036

DUAL-ZONE INDOOR SHADES

OPPORTUNITY

How much energy can window technologies save in U.S. commercial buildings?

11% REDUCTION IN PRIMARY ENERGY USE
WITH SOLAR CONTROL & DAYLIGHTING TECHNOLOGIES[1]

TECHNOLOGY

How do dual-zone indoor shades work?

UPPER ZONE FOR DAYLIGHT
WITH AUTOMATICALLY- OR MANUALLY-CONTROLLED LOUVERS

LOWER ZONE CONTROLS GLARE & PRESERVES VIEWS

M&V

Where did Measurement and Verification occur?

LAWRENCE BERKELEY NATIONAL LABORATORY measured performance of a dual-zone indoor shade provided by LouverShade at the Advanced Windows Testbed in Berkeley, CA against roller shades and venetian blinds. LBNL assessed facility manager and occupant satisfaction at the Ronald V. Dellums Federal Building in Oakland, CA, where the dual-zone shades replaced vertical blinds.

RESULTS

How did the dual-zone indoor shades perform in M&V?

DECREASE IN ENERGY USE
Compared to fabric roller shades (25% to 51% for lighting, -4% to 15% for cooling); *Increase* compared to venetian blinds (150% to 300% for lighting, 5% to 36% for cooling)[2]

ROI NEGATIVE
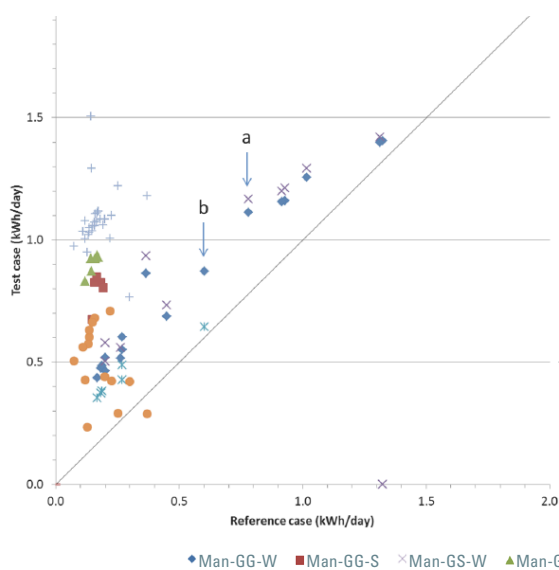Compared to both fabric roller shades and venetian blinds[3]

80% OCCUPANT PREFERENCE
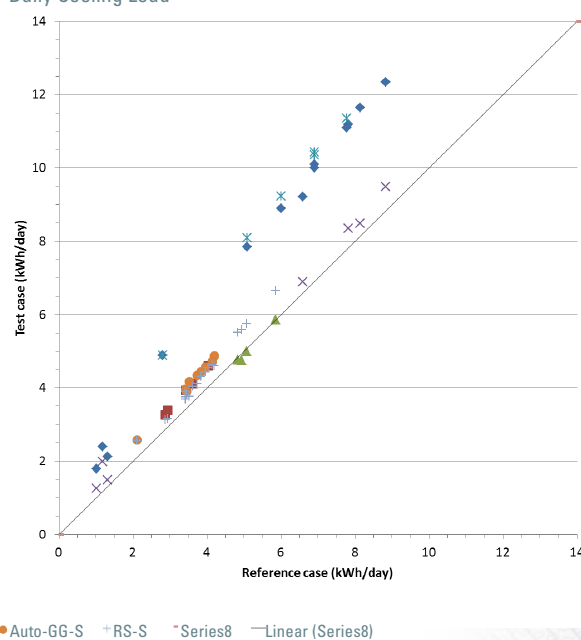Over baseline vertical blinds[4]

Measured Energy Use at the Advanced Windows Testbed
Compared to venetian blinds; points above diagonal line indicate that energy use is greater than venetian blinds

Lighting Energy
with Dimmable Fluorescent

Cooling Energy
Daily Cooling Load

◆Man-GG-W ■Man-GG-S ✕Man-GS-W ▲Man-GS-S ✷Auto-GG-W ●Auto-GG-S ＋RS-S ✳Series8 —Linear (Series8)

DEPLOYMENT

Where does M&V recommend deploying dual-zone indoor shades?

CONSIDER FOR REPLACEMENT
OF ROLLERSHADES
Manual upper shades provided the best balance between financial performance and occupant response. Not broadly recommended to replace venetian blinds from a cost-savings standpoint.

[1]Dual-Zone Solar Control Indoor Shade, Eleanor S. Lee, Christoph Gehbauer, Anothai Thanachareonkit, Luís L. Fernandes, Taoning Wang, Lawrence Berkeley National Laboratory (LBNL), January 2018, p.7 [2]Ibid, p.30 [3]Ibid, p.47 [4]Ibid, p.44