

# ALUTECH SYSTEMS S.R.O. COMPUTER SIMULATION REPORT

**SCOPE OF WORK**

W72 SWING DOOR - NFRC 100/200/500

**REPORT NUMBER**

L3936.03-116-45 R0

**TEST DATE**

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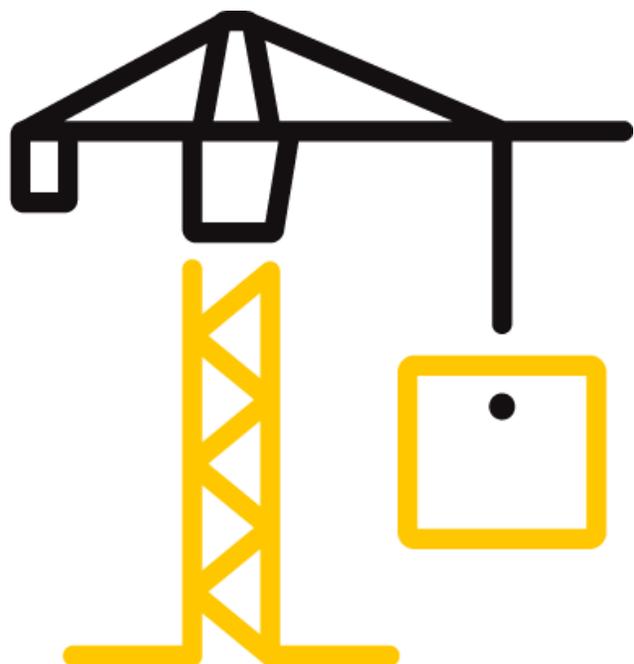
**PAGES**

12

**DOCUMENT CONTROL NUMBER**

RT-R-AMER-Test-4044 (04/11/22)

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## TEST REPORT FOR ALUTECH SYSTEMS S.R.O.

Report No: L3936.03-116-45 R0

Date: 06/26/23

### SECTION 6

### SIMULATION RESULTS

| TOTAL PRODUCT CALCULATIONS (W72 Swing Door) |  |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|---|--|------------------|-----------------------|--|-----------------------|------------------|-----------------------|--|-----------------------|------------------------------|--------|-----------|
| Option Number                               | Pane Thickness 1 (in)  | Gap Width 1 (in) | Pane Thickness 2 (in) | Gap Width 2 (in)   | Pane Thickness 3 (in) | Gap Width 3 (in) | Pane Thickness 4 (in) | Gap Fill   | Low-e (Surface #)     | Tint                         | Spacer | Grid Type |
|   | U-Factor (Btu/Hr-Ft <sup>2</sup> -F)                             |                  |                       | Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1) |                       |                  |                       | Visible Transmittance (VT) Grids (None / <1 / >=1) |                       | Condensation Resistance (CR) |        |           |
| 1   | SB60 / arg90 / clr (6mm/6mm) 25.4mm                              |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.223  | 0.500            | 0.223                 |  |                       |                  |                       | ARG90  | 0.035(#2)             | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.25 / 0.22 / 0.19                           |                       |                  |                       | VT(N/<1/>1) 0.44 / 0.38 / 0.32                     |                       | CR 59                        |        |           |
| 2   | SB67 / arg90 / clr (6mm/6mm) 25.4mm                              |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.223  | 0.500            | 0.223                 |  |                       |                  |                       | ARG90  | 0.035(#2)             | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.19 / 0.17 / 0.15                           |                       |                  |                       | VT(N/<1/>1) 0.34 / 0.29 / 0.24                     |                       | CR 59                        |        |           |
| 3   | SB70 / arg90 / clr (6mm/6mm) 25.4mm                              |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.223  | 0.500            | 0.223                 |  |                       |                  |                       | ARG90  | 0.018(#2)             | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.18 / 0.16 / 0.14                           |                       |                  |                       | VT(N/<1/>1) 0.40 / 0.34 / 0.29                     |                       | CR 60                        |        |           |
| 4   | SunGuard SN 70/35 HT / arg90 / clr (6mm/6mm) 30mm                |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.230  | 0.709            | 0.230                 |  |                       |                  |                       | ARG90  | 0.025(#2)             | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.21 / 0.19 / 0.16                           |                       |                  |                       | VT(N/<1/>1) 0.43 / 0.37 / 0.31                     |                       | CR 61                        |        |           |
| 5   | SunGuard HP Neutral 60 / arg90 / clr (6mm/6mm) 30mm              |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.226  | 0.709            | 0.230                 |  |                       |                  |                       | ARG90  | 0.068(#2)             | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.33  |                  |                       | SHGC(N/<1/>1) 0.25 / 0.22 / 0.19                           |                       |                  |                       | VT(N/<1/>1) 0.35 / 0.30 / 0.25                     |                       | CR 60                        |        |           |
| 6   | SunGuard SNX 60 HT / arg90 / SunGuard SN 70/35 HT (6mm/6mm) 30mm |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.230  | 0.709            | 0.230                 |  |                       |                  |                       | ARG90  | 0.026(#2) / 0.025(#3) | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.16 / 0.14 / 0.13                           |                       |                  |                       | VT(N/<1/>1) 0.32 / 0.27 / 0.23                     |                       | CR 62                        |        |           |
| 7   | Suncool 70/35 / arg90 / clr (6mm/6mm) 32mm                       |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.230  | 0.787            | 0.223                 |  |                       |                  |                       | ARG90  | 0.021(#2)             | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.33  |                  |                       | SHGC(N/<1/>1) 0.23 / 0.20 / 0.18                           |                       |                  |                       | VT(N/<1/>1) 0.43 / 0.37 / 0.32                     |                       | CR 63                        |        |           |
| 8   | Suncool 70/35 / arg97 / Planibel Top N+T (6mm/6mm) 32mm          |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.230  | 0.787            | 0.230                 |  |                       |                  |                       | ARG97  | 0.021(#2) / 0.04(#3)  | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.23 / 0.20 / 0.18                           |                       |                  |                       | VT(N/<1/>1) 0.43 / 0.37 / 0.31                     |                       | CR 63                        |        |           |
| 9   | Suncool 66/33 / arg90 / clr (6mm/6mm) 32mm                       |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.233  | 0.787            | 0.223                 |  |                       |                  |                       | ARG90  | 0.025(#2)             | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.33  |                  |                       | SHGC(N/<1/>1) 0.23 / 0.20 / 0.17                           |                       |                  |                       | VT(N/<1/>1) 0.41 / 0.36 / 0.30                     |                       | CR 63                        |        |           |
| 10  | Suncool 66/33 / arg97 / Planibel Top N+T (6mm/6mm) 32mm          |                  |                       |  |                       |                  |                       |  |                       |                              |        |           |
|   | 0.233  | 0.787            | 0.230                 |  |                       |                  |                       | ARG97  | 0.025(#2) / 0.04(#3)  | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.22 / 0.20 / 0.17                           |                       |                  |                       | VT(N/<1/>1) 0.41 / 0.35 / 0.30                     |                       | CR 63                        |        |           |

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Date: 06/26/23

### SECTION 6 (Continued)

### SIMULATION RESULTS

| TOTAL PRODUCT CALCULATIONS (W72 Swing Door) |  |                  |  |                  |                       |                  |  |          |   |      |        |           |
|---|--|------------------|--|------------------|-----------------------|------------------|--|----------|---|------|--------|-----------|
| Option Number                               | Pane Thickness 1 (in)  | Gap Width 1 (in) | Pane Thickness 2 (in)  | Gap Width 2 (in) | Pane Thickness 3 (in) | Gap Width 3 (in) | Pane Thickness 4 (in)                                    | Gap Fill | Low-e (Surface #)                         | Tint | Spacer | Grid Type |
|   | U-Factor<br>(Btu/Hr-Ft <sup>2</sup> -F)  |                  | Solar Heat Gain Coefficient<br>(SHGC)<br>Grids (None / <1 / >=1) |                  |                       |                  | Visible Transmittance<br>(VT)<br>Grids (None / <1 / >=1) |          | Condensation<br>Resistance<br>(CR)        |      |        |           |
| 11  | Suncool 70/35 / arg90 / Planibel Top N+T (6mm/6mm) 32mm  |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.230  | 0.787            | 0.230  |                  |                       |                  |  | ARG90    | 0.021(#2) / 0.04(#3)                      | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  | SHGC(N/<1/>1) 0.23 / 0.20 / 0.18                                 |                  |                       |                  | VT(N/<1/>1) 0.43 / 0.37 / 0.31                           |          | CR 63                                     |      |        |           |
| 12  | Suncool 70/35 / arg97 / Optitherm S3 ProT (6mm/6mm) 32mm   |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.230  | 0.787            | 0.229  |                  |                       |                  |  | ARG97    | 0.021(#2) / 0.037(#3)                     | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  | SHGC(N/<1/>1) 0.23 / 0.20 / 0.18                                 |                  |                       |                  | VT(N/<1/>1) 0.43 / 0.37 / 0.32                           |          | CR 63                                     |      |        |           |
| 13  | Suncool 66/33 / arg90 / Planibel Top N+T (6mm/6mm) 32mm  |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.233  | 0.787            | 0.230  |                  |                       |                  |  | ARG90    | 0.025(#2) / 0.04(#3)                      | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  | SHGC(N/<1/>1) 0.22 / 0.20 / 0.17                                 |                  |                       |                  | VT(N/<1/>1) 0.41 / 0.35 / 0.30                           |          | CR 63                                     |      |        |           |
| 14  | Suncool 66/33 / arg97 / Optitherm S3 ProT (6mm/6mm) 32mm   |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.233  | 0.787            | 0.229  |                  |                       |                  |  | ARG97    | 0.025(#2) / 0.037(#3)                     | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  | SHGC(N/<1/>1) 0.23 / 0.20 / 0.17                                 |                  |                       |                  | VT(N/<1/>1) 0.41 / 0.35 / 0.30                           |          | CR 63                                     |      |        |           |
| 15  | Suncool 70/35 / arg90 / Stratophone 66.2 (6mm/12mm) 38mm   |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.230  | 0.787            | 0.491  |                  |                       |                  |  | ARG90    | 0.021(#2)                                 | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  | SHGC(N/<1/>1) 0.23 / 0.20 / 0.18                                 |                  |                       |                  | VT(N/<1/>1) 0.42 / 0.36 / 0.31                           |          | CR 62                                     |      |        |           |
| 16  | Stratobel iplus I-Top 44.2 / arg90 / Stratophone Top N+66.2 (8mm/12mm) 41mm  |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.333  | 0.787            | 0.491  |                  |                       |                  |  | ARG90    | 0.038(#2) / 0.033(#3)                     | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.31  |                  | SHGC(N/<1/>1) 0.29 / 0.25 / 0.22                                 |                  |                       |                  | VT(N/<1/>1) 0.44 / 0.38 / 0.32                           |          | CR 63                                     |      |        |           |
| 17  | SunGuard SN 70/35 HT / arg97 / clr / arg97/ SunGuard SN 70/35 HT (6mm/6mm/6mm) 54mm                                    |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.230  | 0.709            | 0.230  | 0.709            | 0.230                 |                  |  | ARG97    | 0.025(#2) / 0.025(#5)                     | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.23  |                  | SHGC(N/<1/>1) 0.18 / 0.16 / 0.14                                 |                  |                       |                  | VT(N/<1/>1) 0.33 / 0.28 / 0.24                           |          | CR 61                                     |      |        |           |
| 18  | Suncool 70/35 Pro T / arg90 / clr / arg90/ Optitherm S3 ProT (6mm/6mm/6mm) 54mm  |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.230  | 0.709            | 0.223  | 0.709            | 0.229                 |                  |  | ARG90    | 0.021(#2) / 0.037(#5)                     | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.24  |                  | SHGC(N/<1/>1) 0.21 / 0.18 / 0.16                                 |                  |                       |                  | VT(N/<1/>1) 0.39 / 0.33 / 0.28                           |          | CR 61                                     |      |        |           |
| 19  | Suncool 70/35 Pro T / arg97 / clr / arg97/ Planibel Top N+T (6mm/6mm/6mm) 58mm   |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.230  | 0.787            | 0.223  | 0.787            | 0.230                 |                  |  | ARG97    | 0.021(#2) / 0.04(#5)                      | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.23  |                  | SHGC(N/<1/>1) 0.21 / 0.18 / 0.16                                 |                  |                       |                  | VT(N/<1/>1) 0.38 / 0.33 / 0.28                           |          | CR 61                                     |      |        |           |
| 20  | Planibel Top N+T / arg97 / Planibel Top N+T / arg97/ Planibel Top N+T / arg97/ Planibel Top N+T (4mm/4mm/4mm/4mm) 60mm |                  |  |                  |                       |                  |  |          |   |      |        |           |
|   | 0.152  | 0.551            | 0.152  | 0.630            | 0.152                 | 0.551            | 0.152  | ARG97    | 0.04(#2) / 0.04(#4) / 0.04(#6) / 0.04(#7) | CL   | TS-D   | N,G,S     |
|   | U-Factor 0.20  |                  | SHGC(N/<1/>1) 0.26 / 0.23 / 0.20                                 |                  |                       |                  | VT(N/<1/>1) 0.38 / 0.33 / 0.28                           |          | CR 62                                     |      |        |           |

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### SECTION 6 (Continued)

### SIMULATION RESULTS

| TOTAL PRODUCT CALCULATIONS (W72 Swing Door) |  |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|---|--|------------------|-----------------------|--|-----------------------|------------------|-----------------------|--|-------------------|------------------------------|--------|-----------|
| Option Number                               | Pane Thickness 1 (in)  | Gap Width 1 (in) | Pane Thickness 2 (in) | Gap Width 2 (in)   | Pane Thickness 3 (in) | Gap Width 3 (in) | Pane Thickness 4 (in) | Gap Fill   | Low-e (Surface #) | Tint                         | Spacer | Grid Type |
|   | U-Factor (Btu/Hr-Ft2-F)  |                  |                       | Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1) |                       |                  |                       | Visible Transmittance (VT) Grids (None / <1 / >=1) |                   | Condensation Resistance (CR) |        |           |
| 21  | SN 70/35 HT/ arg90 / Extra Clear (6mm/6mm) 34mm                                |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.230  | 0.866            | 0.230                 |  |                       |                  |                       | ARG90  | 0.025(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.33  |                  |                       | SHGC(N/<1/>1) 0.21 / 0.19 / 0.16                           |                       |                  |                       | VT(N/<1/>1) 0.43 / 0.37 / 0.31                     |                   | CR 61                        |        |           |
| 22  | SN 70/37 HT/ arg90 / Extra Clear (6mm/6mm) 34mm                                |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.230  | 0.866            | 0.230                 |  |                       |                  |                       | ARG90  | 0.025(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.33  |                  |                       | SHGC(N/<1/>1) 0.21 / 0.19 / 0.16                           |                       |                  |                       | VT(N/<1/>1) 0.43 / 0.37 / 0.31                     |                   | CR 61                        |        |           |
| 23  | iplus Energy NT/ arg90 / Extra Clear (6mm/6mm) 34mm                            |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.230  | 0.866            | 0.230                 |  |                       |                  |                       | ARG90  | 0.038(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.33  |                  |                       | SHGC(N/<1/>1) 0.25 / 0.22 / 0.19                           |                       |                  |                       | VT(N/<1/>1) 0.45 / 0.39 / 0.33                     |                   | CR 61                        |        |           |
| 24  | HP Neutral 50/32/ arg90 / Extra Clear (6mm/6mm) 26mm                           |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.230  | 0.551            | 0.230                 |  |                       |                  |                       | ARG90  | 0.040(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.20 / 0.18 / 0.16                           |                       |                  |                       | VT(N/<1/>1) 0.31 / 0.27 / 0.23                     |                   | CR 60                        |        |           |
| 25  | Energy Light / arg90 / Extra Clear (6mm/6mm) 26mm                              |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.233  | 0.551            | 0.230                 |  |                       |                  |                       | ARG90  | 0.027(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.32  |                  |                       | SHGC(N/<1/>1) 0.27 / 0.24 / 0.21                           |                       |                  |                       | VT(N/<1/>1) 0.40 / 0.34 / 0.29                     |                   | CR 60                        |        |           |
| 26  | SN 70/35 HT / arg90 / Extra Clear / arg90/ Extra Clear (6mm/6mm/6mm) 54mm      |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.230  | 0.630            | 0.230                 | 0.787  | 0.230                 |                  |                       | ARG90  | 0.025(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.27  |                  |                       | SHGC(N/<1/>1) 0.20 / 0.17 / 0.15                           |                       |                  |                       | VT(N/<1/>1) 0.39 / 0.34 / 0.28                     |                   | CR 62                        |        |           |
| 27  | SN 70/37 HT / arg90 / Extra Clear / arg90/ Extra Clear (6mm/6mm/6mm) 54mm      |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.230  | 0.630            | 0.230                 | 0.787  | 0.230                 |                  |                       | ARG90  | 0.022(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.27  |                  |                       | SHGC(N/<1/>1) 0.21 / 0.18 / 0.16                           |                       |                  |                       | VT(N/<1/>1) 0.39 / 0.34 / 0.29                     |                   | CR 62                        |        |           |
| 28  | iplus Energy NT / arg90 / Extra Clear / arg90/ Extra Clear (6mm/6mm/6mm) 54mm  |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.230  | 0.630            | 0.230                 | 0.787  | 0.230                 |                  |                       | ARG90  | 0.038(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.27  |                  |                       | SHGC(N/<1/>1) 0.23 / 0.20 / 0.18                           |                       |                  |                       | VT(N/<1/>1) 0.41 / 0.36 / 0.30                     |                   | CR 62                        |        |           |
| 29  | HP Neutral 50/32 / arg90 / Extra Clear / arg90/ Extra Clear (6mm/6mm/6mm) 50mm |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.230  | 0.551            | 0.230                 | 0.709  | 0.230                 |                  |                       | ARG90  | 0.040(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.27  |                  |                       | SHGC(N/<1/>1) 0.19 / 0.17 / 0.15                           |                       |                  |                       | VT(N/<1/>1) 0.29 / 0.24 / 0.21                     |                   | CR 62                        |        |           |
| 30  | Energy Light / arg90 / Extra Clear / arg90/ Extra Clear (6mm/6mm/6mm) 50mm     |                  |                       |  |                       |                  |                       |  |                   |                              |        |           |
|   | 0.233  | 0.551            | 0.230                 | 0.709  | 0.230                 |                  |                       | ARG90  | 0.027(#2)         | CL                           | TS-D   | N,G,S     |
|   | U-Factor 0.27  |                  |                       | SHGC(N/<1/>1) 0.25 / 0.22 / 0.19                           |                       |                  |                       | VT(N/<1/>1) 0.37 / 0.32 / 0.27                     |                   | CR 62                        |        |           |