**Indo-Swiss**

**Building Energy Efficiency Project**

**External Movable Shading Systems (EMSYS)**

- Customised Adjustable Vertical Louvers
- Fabric Screens
- Projection Awnings
- Sliding Shutters
- Sliding Folding Panels
- Bamboo Chicks
- Roller Blinds
- Lyonnaise Jalousies
- Lamella Blinds

**Types of EMSYS**

1. Window Shutters
2. Green Shedding Cloth
3. Bamboo Chicks

Shading Systems in India

[Images of various shading systems are shown, each labeled with the type of EMSYS they represent.]
EMSYS Historically in India

The concept of external shading is not new in India, where traditionally, some or other form of external shading has been used in hot climates to significantly reduce solar heat gains and provide natural daylighting. Some of these can still be seen in old “heritage” buildings across India.

BEEP's Activities on EMSYS

- National Design Competition
- Assistance for Development of innovative products for the Indian market
- Pan-India Manufacturer & Seller Association
- Annual Workshop
- Orienting the media on the importance of EMSYS
- Publications on EMSYS
importance of external movable shading

External movable shadings systems (EMSYS) are used in buildings to improve thermal comfort and reduce cooling loads. EMSYS afford the best protection from solar heat gains from windows, which is the largest outdoor heat gain source in most buildings.

- Better protection against solar heat gains (3-4 times more effective than DC glass)
- Permits adjustable natural daylight in the building

Compliance with Energy Conservation Codes by using EMSYS

With the launch and the subsequent adoption of Energy Conservation Building Code (ECBC) and Eco-Niwas Samhita, the Energy Conservation Building Code for Residential Buildings by various states, external shading will gain even more relevance in building design in India.

For building to comply to the standards specified in the code, without compromising on window to wall ratio or glazing, it will become necessary to use external shading on the windows.
The Indo-Swiss Building Energy Efficiency Project (BEEP) is a bilateral cooperation project between the Ministry of Power (MoP), Government of India and the Federal Department of Foreign Affairs (FDFA) of the Swiss Confederation. The Bureau of Energy Efficiency (BEE) is the implementing agency on behalf of the MoP while the Swiss Agency for Development and Cooperation (SDC) is the agency in charge on behalf of the FDFA. The Project Management and Technical Unit (PMTU) is responsible for programme implementation which includes selected technical work, management tasks, programme and program outreach.

**Table of Measured SHGC**

### Residential

**Touch Me Not** by Jurong Sustainable Urban Solution
- **Operation Position** | **Measured SHGC**
  - Close: 0.25
  - Intermediate: 0.49
  - Open: 0.72
  - Reference Glass: 0.83

**One-Fold** by Banduksmithstudio
- **Operation Position** | **Measured SHGC**
  - Close: 0.12
  - Intermediate: 0.58
  - Open: 0.78
  - Reference Glass: 0.83

**Fabric Twist** by Payal Chaudhari and Anto Gloren
- **Operation Position** | **Measured SHGC**
  - Close: 0.10
  - Intermediate: 0.69
  - Open: 0.73
  - Reference Glass: 0.83

### Commercial

**Zula** by Keyur Zaveri
- **Operation Position** | **Measured SHGC**
  - Close: 0.06
  - Intermediate: 0.29
  - Open: 0.49
  - Reference Glass: 0.83

**VRLS** by FACE
- **Operation Position** | **Measured SHGC**
  - Close: 0.09
  - Intermediate: 0.45
  - Open: 0.78
  - Reference Glass: 0.83

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