Train Students like WorldSkills Champions: Prepare Renewable Energy Technicians for a Greener Future

FESTO



Skills competitions are strong career accelerators and valuable opportunities for teaching and learning, both at school and on the competition floor.

Skill 62 Renewable Energy is a growing discipline at WorldSkills competitions. Since its first introduction in 2022, competitors have demonstrated their expertise in wind power systems using our Wind Turbine Nacelle Learning System.

Whether you take part in a competition or not, discover how the renewable energy occupational standard, practical tasks, and training equipment can inspire your teaching and support industry-relevant training for your students.

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Develop Core Skills for Renewable Energy Technicians

Industry demands technicians who can ensure the efficient operation of equipment used to generate power from renewable energy sources. WorldSkills translates these industry requirements into its Renewable Energy Occupational Standard, an industry-validated framework that defines the professional skills and knowledge required to work with solar and wind power generation systems.



The competition brings the occupational standard to life through concrete tasks in which competitors independently design, install, wire, commission, test, and troubleshoot renewable energy (solar and wind power) systems. Tasks are grouped into modules and typically include:

1 | Planning and system preparation
Competitors interpret drawings and specifications, verify components, perform basic system calculations, identify risks, plan work sequences, and organize tools and materials in compliance with safety and sustainability requirements.

2 | Mechanical installation and assembly
Competitors assemble and install mechanical components of renewable energy systems (including photovoltaic frawework, hydraulic brakes, wind turbine generator, and more), ensuring correct alignment, fastening, torque, and mechanical integrity while working safely and efficiently.

3 | Electrical installation and wiring
Competitors install and connect electrical components (solar panels, inverters, controllers, sensors, etc.) using schematics, apply correct wiring, grounding, and isolation practices, and ensure electrical safety, functionality, and professional workmanship.

4 | Commissioning and functional testing
Competitors inspect, test, and commission renewable energy systems, perform start-up and verification procedures, measure operating parameters, and confirm safe and correct system operation.

5 | Troubleshooting and system optimization
Competitors diagnose and resolve mechanical or electrical faults, interpret test data, implement corrective actions, and optimize system performance within defined technical limits.

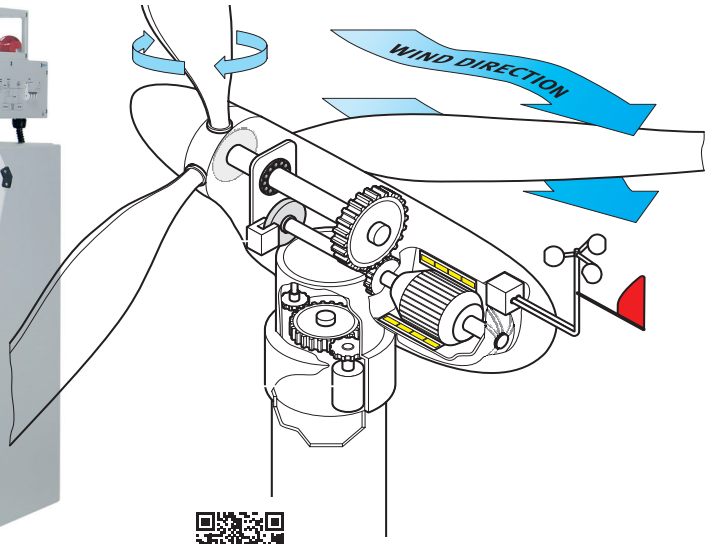
Get inspired by the
→ **Renewable Energy Occupational Standard**

View a task project from a previous WorldSkills edition
→ **Download the PDF on Festo LX**

Explore Equipment for the Competition Floor and the Classroom

Several competition tasks are performed on our WorldSkills-aligned Wind Turbine Learning System, a scaled-down, fully operational replica of a commercial wind turbine nacelle, making it suitable for both competition preparation and electrical engineering and renewable energy training.





See the learning system in action:
→ **Video on YouTube**

This system prepares learners for real-life operation, maintenance, and troubleshooting tasks in a safe environment. The HMI can be used to monitor and control the various subsystems and to program realistic wind simulations. The system covers the following topics:

Mechanical systems: components; inspection of bearings, shafts, and gears; brake system maintenance; lubricants, filter technology, and oil analysis; power drive couplings; and the function and maintenance of yaw systems.

Wind energy technology: systems and components, as well as aerodynamics.

Hydraulics assembly and maintenance: hydraulic units, pumps, valves, and systems; electrohydraulic controls; proportional hydraulic controls and servo valves; and brake systems.

Electronics and electrical systems: generators and electric motors; inverter maintenance and troubleshooting; electrical measurement techniques; sensor installation in wind turbines; wind turbine electronics; and wind farm networks.

The optional **electrical or hydraulic pitch hub** learning systems extend the nacelle.

Additional learning solutions from our portfolio support comprehensive renewable energy technician training, for example:

- Solar Thermal Energy Learning System
- Solar / Wind Energy Learning Systems
- Solar and Wind Power Training Packages
- Training packages in the fundamentals of electrical technology, electrical installations, and hydraulics/pneumatics.

Our experts work with you to identify and combine the learning solutions from our portfolio that best fit your training needs.



Equipment used during the competitions may be purchased at a special price after the event. Please contact your local Festo representative for information on availability and sales conditions.

Ready to Move Forward?





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Whether your objective is to prepare students for WorldSkills competitions or to integrate competition-grade training into everyday teaching, we support you in building a learning environment aligned with your needs and educational aspirations.

Considering embarking on the WorldSkills journey with your students?
Here are the main steps to get started:

Step 1
Learn about the competition on your national WorldSkills website.

Step 2
Identify motivated and committed students to represent your institution.

Step 3
Register them for the regional skills competition, the first selection stage for higher levels, such as national and international competitions.

Step 4
Develop a training program based on the occupational standard and tasks from past competitions.

Step 5
Select training equipment suited to the required skills and learning objectives.

Contact your Festo local company.
Leverage expert guidance, practical advice, and technical insight from our specialists.

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