Metrology
Asia Pacific

Powering Mongolia's grid through metrology

International collaboration provides new tools and extends the country's electrical standards

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The Challenge

In Mongolia Law, there is a dedicated policy for metrology. It is aimed *"at establishing and developing the metrology system in the country, to develop the economy, society, science and technology, and to ensure the protection of health, environment and public interests, while reducing the technical barriers to trade."*

Within this, there is a specific need to create national measurement standards for high currents and high voltages, traceable to the international system of units (the SI). This traceability ensures measurement capabilities, and the calibrations performed on them, are recognised and can be reliably compared globally.

The MASM Solution

The electrical standard laboratory of the Mongolian Agency for Standardization and Metrology (MASM) – the country's National Measurement Institute (NMI) – maintains electrical national standards that are traceable to the SI. In addition to guaranteeing the uniformity of electrical measurement in the country, this service provides important, continuous support to industry.

The MASM is working with the metrology laboratory of the National Power Transmission Grid Company (NPTGC) as part of a joint project with Mongolia's Ministry of Energy and Germany's Physikalisch Technische Bundesanstalt (PTB).

The overall goal of this relationship is to build a metrology system that will meet the country's needs, now and into the future. Part of that involves strengthening and expanding the NPTGC lab so that it meets the requirements to become an official Designated Institute (DI), and creating new national standards for high current and high voltage.

DIs play a crucial role in the word of metrology, often bringing in expertise in metrological areas not covered by the country's NMI. To become one, NPTGC had to meet specific requirements for measurement standards, equipment, metrological traceability, personnel training, workplace and environmental conditions, calibration procedures and documentation records.

MASM provided training to NPTGC in metrology and on measurement uncertainty estimation, and advised on the development of calibration procedures, and the translation and implementation of international standards. PTB support included the provision of high-accuracy reference standards and associated training, providing technical advice, hiring a consultant for quality documentation, and sharing international experience.

The Impact

This joint project establishes NPTG's metrology lab as a Designated Institute for electrical standards. MASM will continue to maintain Mongolia's 1000 V and 100 A standards, and the DI will create new national standards for high current (10kA) and high voltage (220 kV) measurements.
This not only extends Mongolia's electrical metrology capability, it builds relationships between key organisations, and it puts uniform, accurate and reliable measurements at the heart of the power grid.

Customer quote

"The collaboration between MASM, the Ministry of Energy, and PTB is of great importance as it increases the capacity and raises the status of our organization. Thanks to this work, our organization will be able to create a new national standard in the energy sector."

– -Mr. Khosbayar-Head of Metrology laboratory, NPTGC