skillELECTRIC
Electrical Installation Skills Competition

worldskillsuk
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TV NET

Pre-Competition Activity **2023**

What's this Document For?

This Pre-Competition Guide will help you identify your most suitable candidate(s) for the SkillELECTRIC competition. Within this guide you'll find:

1. The **Talent Spotting Checklist** which defines the ideal personal attributes and other characteristics a competitor should have.
2. The **Core Competencies** that competitors are expected to meet at each stage of the SkillELECTRIC competition journey, starting from the Entry Stage through to world-class international standards.
3. The **Pre-Competition Task** can be used as an in-house competition from which you can identify your most suitable candidates to register for SkillELECTRIC.

What's Next?

Once you have worked through these guides to identify the candidate(s) that meet the standard, please register them for SkillELECTRIC – the registration window is open between 27 February - 24 March 2023.

The SkillELECTRIC Competition

Thank you for your interest in the SkillELECTRIC competition, the industry's premier annual skills competition, which is generously sponsored by Electric Center, the NICEIC and Scolmore Group.

The SkillELECTRIC competition is organised by the registered charity NET (National Electrotechnical Training) who own, manage and develop numerous Assessments of Occupational Competence on behalf of the industry.

SkillELECTRIC has been designed to reflect the role of an Electrical Technician and the standards that are expected within the electrical industry. Each year the best electrical apprentices and newly qualified electricians from across the UK take part in SkillELECTRIC national qualifying heats to win a place in the competition's grand UK Final.

SkillELECTRIC is the only route to the next **WorldSkills International competition**. Those who are age eligible and meet the standard will be considered for a place in Squad UK.

I hope that this document helps you identify your most suitable candidate for SkillELECTRIC and helps them to prepare for live competitions. If you have any further queries relating to the competition, please do not hesitate to contact me.

Jennie Phung
SkillELECTRIC Project Manager
jennie.phung@netservices.org.uk

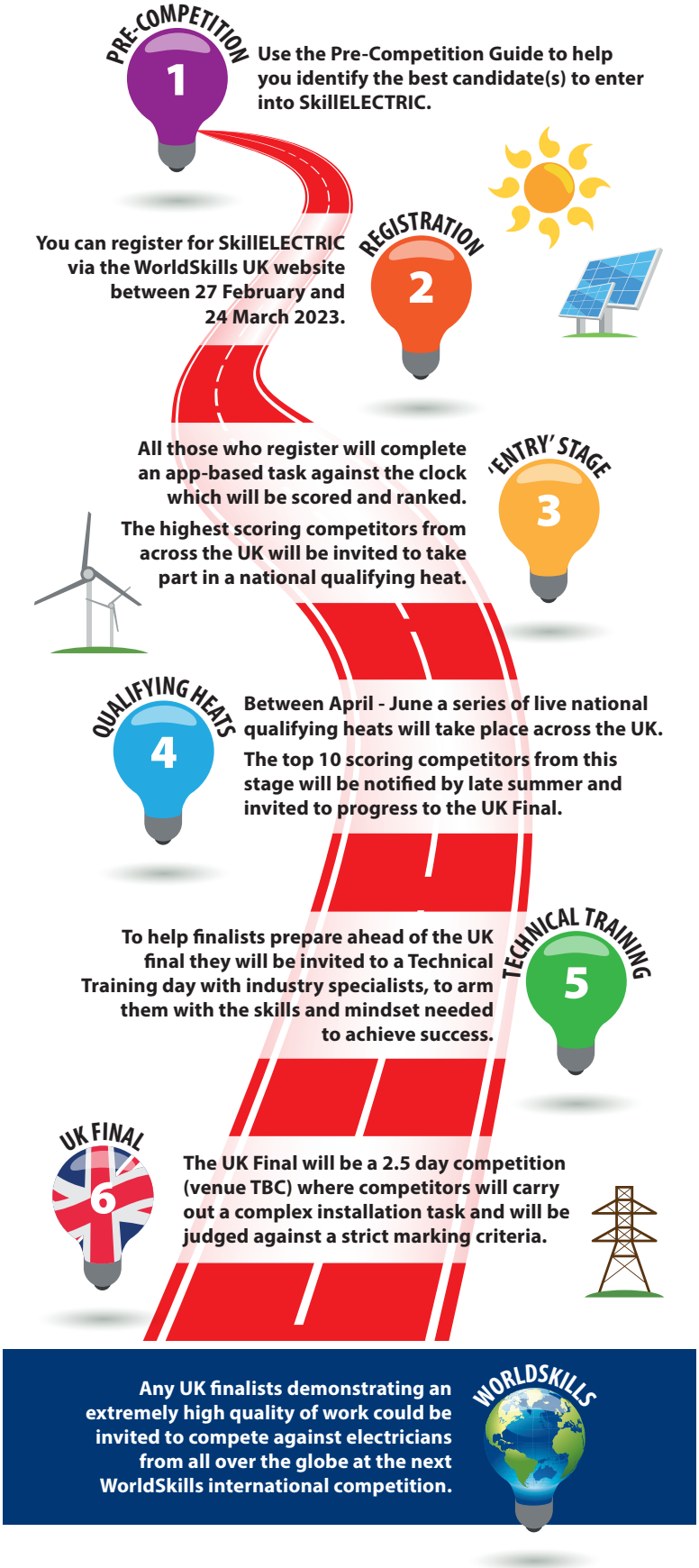
Step	GET STARTED!
1	Use the **Talent Spotting Checklist** (pg 6) to to identify candidates with the key attributes
2	Check they've got the **Core Competences** (pg 7) to progress to further stages
3	Set up and carry out the **Pre-Competition Task** (pgs 8-9) using the supplied marking guide with your shortlisted candidate to see who excels in a practical test
4	**Register your chosen candidates** between 27 February - 24 March 2023 on the WorldSkills UK website
5	Soon after your candidates have registered they will receive an email to take part in the **'Entry Stage'** of the competition (27-28 March) which involves a 1-hour, app-based, timed and interactive online task. **The SkillELECTRIC entry stage will require competitors to download an Android/iOS app to a device which operates at least Android 10 or iOS 11. An internet connection will also be required to submit their results.**

Entry Stage and Progression to Heats

Following the entry stage, only the highest scoring competitors from across the UK will be selected to take part in a national qualifying heat. For more information please see our 'Entry Stage information' page on the SkillELECTRIC website.

If the candidate is successful in the entry stage they will need to formally accept their place in the qualifying heats by **31 March 2023.** If formal acceptance is not submitted by this deadline, the candidate **will not be able to progress.**

Competition Journey



Competition Cycle - Detail

1. PRE-COMPETITION

Use the Pre-Competition Guide to help you identify your most suitable candidate(s) to enter for SkillELECTRIC. Within the guide you'll find:

- **a.** The **Talent Spotting Checklist** which defines the ideal personal attributes and other characteristic a competitor should have
- **b.** The **Core Competencies** that competitors are expected to meet at each stage of the SkillELECTRIC competition journey, starting from the Entry Stage through to world-class international standards
- **c.** The **Pre-Competition Task** which can be used as an in-house competition from which you can identify your most suitable candidates to register for the SkillELECTRIC competition.

2. ENTRY STAGE

The Entry Stage is an app-based, timed and interactive online task which will test the candidates' electrotechnical knowledge. It will take around an hour to complete. The app will be live from 10:00 on 27 March to 22:00 on 28 March; it must be completed during that time and it must be done independently.

After registering for SkillELECTRIC and agreeing to the rules, candidates will be sent a one-time login and link to download the app on either Android or iOS, to a device which operates at least Android 10 or iOS 11.

Only the top scorers from across all of the UK at the Entry Stage will progress onto the National Qualifier heats, which will take place between April and June.

If a candidate is successful in the Entry Stage they will need to formally accept their place in the qualifying heats by **31 March 2023.** If formal acceptance is not submitted by this deadline, the candidate **will not be able to progress to the heat stage.**

At the time of registration the candidate will be asked to select their preferred first and second choice venue. NET will make every attempt to offer these venues; however the competition at each venue will only go ahead if there is sufficient demand. If a competition is unable to take place at your preferred venues, we will offer you another location.

3. NATIONAL QUALIFYING HEATS

A series of live competitions taking place across the UK. The top scoring competitors from the national qualifiers will progress to the UK final.

4. PRE-UK FINAL TRAINING

To help finalists prepare ahead of the UK Final, we will provide relevant technical training and share mindset development techniques, which will support them to remain focused on achieving success.

5. UK FINAL

WorldSkills UK quality assure the results and finalists will be notified by late summer to confirm their participation in the UK Final.

This is a 2.5 day competition where accommodation will be provided by NET.

Time Commitment

The time needed for each stage varies – take a look below to give you an idea of what time your candidates will need to commit as the competition progresses:

	Duration
Pre-Competition Activity	1 hour
Entry Stage	1 hour
If candidate progresses to the National Qualifiers...	
National Qualifier	1 day
If candidate is selected for the UK final...	
Technical and Mindset training	1 day
UK Final	5 days

This does not include training and preparation time for each stage of the competition. You would also need to factor in potential travel and overnight stays if required for the National Qualifier and UK Final.

Special Requirements or Assistance

If your candidates have any particular personal requirements that they need to discuss with us, please encourage them to do so at the point of registration.

Where possible, on a case-by-case basis we will review and make reasonable adjustments to support their needs.

In the interest of personal safety, NET reserves the right to refuse or terminate a competitor's task should any medical issues present themselves on the day that have not been previously disclosed or discussed.

1. Talent Spotting Checklist

Use this checklist to identify your most appropriate candidate(s) to register for the competition from 27 February to 24 March 2023. It would be ideal if they have as many of these personal attributes as possible.

Competitor Name | Date

College and Campus

	Please tick
Has achieved S/ NVQ level 2 and is either working towards or has completed level 3	☐
Has a supportive employer	☐
Can work well under pressure	☐
Has a high level of ability and flexibility	☐
Good communication and interpersonal skills	☐
Self-motivated and can self-reflect	☐
Has a good level of practical skills and knowledge	☐
Uses theoretical knowledge to its full potential	☐
Consistent high performer in the work place and/ or at college	☐
Can adapt to different working environments	☐
Is accurate in measurements	☐
Possesses mental and physical stamina	☐
Able to assess task and plan before they act	☐
Good time management and can work to a tight time schedule	☐
Self-confident, but not over confident	☐

2. Core Competencies

The table below clearly lists the core competencies and the expected standards at each stage of the SkillELECTRIC competition journey, starting from the entry stage through to world class international standards.

		Entry Stage	National Qualifier	National Final	WorldSkills / Team UK
Competency	**Health and Safety**				
Level 3	Tidy work area	No	Yes	Yes	Yes
Level 3	Correct PPE being used	No	Yes	Yes	Yes
Level 3	Safe working practices being observed	No	Yes	Yes	Yes
Level 3	Safe isolation of electrical supply	Yes	Yes	Yes	Yes
Level 3	Theory knowledge	Yes	Yes	Yes	Yes
Competency	**Positioning**				
Level 3	Mark horizontal and vertical datum lines	No	Yes	Yes	Yes
Level 3	Correctly position electrical components in relation to the given drawings	No	Yes	Yes	Yes
Level 3	Ensure all equipment is fitted level	No	Yes	Yes	Yes
Competency	**Wiring and Terminations**				
Level 3	Correctly select the correct type and size of cable	No	Yes	Yes	Yes
Level 3	Correctly fit and secure cable glands	No	Yes	Yes	Yes
Level 3	Correctly and securely terminate conductors	No	Yes	Yes	Yes
Competency	**Quality**				
Level 3	Install cable containment to industry standards	No	Yes	Yes	Yes
Level 3	Correctly support cables with clips or cleats where required	No	Yes	Yes	Yes
Level 3	Correctly install cables within containment	No	Yes	Yes	Yes
Competency	**Inspection and Testing**				
Level 3	Correctly carry out the following tests:				
	1. Continuity	Yes	Yes	Yes	Yes
	2. Insulation resistance	Yes	Yes	Yes	Yes
	3. Earth fault loop impedance	No	No	Yes	Yes
	4. RCD operation	No	No	Yes	Yes
Competency	**Function**				
Level 3	Installation operates as specified	No	Yes	Yes	Yes

3. Pre-Competition Activity Task

This task is designed to be used as an in-house competition from which you can identify your most suitable learners/ employees to register for the SkillELECTRIC competition.

The competitors are expected to:

- Comply with all Health and Safety legislation and requirements for the competition
- Install the competition piece to industry standards in a safe and orderly manner
- Eye protection must be worn for all drilling and cutting
- Complete the exercise with the materials provided
- Work to the dimensions included on the diagram with a tolerance of +/- 4mm
- Determine all necessary wiring for the correct installation and operation of equipment as described in the specification
- Carry out dead electrical safety tests and record your readings on the test results sheet to prove the installation is safe to energise prior to requesting live testing.

Materials

Please supply all the tools and equipment for which to complete this task including; hand tools, test equipment, bending springs, cutting blocks, handsaws, draw tapes, spare blades etc. Competitors can use their own tools if they prefer. The supply to energise will have its protection when the assessment is complete. You are welcome to use RCBO in line with the domestic expectations of the current edition of BS7671 if you wish.

*Please note the use of MCB was considered in order to keep costs down for this stage of competition and that there is no requirement for "live" testing.

Below is the suggested materials list you will require per competitor:

Material	Quantity
Metal clad 4-way DB	1
6A MCB *or RCBO	1
16A MCB *or RCBO	2
MCB Blank	1
2 gang 2-way switch	1
2-way switch	1
Switch pattress PVC with 20mm knockout	2
13A fused connection unit	1
Pattress for above with 20mm knock out	1
Metal clad socket outlet with backbox	1
20mm PVC conduit tee box	2
20mm PVC conduit angle box	1
20mm PVC conduit end box	1
Batten lamp holder	2
20mm PVC conduit	3 metres
20mm conduit saddles	6
2.5mm T&E PVC/ PVC	3 metres
2.5 clips	10
2.5mm 3core SWA	3.5 metres
20mm SWA glands	2
SWA cleats	8
PVC conduit box lids	2

We suggest that you set a time limit by which to complete this task which consists of a PVC conduit, PVC/ PVA and a SWA installation with the following 3 circuits:

Circuit 1: 20A radial circuit feeding a switched fused connection unit (CU1) wired in PVC/ PVC insulated cable.

Circuit 2: 20A general power circuit feeding one single metal clad switch socket outlet (S01) wired in 2- core SWA cable.

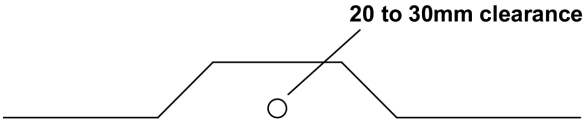
Circuit 3: 6A lighting circuit wired in a single PVC insulated cable enclosed in PVC conduit. The circuit consists of 2 lighting points. LT1 is controlled by two-way switching, SW1 and the left-handed side of SW2. LT2 is controlled by a one-way switch, right-hand side of the two-gang switch (SW2).

Key for diagrams

DB1 Metal clad consumer unit
LT1 BC baton lamp holder
LT2 BC baton lamp holder
SW1 1 gang 2-way light switch
SW2 2 gang 2-way light switch
SO1 13A single metal clad switched socket outlet
CU1 13A switched fused connection unit

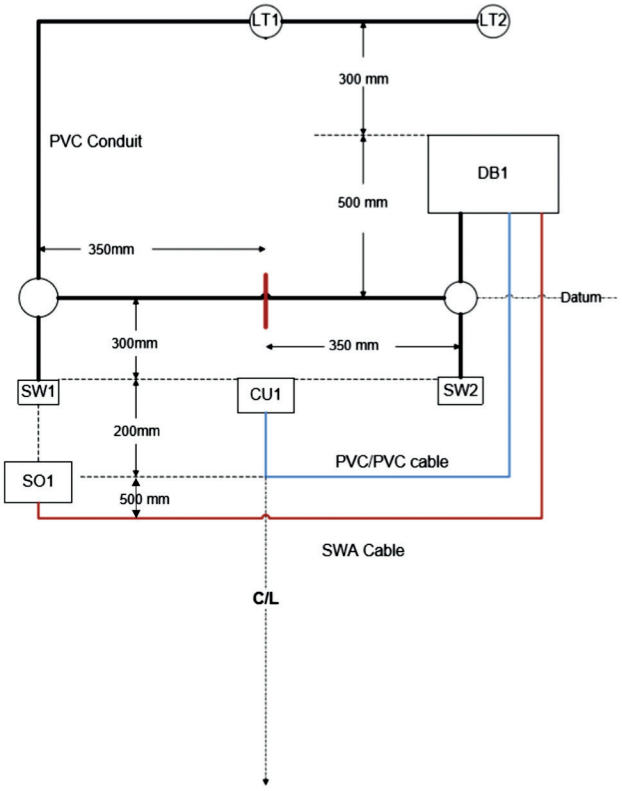
Note 1

The PVC conduit must bridge an obstruction (20mm PVC conduit) using a double set with a minimum clearance of 20mm and a maximum clearance of 30mm.



Note 2

3 core flex and 13A plug top to be supplied by organisation for connection to a RCD protected supply using trailing socket.



Marking Guide for Pre-Competition Activity

Competitor Name | Date

College and Campus

Aspect ID	Description	Maximum mark allocated	Mark awarded
A1	CU1 circuit completed in the correct cable as per the specification	**1**	
A2	SO1 circuit completed in the correct cable as per the specification	**1**	
A3	LT1 and LT2 circuit completed in the correct cable as per the specification	**1**	
A4	Conductors securely terminated at DB1 with no exposed copper when viewed at 90 degrees. Pull test on all terminations. No damage to insulation or reduction in conductor CSA (1 mark per circuit to include supply)	**3**	
A5	SWA gland terminated correctly (1 mark per gland)	**2**	
A6	Conductors securely terminated at CU1 with no exposed copper when viewed at 90 degrees. No damage to insulation or reduction in conductor CSA. Pull test on all terminations	**2**	
A7	Conductors securely terminated at SW1 with no exposed copper when viewed at 90 degrees. No damage to insulation or reduction in conductor CSA. Pull test on all terminations	**2**	
A8	Conductors securely terminated at SW2 with no exposed copper when viewed at 90 degrees. No damage to insulation or reduction in conductor CSA. Pull test on all terminations	**2**	
A9	Conductors securely terminated at SO1 with no exposed copper when viewed at 90 degrees. No damage to insulation or reduction in conductor CSA. Pull test on all terminations	**2**	
A10	Conductors securely terminated at LT1 with no exposed copper when viewed at 90 degrees. No damage to insulation or reduction in conductor CSA. Pull test on all terminations	**2**	
A11	Conductors securely terminated at LT2 with no exposed copper when viewed at 90 degrees. No damage to insulation or reduction in conductor CSA. Pull test on all terminations	**2**	
A12	CPCs and Neutral conductors connected in correct sequence at DB1 for all circuits (1 mark per circuit and 1 mark for Earthing conductor)	**3**	
	Total marks for A	**23**	

Aspect ID	Description	Maximum mark allocated	Mark awarded
B1	PVC conduit bridge set and offset acceptable as per specification and drawing	**3**	
B2	PVC conduit bend acceptable and inner radius at least 2.5 times outside diameter of the conduit	**3**	
B3	PVC/ PVC cable securely clipped horizontally and vertically. Bending radii satisfactory	**3**	
B4	SWA cable securely clipped horizontally and vertically. Bending radii satisfactory	**3**	
B5	Additional material used **(-1 mark for each item issued)**	**0**	
	Total marks for B	**12**	

Aspect ID	Description	Maximum mark allocated	Mark awarded
C1	DB1 level, centred horizontally and vertically within 2mm of measurements taken from datum lines (500mm)	**1**	
C2	LT1 centred, horizontally and vertically within 2mm of measurements taken from datum lines (350mm and 1000mm)	**1**	
C3	LT2 centred horizontally and vertically within 2mm of measurements taken from datum lines (1000mm)	**1**	
C4	SW1 level, centred horizontally and vertically within 2mm of measurements taken from datum lines (350mm and 300mm)	**1**	
C5	SW2 level, centred horizontally and vertically within 2mm of measurements taken from datum lines (350mm and 300mm)	**1**	
C6	Centre of set within 2mm of measurements taken from datum (500mm)	**1**	
C7	SO1 level, centred horizontally and vertically within 2mm of measurements taken from datum lines (350mm and 800mm)	**1**	
C8	CU1 level, centred horizontally and vertically within 2mm of measurements taken from datum lines (300mm)	**1**	
C9	PVC/ PVC cable horizontal and vertically within 2mm of measurements taken from datum line (500mm)	**1**	
C10	SWA cable horizontal and vertically below datum lines within 2mm of measurements (1000mm)	**1**	
	Total marks for C	**10**	

Aspect ID	Description	Maximum mark allocated	Mark awarded
D1	Personal protective equipment used at all times	1	
D2	Work area kept free from hazards at all times	1	
D3	Safe working practices employed when using hand tools	1	
D4	No faults or dangers found when work tested	1	
D5	Due consideration to others safety demonstrated	1	
	Total marks for D	5	

Aspect ID	Description	Maximum mark allocated	Mark awarded
E1	Correctly carries out continuity testing on each circuit	3	
E2	Correctly carries out insulation resistance testing on each circuit	3	
E3	Correctly carries out polarity testing on each circuit	3	
E4	Correctly completes schedule of test results for each circuit	3	
	Total marks for E	12	

Aspect ID	Description	Maximum mark allocated	Mark awarded
F1	CU1 functions correctly	1	
F2	SO1 functions correctly	1	
F3	LT1 functions correctly	1	
F4	LT2 functions correctly	1	
	Total marks for F	4	

Total marks awarded for Pre-Competition Activity	

Pre-Competition Activity assessed by:

Name | Date