RCBC Update

NFRC Spring Meeting – March 2017
RCBC Agenda

• Grid Research / Add-on
• 3-pt Trendline
• Implementation of Methodology
• Other Ballot Comments
GRID RESEARCH - ADD-ON
Grid Research

• 5.5mm x 18mm contour aluminum divider
• Started with 3.00mm gap reduced 0.12mm
• Glazing configurations:
  – softcoat\(^2\) / hardcoat\(^2\) / clear
  – DG Air, and DG 95% Arg,
  – TG Air, and TG 95% Arg
  – Total 312 data points
Therm Files

Dual Glazed

Triple Glazed
Frame vs. Div-Edge / Surface Gap

GRID RESEARCH
DG Air – Frame vs. Gap

U-factor (btu)

Grid & Lite Space (mm)

Clear Glass
Hardcoat Glass
SoftCoat Glass

as of March 23, 2017
DG Argon – Frame vs. Gap

U-factor (btu)

Grid & Lite Space (mm)

Clear Glass  Hardcoat Glass  SoftCoat Glass

as of March 23, 2017
TG Air – Frame vs. Gap

U-factor (btu)

Grid & Lite Space (mm)

Clear Glass  Hardcoat Glass  SoftCoat Glass

as of March 23, 2017
TG Argon – Frame vs. Gap

U-factor (btu)

Grid & Lite Space (mm)

- Clear Glass
- Hardcoat Glass
- SoftCoat Glass

as of March 23, 2017
Area Weight Divider vs. COG
GRID RESEARCH
Area Weight Pattern

COG

Divider Edge

Divider
DG Air – AW vs. COG

U-factor Difference (btu) vs. Grid & Lite Space (mm)

- Clear Glass
- Hardcoat Glass
- SoftCoat Glass

as of March 23, 2017
TG Air – AW vs. COG

U-factor Difference (btu)

Grid & Lite Space (mm)

Clear Glass  Hardcoat Glass  SoftCoat Glass

as of March 23, 2017
TG Argon – AW vs. COG

U-factor Difference (btu)

Grid & Lite Space (mm)

- Clear Glass
- Hardcoat Glass
- SoftCoat Glass

as of March 23, 2017
Develop Add-on Ranges
GRID RESEARCH
Develop Add-on Ranges

• Separate DG and TG
• Separate Clear and Low-e
• Separate Softcoat and Hardcoat (TG only)
• Add-on is COG
DG Options – AW vs. COG

![Graph showing U-factor difference vs. Grid & Lite Space for different glass types and conditions.](image-url)
## DG Air Ranges

<table>
<thead>
<tr>
<th>COG Add-on</th>
<th>Clear</th>
<th>Low-E</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>2.99mm – 1.50mm</td>
<td>n/a</td>
</tr>
<tr>
<td>0.02</td>
<td>1.49mm – 0.72mm</td>
<td>2.99mm – 2.28mm</td>
</tr>
<tr>
<td>0.03</td>
<td>0.71mm – 0.42mm</td>
<td>2.27mm – 1.20mm</td>
</tr>
<tr>
<td>0.04</td>
<td>0.41mm – 0.24mm</td>
<td>1.19mm – 0.72mm</td>
</tr>
<tr>
<td>0.05</td>
<td>0.23mm – 0.12mm</td>
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</tr>
<tr>
<td>0.06</td>
<td>0.11mm – 0.00mm</td>
<td>0.41mm – 0.24mm</td>
</tr>
<tr>
<td>0.07</td>
<td>n/a</td>
<td>0.23mm – 0.12mm</td>
</tr>
<tr>
<td>0.08</td>
<td>n/a</td>
<td>0.11mm – 0.00mm</td>
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</tbody>
</table>
DG Argon Options – AW vs COG

Low-e glass = 7 Ranges
Clear glass = 6 Ranges

U-factor Difference (btu)

Grid & Lite Space (mm)

Clear Glass  Hardcoat Glass  SoftCoat Glass
# DG Argon Ranges

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*as of March 23, 2017*
DG Options – Graph Add-on

Low-e glass = 5 Ranges
Clear glass = 4 Ranges

U-factor Difference (btu)

Grid & Lite Space (mm)

Clear Glass
Hardcoat Glass
SoftCoat Glass
Clear Glass - Air
Hardcoat Glass - Air
SoftCoat Glass - Air

as of March 23, 2017
DG Add-ons

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TG Options – AW vs. COG

U-factor Difference (btu)

Grid & Lite Space (mm)

-0.01 0.00 0.01 0.02 0.03 0.04

as of March 23, 2017
TG Air Options – AW vs. COG

Low-e glass = 3 Ranges
Clear glass = 2 Ranges

U-factor Difference (btu)

Grid & Lite Space (mm)

Clear Glass  Hardcoat Glass  SoftCoat Glass

as of March 23, 2017
# TG Air Ranges

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TG Argon Options – AW vs. COG

Softcoat glass = 3 Ranges
Hardcoat glass = 3 Ranges
Clear glass = 2 Ranges
## TG Argon Ranges

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TG Options – Graph Add-on

Softcoat glass = 2 Ranges
Hardcoat glass = 2 Ranges
Clear glass = 2 Ranges

- U-factor Difference (btu)
- Grid & Lite Space (mm)

as of March 23, 2017
# TG Add-ons

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As of March 23, 2017
Captures the product line’s characteristics

COG ADD-ON
Future Work

• Depends on today’s discussion
• Add add-on language and ballot
3 POINT TRENDLINE
3 Point Trendline

- Reduce trendline error
- Visible confirmation
- $R^2$ value to determine TL acceptance
- Data results are favorable
Balloted language

• Quanex language from 2016-10 ballot
Future Work

• Depends on today’s discussion
• Revise language and ballot
IMPLEMENTATION OF METHODOLOGY
Implementation of Methodology

• Negatives to make methodology optional
OTHER BALLOT NEGATIVES
Other Ballot Negatives

• Grid add-on optional
• Single simulation methodology
• Grammatical / document references
• Additional options – 15% criteria
Thank You

Questions