

FACT SHEET



DART Sensor
Located outside diffuser for ceilings with Asbestos issues

Dual Air Regulation Technique (DART)

OLDER BUILDINGS CAN REALIZE SUBSTANTIAL SAVINGS ON VENTILATION ENERGY

When looking for ways to save energy and reduce power costs, commercial customers often face the challenge of working with legacy constant air volume (CAV) systems for heating and cooling. Energy-efficient variable air volume (VAV) technology may offer energy savings of about 50 percent, but converting to VAV can require the purchase of expensive hardware, disruptive construction projects, and even asbestos abatement.

The National Library for the California Institute for Energy Efficiency estimates that only five percent of the existing CAV distribution systems might be converted to traditional VAV systems. The innovative use of information technology in building controls may provide cost-effective alternatives to conversion. A recent study of one such technology, the Dual Air Regulation Technique (DART) system, indicates that it offers the potential for significant energy savings.

Pacific Gas and Electric Company's (PG&E) Emerging Technologies Group tested DART at Stanford University's Jordan Hall Annex. Manufactured by Federspiel Controls, the DART system wirelessly monitors interior temperatures. Its readings are used to regulate the speed of fans.

PROJECT RESULTS

PG&E and Federspiel Controls worked with Jordan Hall Annex's Facility Manager and Stanford's Demand-Side Energy Manager to familiarize university staff with operation of the DART system, integrate DART with the building's control and data reporting systems, and obtain information on Stanford's expectations and satisfaction with the system.

First, DART sensors and monitoring equipment were installed and used to gather

a month's worth of baseline data. Then, the DART fan controls were activated for two weeks to control the building's ventilation.

Key results were:

- 1. Significant Reduction in Energy Consumption:** On an estimated annual basis, DART reduced fan energy by 33 percent, cooling energy by 39 percent, and heating energy by 26 percent at Jordan Hall Annex.
- 2. Cost Savings:** The simple payback of this DART installation before utility incentives was 1.7 years. Incentives from PG&E's Non-Residential Retrofit Program reduced payback to 0.5 years.
- 3. Occupant Comfort:** DART kept interior temperatures within the desired range, with negligible variations. There were no reports of occupant discomfort and no indication that building occupants were aware of any change to the HVAC system.

Members of Stanford's operations staff were interviewed at the end of the project. They reported satisfaction with the cost and results, and said they were considering expanding the use of DART to other campus buildings. Other potential users surveyed during the study also indicated that the cost and benefits of DART would make it an attractive, easy-to-implement retrofit.

RECOMMENDATIONS

DART provides a unique, cost-effective solution for saving energy in buildings with legacy CAV systems. DART's supplier, Federspiel Controls, seems poised to meet increasing demand as additional customers recognize the value and adopt the technology.

CONTACT INFORMATION

For more information about the DART study, contact your local PG&E representative or call the **Business Customer Service Center** at **1-800-468-4743**. For details on PG&E's energy efficiency programs, visit www.pge.com/business.

