

METHODOLOGY

for conducting preliminary and final stages
OF THE WORLD CONSTRUCTION CHAMPIONSHIP (WCC)
within the individual nomination:
**«Electrical Installation of Lighting Networks and Electrical
Equipment»**

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1. PURPOSE AND SCOPE

These methodological recommendations (hereinafter referred to as the Methodology) determine the procedure and conditions for holding the preliminary and final stages of the World Construction Championship (WCC) (hereinafter referred to as the Championship) within the individual nomination “Electrical installation of lighting networks and electrical equipment”.

The preliminary stage of the Championship is optional, i.e. Participant Organizations shall make their own decisions and determine the option of selecting specialists to participate in the final stage of the Championship:

- or independently organize and hold the preliminary stage in the organization using the Tasks developed for the preliminary stage of the Championship (see Annex No. 2 to the Methodology) according to the Methodology,

- or conduct the selection of Participants according to the qualification criteria in accordance with Appendix No. 1 to the Methodology.

The lists of Finalists shall be sent within the terms established by Section 9 of the Methodology, in accordance with the Quotas presented in Appendix No. 3 to the General Procedure for the Championship.

The participating organization shall provide the Organizer with information about the finalists in the format in accordance with Appendix No. 6 to the Methodology and ensure their registration on the Official website of the Championship <https://pro-wcc.ru> (hereinafter - the Official website) in the section “Participants”.

The Methodology was developed to identify the level of competences and conduct a comprehensive assessment of the knowledge, skills and abilities of specialists and workers' organizations performing construction and installation work at industrial construction facilities.

2. TERMS AND DEFINITIONS

Abbreviation	Decryption
Jury/Expert jury	A group of experts evaluating the results of tasks performed by Participants on nominations
Task/Task of the Championship	Task, during performance and according to the results of which the Participants demonstrate the level of knowledge, abilities and skills on the nomination
Quotas	Number of places for specialists of Organizations-participants established by the Organizing Committee for each nomination in the final stage of the Championship
Nomination	Name of the activity (profession) on which the Championship competitions are held
Organizer	A team of diverse specialists under the direction of the Ministry of Construction of Russia and Rosatom State Corporation, responsible for organizing and holding of the Championship
Participant Organization	An Organization whose specialists take part in Championship competitions/General partner-Participant
Organizing	Federal Organizing Committee of the Championship

committee	
Official site	Website of the Championship containing complete, reliable, updated information about the Championship
Site	The site of the nomination, the place where the Participant /team of Participants complete the Tasks for the final stage of the Championship
Participant / Team of Participants	Specialist / Team of specialists taking part in the Championship competitions
Organization-developer	An Organization not participating in the competitions but providing methodological support for nominations
Technical expert	A Developer Organization representative who works on the site of the final stage of the Championship and ensures holding of the nomination competitions and the work of Expert Jury
Finalist	Specialist participating in the final competitions of the Championship
Championship	World Construction Championship (WCC) shall mean the international championship in industrial construction

3. REGULATIONS

The tasks are formulated taking into consideration the following regulations:

1. IEC 60050-826-2004 Electrical Installations Terms and definitions;
2. IEC 60364-4-41:2005. Low voltage electric installations Part 4-41. Safety Requirements Electric shock hazard protection
3. IEC 60364-5-51:2005 Electrical installations of buildings - selection and installation of electrical equipment - general rules.
4. IEC 60364-5-52 Electrical installations of buildings - selection and installation of electrical equipment - joint systems (of electrical components)
5. IEC 60364-5-53:2002, Electrical installations in buildings - selection and installation of electrical equipment - insulation, commutation and operating
6. IEC 529-2013. Protection degrees provided by wrappers (IP code);
7. IEC 60364-5-54:2011. Electrical installations of buildings - selection and installation of electrical equipment - grounding schemes;
8. IES 60364-5-55 Electrical installations in buildings - selection and installation of electrical equipment - other equipment.
9. IEC 60364-6-2006 Electrical installations of buildings Part 6. Trials.
10. IEC 60417 Graphic symbols, applied for equipment;
11. IEC 60598-1-2011 Lighting fixtures. Part 1. General requirements and methods of testing;
12. IEC 60598-2-(all parts) Lighting fixtures. Part 2. Special requirements Lighting fixtures for street and road lighting;
13. IEC 60715 Dimensions of low voltage switch gears Standard assembling on guiding elements for mechanical fastening of electrical components of switch gears.
14. IEC 60364-7-714 Electrical installation in buildings - requirements for special installations and objects - installation of exterior lighting

15. IEC 60947-1:2004 Low voltage switchgear and control gear. Part 1. General requirements
16. IEC 60947-2 Low voltage switchgear and control gear. Part 2. Circuit breakers
17. IEC 61140 Electrical shock hazard protection - general aspects for installations and equipment.
18. GOST 21.210-2014 INTERSTATE STANDARD System of design documentation for construction. GRAPHIC IMAGES LEGEND OF ELECTRICAL EQUIPMENT AND WIRING
19. GOST 31565-2012. Interstate standard CABLE PRODUCTS Fire safety requirements
20. GOST 32397-2013. INTERSTATE STANDARD POWER SUPPLY BOARDS FOR INDUSTRIAL AND MUNICIPAL BUILDINGS. General specifications;
21. GOST 32395-2013. INTERSTATE STANDARD POWER SUPPLY BOARDS FOR RESIDENTIAL BUILDINGS General specifications;
22. GOST 32396-2013. INTERSTATE STANDARD ELECTRICAL DISTRIBUTION PANELS FOR RESIDENTIAL AND MUNICIPAL BUILDINGS. General specifications;
23. GOST IEC 60715-2013. INTERSTATE STANDARD LOW VOLTAGE SWITCHGEAR AND CONTROL GEAR. Installation and mounting on electrical apparatus guides in distribution and control devices;
24. GOST IEC 61140-2012. INTERSTATE STANDARD ELECTRIC SHOCK HAZARD PROTECTION General provisions for electrical installations and electrical equipment.

4. REQUIREMENTS TO PARTICIPANTS

Participants who meet the requirements set out in Annex No. 1 to the Methodology are allowed to participate in the Championship.

5. ORDER OF THE PRELIMINARY STAGE OF THE CHAMPIONSHIP

- 5.1 The purpose of the preliminary stage of the Championship is to identify and select the Finalists who are able to demonstrate a high level of knowledge and skills that meet international requirements.
- 5.2. The preliminary stage of the Championship is held within the terms established by the Organizing Committee: from 03 August to 11 December 2020.
- 5.3. Participant Organizations independently organize and hold the preliminary stage using the Tasks developed for the preliminary stage of the Championship (see Annex No. 2 to the Methodology) and the Methodology.
- 5.4 Mode of the preliminary stage of the Championship: full-time, on a day-release basis in the Organizations-participants.
- 5.5 The Task includes several practical modules. Task Description is presented in Annex No. 2 to the Methodology.
- 5.6 The Organizer does not provide any clarifications about the Task for the Participants during the organization and conduct of the preliminary stage of the Championship.
- 5.7 The Organizer communicates on the issues of holding the preliminary stage of the Championship only with persons officially authorized and responsible in the Organizations-Participants for organizing and holding the Championship (hereinafter - Responsible person (s)).

5.8 For additional information and clarifications on the preliminary stage of the Championship, the Participants may contact only the Responsible Persons in their organization.

5.9 The Responsible Person provides organizational and technical support to the Participants during the preliminary stage of the Championship.

5.10 The Participant Organizations, by their own decision, can make up to 30% amendments to the Task of the preliminary stage of the Championship. The Organizer must be officially notified of the introduction of such amendments, indicating detailed information, in which sections of the Task and to what extent the amendments were made. The Notice shall be sent by the Organization-Participant to the Organizer jointly with the final lists of the Finalists. The final lists of Finalists can be accepted for work by the Organizer only if there is a notice of amendments, if such amendments were made.

5.11 The Participant Organizations independently choose the time and place for the preliminary stage, organize workplaces for the Participants, incl. independent provision with all tools and materials, personal protective equipment and work clothes (if required) to the Participants to complete the Task of the preliminary stage in accordance with Annex No. 2 to this Methodology. The organizer shall neither go to the site for the execution of the Task nor participate in the organization and conduct of the preliminary stage.

5.12 The sequence and procedure for completing the Task are defined in Annex No. 2 of this Methodology.

5.13 At the site of conducting the preliminary stage:

5.13.1 Workplace allocation

Workplaces are allocated by drawing lots. The drawing lots is carried out by the Jury before the procedure for familiarizing the Participants with their workplaces.

The draw is made in the presence of all Participants in a manner that excludes the planned allocation of workplaces or equipment.

In the course of preparing the site for the nomination, the numbers shall be assigned to workplaces by means of visual marking. Before the start of the competition, the Jury shall present for all the public anonymized envelopes with enclosed numbers of workplaces in accordance with the marking procedure. The Participants take the envelopes and place themselves at their workplaces. Based on the drawing results, a protocol shall be prepared (Annex No. 4, Form 1).

5.13.2 Familiarizing with a workplace

Before the start of the competition, the Participants receive time to familiarize themselves with their workplaces (no more than 30 minutes). The Participants use this time to familiarize themselves with equipment, tools, rigging and materials. Measuring instruments of the Participants are compared with those of the Jury in order to avoid errors (if applicable). At the end of the familiarization period, the Participants shall confirm their familiarization with all equipment and materials by signing the Protocol of familiarization of the Participants with the equipment and workplaces (Annex No. 4, form 2).

5.13.3 Replacement of equipment and devices

The participant can ask for the opportunity to replace the equipment or device with the one brought with him. Permission for the replacement is determined by a general vote of the Jury members with the registration of the protocol (Annex 4, form 3). In this case, the responsibility for the serviceability of the device, the accuracy of its measurements and verification issues lies with the Participant.

5.13.4 Familiarization with the Task

Immediately before the start of the competition, the Jury must familiarize the Participants with the current Task, the assessment criteria for the Task, work regulations and rules of conduct at the site, hold a safety briefing in accordance with Annex No. 2 of the Methodology. Based on the results of familiarization, the corresponding protocols are drawn up (Annex No. 4, forms 4, 5).

5.13.5 Abnormal situations

Any deviation from this Methodology shall be considered as an abnormal situation. The decision on an emergency situation is made by the chairman of the Jury and is confirmed by a simple vote of the members of the Jury with the preparation of the corresponding protocol (Annex No. 4, form 6).

5.13.6 Beginning and completion of work

Participants shall wait for the Chairman of the Jury to indicate the beginning and completion of the work. In case, for reasons beyond the control of the Participant, he/she had to interrupt the performance of the Task (hereinafter-Forced stop), the Participant shall immediately inform the Chairman of the Jury or the member of the Jury responsible for recording the time. In this case, the start and end time of the stop shall be recorded. After confirmation by the Jury Chairman, the Participant shall have the right to receive additional time equal to the time of Forced stop. The amount of extra time shall be determined by a panel decision of the Jury and shall be recorded in the Protocol of an emergency situation (Annex 4, form 6).

5.13.7 Communication and contacts of Participants

Participants shall not be allowed to communicate with third parties during the official time of the Championship, including areas outside their site, with the exception of lunch breaks and official communication times. During the competition, it is forbidden to contact other Participants without the permission of the Chairman of the Jury. Periods of time (15-30 minutes) allocated for official communication of Participants can be held before the start of the Task and after the end of work on the site. Use of any information exchange equipment (mobile phones, electronic devices) shall be prohibited. Members of the Jury shall not be allowed to help Participants in any way in the interpretation of the Task, except with the permission of the Chairman of the Jury. Any questions that arise shall be referred to the Chairman of the Jury for decision.

5.13.8 Illness or accident

If any of the Participants gets sick or has become the victim of an accident, the Chairman of the Jury shall be immediately notified of this and shall decide to award points to the Participant for the amount of work performed.

5.13.9 Industrial safety

All Participants on the site shall comply with labor protection and safety requirements. Failure by Participants to comply with labor protection standards and regulations results in the loss of points in accordance with the assessment criteria, or the exclusion of Participants from performing Tasks if such a violation has led or could have led to a dangerous situation for people or damage to equipment. Each case shall be reviewed by the full Jury and a vote is taken for each case by the Jury members. The decision shall be made by a simple majority of votes and formalized by the Protocol of abnormal situations. When making a decision, the Jury members shall be guided by the requirements of labor protection for the nomination.

In order to ensure measures to prevent the spread of a new coronavirus infection on the territory of the Russian Federation, all persons present at the nomination site shall comply with a set of protective measures against COVID-19 infection.

6. ORDER OF THE FINAL STAGE OF THE CHAMPIONSHIP

6.1 The Organizing Committee shall establish the dates and venue of the final stage of the Championship annually and publish them on the official website of the Championship.

6.2 The form of participation in the Championship is full-time, with a day release.

6.3 The Participants shall arrive at the venue of the final stage of the Championship no later than 1 (one) day before the start of the competition.

6.4 Prior to the start of the Championship competitions, the Participants shall receive registration badges, undergo a General labor protection and safety briefing, and participate in a General organizational meeting in the Championship region. The time and place shall be determined by the Organizer and notified additionally no later than 5 (five) days before the start of the Championship competitions.

6.5 At the Site of Conducting the Final Stage:

6.5.1 Workplace allocation

Before the start of the competition, a drawing jobs is held between the Participants in order to exclude the possibility of obtaining more favorable conditions for completing the task. The drawing is made by Technical experts in public.

6.5.1.1 Procedure for drawing jobs:

In the course of preparing the site for the nomination, the numbers shall be assigned to workplaces by means of visual marking.

The drawing jobs can be made either in electronic format using the randomizer program (random number generator), or using impersonal envelopes with enclosed job numbers in accordance with the marking. In the latter case, before the start of the competition, the Technical expert shall present for all the public impersonal envelopes with enclosed numbers of workplaces in accordance with the marking procedure. The Participants take the envelopes, demonstrate its content to experts and other Participants and place them at their workplaces.

When using the randomizer, the Technical expert shall enter the names of Organizations-participants into the program, and the system automatically assigns job numbers to the Participants.

The Organizer shall select the format for the job draw and the Technical experts shall communicate it to the Participants at the site of the final stage.

At the end of the procedure for drawing jobs by a Technical expert, a Protocol is drawn up (Annex 4, form 1).

6.5.2 Familiarizing with a workplace and the Task

Participants are allowed to perform the Task only after passing the briefing on labor protection and safety at the workplace.

Immediately before the beginning of the Task, the Technical Experts conduct an induction briefing for Participants regarding the work regulations at workplaces, acquaint the Participants with the content of the Task and the evaluation criteria. Based on the results of familiarization, the corresponding protocols are drawn up (Annex No. 4, forms 4, 5).

No more than 30 minutes are allotted to conduct an introductory briefing and provide explanations on the work regulations, which are not included in the total time for completing the Task.

No more than 30 minutes are allotted for familiarization with a workplace and study of the Task, which are not included in the total time for completing the Task.

6.5.3 Beginning and completion of work

The participant must wait for the instructions of the Technical Expert to begin and complete the work. In case for reasons beyond the control of the Participant, he/she had to interrupt the Task, he/she shall immediately report the forced stop to the expert of the Jury. In this case, the start and end time of the stop shall be recorded.

After confirmation by the Jury Expert, the Participant shall have the right to receive additional time equal to the time of forced stop. The amount of extra time shall be determined by a panel decision of the Jury and shall be recorded in the Protocol of an emergency situation (Annex 4, form 6).

6.5.4 Abnormal situations

Any deviations from this Methodology and the provisions of The General Order of the Championship regarding the competitions of the final stage shall be considered as an abnormal situation. The decision on an abnormal situation is made by the experts of the Jury by a simple vote of experts with the preparation of the corresponding protocol. (Annex No.4, Form 6)

6.5.5 Communication and contacts of Participants, Technical experts, Expert jury

Any communication during the performance of Tasks by Participants shall be regulated by The General Order of the Championship.

6.5.6 Illness or accident

In case of an accident or sudden illness, the Participant shall first report the incident to the Expert jury on the site, who shall take measures to provide first aid to the victims, call an ambulance, and, if necessary, send the victim to the nearest medical facility.

The Expert jury shall make a collective decision on whether it is possible to compensate for the lost time. If a Participant has to withdraw from further participation in the Championship, he/she receives points for the amount of work performed.

6.5.7 Replacement of equipment and devices

The participant can ask for the opportunity to replace the equipment or device with the one brought with him. Permission for the replacement is determined by a general vote of the Jury members with the registration of the protocol (Annex 4, form 3). In this case, the responsibility for the serviceability of the device, the accuracy of its measurements and verification issues lies with the Participant.

7. TASK AND EVALUATION STRATEGY

7.1 Preliminary stage (if applicable)

7.1.1 The Task of the preliminary stage is presented in Annex No. 2 to the Methodology. Task execution time - no more than 8 hours with a break.

7.1.2 The results of the Task completed by the Participants shall be evaluated by the Jury in accordance with the assessment criteria provided for in Annex 2 to the Methodology.

7.1.3 The Jury's Decisions on the results of the Tasks completed by the Participants shall be drawn up in the final Protocol in accordance with Annex 5 to the Methodology.

7.2 Final stage

7.2.1 The Task content is electrical installation of lighting and lighting networks in accordance with electrical and assembly diagrams. The task has several modules, subsequently performed, and includes the installation of the distribution switchboard, mounting of various cable structures, installation and connection of various types of lighting fixtures, wiring accessories,

lighting control sensors, laying of lighting networks in different ways. Testing of working ability of the assembled diagram is conducted under voltage.

7.2.2 The time allowed to complete the Task is no more than 20 hours for two days, including the lunch break.

7.2.3 A professional electrician must carry out the installation of safe and reliable lighting networks and electrical equipment including the installation of power and distribution consoles and panels, various types of electrical wiring, lamps and lighting fixtures in accordance with current international electrical technical standards IES (IEC).

7.2.4 The Task and assessment criteria is verified in accordance with the Verification Procedure.

7.2.5 The assessment is made upon completion of each module separately and is based on visual measurement control, compliance with the work technology (compliance with dimensions, installation of boards and cable support systems, lamps, installation products, laying, cutting and connecting cables and wires, checking the operability of the lighting network), in accordance with the requirements of IES standards (IEC), compliance with security measures, as well as in accordance with the prepared documents.

7.2.6 The results of the Task completed by the Participants shall be evaluated by the Jury in accordance with the assessment criteria within 2 (two) days of the final competition. The Jury shall provide the participants with final results and valuation sheets for review. Participants confirm that they have familiarized themselves with the results by signing the valuation sheets.

7.2.7 The Jury's Decisions on the results of the Tasks completed by the Participants shall be drawn up in the final report sheet in accordance with Annex 5 to the Methodology. The report form sheet can be supplemented by a decision made by the Organizer..

8. EXPERT JURY

8.1 Preliminary stage (if applicable)

8.1.1 To assess the performance of the Tasks by the Participants, the Participant Organizations shall independently create an Expert Jury within the individual nomination "Electrical installation of lighting networks and electrical equipment".

8.1.2 The Jury within the individual nomination for the competence " Electrical installation of lighting networks and electrical equipment" consists of a Chairman and two (2) members of the Jury.

8.1.3 The Chairman of the Jury shall be determined by a simple drawing method - a random selection of a conditional subject from a variety of similar subjects.

8.2 Final stage

8.2.1 To assess the performance of the Final Stage Tasks by the Participants, a Jury within the individual nomination "Electrical installation of lighting networks and electrical equipment" shall be formed, consisting of experts from the Organizations-Participants.

8.2.2 The requirements for the Expert jury and the principle of forming the personal composition of the Jury in the final stage of the Championship are established by The Regulations on the Work of the Expert Jury.

8.2.3 The activity of the Expert Jury is regulated by official documents: The General Order of the Championship, The Regulations on the Work of the Expert Jury, and The Methodology.

9. PROCEDURE FOR DETERMINING THE FINALISTS AND WINNERS OF THE CHAMPIONSHIP

9.1 Procedure for determining the Finalists (if applicable)

9.1.1 The winners of the preliminary stage of the Championship are determined by the organizations independently on a basis of the maximum score received by the Participants. The final scores of the Participants are compared, and the overall rating of teams for the nomination is generated.

9.1.2 Participant Organizations shall form and approve the final Protocol according to Annex 5 of the Methodology based on the results of the preliminary stage of the Championship.

9.1.3 The Organizations-Participants shall determine the Finalists independently based on the overall rating of the winners of the preliminary stage in accordance with Quotas according to The General Order of the Championship.

9.1.4 In case several Participants scored the same number of points, the winners shall be determined by the time of completion of the Task, the Participants who completed the Tasks faster go to the final stage of the Championship.

9.1.5 All finalists shall register on the official website of the Championship and fill out a Participant's questionnaire.

9.1.6 The Participant Organizations shall send an official email to the Organizer's email address with the list of Finalists approved by the organization's director, or an authorized representative (main and reserve members), for the nominations in the form prescribed as per Appendix No. 6 to the Methodology, in both PDF and Excel format, within the period established by the Organizer and published on the Official website of the Championship.

9.2 Procedure for determining the winners of the Championship

9.2.1 The Jury shall sum up the results of the Championship in the nomination and determine the winners in the final stage of the Championship.

9.2.2 The Participant who has received the highest number of points based on the results of Tasks and has taken the 1 (first) place in the overall rating of the Participants shall be named the winner in the nomination.

9.2.3 In case several Participants have scored the same number of points, the winners shall be determined by the introduction of an additional assessment criterion, which the Technical expert and the Jury shall announce to the Participants before the start of the competition.

9.2.4 The Jury shall create a list of winners of the final stage of the Championship and draw up the final Protocol, which shall be submitted to the Organizer along with the Protocols and rating sheets with the results of Tasks.

10. REPLACEMENTS

10.1. Participant Organizations shall ensure a reserve team of Participants for the nomination to replace Finalists in the event of unforeseen circumstances and forced cancellation of participation of Participants from the first team in the final stage of the Championship.

10.2. The number of reserve Participants shall be equal to the number of the main Participants.

10.3. Participants of the reserve team shall meet the qualification criteria specified in the Methodology.

10.4. Reserve team members shall register on the official website of the Championship and fill out a Participant's questionnaire.

10.5. Participants can be replaced no later than 2 (two) weeks before the start of the final stage of the Championship. The date of replacement shall be the date when the Organizer sends a response to the Participant Organization with confirmation of the replacement.

10.6. The Organization participating in the Championship shall replace the Participant from the reserve team of Participants by sending an official notification to the Organizer indicating the reason for the replacement, indicating data about the Participants of the main and reserve teams and receiving a response from the Organizer confirming the replacement.

11. APPEALS

11.1 Within the framework of the final stage of the Championship, the Participants may appeal against the quality of the evaluation of the results and the work of the Jury on the evaluation and summing up procedure.

11.2 The appeal is filed on the terms and conditions established by the Regulation on the Appeal Commissions for Nominations.

11.3 Appeals are reviewed by the Appeals Commission.

12. RIGHTS, POWERS AND OBLIGATIONS

The rights, powers and obligations of the Participants, Expert Juries, Technical Experts, the Organizer are established in The General Order of the Championship.

13. AWARDS

The winners and laureates of the Championship are provided with monetary awards in accordance with The General Order of the Championship.

Qualification criteria for Participants

Individual nomination “Electrical installation of lighting networks and electric equipment”

No.	Name	Contents
1	General description of competence	A professional electrician must carry out the installation of safe and reliable lighting networks and electrical equipment in accordance with applicable regulatory documents, including the installation of power and distribution consoles and panels, various types of electrical wiring, lamps and lighting fixtures.
2	Participants' Category	The worker who has a profession "Electrician on lighting and lighting networks" of 5th level
	Skill Requirements	<p>Must know how to:</p> <ul style="list-style-type: none"> - read working drawings, wiring diagrams, diagrams (tables) connections, operating instructions, process sheets, standard operating procedures; - use hand and electric tools when cutting cables, connections, termination and marking of wires, cable cores, mounting of cable structures, power supply and distribution of consoles and boards when laying wires and cable ties in conduits, trays and on strings, installation of lighting fixtures; - use electrical measuring devices for measuring current, voltage, insulation resistance, identification of wires and cables; - mark up the places of installation and install structures for laying of wires, cables and installation of power and distribution consoles and boards; - lay wire and cable ties in ducts, trays, on strings; - install and connect lighting fixtures, light fittings and wiring accessories; - comply with labor protection, fire and environmental safety requirements when performing work
4	Knowledge Requirements	<p>Shall know</p> <ul style="list-style-type: none"> - requirements of regulations, technical, technological documentation for the installation of cable and power networks;

		<ul style="list-style-type: none"> - basics of electrical engineering; - drawing and diagram legend - major cable brands and their construction; - types of materials used in the manufacture and installation of metal structures and cable and wire products; - rules for markup and laying cable trays, perforated mounting profiles, steel boxes; - rules for installation of ground grids; - rules and methods for wire and cable core connections, terminations - rules for wire installation and laying cable ties in ducts, trays and on strings. - rules for installation of lighting fixtures of different brands, light fittings and wiring accessories; - rules for marking up for the installation and mounting of power and distribution consoles and boards; - rules when using electrical tools; - the requirements of regulations in the HSE area, fire safety, environmental protection, labor protection requirements in hazardous production facilities, rules for sanitary and personal hygiene.
5	Requirements for the availability of special permits and documents set forth in official documents	<p>Requirements for education and training:</p> <ul style="list-style-type: none"> - availability of primary vocational education with the assignment of a qualifying category in accordance with the qualification characteristics/profession; - professional training: professional training programs for the professions of workers, retraining programs for workers, the presence of a document of education with the assignment of a qualifying category in accordance with the qualification characteristics/profession. <p>Have valid certificates</p> <ul style="list-style-type: none"> - a document on education (qualifications) confirming the assignment of a qualifying category; - on testing knowledge of labor protection requirements; - on testing knowledge of fire safety in the scope of minimum fire-technical; - duly issued identity card of electrical safety access qualification level (not lower than 3).
6	Job Functions Requirements	<p>Demonstration of competences to apply in practice for the instructions given in electrical drawings and diagrams, process maps, production and factory instructions</p> <p>Demonstration of practical skills in installation and</p>

		<p>revision of electrical and lighting equipment.</p> <p>Demonstration of practical skills in marking up, of fastening of electrical equipment, lighting fixtures and cable routing.</p> <p>Demonstration of practical skills of installation of power, distribution boards, and lighting switchboards.</p> <p>Demonstration of practical skills in stripping, terminating, connecting and attaching cables in various ways.</p> <p>Demonstration of practical skills in labeling wires and cable cores.</p> <p>Demonstration of practical skills in laying cable structures (boxes, trays, etc.).</p> <p>Demonstration of practical skills in insulation resistance test of a cable, wire and cable identification.</p> <p>Demonstration of practical skills in wire installation and laying cable ties in ducts, trays.</p> <p>Demonstration of practical skills in installation and connection of lighting fixtures, light fittings and wiring accessories;</p>
7	Requirements for qualifications/profession	<p>Installation of power and distribution boards and consoles. Marking up of routing and laying cable trays and perforated mounting profiles. Metal hose laying Installation of light fittings and wiring accessories. Preserving and installation of wiring on strands. Charging and installation of lighting fixtures with DRL lamps, fluorescent, LED lamps, spotlights.</p> <p>Marking up of routing and wire installation of different brands. Wire installation and laying cable ties in ducts, trays. Connection, termination, attachment, installation of wires and cable cores of various brands. Marking of laid wires and cables. Erection of structures for cable circuits Wire and cable ring up.</p>

Tasks, evaluation criteria, timing, list of materials and equipment for the preliminary stage of the Championship

Section No.	Section Name
1.1	Task
1.2	Technological map of the Task
1.3	Evaluation Criteria of the Task

1.1. Task**Task Content**

Installation of lighting networks in accordance with electrical and wiring diagrams.

Module 1: Metering & Distribution Board installation

Module 2: lighting fixture, motion detector, outlet, breaker mounting

Module 3: Installation of cable channels and terminal boxes.

Module 4: Cable laying and connection of lighting fixtures, motion detector, wiring accessories, Metering & Distribution Board

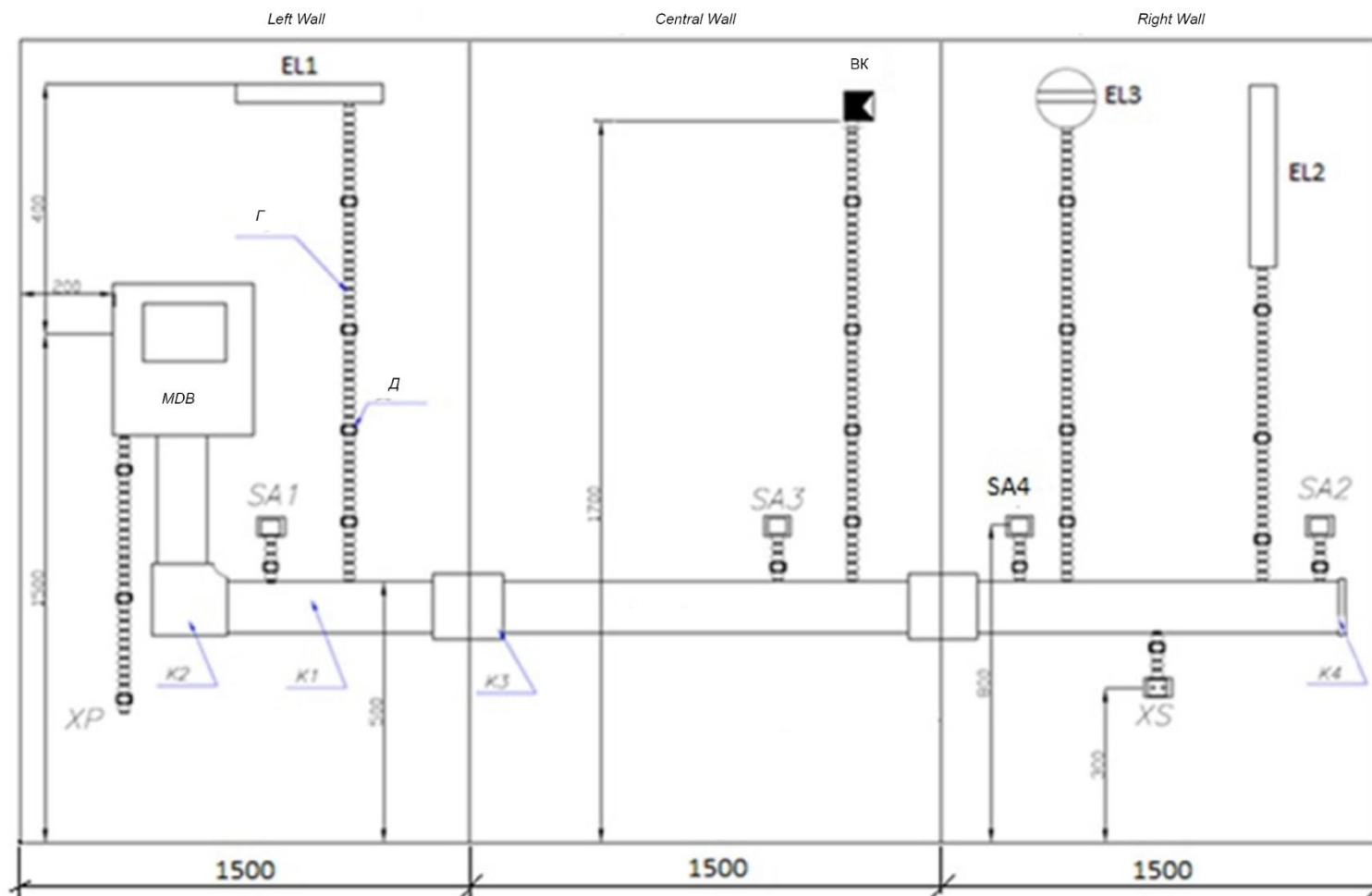
Documents attached:

1. Annex 1.1. Wiring diagram of electric lighting networks
2. Annex 1.2 Electrical circuit diagram of the main lighting network
3. Annex 1.3 Apparatus diagram located in MDB board
4. Annex 1.4 Cable insulation resistance measurement table

Time limit for the task: 8 hours

Maximum number of points for the nomination is 100 points.

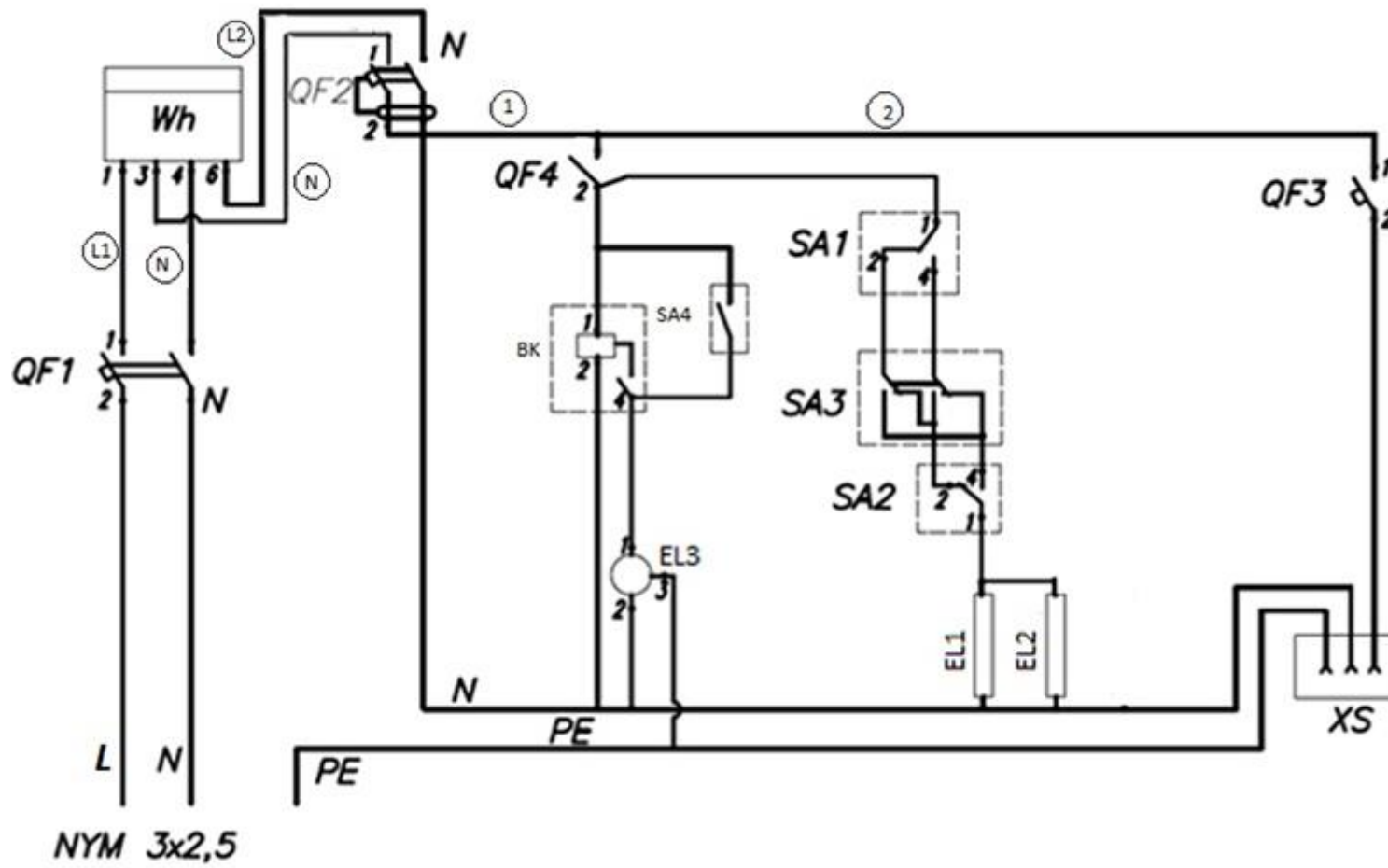
Wiring diagram of electric lighting networks



Alphabetical legend to the wiring diagram of lighting networks

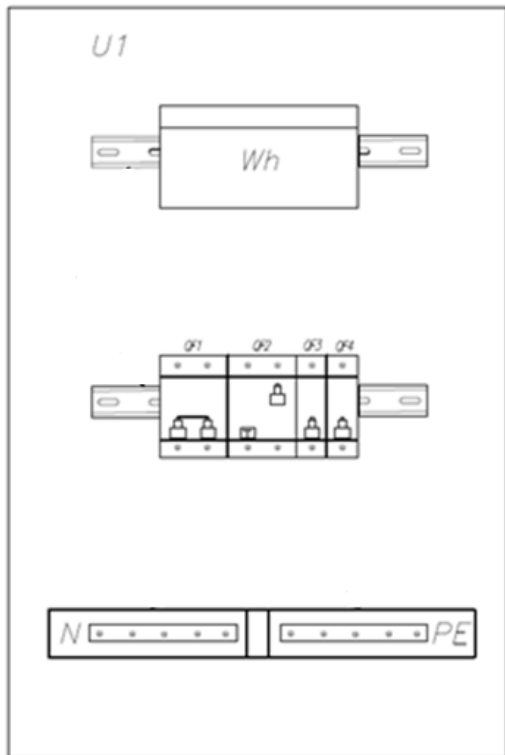
Item No.	Legend	Description
1	MDB	Metering & Distribution Board
2	EL1,EL2	LED lighting fixture
3	EL3	LED spotlight
4	Wolfram cobalt	Infrared motion detector to turn on the light
5	XP	220 V outlet for input
6	XS	220 V outlet
7	SA1, SA2	One-key alternate switch
8	SA3	One-key cross point switch
9	SA4	One-key alternate switch
10	C	Corrugated pipe
11	C	Clip-holder
12	K1	Cable channel plastic 60 x 50
13	K2	Cable channel L-shaped flat angle 90 degrees
14	K3	Cable channel inside angle
16	K4	Cable channel plug 60x50

Electrical circuit diagram of the main lighting network



ANNEX 1.3

Apparatus diagram located in MDB board



MDB Equipment Specification			
Item	Legend	Description	Amount
1	U1	Metering & Distribution Board (N,PE buses, din rails included)	1
2	Wh	Power meter	1
3	QF1	BA47-29 2P 25A Circuit breaker	1
4	QF2	Differential switch (RCD) VD1--63 2P 25 A 30 mA	1
5	QF3	Circuit breaker BA47-29 1P 25A	1
6	QF4	Circuit breaker BA47-29 1P 16A	1

Cable Insulation Resistance Measurement Table

Workplace number/Full name		Completed (Yes/no)
1. Insulation resistance measurement data	<p>1. Riz (L1:L2) = _____</p> <p>2. Riz (L1:L3) = _____</p> <p>3. Riz (L2:L3) = _____</p> <p>4. Riz(L1:RE) = _____</p> <p>5. Riz(L2:RE) = _____</p> <p>6. Riz(L3:RE) = _____</p>	

1.2. Technological map of the Task

Module 1: Mounting of Metering & Distribution Board (MDB)

Module Composition

Instruction:

1. Perform the markup of the Metering & Distribution board installation place in accordance with wiring diagram of electric lighting networks.
2. Perform the mounting of Metering & Distribution board in accordance with the mounting and basic wiring diagram of electric lighting networks

The dimensions of board installation are calculated from the reference point marked on the working field before the start of the Championship. The board and be mounted on the wall before or after the installation of devices and wiring inside the board.

Time limit for the task: 90 minutes.

No.	Operation	Content of operations	Equipment and tools
1	Markup of installation places for Metering & Distribution Board	Perform the mark up of the working field for MDB in accordance with wiring diagram of electric lighting networks (Annex No 1.1).	Measuring tape, level, marker.
2	MDB board assembly	Perform installation of apparatus in MDB board on din-rails, according to apparatus diagram in the board (Annex 1.3). Installation of internal circuits of secondary switching in the lighting panel shall be conducted according to	MDB board with apparatus and wires according to the packing list. Tape measure,

		the circuit diagram (Annex 1.2) with a wire cross-section of 2.5 mm ² .	marker, screwdrivers, side cutters, mounting knife.
3	MDB board installation	Fix the board to the plywood of the working field with self-tapping screws, according to the wiring diagram of the lighting networks (Annex 1.1).	Screw driver with attachments; set of wrenches and screwdrivers
4	MDB (metering & distribution board) board grounding	MDB (metering & distribution board) board grounding should be performed loosely (to the plywood of the working field) with a self-tapping screw, informing the Expert.	Screw driver with attachments; set of wrenches and screwdrivers

Module 2: Mounting of lighting fixtures, motion detector, outlets, breakers

Module Composition

Instruction:

1. Perform the markup of the installation places of lighting fixtures, motion detector, outlet, switches according to the wiring diagram of the lighting networks.

2. Perform the installation of lighting fixtures, motion detector, outlet, switches in accordance with to the wiring diagram of the lighting networks.

Time limit for the task: 90 minutes.

No.	Operation	Content of operations	Equipment and tools
1	Markup of installation places	Marking with a pencil the location of lighting fixtures, outlets, switches, motion detector, according to the installation wiring diagram (Annex 1.1). Lighting fixtures, outlet, switches, motion detector on the wall should be fixed with self-tapping screws.	Measuring tape, level, marker.
2	Lighting fixtures	Install lighting fixtures on the working field using self-tapping screws in accordance to the wiring diagram of the lighting networks (Annex 1.1).	Screw driver with attachments; set of wrenches and screwdrivers, light fixtures
3	Motion detector installation	Install motion detector on the working field using self-tapping screws in accordance to the wiring diagram of the lighting networks (Annex 1.1).	Screw driver with attachments; set of wrenches and screwdrivers, motion detector

4	Installation of socket	Install socket on the working field using self-tapping screws in accordance to the wiring diagram of the lighting networks (Annex 1.1).	Screw driver with attachments; set of wrenches and screwdrivers, power outlet
5	Installation of breaker	Install breaker on the working field using self-tapping screws in accordance to the wiring diagram of the lighting networks (Annex 1.1).	Screw driver with attachments; set of wrenches and screwdrivers, switches

Module 3: Mounting of cable channels and terminal boxes

Module Composition

Instruction:

1. Perform the markup of the installation places of cable channels and distribution boxes in accordance to the wiring diagram of the lighting networks.
2. Perform the installation of cable channels and distribution boxes in accordance to the wiring diagram of the lighting networks.

Time limit for the task: 90 minutes.

No.	Operation	Content of operations	Equipment and tools
1	Marking up of the working field for mounting cable channels and terminal boxes	Mark up the working field for mounting cable channels and boxes in accordance with the wiring diagram of the lighting networks (Annex 1.1).	Measuring tape, level, marker
2	Cable channel mounting	Perform cable channel mounting on plywood of the working field using self-tapping screws.	Screw driver with attachments; a set of wrenches and screwdrivers, cable channel
3	Terminal box mounting	Perform terminal box mounting Terminal boxes should be installed on site as determined by the Participants (adjacent to the upper outer part of the box), taking into account saving of cable running lengths.	Screw driver with attachments; a set of wrenches and screwdrivers, terminal boxes

Module 4: Cable laying and connection of lighting fixtures, motion detector, wiring accessories, MDB board.

Module Composition

Instruction:

1. Cable laying in cable channels, corrugated pipe in accordance with the mounting and basic wiring diagram of the lighting networks.
2. Lighting fixtures connection, light fittings, motion detector in accordance with the basic mounting and wiring diagram of the lighting networks.
3. MDB board connection in accordance with the mounting and basic wiring diagram of the lighting networks.
4. Testing of the wiring diagram in operation (with applied voltage) with participation of an Expert.

Cable insulation resistance measuring is carried out once before laying the cable, with the result recorded in the cable insulation resistance measuring Table (Annex 1.4). Measuring cable insulation resistance after its laying shall be executed “loosely” for cutting installation time.

Time limit for the task: 3.5 hours

No.	Operation	Content of operations	Equipment and tools
1	Checking the insulation resistance of the laid cable Perform the resistance measurement in the presence of an Expert.	Before laying the cable, measure the insulation resistance using a megohmmeter. Enter the result in the cable insulation resistance measurement table (Annex 1.4)	Megohmmeter
2	Cable laying to lighting fixtures, motion detector, socket and switches	Lay a cable in the cable channels and corrugated pipe to connect lighting fixtures, motion detector, socket and switches in accordance with the mounting and basic wiring diagram of the lighting networks (Annex 1.1, 1.2). The branch shall be made with the help of WAGO terminal block in the terminal boxes installed on site as determined by the Participants (adjacent to the upper outer part of the box), taking into account saving of cable running lengths. The cable shall be laid manually, if necessary, using self-adhesive platforms with ties to fasten the cable. The corrugated pipe is fastened to the wall with a clip holder.	Cable, corrugated pipe, WAGO terminal blocks, terminal box, self-adhesive platforms, ties, clips holders, side cutters, mounting knife, self-tapping screws
3	Checking the insulation resistance of the laid cable (loose)	Perform measuring insulation resistance without filling in Cable Insulation Resistance Measurement Table ("loosely", i.e. informing the Expert about the need for measurement)	Megohmmeter

4	Connection of lighting fixtures, socket, motion detector, switches, and MDB board.	Stripping and the connection of cable cores to lighting fixtures, light fittings and MDB board, according to the mounting and basic wiring diagrams of lighting networks (Annex 1.1, 1.2). Connect power supply at the connection point.	Insulation removal tool, cable knife, side cutters, screwdriver set, circuit analyzer
5	Visual verification of the safety and correctness of the assembled scheme	Comparison of the mounted circuit for compliance with the principal and wiring diagrams of secondary switching circuits. <i>Note: all switches are in a disabled position at the end of the work</i>	
6	Diagram functional testing of power supply connection with the participation of an Expert	Check the operation of the wiring diagram on all modes of operation with the participation of an Expert: - voltage supply - checking the lighting control circuit from three locations - checking the lighting control circuit of the spotlight from motion detector and switcher - operability check of the RCDs (checking for tripping under voltage without load). XS1 outlet operability (checked by a circuit analyzer). Clear detected faults (if any).	Circuit analyzer
7	Installation of cable channel covers and presentation of work results	Install cable channel covers and present work results.	

1.3. Evaluation Criteria of the Task

Module 1: Mounting of Metering & Distribution Board (MDB)

Operation No	Control parameters	The	Max	Actual
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		amount of points credited (withdrawn)	value of the evaluation criterion	amount of points
1. Workplace preparation	Organization of the workplace		2	
	- completeness of tools, materials and equipment corresponds to the technical production documentation;	1		
	- placement of materials, tools, equipment complies with health and safety (tools in a belt, on a workbench, chair, table - not scattered on the floor, etc.).	1		
2. Personal and electric safety	HSE Compliance while performing installation works of the board including:		2	
	- availability of personal protective equipment when working with a power tool;	1		
	- tool performance check	1		
3. MDB board installation	Ability to perform the markup of the installation places of MDB board in accordance with working documentation and execute installation work:		2	
	- Markup of installation places in accordance with the working documentation;	1		
	- checking horizontal and vertical installation in mm; <i>(if the markup deviation is more than 5 mm vertically or horizontally, 0 points are credited)</i>	1		
4. MDB board assembly	Ability to perform installation of devices and connection of wires in accordance with main wiring diagram and the layout of devices in the Metering & Distribution board MDBI (Annex 1.2, 1.3):		4	
	- reliability of mounting rails, devices inside the board; <i>(if there are 2 violations, 0.3 points are credited; if there are 3 or more violations, 0 points are credited)</i>	1		
	- quality of insulation removal from the wire cores (no undercuts of the wire cores, no insulation left on the core, smooth insulation	1		

	cut, no "visible" copper when connecting); (if there are 2 violations, 0.3 points are credited; if there are 3 or more violations, 0 points are credited)			
	- reliability of contact connection of wire cores (securely fixed); (if there are 2 violations, 2 points are credited; if there are 3 or more violations, 0 points are credited)	4		
	- proper marking of internal secondary switching circuits (if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)	1		
8. MDB (metering & distribution board) board grounding	Ability to perform grounding of the power board ("loosely"):		1	
	- availability of power supply cabinet grounding;	1		
Total:			11	

Module 2: Mounting of lighting fixtures, motion detector, outlets, breakers

Operation number	Control parameters	The amount of points credited (withdrawn)	Max value of the evaluation criterion	Actual amount of points
1. Workplace preparation	Organization of the workplace		1	
	- location of tools and equipment corresponds to HSE Policy (tools are in the belt, on the workbench, chair, table - not scattered on the floor)	1		
2. Personal and electric safety	HSE compliance when performing work on the installation of lighting fixtures, wiring accessories, including:		1	
	- availability of personal protective equipment when working with a power tool;	1		
3. EL1 lighting fixture	Ability to perform the markup of the installation places and mounting of EL1 lighting fixture		2	

installati on	compliance of the installation place with the wiring diagram <i>(if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)</i>	1		
	- fastening security	1		
4. EL2 lighting fixture installati on	Ability to perform the markup of the installation places and mounting of EL2 lighting fixture		2	
	compliance of the installation place with the wiring diagram <i>(if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)</i>	1		
	- fastening security	1		
5. EL3 lighting fixture installati on	Ability to perform the markup of the installation places and mounting of EL3 lighting fixture		2	
	compliance of the installation place with the wiring diagram <i>(if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)</i>	1		
	- fastening security	1		
6. VC Motion detector installati on	Ability to perform the markup of the installation places for motion detector:		1	
	compliance of the installation place with the wiring diagram and fastening security <i>(if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)</i>	1		
7. Installati on of socket XS	Ability to perform the markup of the installation places and outlet mounting (XS)		1	
	compliance of the installation place with the wiring diagram and fastening security <i>(if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)</i>	1		
8. Installing SA1	Ability to perform the markup of the installation places and mounting of breaker (SA1)		1	

breaker	- compliance of the installation place with the wiring diagram and fastening security (if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)	1		
9. Installing SA2 breaker	Ability to perform the markup of the installation places and mounting of breaker (SA2)		1	
	compliance of the installation place with the wiring diagram and fastening security (if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)	1		
10. Installing SA3 breaker	Ability to perform the markup of the installation places and mounting of breaker (SA3)		1	
	- compliance of the installation place with the wiring diagram and fastening security (if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)	1		
11. Installing the SA4 breaker	Ability to perform the markup of the installation places and mounting of breaker (SA4)		1	
	- compliance of the installation place with the wiring diagram and fastening security (if the markup is broken by more than 10 mm horizontally or vertically - 0 points are credited)	1		
Total:			14	

Module 3: Mounting of cable channels and terminal boxes

Operation number	Control parameters	The amount of points credited	Max value of the evaluation criterion	Actual amount of points
1. Workpla	Organization of the workplace		1	

ce preparati on	- location of tools and equipment corresponds to HSE Policy (tools are in the belt, on the workbench, chair, table - not scattered on the floor)	1		
2. Persona and electrical safety	HSE Compliance while performing installation works of cable channels, terminal boxes, including: - availability of personal protective equipment when working with a power tool;		1	
3. Installati on of cable channels	Ability to perform the markup of the installation places and mounting of cable channels		6	
	- elements are installed in accordance with the wiring diagram;	1		
	- cable channel mounting in accordance with wiring diagram horizontally and vertically; (if the markup deviates by more than 5 mm, 0 points are credited)	2		
	- cable channel sections near the MDB inlets, corrugated pipes cut/drilled neatly); (if there are 2 violations, 1 point is credited; if there are 3 or more violations, 0 points are credited)	2		
	- fastening security <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</i>	1		
4. KR1 terminal box installati on	Ability to perform the markup of the installation places and terminal box mounting - rational placement of the terminal boxes and fastening security. (attachment of terminal boxes to the upper outer part of the box, taking into account savings in cable running lengths).		1	
5. KR2 terminal box installati on	Ability to perform the markup of the installation places and terminal box mounting		1	
	- rational placement of the terminal boxes and fastening security. (attachment of terminal boxes to the upper outer part of the box, taking into account savings in cable running lengths).	1		

6. KR3 terminal box installation	Ability to perform the markup of the installation places and terminal box mounting		1	
	- rational placement of the terminal boxes and fastening security. (attachment of terminal boxes to the upper outer part of the box, taking into account savings in cable running lengths).	1		
Total:			11	

Module 4: Cable laying and lighting fixtures connection, motion detector, wiring accessories, MDB board

Operation number	Control parameters	The amount of points credited (withdrawn)	Max value of the evaluation criterion	Actual amount of points
1. Workplace preparation	Organization of the workplace		1	
	- location of tools and equipment corresponds to HSE Policy (tools are in the belt, on the workbench, chair, table - not scattered on the floor)	1		
2. Personal and electric safety	HSE Compliance while performing installation works of the cable including:		3	
	- availability of personal protective equipment when working with a power tool;	1		
	tool performance check	1		
	- at the end of the work, the following should be done: the workplace should be cleaned, the tools should be packed away, the floor should be swept, and the garbage should be removed).	1		
3. Measuring cable insulation resistance	Ability to test insulation resistance before laying VVG 3x2,5 cable using megohmmeter Verification is carried out in the presence of an Expert:		2	
	correct technological order of insulation resistance measurement	1		
	- measurement quantity	1		

4. Cable laying in cable channel	The ability to provide physical configuration of cable laying and fixing the cable inside the cable channel:		3	
	- selection of optimal tie lines between illuminating and wiring accessories and boxes, lighting cabinet;	1		
	- absence of intersection of cables between each other; <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</i>	1		
	- fastening security, the use of self-adhesive platforms with ties for cable fastening; <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</i>	1		
5. EL1 lighting fixture connection	Ability to demonstrate the quality of EL1 lighting fixture connection		3	
	- mounting the corrugated pipe according to the vertical wiring diagram; <i>(if the markup deviates by more than 5 mm, 0 points are credited)</i>	1		
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips;	1		
	cable core connection security	1		
6. EL2 lighting fixture connection	Ability to demonstrate the quality of EL2 lighting fixture connection		3	
	- mounting the corrugated pipe according to the vertical wiring diagram; <i>(if the markup deviates by more than 5 mm, 0 points are credited)</i>	1		
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips;	1		
	cable core connection security	1		
7. EL3 lighting fixture connection	Ability to demonstrate the quality of EL3 lighting fixture connection		3	
	- mounting the corrugated pipe according to the vertical wiring diagram; <i>(if the markup deviates by more than 5 mm, 0 points are credited)</i>	1		

	- it is not allowed to have exposed cable cores behind connection points to the terminal clips;	1		
	cable core connection security	1		
8. Connecti on of XS outlet	Ability to demonstrate the quality of XS outlet connection		2	
	- mounting the corrugated pipe according to the vertical wiring diagram; (if the markup deviates by more than 5 mm, 0 points are credited)	1		
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips, core fastening security. <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</i>	1		
9. Connecti on of VC motion detector	Ability to demonstrate the quality of VC motion detector connection:		2	
	- corrugated pipe secure fastening in accordance with wiring diagram;	1		
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips, core fastening security; <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</i>	1		
10. SA1 breaker connecti on	Ability to demonstrate the quality of SA1 breaker connection		2	
	- corrugated pipe secure fastening in accordance with wiring diagram;	1		
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips, core fastening security. (if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)	1		
11. SA2 breaker connecti on	Ability to demonstrate the quality of SA2 breaker connection		2	
	- corrugated pipe secure fastening in accordance with wiring diagram taking into account the number of clip holders;	1		
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips,	1		

	<p>core fastening security.</p> <p>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</p>			
12. SA3 breaker connecti on	Ability to demonstrate the quality of SA3 breaker connection		2	
	- corrugated pipe secure fastening in accordance with wiring diagram;	1		
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips, core fastening security. (if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)	1		
13. SA4 breaker connecti on	Ability to demonstrate the quality of SA4 breaker connection		2	
	- corrugated pipe secure fastening in accordance with wiring diagram;	1		
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips, core fastening security. (if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)	1		
14. Cable stripping in KP1 terminal box	Ability to demonstrate the quality of cable core stripping when connected in KP-1 terminal box:		5	
	- it is not allowed to have exposed cable cores behind connection points to WAGO terminal clamps; (if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)	3		
	- rational wire and terminal clamps laying in the terminal box with no twisting.	2		
15. Cable stripping in KP2 terminal box	Ability to demonstrate the quality of cable core stripping when connected in KP-2 terminal box:		5	
	- it is not allowed to have exposed cable cores behind connection points to WAGO terminal clamps; <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0</i>	3		

	<i>points are credited)</i>			
	- rational wire and terminal clamps laying in the terminal box with no twisting.	2		
16. Cable stripping in KP3 terminal box	Ability to demonstrate the quality of cable core stripping when connected in KP-3 terminal box:		5	
	- it is not allowed to have exposed cable cores behind connection points to WAGO terminal clamps; <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</i>	3		
	- rational wire and terminal clamps laying in the terminal box with no twisting.	2		
17. MDB board connection	Ability to demonstrate the quality of cable core stripping when connecting power cable and distribution cable to MDB board:		4	
	- it is not allowed to have exposed cable cores behind connection points to the terminal clips; <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</i>	1		
	cable core connection security <i>(if there are 2 violations, 0.5 points are credited; if there are 3 or more violations, 0 points are credited)</i>	1		
	protection of conductors against mechanical damage at the MDB entry (double-insulated glands, thin pipes are installed);	1		
	- compliance of phase and zero connection plug with 220 V extension to QF1 input machine.	1		
18. Diagram functional testing of power supply connection with the participation of an	Wiring diagram functional testing with power supply connected or 220 V for correct operation		12	
	- at the end of work, all switches are in a disabled position	1		
	- voltage supply <i>(there are no short circuits, a specific smell of heating wires, extraneous noise)</i>	2		
	lighting fixture control in two places by means of SA1, SA2, SA3 breakers. Switching	2		

Expert	SA1 => on. EL1 and EL2, enabling SA2 => off. EL1 и EL2;			
	Checking the lighting control circuit of the spotlight from the VC motion detector (EL3 spotlight on/off);	2		
	Checking the lighting control circuit of the spotlight from SA4 breaker (pressing the switch on/off of the EL3 spotlight);	2		
	RCD operability check (test for tripping under voltage without load)	2		
	XS1 outlet operability (checked by circuit analyzer).	1		
19. Fixing the diagram:	Number of attempts: - each additional attempt is minus 1 point, - more than three attempts is 0 points			
20. Installation of cable channel covers	Ability to perform installation of cable channel covers:		2	
	- no damage to the protective coating and integrity of the product;	1		
	- no gaps between bases and covers.	1		
21. General work planning	Completion of a practice task in less than 8 hours		1	
Total:			64	

Safety requirements and technical requirements for the site of the preliminary stage of the Championship

1. General Requirements for Industrial Safety

1.1. Persons who are at least 18 years of age, who have undergone training in industrial safety, medical examination and have no contraindications for health reasons, are allowed to perform the Task for electrical work. A participant should have the electrical safety access qualification level not lower than 3 (certificate is required).

1.2. Participants must comply with the rules of conduct, the timetable and schedule of the Task, as well as the established work and rest regimes.

1.3. When performing electrical installation and commissioning of finished electrical equipment, the following dangerous and harmful factors may be affected:

- there is potential for electrocution (thermal burns, electric jolt) when accidentally touching uninsulated live parts of the electrical installation.
- the possibility of traumatic injury when using a faulty or careless use of a serviceable tool, as well as in case of accidental contact with moving or rotating parts of machinery and mechanisms;
- the possibility of fire as a result of heating live parts during overload, unsatisfactory electrical contact, as well as resulted from exposure to an electric arc during a short circuit.

1.4. When performing the Electrical Work Task, the following overalls and individual protective equipment should be used: suit, hair cover, disposable cotton protective gloves, tools with insulated handles, as well as safety glasses in case of machining materials. It is forbidden to work in clothes with short or rolled-up sleeves.

1.5. In the process of work, the Participants must comply with the rules for wearing overalls, using individual and collective protective equipment, observe the rules of personal hygiene, wash their hands after using the toilets, keep the workplace clean, regularly remove waste material, shavings, garbage in the trash bin.

1.6. In the room for performing electrical work, there must be a first-aid kit with a set of necessary medicines and dressings. The first aid kit must contain an inventory of medicines and instructions for providing first aid to injured persons.

1.7. Participants must comply with fire safety rules, know locations of primary fire extinguishing equipment. The room for the Tasks is supplied with powder or carbon dioxide fire extinguishers.

1.8. In the event of an accident, the injured person or other Participants must immediately inform the Jury about the incident. In case of equipment or tool failure, stop work and inform the Jury about it.

1.9. Responsibility for accidents that occurred in the premises for the Task is borne by the Participants, both directly violating the rules of safe work on electrical installations, and persons of the administrative and technical personnel who did not provide:

- execution of organizational and technical measures to prevent the possibility of accidents;

- compliance of the workplace with labor protection requirements;
- conducting training in safe working practices on electrical installations.

2. Requirements for industrial safety before starting work

2.1. Before starting work, Participants must do the following:

- carefully study the content and procedure for carrying out the practical task, as well as safe techniques for its implementation;
- put on overalls, carefully pull your hair under the hair cover;
- check the condition and serviceability of equipment and tools. Metal cases for all parts of electrical installations powered from the electric grid must be reliably grounded (neutralized);
- prepare the materials and devices necessary for work and put them in their places, remove all unnecessary things from the desktop;
- prepare personal protection equipment for work, make sure they are in good working order.

3. Requirements for industrial safety during the course of work

3.1. It is allowed to include the assembled circuit on the desktop, stand, wall of the box allocated for the Task only after checking it by the Jury.

It is forbidden to serve meals without warning of all Participants.

3.2. When working with electrical circuits, the control of electrical equipment switchgear under voltage is carried out only in the presence of the Jury.

3.3. It is necessary to connect up wiring diagrams, switch them only if there is no voltage. Connect the power supply last.

3.4. Wiring diagrams must be assembled so that the wires, if possible are not crossed, stretched or twisted in knots or loops.

3.5. When assembling the wiring diagram, it is forbidden to use connecting wires with damaged lugs or broken insulation.

3.6. When working with electrical appliances and machines, care must be taken to keep exposed parts of the body, clothing and hair away from rotating machine parts and exposed wires.

3.7. If there are moving or rotating mechanisms and machines in the wiring diagram that provide for both forward and reverse movements or direct and reverse rotations, it is prohibited to turn on the remote control buttons for reverse movement or reverse rotation until the movement of the mechanism in the forward direction has completely stopped.

3.8. To check the presence of voltage on the wiring diagram, you need to use a voltage indicator or a measuring device. It is necessary to locate measuring instruments and equipment taking into account the convenience of observation and control, excluding the possibility of contact of working with live parts.

3.9. It is forbidden to leave unattended switched-on wiring diagrams and devices.

4. Safety Requirements in Emergency Situations

4.1. If a malfunction is detected in the operation of electrical installations under voltage (increased heating, sparking, burning smell, smoke, etc.), the Participant should immediately switch-off the power supply and report the incident to the Jury.

4.2. In the event of a fire or smoke, immediately switch-off the electrical equipment, take measures to evacuate people, inform the Jury and the nearest fire department about this accident. Start extinguishing the fire with the available fire fighting equipment. To extinguish electrical equipment under voltage, only carbon dioxide and powder fire extinguishers, as well as dry sand or felt mat, should be used; in this case, foam fire extinguishers or water should not be used.

4.3. In case of an accident or sudden illness, it is necessary first of all to switch off the power of the electrical installation and report the incident to the Expert jury on the site, who shall take measures to provide first aid measures to the injured persons, call an ambulance, and, if necessary, send the injured person to the nearest medical facility.

5. Post-job requirements

After the completion of the work, each Participant shall:

- switch off electrical appliances and devices from the power source. Remove the residual charge on the capacitors (if any) by closing its contacts with an insulated conductor and disassemble the electrical wiring diagram;
- clean up the workplace, hand over the equipment, materials and tools to the Jury;
- take off your overalls and wash your hands thoroughly with soap and water.

6. Technical Requirements for the Site in Conducting the Preliminary Stage

6.1. The foundation of the platform floor must be a horizontally flat concrete surface, in which it is possible to drill for fastening anchors up to 15 cm long. The foundation of the platform floor is allowed to be made as a wooden podium.

6.2. The area of the working platform for completing the Task by one team must be at least 30 m². If necessary, sites for works can be marked with clear borders. The site must have a flat, hard surface.

6.3. Each team's site should have storage space for materials. Mechanized operations for the procurement and processing of reinforcement (cutting, bending, etc.) must be performed in a separate specially designated, equipped or fenced area.

6.4. Workplaces must be provided with tested inventory fences, protective and safety devices, devices (scaffolding, staging, step-ladders, access boards, etc.).

6.5. The site must be equipped with fire extinguishing equipment.

**Report Sheet on Familiarizing the Participants with the Equipment
and Workplaces**

Nomination _____

Chairman of the
Jury _____

We, the undersigned, confirm that we were given the opportunity to fully familiarize ourselves with the equipment and workplaces on the site, test the equipment during the time necessary for familiarization, and have received and studied the instructions for using the tools and consumables. We confirm the skill of using the equipment and consumables.

Item	Participant's Full Name	Comments on information received	Signature

Date _____ 2021

Chairman of the Jury _____

Form 3

Report sheet on replacing equipment and instruments

Nomination _____.

Chairman of the
Jury_____

We, the undersigned, take responsibility for the serviceability of the equipment and devices that have been replaced, and for the accuracy of its measurements and verification issues

Item	Participant's Number	Protocol on replacing equipment and instruments	Signature

Date _____2021

Chairman of the Jury_____

Form 4

Report Sheet on Familiarizing the Participants with the Task and Assessment Criteria

Nomination _____.

Chairman of the
Jury _____

We, the undersigned, confirm that we have been given the opportunity to fully familiarize ourselves with the Task and the assessment criteria.

Item	Participant's Full Name	Comments and Misunderstandings on Information Received	Signature

Date _____ 2021

Chairman of the Jury _____

Form 5

Report Sheet on Familiarizing the Participants with Safety and Labor Protection Rules

Nomination _____.

Safety and labor protection briefing was conducted by

Chairman of the Jury

Item	Participant's Full Name	Comments and Misunderstandings on Information Received	Signature

Date _____ 2021

The briefing was conducted by _____ / _____ /

Form 6

**Jury Decision Record Sheet
on an abnormal situation**

Nomination _____.

Chairman of the Jury

The Jury decided on _____

We confirm our agreement with this decision.

Jury member Full name	Signature

Date _____ 2021

Chairman of the Jury _____

Recommended forms of final reporting documents for the work of the Jury
Form 1
LIST
of Championship Participants

Nomination « _____ ».

Period of conducting: _____.

Place of conducting: _____.

No.	Participant's Full Name	Position	Organization	Contacts
1.				
2.				
3.				
4.				
...				

Form 2
LIST
of Jury members

No.	Full name	Position	Organization	Contact details/e-mail	Nomination
1.					
2.					
3.					
4.					
5.					
6.					
...					

Form 3

Final Report sheet
The Jury

Date _____2021

Nomination «_____».

Period of conducting: _____.

Place conducted: _____.

No.	Participant's Full Name	Position	Task Assessment			Final score (points awarded)	Place
			Module 1	Module 2	Module N		
1.							
2.							
3.							
4.							
5.							

6.						
...						
Jury members						
1.	Full name	Position	Organization	Signature	Date	
2.	Full name	Position	Organization	Signature	Date	
...						
Chairman of the Jury:						
1.	Full name	Position	Organization	Signature	Date	

Head of organization (authorized person)

_____ / _____ /

Responsible employee:

_____ / _____ /

Form of providing the Organizer with a list of Finalists

Principal scope of Participants that will participate in the final stage of the Championship:

Item	Full Name	Position	Organization	E-mail	Contact phone	Specialty within the nomination (if applicable)	Registration mark on the Official website (yes / no)
Nomination							
Nomination							
...							

Scope of reserve Participants that will participate in the final stage of the Championship:

Item	Full Name	Position	Organization	E-mail	Contact phone	Specialty within the nomination (if applicable)	Registration mark on the Official website (yes / no)
Nomination							
...							

Head of organization (authorized person)

_____ / _____ /

Responsible employee:

_____ / _____ /