



# TECHNICAL REQUIREMENTS

## ELECTRICAL

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## GROUNDING

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## **1. SCOPE**

The present document is intended to define the technical requirements of the grounding.

## **2. REFERENCES**

The following standards, acts of law and other documents are referenced in the standards:

*Elektros įrenginių įrengimo bendrosios taisyklės, patvirtintos energetikos ministro 2012 m. vasario 3 d. įsakymu Nr. 1-22 (Žin., 2012, Nr. 18-816)*

*Skirstyklų ir pastočių elektros įrenginių įrengimo taisyklės, patvirtintos energetikos ministro 2011 m. gruodžio 15 d. įsakymu Nr. 1-303 (Žin., 2011, Nr. 165-7886)*

*Specialiųjų patalpų ir technologinių procesų elektros įrenginių įrengimo taisyklės*

**OL-TR-GR-000**

*General Requirements*

**OL-TR-ER-000**

*Electrical. General*

## **3. TERMS AND DEFINITIONS**

For terms and definition see:

**OL-TR-ER-000**

*Electrical. General*

## **4. GENERAL**

**4.1** The grounding system will be design for the safety of personnel and for the equipment protection in cases of breakdown, lightning and static charge.

**4.2** The grounding system will contain the underground ground circuit designed to satisfy the requirements of RIEU (Rules for the Installation of Electrical Units) and STR 2.01.06:2009. Buildings protection against lightning. The external buildings protection against lightning. The ground circuit conductors will be connected to rods hammered in the ground, located at certain intervals along the circuit and the network of each process zone will also be connected to the grounding system of the refinery.

**4.3** The measurements of the grounding circuit conductors will be such as indicated in RIEU (Rules for the Installation of Electrical Units), but the minimum measurements of the copper conductor used for the grounding are as shown in Table 1.

*Table 1. Minimum Measurements of the Copper Conductor*

<b>Description</b>	<b>Value</b>
Interconnections between grounding circuits	70 mm <sup>2</sup>
Basic grounding circuit	70 mm <sup>2</sup>
Equipment, panels connection to grounding circuit	35 mm <sup>2</sup>
Small devices and equipment	4 mm <sup>2</sup>

- 4.4** The grounding wire for the main grounding circuit will be of average-hard dragged wicker not insulated copper and the grounding wire for the connection of equipment grounding connectors to grounding circuit will be of soft dragged wicker copper with 600 V green-yellow insulation.
- 4.5** The following equipment will be connected to underground grounding circuit by 2 connections per each unit:
- a) Housings and control panels of all electrical equipment;
  - b) All metal ducts;
  - c) Metallic trestles surrounding electrical units;
  - d) All metallic ware and process units;
  - e) All foundations;
  - f) Metallic buildings and pipe supporters;
  - g) Tanks;
  - h) Engine frames;
  - i) Ventilation chimneys and structures;
  - j) Cable trays, ducts, ladders;
  - k) Railways.
- 4.6** All connections of the conductors performed in the underground and connections to rods hammered into the ground are to be welded using thermal method.
- 4.7** Connections to grounding electrodes, located in the manholes for inspection, and to units shall be performed by means of demountable connectors.
- 4.8** Earth resistance will be measured by means of three-electrode method, using the megohmmeter-grounding tester with two supporting grounding. The earth resistance of the whole grounding system will be measured before connection of any unit; the highest neutral wire resistance of the transformers and generators will be 2  $\Omega$  or less, of other units 10  $\Omega$  or less. When everything is connected to grounding electrode, the resistance from earth wire of each unit to the nearest grounding electrode will not be higher than 1  $\Omega$ , and the resistance of one connection will not be higher than 0,05  $\Omega$ .