

# Oklahoma Students Study Wind/Gas Industries at SWOSU's Oklahoma Giants Academy

07.24.2008

Students of the Oklahoma Giants Academy give the thumbs up to wind energy at the Blue Canyon Wind Farm north of Lawton. Pictured are (front from left): Ryan Gaines, Stratford High; Michael Solomon, Stillwater; Arthur Bulin, Anadarko. Second row-- Aaron Pierce, Waukomis; Drew Sutterfield, Fort Gibson. Third row--Miles Coffman, Vinita; Brittiany Smith, Crowder; Tiffany Short, Weatherford. Fourth row--Mark Woolard, Crowder; Christianna Clark, Mt. St. Mary High in Oklahoma City. Back row--Magan Marshal, Seminole; Sean Treece, Ponca City; and Kelly Sokolosky, Fort Cobb.

Students and faculty of the SWOSU Oklahoma Giants Summer Academy were given a tour of an operating natural gas drilling rig by Chesapeake Energy and its employees.

Forty-five students from around Oklahoma have been studying wind and natural gas power industries of Oklahoma as part of Southwestern Oklahoma State University's 2nd annual Oklahoma Giants Summer Academy on the Weatherford campus.

The science, math, engineering and technology academy, directed by Jeff Short, was made possible by the Oklahoma Regents for Higher Education. The academy started July 6 and concluded July 25.

Short of the SWOSU Department of Industrial and Engineering Technology originated the academy to show the application of math and science in the engineering and technology of the industry of western Oklahoma.

"I wanted to showcase western Oklahoma's unique qualities, so I looked out my office window to the south," Short said.

His view to the south showed the wind generators that have become a rich part of the Weatherford area. Also dotted among the wind generators are numerous natural gas exploration and production sites.

Students from 27 different counties in Oklahoma were chosen to participate in one of three weeks of the camp. The students were invited to participate in activities and classes related to power, energy, and the technology of producing energy with wind or natural gas. The Academy partnered with Western Farmers Electric Cooperative, the Navy, Ferrania Imaging, Chesapeake Energy, Florida Power and Light, and the Oklahoma Energy Resources Board.

Short said the students spent a couple of days in the classroom and laboratories, learning how math and science relate to energy, work and power. They took what they learned in the lab and built operating wind generators from the foundation up. The students' generators produced about .1 watts of power, enough to power a calculator. The principles are the same, however, as the GE or Vestas wind turbines found in Oklahoma that each produce over 1.5 million watts of power.

“The students get a keen understanding of the technological challenges of producing energy from the wind,” Short said.

The academy participants also learned about the chemistry and physics of pumping oil, distilling oil into usable fuels, and the energy contained in the molecules of natural gas and other petroleum compounds. The students’ chemistry and physics experiments were conducted under the direction of faculty from the Oklahoma Energy Resources Board.

Students also learned to program robots. In another laboratory, the students participated in activities that taught them to program a robotic vehicle to navigate a course. These automated machines use mechanisms very similar to the automation required to pitch and yaw the wind generators to control rotor speed and energy production.

The academy is not just about classrooms and laboratories. Another key part of the summer academy experience for the students was the field trips. Students this year visited the Blue Canyon Wind Farm north of Lawton. They got to see the generators up close, listen to the quiet rushing of the wind, and learn for themselves the clean, effective power of the wind.

The students also visited the Western Farmers Electric Cooperative generating facility. The Anadarko facility is very unique in that it generates most of its electric power using a natural gas turbine and steam turbine in a combined cycle operation. The natural gas not only turns an electric generator, it also creates steam used to turn a steam turbine attached to the same electric generator. The natural gas, therefore, is used in two different ways to create the electricity, greatly increasing the overall efficiency of the system.

The students made another stop at a gas drilling rig. Chesapeake Energy, through its exploration company Nomac Drilling, hosted the students at an active drilling rig site. Employees of Chesapeake and Nomac conducted thorough tours for the students, explaining the terms and technology used in today’s drilling operations. The students also visited a natural gas producing site.

The final tour was the Chesapeake headquarters in Oklahoma City. Students learned about careers in engineering, geology and mathematics.

Short said with entrepreneur T. Boone Pickens starting an active conversation about reducing America’s dependence on foreign oil with wind energy and natural gas production, the SWOSU summer academy was certainly timely and pertinent. The faculty and partners of the academy hope their students will someday all be located in Oklahoma pursuing a career in the Oklahoma giants of wind and natural gas.