

Technical Description

Electrical Installations (18)


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Effective 15.03.2023



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1 Introduction

1.1 Name and description of the Skill Competition

1.1.1 The name of the Skills Competition is

Electrical Installations

1.1.2 Description of the associated work role(s) or occupation(s)

An electrician works on commercial, residential, agricultural and industrial projects. There is a direct relationship between the nature and quality of the product required and the payment made by the customer. Therefore the electrician has a continuing responsibility to work professionally in order to meet the requirements of the customer and thus maintain and grow the business. Electrical installation is closely associated with other parts of the construction industry, and with the many products that support it, normally for commercial purposes.

The electrician works internally, including the homes of customers and on small and major projects. He or she will plan and design, select and install, commission, test, report, maintain, fault find and repair systems to a high standard. Work organisation and self-management, communication and interpersonal skills, problem solving, flexibility and a deep body of knowledge are the universal attributes of the outstanding electrician.

Whether the electrician is working alone or in a team the individual takes on a high level of personal responsibility and autonomy. From working to provide a safe and reliable electrical installation and maintenance service, in accordance with relevant standards, through to diagnosing malfunctions, programming and commissioning home and building automation systems, concentration, precision, accuracy and attention to detail every step in the process matters and mistakes are largely irreversible, costly and potentially life threatening.

With the international mobility of people the electrician faces rapidly expanding opportunities and challenges. For the talented electrician there are many commercial and international opportunities; however these carry with them the need to understand and work with diverse cultures and trends. The diversity of skills associated with electrical installations is therefore likely to expand.

1.2 The content, relevance and significance of this document

This document incorporates a Role Description and Occupational Standards which follow the principles and some or all of the content of the WorldSkills Occupational Standards. In doing so WSE acknowledges WorldSkills International's (WSI's) copyright. WSE also acknowledges WSI's intellectual property rights regarding the assessment principles, methods and procedures that govern the competition.

Every Expert and Competitor must know and understand this Technical Description.

In the event of any conflict within the different languages of the Technical Descriptions, the English version takes precedence.

1.3 Associated documents

Since this Technical Description contains only skill-specific information it must be used in association with the following:

- WSE – Competition Rules
- WSI – WorldSkills Occupational Standard framework

- WSE – WorldSkills Europe Assessment Strategy
- WSE – Online resources as referenced in this document
- WSE – Code of Ethics and Conduct
- Host Country – Health and Safety regulations

2 The Standards Specification

2.1 General notes regarding WSOS / WSEOS

Where appropriate WSE has utilised some, or all, of the WorldSkills International Occupational Standards (WSOS) for those Skills Competitions that naturally align between the two international competitions. Where the Skill is exclusive to the EuroSkills Competition, WorldSkills Europe has developed its own Occupational Standards (WSEOS) using the same principles and framework to that used for the development of the WSOS. For the purposes of this document the use of the words “Occupational Standards” will refer to both WSOS and WSEOS.

The Occupational Standards specifies the knowledge, understanding and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business. Helpfully, for the global consultation on the WSOS in 2014-2021, around 50 percent of responses came from European industry and business.

Each Skill Competition is intended to reflect international best practice as described by the Occupational Standards, and to the extent that it is able to. The Occupational Standards is therefore a guide to the required training and preparation for the Skill Competition.

In the Skill Competition the assessment of knowledge and understanding will take place through the assessment of performance. There will not be separate tests of knowledge and understanding.

The Occupational Standards are divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Occupational Standards. The sum of all the percentage marks is 100.

The Marking Scheme and Test Project will assess only those Skills that are set out in the Occupational Standards. They will reflect the Occupational Standards as comprehensively as possible within the constraints of the Skill Competition.

The Marking Scheme and Test Project will follow the allocation of marks within the Occupational Standards to the extent practically possible. A variation of five percent is allowed, provided that this does not distort the weightings assigned by the Occupational Standards.

2.2 Occupational Standards

SECTION		RELATIVE IMPORTANCE %
1	Work organization and self-management	10

The individual needs to know and understand:

- health and safety legislation, obligations and documentation
- the principles of working safely with electricity
- the situations when personal protective equipment must be used
- the purposes, uses, care, maintenance and storage of all tools and equipment together with their safety implications
- the purposes, uses, care and storage of materials
- the importance of keeping a tidy work area
- sustainability measures applying to the use of 'green' materials and recycling
- the ways in which working practices can minimise wastage and help to manage costs whilst maintaining quality
- the principles of work flow and measurement
- the significance of planning, accuracy, checking and attention to detail in all working practices
- impact of new technology

The individual shall be able to:

- follow health and safety standards, rules and regulations
- diligently follow electrical safety procedures
- identify and use the appropriate personal protective equipment including safety footwear, ear and eye protection
- select, use, clean, maintain and store all tools and equipment safely
- select, use and store all materials safely
- identify and take care of expensive fixtures/fittings
- plan the work area to maximise efficiency and maintain the discipline of regular tidying
- measure accurately
- manage time effectively
- work efficiently and check progress and outcomes regularly
- establish and consistently maintain high quality standards and working processes

2	Communication and interpersonal skills	10
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The individual needs to know and understand:

- the significance of establishing and maintaining customer confidence and trust
- the importance of maintaining and keeping knowledge base up-to-date

SECTION	RELATIVE IMPORTANCE %
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- the roles and requirements of related trades
- the value of building and maintaining productive working relationships
- techniques of effective teamwork
- the importance of swiftly resolving miss-understandings and conflicting demands

The individual shall be able to:

- interpret customer requirements and manage customer expectations positively
- provide advice and guidance on products/ solutions e.g. technological advancements
- visualise and translate customer wishes making recommendations which meet/improve their design and budgetary requirements
- question customers closely/deeply to fully understand requirements
- provide clear instructions
- introduce related trades to support customer requirements
- produce written reports for customers and the organisation
- produce a cost and time estimate for customers
- recognise and adapt to the changing needs of related trades
- work effectively as a member of a team

3	Problem solving, innovation and creativity	10
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The individual needs to know and understand:

- the common types of problem which can occur within the work process
- diagnostic approaches to problem solving
- trends and developments in the industry including new technology, standards and working methods e.g. 'smart house' and energy saving measures

The individual shall be able to:

- check work regularly to minimise problems at a later stage
 - identify problems originating from the work of a related trade e.g. heating pump, ventilation system etc.
 - challenge incorrect information to prevent problems
 - recognise and understand problems swiftly and follow a self-managed process for resolving
 - recognise opportunities to contribute ideas to improve the solution and overall level of customer satisfaction
 - demonstrate a willingness to try new methods and embrace change e.g. ready-made components
-

SECTION	RELATIVE IMPORTANCE %
4 Planning and design	10

The individual needs to know and understand:

- different types of standards, drawings, installation descriptions and manuals
- range of materials and installation techniques to be used in different environments

The individual shall be able to:

- read, interpret and revise drawings and documentation including:
 - layout and circuit drawings
 - follow written instructions
 - plan installation work using drawings and documentation provided
- to answer some questions about Theoretical knowledge
 - Technology
 - Circuit technology
 - Operational analysis
- Technical calculation

5 Installation	40
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The individual needs to know and understand:

- ducting and wiring systems for commercial, domestic, residential agricultural and industrial use and when and where to use a specific ducting and/or wiring system
- the range of electrical switchboards used for commercial, domestic, residential, agricultural and industrial uses and when and where to use a specific switchboard system
- types of electric lighting and heating systems for commercial, domestic residential and industrial use
- control devices and socket outlets used for commercial, domestic, residential, agricultural and industrial uses
- structured cabling systems including: computer network cabling, fire/burglar alarm (conventional and addressable), evacuation control (audio and optical), control and monitoring, access control ('stand-alone' and 'network supervised'), closed circuit television (cameras, lenses and attachment component, recorders and monitors)
- Building Automation Systems such as KNX
- Car charging station
- PV

SECTION
**RELATIVE
IMPORTANCE %**
The individual shall be able to:

- select and install equipment and wire ways as per drawings and documentation provided
- install ducting and cabling systems on different surfaces as per manufacturer's instructions and current industrial standards
- select and install single and double insulated cables inside ducts, conduits and flexible conduits
- install and securely fix double insulated cables onto cable ladder, cable tray and different surfaces as per manufacturer's instructions and current industrial standards
- install metal and plastic ducting (trunking): accurately measure and cut duct at specified lengths/ angles; assemble without distortion to joints and to specified tolerances
- assemble different termination adaptors, including glands onto duct and attach ducts, of different types, securely onto a surface
- install metal and plastic conduits/ flexible conduits and attach securely onto surface, maintaining even radius bends, without distortion to conduit
- correct termination adaptors used for entry of conduits into boxes, boards and ducts
- install and securely attach different types of cable ladder and cable tray to a surface
- install electrical switchboards onto a surface in a secure way and assemble switchboard apparatus in a switchboard as per layout drawings/instructions to include: main switches, RCDs, MCBs, fuses, controlling equipment such as relays and timers and home and building automation devices
- terminate and install wiring inside a switchboard according to circuit drawings
- connect equipment as per instructions provided to include: structured cabling systems as per manufacturer's instructions and current industrial standards and regulations
- programming KNX Systems with devices like dimmactuator, blindactuator, roomcontrolling, movedetector.display, on/off actuator, different type of sensor.

6 Testing, reporting and commissioning
20
The individual needs to know and understand:

- industrial regulations and standards applicable to different types of installations
- verification standards, methods and reports to be used to record verification results
- types of measuring instruments
- tools and software used for parameterization, programming and commissioning

SECTION	RELATIVE IMPORTANCE %
<ul style="list-style-type: none">the correct operation of the electrical installation in accordance with the planned specification and customer requirements	
Total	100%

3 The assessment approach & principles

3.1 General guidance

Note: this Section and Section 4 summarize a great deal of new information and guidance regarding assessment. Please refer to the Competition Rules for greater detail.

The Competition Committee (CC) establishes the principles and techniques to which assessment at the EuroSkills Competition must conform.

Expert assessment practice lies at the heart of the EuroSkills Competition. For this reason it is the subject of continuing professional development and scrutiny. The growth of expertise in assessment will inform the future use and direction of the main assessment instruments used by the EuroSkills Competition: the Marking Scheme, Test Project, and Competition Information System (CIS).

Assessment at the EuroSkills Competition falls into two broad types: measurement and judgement. All assessments will be governed by explicit benchmarks, referenced to best practice in industry and business.

The Marking Scheme must include these benchmarks and follow the weightings within the Occupational Standards. The Test Project is the assessment vehicle for the Skill Competition, and also follows the Occupational Standards. The CIS enables the timely and accurate recording of marks, and has expanding supportive capacity.

The Marking Scheme, in outline, will lead the process of Test Project design. After this, the Marking Scheme and Test Project will be designed and developed through an iterative process, to ensure that both together optimize their relationship with the Technical Description and the principles for assessment as set out in the WSE Assessment Strategy. They will be agreed by the Experts and submitted to WSE for approval together, in order to demonstrate their quality and conformity with the Occupational Standards.

Prior to submission for approval to WSE, the Marking Scheme and Test Project will be reviewed by the WSE Skill Advisors in order to benefit from the capabilities of the CIS.

4 The Marking Scheme

4.1 General guidance

This Section describes the role and place of the Marking Scheme, how the Experts will assess Competitors' work as demonstrated through the Test Project, and the procedures and requirements for marking.

The Marking Scheme is the pivotal instrument of the EuroSkills Competition, in that it ties assessment to the standards that represent the skills to be tested. It is designed to allocate marks for each assessed aspect of performance in accordance with the weightings in the Occupational Standards.

By reflecting the weightings in the Occupational Standards, the Marking Scheme establishes the parameters for the design of the Test Project. Depending on the nature of the skill and its assessment needs, it may initially be appropriate to develop the Marking Scheme in more detail as a guide for Test Project design. Alternatively, initial Test Project design can be based on the outline Marking Scheme. From this point onwards the Marking Scheme and Test Project should be developed together.

Section 2.1 above indicates the extent to which the Marking Scheme and Test Project may diverge from the weightings given in the Occupational Standards, if there is no practicable alternative.

The Marking Scheme and Test Project may be developed by one person, or several, or by all Experts. The detailed and final Marking Scheme and Test Project must be approved by the whole Expert Jury prior to submission for independent quality assurance. The exception to this process is for those Skill Competitions which use an Independent Test Project designer for the development of the Marking Scheme and Test Project.

In addition, Experts are encouraged to submit their Marking Schemes and Test Projects for comment and provisional approval well in advance of completion, in order to avoid disappointment or setbacks at a late stage. They are also advised to work with the CIS Team at this intermediate stage, in order to take full advantage of the possibilities of the CIS.

In all cases the complete and approved Marking Scheme must be entered into the CIS at least **eight weeks** prior to the Competition using the CIS standard spreadsheet or other agreed methods.

In the interests of fairness and transparency, all experts should have the same knowledge of the Marking Scheme at any given time. If an expert, including the chief expert and deputy chief expert, is assigned some information on the Marking Scheme, it should be shared with the other experts without delay.

4.2 Assessment criteria

The main headings of the Marking Scheme are the Assessment Criteria. These headings are derived in conjunction with the Test Project. In some Skill Competitions the Assessment Criteria may be similar to the section headings in the Occupational Standards; in others they may be totally different. There will normally be between five and nine Assessment Criteria. Whether or not the headings match, the Marking Scheme must reflect the weightings in the Occupational Standards.

Assessment Criteria are created by the person(s) developing the Marking Scheme, who are free to define criteria that they consider most suited to the assessment and marking of the Test Project. Each Assessment Criterion is defined by a letter (A-I).

The Mark Summary Form generated by the CIS will comprise a list of the Assessment Criteria.

The marks allocated to each criterion will be calculated by the CIS. These will be the cumulative sum of marks given to each aspect of assessment within that Assessment Criterion.

4.3 Sub criteria

Each Assessment Criterion is divided into one or more Sub Criteria. Each Sub Criterion becomes the heading for a EuroSkills marking form.

Each marking form (Sub Criterion) has a specified day on which it will be marked.

Each marking form (Sub Criterion) contains Aspects to be assessed and marked by measurement or judgement. Some Sub Criteria have assessment by both measurement and judgement, in which case there is a separate marking form for each method

4.4 Aspects

Each Aspect defines, in detail, a single item to be assessed and marked together with the marks, or instructions for how the marks are to be awarded. Aspects are assessed either by measurement or judgement and appear on the appropriate marking form.

The marking form lists, in detail, every Aspect to be marked together with the mark allocated to it, the benchmarks, and a reference to the section of the Standards Specification.

The sum of the marks allocated to each Aspect must fall within the range of marks specified for that section of the Standards Specification. This will be displayed in the Mark Allocation Table of the CIS, in the following format, when the Marking Scheme is reviewed from C-8 weeks. (Section 4).

CRITERIA											TOTAL MARKS PER SECTION
		A	B	C	D	E	F	G	H	I	
OCCUPATIONAL STANDARDS SPECIFICATION SECTIONS	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
TOTAL MARKS PER CRITERION											100

4.5 Assessment and marking

There is to be one marking team for each Sub Criterion, whether it is assessed and marked by judgement, measurement, or both. The same marking team must assess and mark all Competitors. Where this is impracticable (for example where an action must be done by every Competitor simultaneously, and must be observed doing so), a second tier of assessment and marking will be put in place, with the approval of the Competitions Management Team. The marking teams must be organized to ensure that there is no compatriot marking in any circumstances. (Section 4.6 refers.)

4.6 Assessment and marking using judgement

Judgement uses a scale of 0-3. To apply the scale with rigor and consistency, judgement must be conducted using:

- benchmarks (criteria) for detailed guidance for each Aspect (in words, images, artefacts or separate guidance notes)
- the 0-3 scale to indicate:
 - 0: performance below industry standard
 - 1: performance meets industry standard
 - 2: performance meets and, in specific respects, exceeds industry standard
 - 3: performance wholly exceeds industry standard and is judged as excellent

Three Experts will judge each Aspect, normally simultaneously, and record their scores. A fourth Expert coordinates and supervises the scoring, and checks their validity. They also act as a judge when required to prevent compatriot marking. Assessment and marking by measurement

4.7 Assessment and marking using measurement

Normally three Experts will be used to assess each aspect, with a fourth Expert supervising. In some circumstances the team may organize itself as two pairs, for dual marking. Unless otherwise stated, only the maximum mark or zero will be awarded. Where they are used, the benchmarks for awarding partial marks will be clearly defined within the Aspect. To avoid errors in calculation or transmission, the CIS provides a large number of automated calculation options, the use of which is mandated.

4.8 Assessment overview

For both measurement and judgement there will be three Experts in the assessment team.

Good practice in assessment comprises measurement and judgement applied both specifically and broadly. The final proportions of measurement and judgment, whether specific or broad, will be determined by the standards, their weightings and the nature of the Test Project.

4.9 Skill assessment strategy

Section	Criterion	Marks		
		Judgement (if applicable)	Measurement	Total
A	Installing & Connecting	20	20	40
B	Commissioning & Testing	4	10	14
C	Programming & Commissioning Automation (Functions)	0	30	30
D	Fault Finding	0	8	8
E	Health & Safety	0	8	8
Total =		24	76	100

4.10 Skill assessment procedures

The Chief Expert divides the Experts of the Jury in such way that 3 Experts must be assigned to assess each Aspect of a Sub Criterion. Each marking group must mark the same Aspects of a Sub Criterion for every Competitor to ensure standardisation of marking. Each marking group should, where possible, mark a similar number of Aspects of a Sub Criterion.

The marking groups will be organised so that Experts do not mark their compatriot Competitors.

Exception:

Compatriot marking will only be allowed with the approval of the Chair of the Competition Development Committee. Approval will only be given in extreme circumstances.

Measurement / Objective criteria testing	Info example
Tolerances: Measurements: $<500\text{mm} \pm 2$ / $\geq 500\text{mm} \pm 4\text{mm}$ Level / plumbing: bubble into the lines (touch allowed)	Take 2 (sort) measures by the examples in wall (correct =1 /no correct =0)
Judgement criteria testing (To do with the flash cards, at the same time, and the difference between the highest and lower can't be more	<u>INFO / EXAMPLE:</u> Take 2 cut's / angle directions of duct in examples in the wall, to judge (ex. below:)

Measurement / Objective criteria testing	Info example
<p>than 1 point. If difference >1, have to do new judgement)</p>	<p>0 point: The opening between cut's is >4 mm</p> <p>1 point: The opening between cut's is >2 mm <4 mm</p> <p>2 point: The opening between cut's is >1 mm <2 mm</p> <p>3 point: The opening between cut's is <1 mm</p>

5 The Test Project

5.1 General notes

Sections 3 and 4 govern the development of the Test Project. These notes are supplementary.

Whether it is a single entity, or a series of stand-alone or connected modules, the Test Project will enable the assessment of the skills in each section of the Occupational Standards.

The purpose of the Test Project is to provide full and balanced opportunities for assessment and marking across the Occupational Standards, in conjunction with the Marking Scheme. The relationship between the Test Project, Marking Scheme and Occupational Standards will be a key indicator of quality.

The Test Project will not cover areas outside the Occupational Standards, or affect the balance of marks within the Occupational Standards other than in the circumstances indicated by Section 2.1.

The Test Project will enable knowledge and understanding to be assessed solely through their applications within practical work.

The Test Project will not assess knowledge of the EuroSkills Competition's rules and regulations.

This Technical Description will note any issues that affect the Test Project's capacity to support the full range of assessment relative to the Standard Specification. Section 2.1 refers.

5.2 Format/ structure of the Test Project

- Test Project assessed at end of Competition
- Test Project with separately assessed modules
- Test Project assessed in stages
- Series of standalone modules
- Other

If other, please specify here:

5.3 Test Project design requirements

The application selected for the competition concerns for example the installation of a certain building.

Tasks to be carried out by the Electrician:

- Task 1: Installation and connecting of Distribution box, cables and wire ways, cabling and wiring, mounting and connecting electrical equipment; Commissioning and testing of the installation; Programming and commissioning Automation/Bus System KNX – 17 hours (full functionality provided prior to the last 3 hours)
- Task 2: Fault Finding – 30 Minutes

5.4 Test Project development

The Test Project MUST be submitted using the templates provided by WSE. Use the Word template for text documents and DWG template for drawings. Please contact jordy.degroot@worldskillseurope.org for guidance.

If the Test Project is designed by an Independent Test Project designer, then the Test Project must be designed in accordance with the WSE Independent Test Project Guide v1.1.

If your Skill wishes to have an Independent Test Project designer, you must ensure that WorldSkills Europe is made aware of this, so that it can be assured that there is proper funding in place, or that the Independent Test Project designer is aware that he/she will do this task free of charge.

5.4.1 Who develops the Test Projects or modules

The Test Project / modules are developed under the supervision of:

- All Experts
- Some Experts
- Nominated Experts
- Independent Test Project designer/ Third party
- Chief Expert, Deputy Chief Expert

Add information if needed:

The automation task will be undertaken by an external party.

5.4.2 How and where is the Test Projects or modules developed

The Test Project or modules are developed:

- Jointly on the Discussion Forum
- Independent Test Project designer
- Other:

- CE and DCE for drawings
- Functionality by an external designer
- Fault Finding board by CE and DCE. Faults by Group of experts

5.4.3 When is the Test Project developed

The Test Project is developed according to the following timeline:

TIME	ACTIVITY
At the previous Competition	Not applicable
6 months prior to the Competition	Until 6 months before the current Competition
At the Competition	Not applicable

5.5 Test Project validation

The test project will be validated by CE and DCE

CE and DCE: just the drawings

5.6 Test Project selection

- By vote of Experts at the previous Competition
- By vote of Experts on the Discussion Forums
- By vote of Experts at the upcoming Competition
- By random draw by the Competition Director, three months before the current Competition
- Test Project is designed by an Independent Test Project designer, therefore there is no selection process
- Other, please specify below:

- CE and DCE for drawings
- Functionality by an external designer
- Fault Finding board by CE and DCE. Faults by Group of experts

5.7 Test Project circulation

Please note that if a Test Project is known by the Chief- and/or Deputy Chief Experts, and/or any of the other Experts, it must be shared via the forums before the start of the Competition. This also means that this Test Project is subject to a 30% change before the start of the Competition.

The Test Project is circulated via the website as follows:

- Submitted to the Secretariat for circulation 3 months before the current Competition
- Not circulated

Other, please specify below:

2 months before the current competition

5.8 Test Project coordination (preparation for competition)

Coordination of the Test Project will be undertaken by:

- Skill Management Team
- Chief Expert
- Chief Expert and Deputy Chief Expert
- Chief Expert and Workshop Manager
- Chief Expert with selected Experts
- Chief Expert with Competition Organizer
- All Experts
- Other, please specify below:

5.9 Test Project change at the competition

According to general rules (30% change)

For example:

- Fault Finding
- Automation Functions (external development)
- Scheme not published

5.10 Material or manufacturer specifications

Specific material and/or manufacturer specifications required to allow the Competitors to complete the Test Project will be supplied by the Host Organization and are available via the forums. However, note that in some cases details of specific materials and/or manufacturer specifications may remain secret and will not be released prior to the Competition. These items may include those for fault finding modules or modules not circulated.

6 Skill management and communication

6.1 Discussion forum

Prior to the EuroSkills Competition, all discussion, communication, collaboration, and decision making regarding the Skill Competition must take place on the skill specific Discussion Forum, which can be reached via www.worldskillseurope.org. Skill related decisions and communication are only valid if they take place on the forum. The Chief Expert (or an Expert nominated by the Chief Expert) will be the moderator for this Forum. Refer to Competition Rules for the timeline of communication and competition development requirements.

6.2 Competitor information

All information for registered Competitors is available from the WorldSkills Europe website www.worldskillseurope.org. Please contact jordy.degroot@worldskillseurope.org for guidance.

The information includes:

- Competition Rules
- Technical Descriptions
- Marking Schemes
- Test Projects
- Infrastructure List
- Health and Safety documentation
- Other Competition-related information
- List of material that can be used to build templates and not been provided by the host

6.3 Test Projects and Marking Schemes

Circulated Test Projects will be available at the WorldSkills Europe website from www.worldskillseurope.org. Please contact jordy.degroot@worldskillseurope.org for guidance.

6.4 Day-To-Day management

The day-to-day management of the Skill Competition during the EuroSkills Competition is defined in the Skill Management Plan that is created by the Skill Management Team led by the Chief Expert. The Skill Management Team comprises the Jury President, Chief Expert and Deputy Chief Expert. The Skill Management Plan is progressively developed in the six months prior to the Competition and finalized at the Competition by agreement of the Experts. The Skill Management Plan can be viewed at www.worldskillseurope.org. Please contact jordy.degroot@worldskillseurope.org for guidance.

7 Skill specific safety requirements

Refer to Host Country/Region Health and Safety documentation for Host Country/Region regulations. This document will be shared via the forums. One overall Health and Safety document will be published, as well as Skill specific safety requirements.

8 Materials and equipment

8.1 Infrastructure List

The Infrastructure List details all equipment, materials and facilities provided by the Competition Organizer.

The Infrastructure Lists will be available at the WorldSkills Europe website from www.worldskillseurope.org. Please contact jordy.degroot@worldskillseurope.org for guidance.

The Infrastructure List specifies the items and quantities requested by the Experts for the next Competition. The Host Organization will progressively update the Infrastructure List specifying the actual quantity, type, brand, and model of the items.

At each Competition, the Experts must advise the Competition Manager of any increases in space and/or equipment.

At each Competition, the Technical Observer must audit the Infrastructure List that was used at that Competition.

The Infrastructure List does not include items that Competitors and/or Experts are required to bring and items that Competitors are not allowed to bring – they are specified below.

8.2 Competitors toolbox

WorldSkills Europe aims to minimize the sending of toolboxes as much as possible. We therefore ask you to keep this in mind when writing the section below. Please be advised that competitors should bring as little as possible and what they do bring **MUST** be true hand tools. Only items are allowed that would significantly affect their ability to perform the task and deliver the Test Project to a high standard.

8.3 Materials, equipment and tools supplied by Competitors in their toolbox

Information about materials, equipment and tools supplied by Competitors will be distributed with the Test Project at least 2 months prior the current competition.

The Tool-List says clear which tools the competitor has to bring by himself. The competitor cannot bring more tools as on the Tool-List.

The pictures on the Tool-List are only samples and undefined producers.

8.4 Materials, equipment and tools supplied by the Experts

Experts can bring replacement equipment or tools if the competitor needs them. Experts must ask (SMT) Chief and Deputy Chief for replacement.

8.5 Materials, equipment and tools prohibited in the Skill area

Not applicable.

8.6 Proposed workshop and workstation

Workshop layouts from previous competitions are available by contacting the Competition and IT Coordinator at: jordy.degroot@worldskillseurope.org. New Workshop Layouts will be communicated via the forums when completed.

Please be advised that you will have the opportunity to discuss your Workshop Layout proposal with the Host Organization during the Competition Preparation Meetings (CPM).

For workshop layout development, please refer to the forums.

9 Skill-specific rules

Skill-specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from Skill Competition to Skill Competition. This includes but is not limited to personal IT equipment, data storage devices, Internet access, procedures and workflow, and documentation management and distribution. Breaches of these rules will be solved according to the Issue and Dispute Resolution procedure including the Code of Ethics and Conduct Penalty System.

9.1.1 Personal laptops – USB – memory sticks– mobile phones

- Competitors are only allowed to use memory sticks provided by the Competition Organizer. No other memory sticks are to be inserted into the Competitor computers.
- Memory sticks or any other portable memory devices cannot be taken outside the workshop.
- Memory sticks or other portable memory devices are to be submitted to the Chief Expert at the end of each day for safe keeping and must not be taken out of the workshop.
- Only Competitors and Technical Support Team are allowed to work with the computers in Competitors workstation unless special permission is given by the SMT. No Expert can be given such permission to their compatriot Competition.

9.1.2 Personal photo cameras – video taking devices

- Competitors are not allowed to bring personal laptops, tablets, or mobile phones into the workshop on Familiarisation day, C1 to C3. If Competitors do bring these items into the workshop they must place them in their locker. They can use them at break times and take at the end of each day. Experts, Chief Expert, Deputy Chief Expert are exempt from this rule.
- Competitors, Chief Experts, Deputy Chief Experts, Experts are allowed to use personal photo and video taking devices in the workshop, however no photos can be taken of details of the Test Project documents and material or any marking forms.
- Workshop Manager are able to take photos to support technical matters.

9.1.3 Communication between compatriot experts and competitors

- Competitors may make drawings, document instructions, or take notes whilst in the workshop however they cannot be taken out of the workshop at any time.
- Chief Expert, Deputy Chief Expert, Experts may make notes to support the marking process.

10 Visitor and media engagement

Following is a list of possible ways to maximize visitor and media engagement, within the remit of the Competition Rules:

- Try a trade
- Display screens
- Test Project descriptions
- Enhanced understanding of Competitor activity
- Competitor profiles
- Career opportunities
- Daily reporting of competition status
- Time based parts of the Test Project

11 Sustainability

This Skill Competition will focus on the sustainable practices below:

- Recycling
- Use of 'green' materials
- Use of completed Test Projects after Competition