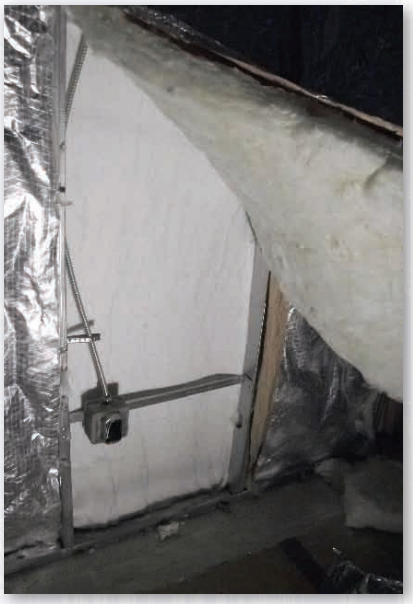
aspen aerogels®

At the Pentagon, Thin Aerogel Insulation Improves Thermal Efficiency of Renovation by 23%

Flexible, thin aerogel insulation a perfect fit for envelope upgrades to solid masonry wall buildings



CASE STUDY

DETAILS

Location: The Pentagon, Washington, DC
Fabrication Partner: Regional Contracting Services, LLC

CHALLENGES

- Existing wall is solid masonry un-insulated wall. The existing wall had a very poor thermal performance of approximately R-3.
- Baseline renovation design incorporated a new metal stud frame wall built to the interior of the solid masonry with new fiberglass insulation in the cavity. The fiberglass added R-13 to the cavity area, but the metal framing allowed thermal bridges; a path for heat loss and inefficiency.
- The baseline renovation design had already been used on much of the building and could not be changed due to the incorporation of aerogel.

SOLUTIONS

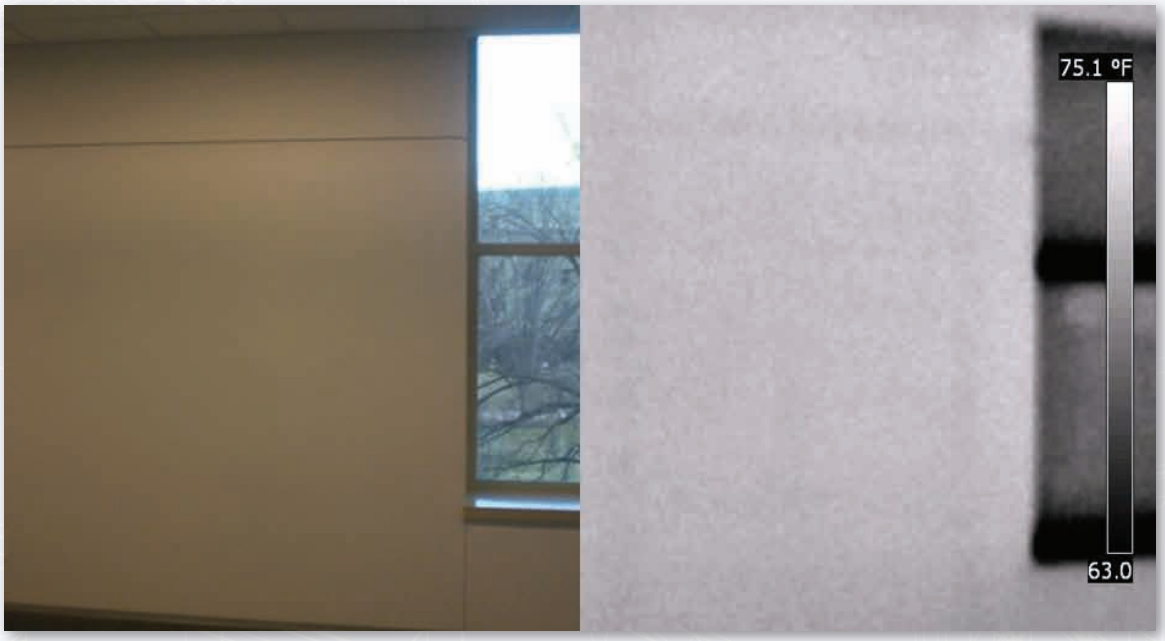
- Apply one layer of **Spaceloft®** (10 mm, 0.4") to the existing solid masonry wall behind the metal stud frame wall and new cavity insulation.
- Spaceloft insulation was installed with spray adhesive and insulation pins.

BENEFITS

- 23% improvement in the R-value of the aerogel treated wall.
- 419 MMBtu annual savings due to the aerogel.
- 48.6 thousand pounds annual emitted CO_2 reduction.
- No change to baseline design and no impact to schedule.
- Incorporating aerogel insulation earlier into design would have yielded much higher benefits:
  - More space savings - up to 40,000 sq ft
  - Lower installed cost
  - Higher energy savings
  - Higher CO_2 reductions

Spaceloft - High Performance Insulation for Building Envelopes

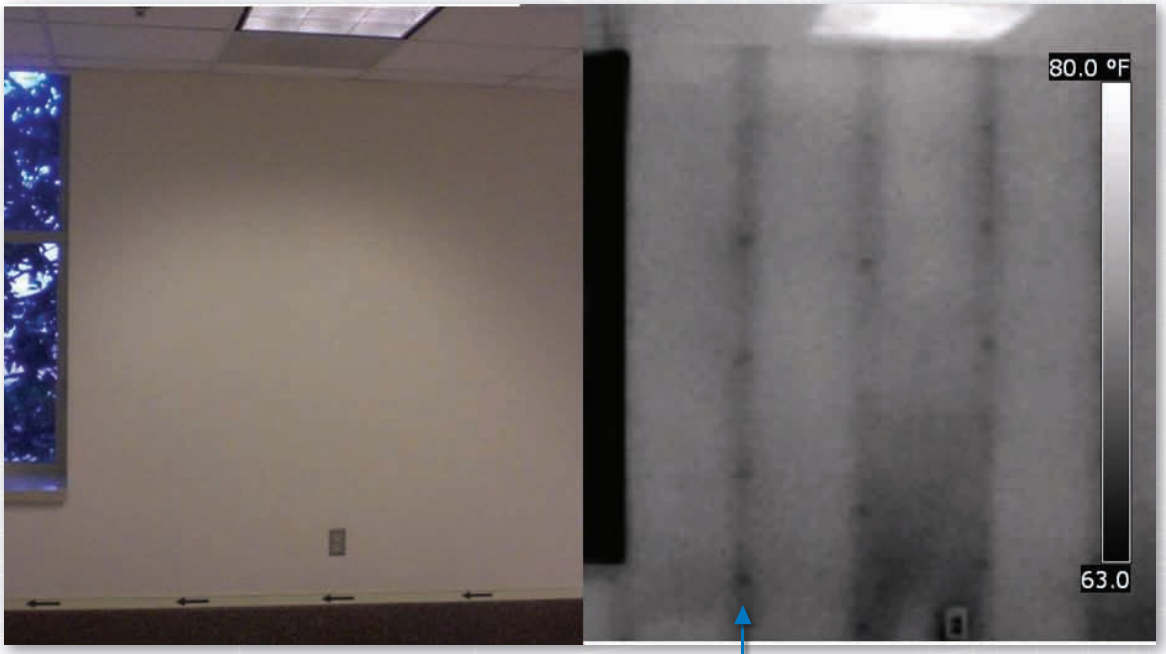
Pentagon Interior Wall Renovation With Spaceloft Insulation



Visible image

Infrared image

Pentagon Interior Wall Renovation Without Spaceloft Insulation



Visible image

Infrared image - thermal bridging through the framing is highly visible with infrared imaging

Investments made through Title III of the Defense Production Act supported this project installation.

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