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## Energy Supply Infrastructure for the Nechit Monastery: Technical Design and Implementation

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### Abstract

This technical documentation outlines the comprehensive engineering design for the modernization and implementation of a reliable electricity supply system for the Monastic House and cell building at the Nechit Monastery, located in Borlești, Neamț County, Romania. The project addresses the necessity for upgraded energy characteristics to support the facility's 24/7 operating mode, transitioning it from domestic to non-domestic consumer status with a maximum projected power absorption of 210 kW (247.06 kVA).

The proposed technical solution involves the construction of a new 1960-meter mixed medium-voltage connection. This infrastructure includes a 60-meter Overhead Power Line (OHL/LEA) and a 1900-meter Underground Power Line (LES) utilizing NA2xS(F) 3x(1x150) mm<sup>2</sup> cabling. Central to the system is the installation of a new pole-mounted transformer substation (PTA 4 Nechit) rated at 20/0.4 kV and 250 kVA. The design meticulously details the placement of concrete pillars (type SC 15014), modular separators, and zinc oxide arresters for surge protection.

Furthermore, the documentation specifies strict adherence to Romanian technical norms (NTE, PE) and environmental regulations (GEO 195/2005). It includes detailed safety protocols, quality control measures for earthing installations with dispersion resistance below 1 ohm, and semi-direct electricity metering integrated into the AMR remote reading system. The execution plan, estimated to span five months, ensures that all materials and construction technologies comply with SREN-ISO9001/2001 standards, providing a sustainable and safe energy framework for the monastery's expansion.

**Keywords:** Electrical Infrastructure, Transformer Substation (PTA), Medium-Voltage Connection, Energy Modernization, Nechit Monastery