



Mission Verde Center @ Cooper



As part of its Mission Verde Resolution, the City of San Antonio (CoSA) has selected the former James Fenimore Cooper Middle School of the San Antonio Independent School District (SAISD) to serve as Mission Verde Center (MVC) @ Cooper. The main building at the center features 65,000 ft² on two floors, including an auditorium, a kitchen, a cafeteria, and a large number of offices and



classrooms. The mission of the center is technology demonstration, community education, job training, and business support in the general area of sustainable energy and water usage. Partners at MVC @ Cooper are San Antonio Youth (SA Youth), Texas A&M Engineering Experiment Station (TEES), CPS Energy, San Antonio Water System (SAWS), SAISD and Alamo Colleges.

CoSA obtained funds from the federal and state government for installation of energy efficiency retrofits and a photovoltaic system at MVC @ Cooper. CoSA tasked the Texas Center for Applied Technology (TCAT), a TEES research center, with the selection and management of these installations. They seed the technology demonstration aspect of the centers' mission.



The energy efficiency retrofits include a roof upgrade, a lights upgrade, a water-side HVAC upgrade and installation of a vertical well geothermal heat pump. The roof upgrade comprised conversion of the existing asphalt and gravel roof into a cool roof via a primer layer, a urethane foam insulation layer, and a two-coat acrylic cap layer. The estimated reduction in cooling load is between 5 and 10 tons. The lights upgrade comprised replacement of T12-34W and T8-32W fluorescent tubes with T8-25W fluorescent tubes, as well as installation of various LED and inductive fluorescent lights. The reduction in peak demand is 24 kW_{AC}. The HVAC upgrade comprised replacement of the existing 24 year old over-sized 280 ton centrifugal chiller with a right-sized magnetic levitation bearing high-speed 195 ton centrifugal chiller as well as establishment of water-side Variable Speed Drive (VFD) capability. The reduction in average demand is estimated to be 26 kW_{AC} under load conditions most frequently encountered on site.



The photovoltaic system features amorphous silicon thin film modules and Copper Indium Gallium Di-Selenide (CIGS) thin film modules, supported on Roof Top (RT), Top-of-Pole (TP), Vertical Single Axis Tracker (VSAT), and Dual Axis Tracker (DAT) structures. The peak power generation capacity of the system is 48.8 kW_{DC} or 42.5 kW_{AC}. The estimated annual energy production is 80,000 kWh_{AC}.

TEXAS CENTER FOR APPLIED TECHNOLOGY

There are many problems that require the careful and proper integration of applied technologies to find solutions. The Texas Center for Applied Technology (TCAT) was created to focus on these specific problems and to develop effective and efficient solutions. TCAT's core competency is the innovative application of existing technologies and advanced research to solve complex real-world problems.

TCAT's primary objective is to apply and test technologies to address targeted problems and engage basic research as required. TCAT has employees in a variety of locations with the ability to perform research that cuts across multiple technologies, disciplines, and cultures. The Center's employees are knowledgeable regarding customers' requirements and are ready to respond effectively to provide the best value for the customers' needs including expertise in technology insertion, technology assessments, and test and evaluation.

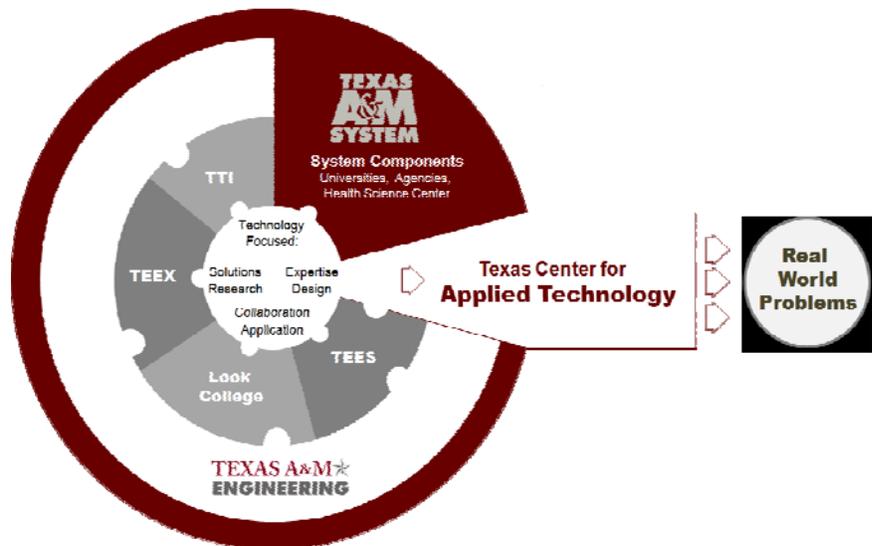
TCAT is part of the Texas A&M Engineering Experiment Station (TEES), a member of The Texas A&M University System. The A&M System is one of the largest and most comprehensive systems of higher education in the United States. Through a statewide network of eleven university campuses, seven state agencies, and a comprehensive health science center, the A&M System educates more than 120,000 students on its university campuses, conducts more than \$780 million in research, and reaches another 22 million people through service each year. TEES is an engineering research agency for the state of Texas and conducts over \$147 million in research annually. Because of the Center's position within the Texas A&M Engineering program, TCAT's expertise can easily be extended by rounding out its team with world class faculty researchers, as appropriate. TCAT is in an excellent position for collaboration not only with The Texas A&M University System components and their customers but with other universities, institutions, centers, and industry.

TCAT'S CORE COMPETENCIES

Energy Sustainability ★ Environmental Sustainability
Manufacturing & Systems Engineering ★ Information Technology ★ Modeling & Simulation
Technology Insertion ★ Test & Evaluation

TEXAS A&M ENGINEERING

Texas A&M Engineering consists of the Dwight Look College of Engineering, and three engineering agencies, including TEES: Texas A&M Transportation Institute (TTI) conducts research and professional education in all modes of transportation. The Texas A&M Engineering Extension Service (TEEX) works to develop a highly skilled and educated workforce and enhances public safety through training, continuing education, and technical assistance.



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