



Technology DRDO 028: Electrochromatic Window

Defence Laboratory, Jodhpur has designed and developed Electrochromic Windows of size 14" X 18". Smart window technology is based on such materials whose optical properties change in response to a small electrical current. The developed windows have ability to dynamically control solar transmission i.e. between 17-70% with fast switching time and low DC power consumption from 1 to 3V. Control is possible through a dimmer switch or remote control device.

Such windows provide 30-40% energy saving in terms of cooling, lightning and peak utility electric loads. It transmits high levels of visible light while reflecting invisible solar heat and therefore provides both visual and thermal comfort

Description:

The glasses used for window application are FTO glass (Fluoride doped tin oxide coated glass substrate with thickness of 3.2 mm to 6 mm. The transmittance of > 85% and sheet resistance of 10 ohm is essential for better EC effectiveness. The u value of FTO glass substrates taken for window fabrication is 1.9. The coating is a dielectric gel type transparent material sandwiched in between two conducting glass substrate and the thickness depends on gap lies in between two glasses i.e. 0.5 to 1mm.

Development Status:

Lab modules have been developed and final finished product is yet ready for the market. Lab module of 12 inch X 12 inch was successfully demonstrated over SHAKTIMAN military vehicle in dynamic mode. Standard parameters like coloration efficiency, electro chromic contrast, visible transmittance, contrast ratio, solar heat gain coefficient, coolness factor, and cyclic test along with driving voltage have been optimized.

An Indian Patent has been filed - "A process for preparing a dielectric Electrochromic material" No.: 2005/DEL/2005 in 2005.

Partner Opportunities:

DRDO is seeking partnership and development opportunities.

Additional information contact Earle Hager, IC2 Institute Global Commercialization Group at 512-475-7789, 512-431-3940 or ehager@ic2.utexas.edu.

