

Technical Handbook

Renewable Energy – 2025 Cycle



About WorldSkills UK

WorldSkills UK is a set of dynamic skills competitions for young people and adults, designed and delivered by industry experts annually in over 40 skills.

Many WorldSkills UK competitions lead into WorldSkills International competitions which are biennial global events.



For further details, please visit

www.worldskillsuk.org/worldskills-uk-competitions

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Renewable Energy

Introduction:

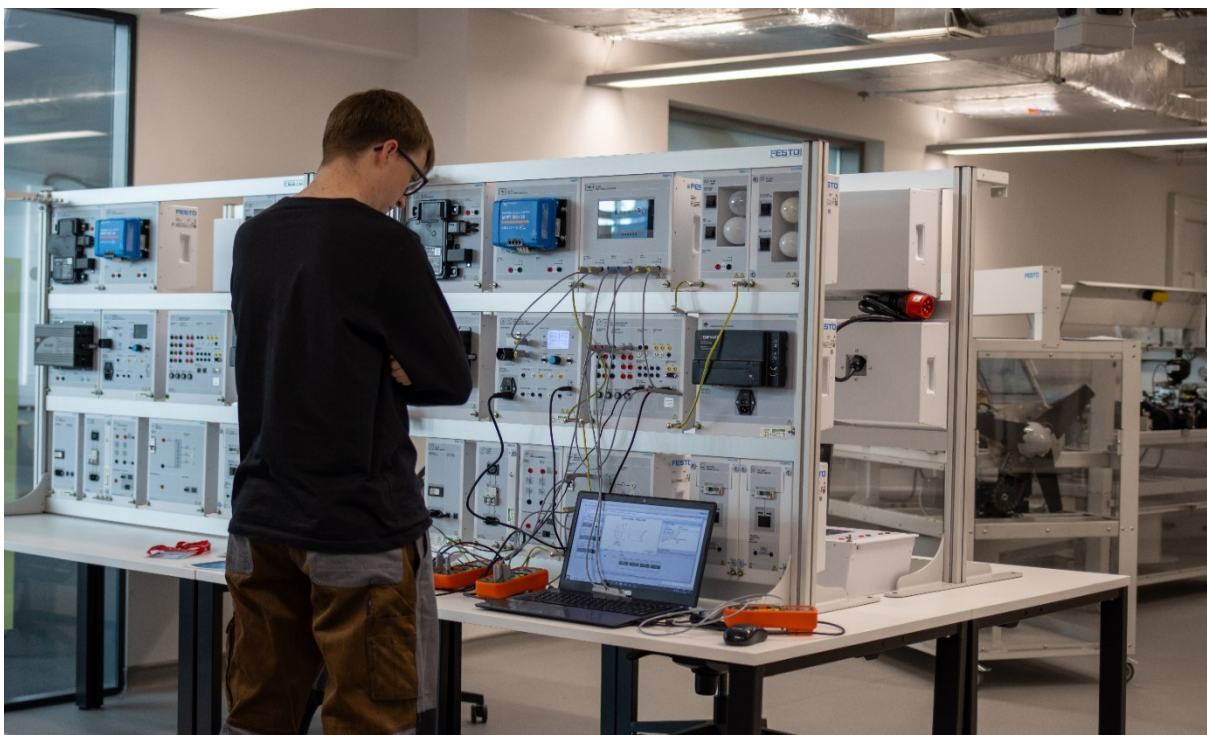
The aim of this manual is to aid competitors in preparation for the Renewable energy competition at regional and national level. We hope this will help competitors to perform to the best of their ability during the competitions. The guide contains general advice, technical tips and a more in-depth overview of the competition structure and its content. This is an individual competition; therefore, each team will consist of 1 competitor.

The information in this guide is intended to help participants become more aware of what to expect during the competition. Following the tips and advice in this guide will help you focus more on key competition areas with an enhanced level of precision, ensure you thoroughly read, review, and assess tasks before starting, and encourage you to step back periodically to evaluate your progress toward your goal.

Competition Overview:

This is a practical competition that will challenge your logic, design, and troubleshooting abilities in a demanding environment.

To complete the tasks, competitors are expected to apply their theoretical knowledge of fundamental principles, installation, mechanical, electrical/electronic and maintenance.



The skills that are tested in the competition include:

- Installing photovoltaic panels, ensuring accuracy and precision in spacing, angular alignment, torque tensions.
- Wiring and testing of photovoltaic installations with given components
- Maintenance of a Nacelle, ensuring mechanical reliability and operational efficiency
- Designing and calculating photovoltaic systems. Focusing on optimising energy efficiency while meeting inspection and testing requirements
- Ensuring safety protocols are adhered to and prioritised. Health and safety is paramount

Stage 1: Registration and preparation

To participate in the competition, you need to register through the WorldSkills UK website. You will then receive a confirmation regarding the success of your registration. Renewable energy is an individual competition. While waiting to progress to the next stage of the competition, you should prepare by reviewing the pre-competition activity task, which is available on our website.

Stage 2: Entry stage

Shortly after registering, the competition will begin with the entry stage, which consists of an online multiple-choice task. This activity will assess the competitor's basic knowledge and familiarity with electrical schematics, gearboxes, and PV systems. It will take place soon after the registration period ends. This is an important part of the competition journey as it gives the competitor an early taste of what knowledge is needed to be successful on the journey. Once all scores are tallied, competitors will be notified whether they have advanced to the next round, known as the national qualifiers.

Stage 3: National qualifiers

For competitors who have managed to progress from the entry stage, the next step is the national qualifiers. There will be a range of venues and dates that will be available to register. You are advised to register for your nearest venue. The top scoring competitors from the national qualifiers will then go through to the next round, the national finals. National qualifiers are a one-day activity, typically involving 2/3 main tasks.

Stage 4: National finals

The top 8 highest scoring competitors from the qualifiers will be invited to compete in the UK National Final, which is the pinnacle of the UK national competition cycle.

The finals are usually a large-scale event, and a chance to show off your skills, meet a range of industry professionals and other competitors taking part, as well as bring your family along to see you compete. This is typically a three-day event involving a day of setup and familiarisation, followed by two days of competition activity, and concluded by an awards ceremony.

Stage 5: WorldSkills UK International competitions

Beyond the national finals, there are a host of opportunities for competitors. Eligible competitors who show the highest skills, passion, and drive from the national finals will be given the opportunity to compete to train for the EuroSkills and WorldSkills International competitions. The winners from national final competitions who are not eligible for international competitions may join the Skills Champions programme, which allows continued involvement, including the opportunity to work with WorldSkills UK and visit schools, colleges, and events to inspire the next generations.

Alternatively, if training is of interest to you, you could consider supporting WorldSkills UK with organising and training, and even helping to run the National Finals.

Schedule:

Registration: 3rd – 28th March 2025

Entry Stage: 1st – 30th April 2025

National Qualifiers: 17th - 18th June 2025

National Finalists Announced: 10th July 2025

National Finals: 25th – 28th November 2025

General instructions:

- 1.** Entry stage will involve a multiple-choice test, aimed at testing fundamental knowledge and familiarity with electrical schematics, gearboxes, and PV systems. Competitors will be informed for their specific allocated time soon after the closing of the registration period
- 2.** Working time at the National qualifiers will be in one day, typically with 2-3 tasks, and will be across 2 days at the National finals with 3-4 tasks to explore the different competencies
- 3.** All supplied equipment and materials must be accurately checked by the competitor upon commencing the competition
- 4.** Competitors will not lose marks for any misplaced, lost, or spoiled materials and/or equipment, where this is the result of competitor error.
- 5.** Competitors will lose marks for each minor breach of the Health & Safety rules. Where a competitor puts themselves or any other person at risk as a result of a Health & Safety breach, the task will be stopped. Where a task is stopped due to a Health & Safety risk, the judge will decide if the task can be continued safely.
- 6.** Competitors are marked on cleanliness of area and adherence to safety protocols.

Competition equipment needed at National Qualifiers:

Competitors are not required to bring any equipment. They require protective boots and suitable clothing. While it is not necessary, competitors are entitled to bring any tools or equipment they desire.

Competition equipment needed at National Finals:

Competitors are not required to bring any equipment. They require protective boots and suitable clothing. While it is not necessary, competitors are entitled to bring any tools or equipment they desire.

Judges Top Tips:

The following eight aspects are neither exhaustive nor prescriptive and not a 'magic' formula to success. However, these are tips based on being involved with competitions for many years and we hope these will help you in future competition participation.

- 1. Pressure.** You will be nervous, but you will need to keep nerves under control and not let the pressure overtake you. But managed pressure can be good, increasing energy and performance potential.

How to handle nerves.

- a.** Listen to the Judge's brief and ask questions – what sort of questions depends on you, i.e. repeating an aspect of their brief; gives you a chance to understand more.
- b.** Importantly, understand at what point your allotted time actually starts, i.e. normally after the Judge's brief.
- c.** Read your competitors' brief; everything you need to know for the task is in that brief. Allow yourself 2 to 3 minutes to read it. Read it at least twice as your first reading will be too fast.
- d.** Take a deep breath and start the task. You are against the clock and so you will need to work with focus.
- e.** Task going wrong? Take a moment, think. If necessary, quickly re-read that part of the instructions and then refocus. You may need to move on from that particular aspect of the task.

2. Time Management. The tasks are all against the clock. So, once you have had your task brief and know how long you have, then quickly plan your workload. Section the aspects of the task into time blocks.

3. Remember, it is a competition and so practically everything you do within the task is marked and worth points; so, focus on gathering points. Leave some time to put tools away at the end (that is worth points), clean up the working area (again, worth points). If you are stuck on a particular aspect then accept you may or may not get points for that particular part and in order to move onto the next part of the task, ask the Judge for assistance. Remember, there are other points to be earned. ENGINEERING SKILLS FOR THE FUTURE

4. Think outside of the task. Where are the Risk Assessments? If using any POL, where is the COSHH? If in doubt, then ask the Judge where these items are. Remember, you have a limited time to display your technical skill to the Judge and so you must be smart with your actions and work levels.

5. Practice before the competition at working under pressure and with someone watching you; perhaps your works' supervisor or college lecturer. Get them to be super critical on your work quality, methods of work and approach.

6. Understand the advantage of selecting the right tool for the job.

7. Sleep. Get plenty of sleep the night before. If offered, take advantage of accommodation for the night before the competition. Resist the temptation to consume alcohol the night before and have a good breakfast on the day of the competition; these actions will assist in preparing your mind and body.

Technical Guidance

Technical guidance for each specific task and / or tooling will be given at the competition.

Task Breakdown

The following is an example of the marking criteria for the National Qualifier.

Criteria	Task	Mark
A	Mechanical assembly of Nacelle simulation on trainer	15.2
B	Electrical schematics and operation	15
C	PV Panel and wiring	14.9
D	Designer reports	4.6
Total Marks		100%

Health & Safety

During the competition as in any work or educational facility you have a duty to protect yourself and those around you.

As an Organising Partner, our delivery partners have a responsibility to protect you and keep you informed about health & safety procedures and practices including

- making the competition area safe and without risks to health
- ensure plant and machinery are safe and that safe systems of work are set and followed
- ensure hazardous articles and substances are moved, stored and used safely
- provide adequate welfare facilities
- give instruction, information, supervision and where applicable training necessary to maintain health and safety.

As a competitor you have a legal duty to:

- take reasonable care for your own health & safety and that of others who may be affected by what you do or do not do
- cooperate with the Organising Partner and/or their appointed delivery team on health and safety matters
- correctly use work/competition items provided, including personal protective equipment, in accordance with instructions and/or training given
- not interfere with or misuse anything provided for your health, safety or welfare

In particular:

- all health and safety regulations, including protection standards, specified by the competition hosts and delivery team, must be followed exactly. Any defect in machines or equipment must be reported immediately.
- safety goggles must be used in all material-removing operations.
- shoes and clothing must comply with health and safety regulations.

Conclusion

Remember, the competition will be designed to take you out of your comfort zone, but the tasks will be achievable. There will be a lot of 'self-pressure'. You need to learn how to control this and focus on the task in hand.

Once a task is complete, you cannot change the outcome good or bad, start the next task afresh and with positivity.

Drink plenty of water throughout the competition, staying hydrated will help with your concentration, focus and will reduce stress and headaches

