%** Air Pollution
- **42%** Greenhouse Emissions
- **48%** Waste Generation
- **20%** Allergy Complications
What’s the way ahead?

INNOVATIVE Engineering with GLASS

- For Energy
- For Environment

Responsible Engineering
Sustainable Engineering
The Four Pillars of Net Positive Design

- Energy Generation
- Energy Conservation
- Environmental Comfort
- Energy Management

A Four pronged Approach..

- Conserve Energy
- Preserve Environment
- Enhance Comfort

...through Product Engineering
Solar Power

- Lifeline of a Net Positive Building.
- Advanced technologies available for easy installation anywhere and everywhere
- For a **100sft-120sft** area, the best Solar Panels generate **1500** units per year, considering **300** sunny days
- **1.5 Mn** units from a **1MW** on a **5** Acre space (110000 Sft) can be generated
- E.g. an idle Car park Roof can be made info an Energy generation Zone!
Increase efficiency with Specialized Glass

Reflection can be reduced by up to 3%

Energy Conservation
Bridging The Energy Gap

Energy Conservation
Or..
‘Negawatt’

Energy Generation
Or..
‘Megawatt’

Studies show that usage of right kind of energy efficient glazing can reduce energy consumption by 35kWh per sqm of built space.

Glass Engineered For Energy Conservation

Lighting

Cooling
Lighting

Clear Glass

Light Transmission 89%

Optimize Light Transmission

Solar Control Coated Glass

Light Transmission 40%
Natural Lighting

- **Barely glazed bedroom**: Opening index 16.4% → 24.5% (24.5% increase)
- **Largely glazed bedroom**: Opening index 24.5% → 24.5% (no change)

Electricity consumed:
- **Barely glazed bedroom**: 4.2 kWh/m²/year → 2.7 kWh/m²/year (-36% reduction)
- **Largely glazed bedroom**: 2.7 kWh/m²/year (no change)

Cooling (Solar Control)
The future is here

“Extreme” Solar and thermal control

- SGG **Extreme**
- Triple silvered low-e glass
- High spectral selectivity **2.15**
- Solar Factor: **0.28**
- U-Value: **1.5**
- Light Transmission: **60%**
Intelligent Energy Management
- Dynamic Climate responsive performance
- Enhanced Real Time Energy Management possible
- Ensuring the internal comfort to occupants is maintained always
- Tangible benefits in improving energy conservation
Welcome to the Future

- SGG Electrochrome

- Flexible Energy management – at a click of a switch

- Automatic transition - excellent light and heat control – Climate responsive

Automatic transition performance from clear to high solar control at will

Ball State University: Muncie
Performance

- **Eckelt** - Glass integrated electrically operated louvers - solar and glare control.

- Solar factor total of up to 8% and Diffused Light Transmission of up to 22% can be achieved

- Roof Glazing - innovation in skylights
  - Reichstag, Berlin (GER) – Sir Norman Foster
  - Daimler Chrysler AG, Sindelfingen (GER) – Renzo Piano
Glass Engineered For Environment

- Non-Toxic
- Low VoC
- Hygiene
- 100% Recyclable
- Lead Free
- Self Cleaning
- Arsenic Free
Writing on the Wall...!

- **Save Paper!**
  - Have we ever wondered, how much of paper is used for regular office communication?

- **Maintenance?**
  - How do we reduce toxic Maintenance measures?
Lacquered Glass

- SGG Planilaque Evolution
- Combines the visual depth of lacquer colors and the resistance of glass
- Environment friendly - Lead free, arsenic free, formaldehyde free, low VOC

The Writing on the wall... is now clear!

Net INNOVATION

1. Anti-Reflective Coating for Solar panels
2. Triple Silver, Highly Spectral Selective coatings
3. Flexible Climate Responsive Control
4. Automated Glass integrated Louvres
5. Self-Cleaning Glass
6. Environment friendly Lacquered Glass
Innovation.. Now closer home!!

- Saint-Gobain’ 7th Worldwide Transversal R&D facility ..now in Chennai!
- Send in your ideas to sriram.n@saint-gobain.com
  - We are Listening !!

Glass !!
TRULY ... an intriguing material

... with Glass Engineered for the tomorrow....
Thank You

www.glassisgreen.com