

December 4, 2019

Client: Terry Mundle, RU Grounded Energy Inc.  
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Product: **Hybrid Grounding Device**



## Issue

The Hybrid Grounding Device is designed and manufactured by RU Grounded Energy Inc. was investigated to determine if it conforms with the Canadian Electrical Code Section 10 (CSA Standard 22.1-18).

## Opinion

When installed and operated according to the manufacturer's instructions in temporary oil and gas field installations, the Hybrid Grounding Device meets the intent of CSA Standard 22.1-18 as an alternative to a plate-type grounding electrode. The device is suitable for low voltage (less than 750 volts) applications only.

## Justification

The Hybrid Grounding Device was evaluated as follows:

- CSA 22.1-18 Section 10-102, 2 c) i) requires a plate electrode in direct contact with soil at not less than 600 mm below grade level
- CSA 22.1-18 Section 10-102, 5) Where a local condition such as rock or permafrost prevents a grounding electrode from being installed at the required burial depth, a lesser acceptable depth shall be permitted.
- Temporary oil and gas field sites are often dealing with frozen soil, difficult digging conditions and restrictions on ground disturbance.
- The Hybrid Grounding Device is installed on the surface, covered and packed/surrounded with acceptable local soil to provide a surface area exposed to soil of approximately 600 mm<sup>2</sup>.
- Typically, the implication for a plate to be at least 600mm below grade is to help ensure compacted soil is in contact with the plate and provide a better opportunity for favorable moisture content.
- The Hybrid Grounding Device requires soil to be compacted into/around the device and moisture is managed by adding water and covering the area. A heater is also applied in the winter to the covered arrangement to create more favorable surface and underground conditions to achieve lower ground resistance.
- Ground resistance is measured and monitored with the Hybrid Grounding Device to verify and maintain effectiveness during the activities on the worksite.

Temporary oil and gas sites present unique challenges and often require creative solutions within the intent of the applicable standards and requirements. The Hybrid Grounding Device provides a solution that meets the intent of the CSA requirements by achieving adequate surface area contact, managing moisture, and supplying heat in frozen conditions, to achieve acceptable ground resistance, which is also measured and monitored.

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