



**Southwall
Technologies**



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Golden Field Office

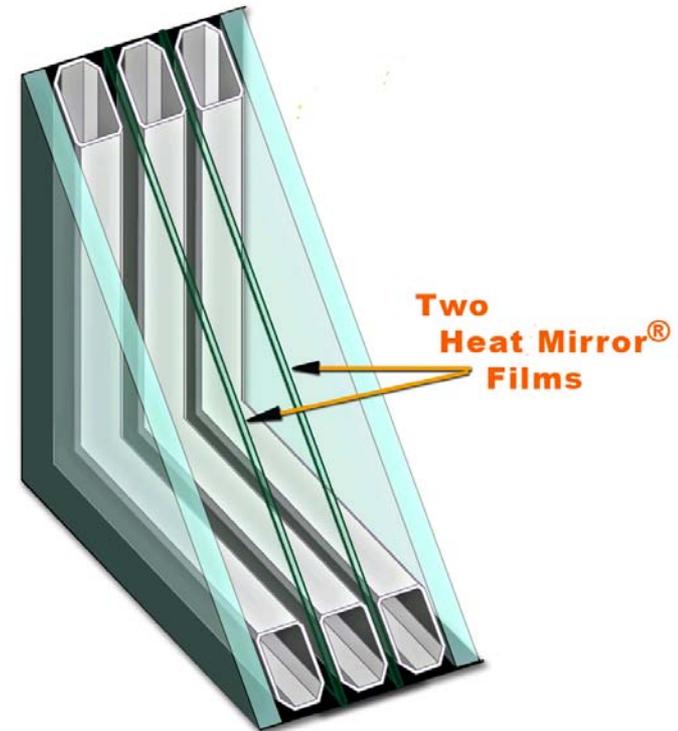
DE-EE0003925
DOE Window Roadmap Meeting

28-June-2012

Presenter: John Meade

Heat Mirror®

- ❖ Combines multi-cavity with low-e
- ❖ Thin & light-weight glazing layer
- ❖ Demonstrated R20 COG performance
- ❖ Over 15 Mio m² installed



OBJECTIVE & SCOPE OF WORK

Objective:

Develop a new **high-performance R-10** Heat Mirror/**high SHGC** window design, and evaluate manufacturing solutions required for broad residential market adoption.

Scope of Work:

- ❖ Identify viable technical solutions based on modeling of modern and potential coating stacks and IGU designs;
- ❖ development of new coating material sets for HM thin film stacks, as well as improved HM IGU designs to accept multiple layers of HM films;
- ❖ match promising new coating designs with new HM IGU designs to demonstrate performance gains;
- ❖ assess the potential for high-volume manufacturing and cost efficiency of a HM-based R-10 window with improved solar heat gain characteristics.

PMP: Project Timeline (Updated: May 2012)

Aug-16, 2010

Aug-15, 2013

Activity	Budget Period:	2010		2011				2012				2013	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Task 1 DOE Project Management Plan / Kick-off Meeting		█											
Task 2 Design Analysis: Modeling of material/design options		█	█										
2.1 Window performance modeling		█	█										
2.2 Modeling: secondary optics of proposed coating stacks		█	█	█									
2.3 Economical analysis of candidate designs				█									
2.4 Milestone / Gate review: Technical / economics validation													
Task 3 New Coatings, IGU designs				█	█	█	█	█	█				
3.1 New Heat Mirror Coating Stack: process development				█	█	█	█	█	█				
3.2 New coating stacks: IGU manufacturability, quality, economics													
3.3 Milestone / Gate review: New HM Film													
3.4 New HM IGU: design, prototyping, manufacturability & performance				█	█	█	█	█	█				
3.5 Economic analysis (manufacturing cost)													
3.6 Milestone / Gate: New Heat Mirror IGU feasibility													
Task 4 New Heat Mirror Coatings in New Heat Mirror IGUs								█	█	█	█		
4.1 New Film & New Spacer/IGU: prototyping & performance analysis								█	█	█	█		
4.2 Manufacturability & economics review													
4.3 Milestone / Gate Review: R10 Heat Mirror Feasibility													
4.4 External Review: Samples to Window Manufacturer, DOE													
4.5 DOE Final Report													█

Total Cost: \$ 1,806,656
 DOE (80%): \$ 1,445,325
 Southwall (20%): \$ 361,331

Accomplishments to-Date

- ❖ Thermal Modeling Completed
- ❖ HM Film Development
 - ❑ Lower- ϵ HM Films qualified
 - ❑ Several AR approaches screened
 - ❑ Anti-Reflection coating qualified for HM compatibility
- ❖ IGU Development
 - ❑ Structural Warm-Edge Spacer qualified for Heat Mirror
 - ❑ Alternative IGU assembly methods screened
- ❖ Economics
 - ❑ Film, IGU Cost Models developed
 - ❑ Capacity model developed

Remaining Tasks

- ❖ Film Development
 - ❖ Scale AR coating process to produce sample IGUs
- ❖ IGU Development
 - ❖ Finalize new IGU concepts
 - ❖ Expand additional warm-edge spacers
- ❖ Integration
 - ❖ Produce Demo IGUs on Automated Production Line
 - ❖ Review manufacturability
- ❖ Cost / Benefit analysis
 - ❖ Finalize Cost detail
 - HM IGU value engineering
 - window value chain to end consumer
 - ❖ Finalize Cost/Benefit analysis