



ABOUT AYA

Operating in the energy sector for more than 20 years, AYA Instruments is invested in the education of future generations about clean and renewable energy. AYA Instruments, aiming to bring a greater awareness of energy's importance, provides students the tools to measure, meter, monitor, and analyze scientific data from the world around them.

Our hope is to involve students around the globe in scientific projects that can help promote interest in clean and renewable energy, allowing us to work collectively on maintaining a sustainable environment. We actively cultivate this approach through our partnerships with educational institutions and our Solar STEM projects.

AYA SOLAR STEM

Solar STEM is a collaborative learning project developed by AYA Instruments with input from teachers at the Fort Cherry School District and Parkway West Career and Technology Center in Pittsburgh. The project is aligned with the College and Career Ready standards to provide real-world experiences around sustainable, energy-related concepts.

SOLAR STEM ACTIVITIES

- Learning about the effect of shading/shadows, tilt, and orientation on solar-power production
- Projecting energy production locally, nationally, and globally based on season and weather
- Comparing modeled energy production to actual energy production

WHY USE THE SOLAR POWER STATION PLATFORM?

It is affordable, and it can be used for:

- An Outdoor Classroom
- Can Be Expanded or Relocated, As Needs Grow
- Students Can Work With Other Schools Around the Globe and Share Data
- Connect With Other Sources of Energy Generation
 - Wind Turbine
 - Water Turbine
 - Auxiliary Generator

RELATED STEM PROJECTS

- AYA Cloud Based Data Logging
- Aquaponics
- Greenhouses
- Monitoring and Control System Automation
- Multifunction Environmental Instrument Use

“The goal isn’t to prepare them for careers in conservation. It’s to bring today’s electricians into the 21st century”

-MICHAEL LEDDY
Electrical Systems Technology Instructor

CASE STUDY: THE DISCOVERY ZONE AND SOLAR POWER STATION INSTALLATION

AYA Instruments installed a solar power station and weather station in the Discovery Zone to help educate Fort Cherry students about solar energy and energy consumption. The Discovery Zone is used by students in grades K-12 of all content areas for several projects and activities, as well as staff and community members of the Fort Cherry School District. The project was funded by a \$20,000 STEAM grant for the 2015-2016 school year.



The Discovery Zone includes a weather station, solar panels, vertical and shade gardens, self-watering systems, living salsa wall, ant farm, and a wall mural. The project resulted in a collaborative environment where students, educators, administrators, and grant donor could relax and learn.





**K-12 OPPORTUNITIES:
NGSS STANDARDS APPLICATION**

- K-PS3-1 Energy: Make observations to determine the effect of sunlight on Earth's surface (K-2)
- 4-PS3-2 Energy: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents (Grades 3-5)
- 4-PS3-5 Energy: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another (Grades 3-5)
- MS-PS3-3 Energy: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer (Grades 6-8)
- HS-PS3-1 Energy: Create a computational model to calculate the change in energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known (Grades 9-12)



AYA SERVICES

While we have a standard package, we will work with each customer to create systems tailored to fit their needs.

**THE CRITICAL COMPONENT: SOLAR POWER STATION
PLATFORM SOFTWARE**

The software package allows system installers and owners to monitor and control system settings from any internet-connected device – anywhere in the world. With real-time status and hands-on control, users track and manage individual system performance or a network of dispersed systems.

**OPTIONAL WEATHER STATION: DAVIS VANTAGE PRO2
SENSOR SUITE**

Measures:

- Rainfall
- Temperature & Relative Humidity
- Wind Speed
- UV & Solar Radiation

Software package allows remote viewing and connectivity to other stations around the world in order to compare and contrast data. Easily customize a weather station to suit individual needs and microclimate.

CONTACT US

Talk to an AYA representative today for a project quote and to find out how your project could be eligible for grants or financial assistance!

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ENERGY DISCOVERY SYSTEM

K-12 STEM Learning Platform

