



Propellants North Administrative and Maintenance Facility



The Propellants North Administrative and Maintenance Facility in the Launch Complex 39 area of Kennedy Space Center in Florida is the space agency's first carbon-neutral facility, which means it will produce enough energy onsite from renewable sources to offset what it requires to operate. The facility will produce an estimated 150,000,000 watt-hours per year (150 megawatt-hours) through an 80-kilowatt array, integrating the two photovoltaic (PV) roof systems and a PV-covered electric vehicle charging canopy in the facility's parking lot.

The Facility

The Propellants North Administrative and Maintenance Facility in the Launch Complex 39 area of Kennedy Space Center in Florida is one of NASA's most environmentally friendly facilities.

Propellants North, as it is called, consists of two buildings -- a single-story, 1,800-square-foot shop used to store cryogenic fuel transfer equipment and a two-story, 9,540-square-foot administrative building that houses managers, mechanics and technicians who fuel spacecraft.

The facility will reach for the U.S. Green Building Council's (USGBC) Leadership in Environmental and Energy Design (LEED) Platinum status, which is the highest LEED rating. USGBC awards LEED credits toward the rating based on the project's design and implementation.

There only are about 350 Platinum-rated facilities in the United States and four others in Florida. Although Propellants North is slated to be the second Platinum-certified facility for the space agency, it will be NASA's first carbon neutral facility, which means it will produce enough energy onsite from renewable sources to offset what it requires to operate.

Green Features

Propellants North is designed to be 42 percent more efficient than a traditional commercial facility and will strive to maintain Platinum certification and net-zero status with:

- Estimated production of 150,000,000 watt-hours



Inside Propellants North is window glazing and framing from the iconic firing rooms of Kennedy's Launch Control Center (LCC). The windows are set at the same orientation and angle as they were in the LCC, looking out toward Launch Complex 39.

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More than 300 solar panels were installed on the roof of Propellants North. Each panel will produce 235 watts of clean energy.

per year (150 megawatt-hours) through an 80-kilowatt array, integrating the two photovoltaic (PV) roof systems and a PV-covered electric vehicle charging canopy in the facility's parking lot

- Air conditioning with energy recovery technology
- Highly insulated roof and walls
- Lighting fixtures with smart lighting controls, step dimming and occupancy sensors

• Energy Star appliances

- Water-conserving restroom fixtures and high-velocity hand dryers
- High windows with correct solar orientation to make the most of natural daylight

• Sustainable flooring using polished concrete and laminated bamboo

- Roof constructed from recycled materials integrated with a rainwater harvesting system

• Underground non-potable water storage tanks for irrigation and restroom facilities

- Xeriscape landscaping using native species and recycled crushed crawlerway rock for mulch

• Reuse of deconstructed Launch Control Center firing room window glazing and framing

- Reclaimed and processed waste concrete from Kennedy's demolition projects for facility foundation and paving subbase materials

• Construction site recycling of more than 98 percent of all wastes, totaling 664.15 out of 686.22 tons diverted from landfill disposal:

- 523 pounds of crushed plastic bottles and aluminum cans
- 10.6 tons of cardboard

- 164 pounds of white paper
- 15.8 tons of wood
- 5.33 tons of metal
- 613.57 tons of concrete
- 18.55 tons of asphalt

Designers and Builders

The project, which included new construction of the facility, abatement and deconstruction of three old facilities, replacement of a substation and the repaving of the Propellants North area, finished on time and under budget.

• Jones Edmunds and Associates Inc. of Titusville, Fla., and Green Building Services of Orlando, Fla., designed the facility

• 3w-designs LLC of Jacksonville Beach, Fla., designed the landscaping

• NASA and the Florida Solar Energy Center, which is a research institute of the University of Central Florida, co-designed the solar photovoltaic system

• HW Davis Construction Inc. of Orlando, Fla., was the prime contractor

• 16 subcontractors include:

- VA Paving of Cocoa, Fla.
- Professional Tilt Services of Groveland, Fla.
- Champion Steel Corporation of Deland, Fla.
- Glenco Industries of Orlando, Fla.
- Architectural Sheet Metal of Orlando, Fla.
- West Painting of Winter Park, Fla.
- Winner Glass of Rockledge, Fla.
- Acousti Engineering of Rockledge, Fla.
- Richard's Paint and Decorating of Melbourne, Fla.
- Access Floor Solutions of Orlando, Fla.
- Sundance Awning Systems of Orlando, Fla.
- Kone Inc. of Orlando Fla.
- WW Gay Mechanical of Port Orange, Fla.
- Service Cable Electric of Oviedo, Fla.
- Sharp Corp. of Memphis, Tenn.
- Superior Solar LLC of Longwood, Fla.
- Along with support from Kennedy's Base Operations contractor URS/ISC



The walls of Propellants North are made of a THERMOMASS concrete wall insulation system. In this approach, the exterior layer of concrete is poured and leveled on the building's footprint. Then, prefabricated, predrilled insulation sheets are arranged on top of the un-hardened concrete, and connectors, designed to hold the sandwiched layers of concrete and insulation secure, are inserted through the predrilled holes. Next, the structural wythe is poured. Once cured, these panels are lifted upright to form the building's envelope.

National Aeronautics and Space Administration

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