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Burns & McDonnell Recognized for Innovative Hawaii Air National Guard Project
Renovated Jet Engine Maintenance Facility Delivered at Half the Cost of New Facility, While Achieving Substantial Energy Savings and Flexibility for Future

HONOLULU, Hawaii — In 2014, the Hawaii Air National Guard awarded Burns & McDonnell a contract to design a new jet engine maintenance shop at Joint Base Pearl Harbor-Hickam. The requirements were that it be flexible and adaptable for future mission needs, meet aggressive goals for sustainability, achieve 30-50 percent energy savings and be less expensive than building a new facility.

As a result of meeting those design goals, Burns & McDonnell has been recognized with an Honor Award by the Hawaii Chapter of the American Council of Engineering Companies (ACEC).

Built in the 1970s, the Hawaii Air National Guard's jet engine maintenance shop was a multipurpose, two-story facility totaling 32,000 square feet. It had two high-bay areas for maintenance, related shops, offices, storage and other functional spaces. The second floor included space for a variety of administrative offices.

Though it was clear maintenance operations needed an upgrade, funds were not available to construct an all-new facility. Renovation of the existing structure was the preferred option.

While this approach saved significant dollars, it did create challenges. The first was that maintenance operations would need to continue as normal while renovations were underway. After evaluating several options, the solution was to move the entire operation to an adjacent hangar where maintenance operations could continue while the renovation was underway.

Once maintenance operations were relocated, the interior space was gutted and roofing and exterior wall panels were torn off, leaving only the structural framing standing on the original concrete slab. The building exterior was replaced with high-performance insulated metal wall panels to greatly improve energy efficiency. Durable, split-faced masonry was then installed to protect the lower wall sections from damage. Translucent wall panels, high-performance, anti-terrorism/force protection windows and high-efficiency mechanical systems rounded out the energy savings package.

The interior space featured a reconfigured floor layout that achieved an additional 2,700 square feet of usable space. New mezzanine storage systems greatly expanded functionality and new exterior access doors greatly improved maintenance efficiency as well as added storage functionality.

When it was completed in February 2018, the Guard took possession of a completely renovated facility at a final cost of \$14.4 million, less than half the cost of building an all-new facility. It is easily adaptable to future mission needs, including the ability to service each \$10 million F-22 fighter jet engine indoors, protecting each from exposure to the elements as each was prior to the renovation. Thanks to the full range of design features and mechanical system upgrades, the maintenance facility now achieves a 75-percent energy reduction, greatly exceeding initial requirements and one of the features that helped the facility earn LEED Silver certification.

“The Hawaii Air Guard handed us a challenge that we were proud to accept,” says [Dave Barr](#), vice president and leader of the firm’s Federal Group. “This new jet engine maintenance facility will serve multiple needs and missions for the Guard for many years to come, all at a significant savings of taxpayer dollars.”

Burns & McDonnell serves [Department of Defense \(DOD\) agencies](#), the [commercial aviation sector](#) and [corporate and municipal energy clients](#) in the [Pacific region](#). During the past decade, the firm has designed projects in Hawaii, Guam, Diego Garcia, China, Japan, Malaysia, South Korea, Philippines, Singapore, Taiwan and Vietnam.

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