

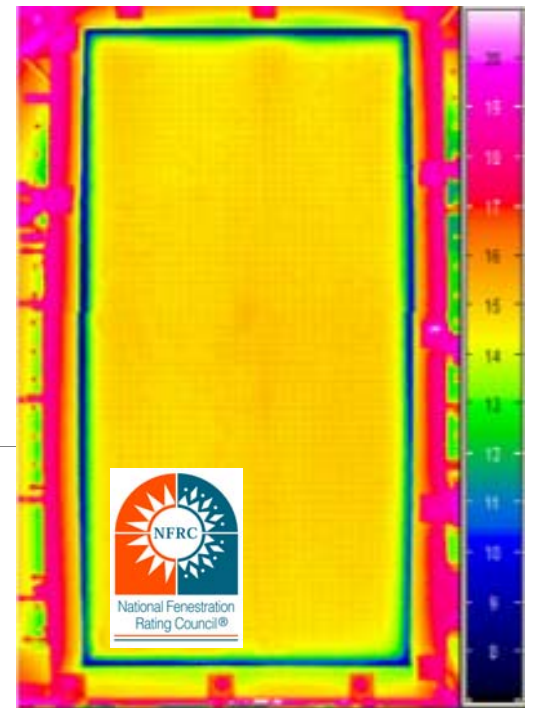
# VIG TG Update

---

DAVE COOPER, GUARDIAN INDUSTRIES

NFRC FALL CONFERENCE

OCT. 2018



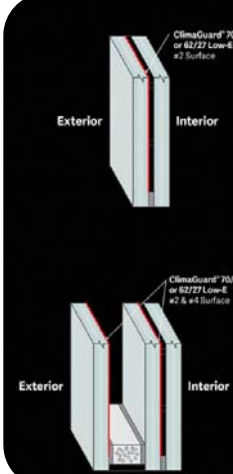
LBNL Vacuum Insulating Glass IR Image

# Background

Vacuum Insulating Glass is not cited in any NFRC documentation.

A VIG simulation module exists in LBNL Window.

The goal is to add VIG into the testing and simulation documentation for thermal performance, to include VIG as a certifiable component



**VIG**

Product	Visible Light %	Reflectance (Out % / In %)	U - Factor	R - Value	Solar Heat Gain Coefficient
8.3mm Thickness, Low-E coating #2 surface <span style="float: right;">4mm/3mm gap/4mm</span>					
VIG - CG 70/36	70%	11 / 12	0.089	11.3	0.372
VIG - CG 62/27	62%	11 / 12	0.085	11.8	0.266

**VIG Hybrid**

Product	Visible Light %	Reflectance (Out % / In %)	U - Factor	R - Value	Solar Heat Gain Coefficient
24.7mm IG Unit, Low-E coating #2 & #4 surface <span style="float: right;">4mm/12mm air gap/4mm/3mm gap/4mm</span>					
VIG - CG 70/36	54%	13 / 15	0.071	14.1	0.265
VIG - CG 62/27	42%	13 / 14	0.068	14.6	0.180

# 4 Objectives

---

1. Add VIG specific content to NFRC documents  
**WORK COMPLETED – BALLOTS ON HOLD PENDING TESTING AND SIMULATION COMPLETION**
  - A. Ballots submitted; NFRC 100, 200, 705, Updated simulation manual draft
2. Test validation RFP prepared for NFRC board approval (\$85,000)  
BRTG Formed **Bids received and scored – recommended RFQ to R&T SC / C / BOD for approval**
3. Test VIG thermal performance (Hot Box and GHP tests) Validate Model
  - A. Send VIG units to fabricator for glazing... **HOLD – WAITING ON BOARD FUND APPROVAL**
  - B. Run LBNL Window/Therm VIG simulations to built samples.
  - C. Compare test results to simulations. Adjust LBNL software as required.
4. Publish NFRC documents – Rate and Label Products

# VIG Validation Program

---

## Test design:

- 2 frames / 2 VIG types – all donated by NFRC members (*thanks!*)
- Lab testing per NFRC 102
  - VIG cog with GHP test and VIG in window frame hot box test
- Simulate VIG constructions – compare to physical testing results

## Validation

- If simulation is beyond allowed tolerance, determine reasons and adjust software.

# VIG Testing and Simulation Steps

---

## Recommended Bid Steps

- Out for bid 8/31/17
- 4 bids received with first STG review meeting 2/23/18
- Bidders asked to clarify / add information / timeline for comparable assessment
- Re-evaluated, scored bids – high score bid determined 5/9/18
- **On hold till this meeting**

**4 Bids Received: Timing from 12 wks to 1 year, Cost from \$16,400 to \$121,000**

# Bid Scoring Form

Submitted by:

Criteria	Description	Weighting x	Rating =	Score
<b>1.</b>	<b>General Evaluation Criteria</b>			
A.	Understanding of project goals, objectives, and research issues to be addressed.	15%		0.00%
B.	Responsiveness of proposed research and documentation to meet project objectives as specified by the RFP.	30%		0.00%
C.	Appropriateness and practicality of experimental design, computer modeling, or theoretical approach.	25%		0.00%
D.	Proposed description of experimental apparatus, test methods, and test specimens and / or computer modeling methodology.	10%		0.00%
<b>2.</b>	<b>Product Delivery Evaluation</b>			<b>0.00%</b>
A.	Proposed time-line and payment schedule.	10%		0.00%
B.	Cost share benefits.	10%		0.00%
<b>Totals</b>		<b>100%</b>		<b>0.00%</b>

# Bid Scoring Results

Criteria	Description	Weighting x	Rating =	Score
<b>1.</b>	<b>General Evaluation Criteria</b>			
A.	Understanding of project goals, objectives, and research issues to be addressed.	15%	71	10.61%
B.	Responsiveness of proposed research and documentation to meet project objectives as specified by the RFP.	30%	80	24.00%
C.	Appropriateness and practicality of experimental design, computer modeling, or theoretical approach.	25%	73	18.13%
D.	Proposed description of experimental apparatus, test methods, and test specimens and / or computer modeling methodology.	10%	71	7.13%
<b>2.</b>	<b>Product Delivery Evaluation</b>			<b>0.00%</b>
A.	Proposed time-line and payment schedule.	10%	53	5.25%
B.	Cost share benefits.	10%	23	2.25%
<b>Totals</b>		<b>100%</b>		<b>67.36%</b>

# Funding Approval – Almost There...

---

BRTG to present outcome of bid review to Research Sub-Committee

SC to vote on approval of funds

R&T Committee to vote to approve funds and move to BOD for final approval

**Funds are budgeted. If BOD approves; staff can release a contract for research with the winning bidder.**



# ISO 19916 - VIG Standard

---

Part 1 – Should be published very soon (this month?)

- **Basic specification of products and evaluation methods for thermal and sound insulating performance**

Part 2 – In progress.

- **Test Method for Evaluating Performance Under Temperature Differences**