Naval Facilities Engineering Command
Engineering and Expeditionary Warfare Center Port Hueneme, California 93043-4307

TechData Sheet

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Aerosol Duct Sealing

Technology Description

Duct Sealing is an energy reduction technology that was demonstrated under the Navy's Techval Program performed by the NAVFAC Engineering and Expeditionary Warfare Center. This technology internally seals leaks in air distribution ducts by injecting a fog of aerosolized sealant particles into a pressurized duct system. The product keeps the particles suspended within the air stream. As the duct work is pressurized, the particles deposit at the leak edges, collect, and eventually seal the leaks.

Energy savings are realized through sealing air leaks in the duct work, which reduces the amount of air requiring movement by fans throughout the air distribution systems. This will, in turn, result in fan motor power reduction. In addition, the reduction of air leaks in the duct work can reduce the thermal energy lost in the space heating and cooling systems.

Duct Sealing Application in Progress at NSA Orlando

Value to the Warfighter

This duct sealant technology demonstration has shown that application of the aerosol duct sealant can reduce both thermal energy and fan energy consumption, depending on the HVAC system type and the location of the ducts that were sealed. The cost effectiveness of the technology is site specific, primarily a function of local energy costs, the building thermal loads, and the cost of sealant application.

Economics of the Technology: ROI or Payback

Of the four sites, the greatest impact from the duct sealant was at the DeFlorez Building in Orlando, which was also the site with the greatest cooling degree-day (CDD) value. At this site, the technology resulted in a total annual energy use savings of 103,438 kWh, resulting in the annual energy cost savings of $8,689 with a simple payback period of 5.7 years.

Technology Transition Documentation

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Category 4. The transition of Research knowledge into products that provide information for the NAVFAC community to purchase services for SRM, special projects and energy performance performing contractual mechanisms.

Site Implementation

The aerosol duct sealant technology was demonstrated on four buildings at four different Navy facilities around the country. The four demonstration buildings were 1) the DeFlorez Building at NAVAIR Orlando, FL; 2) Building 1268 at the Naval Station Newport, RI; 3) Building 865 at the Naval Base Kitsap in Bremerton, WA; and 4) Building 3339 at the Naval Base San Diego, CA. The four buildings represent four different climatic conditions and different air distribution systems types. Data on thermal energy and fan power was collected before and after the duct sealant material was applied. Annual energy and cost savings were predicted based on a typical weather year for each site.

Since the above 4 sites were completed an additional 2 sites at NS Newport and 1 site at NB Kitsap have had duct sealant applied and data collection is currently in progress at those 3 sites.

Specific Applications

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