

# GRID IMPEDANCE METER

*NIM 1000 is a versatile device: it measures the current capacity under real-life conditions, determines the voltage dip resulting from a given load, and performs tests on cables, power supply lines, and bus-bars. Those tests help determine the correct dimensioning of the installations, ensure a consistently good power quality, and prevent downtimes.*



**S**ebaKMT, Megger's newly acquired company and a global leader in the manufacture of measuring equipment for cable fault location and pipe leak detection, showcased its new NIM 1000 grid impedance meter at this year's Hannover Messe International on April 8, 2013.

## MEASURES THE LOOP IMPEDANCE

With up to 1kA test current, the NIM 1000 measures the loop impedance to detect malfunctions in LV grids at an early stage. The impedance meter triggers load-sensitive and neutral faults, detects weak contacts, and exposes hidden flaws. Depending on the grounding conditions of the tested grid, a multi-phase measurement calculates the impedance of the neutral conductor to detect defects that can cause severe safety issues.

Jürgen Müller, SebaKMT's R&D Manager COE Tools, said, "The LV grid has experienced a dramatic change over the past few years. The modern LV grid is no longer restricted to the top-down distribution path, but plays an increasingly strategic role in the smart grid. With the exhaustion of LV grid capacity reserves and increasingly critical grid outages, many of our customers have both questions and concerns about the grid impedance. To address those concerns, we have developed a smart impedance meter: the NIM 1000."

## RELIABLE EVALUATION OF THE POWER GRID

The collected data provide a comprehensive and reliable evaluation of the power grid in terms of current load capacity and voltage fluctuations under load.


For reliable absorption and transmission of decentrally generated energy, the grid impedance must be low. Impedance is a complex

variable consisting of ohmic and inductive components. Feeders (e.g. photovoltaic systems) and converters cause impedance fluctuations because of their control behavior and way of operation. Converters, for instance, generate strong harmonic frequencies that can carry a higher energy than the base frequency of 50 or 60 Hz respectively. Harmonic currents add to the base frequency current, significantly elevating the load of the power system. Measurements based solely on the base frequency give no precise indication of how the network performs under load. For this reason, the NIM 1000 measures the complex impedance up to the 10th harmonic frequency.

The NIM 1000 is connected to the LV grid by fused test leads that also supply the impedance meter with power. Single measurements, multiple measurements with averaging, and automatic long-term measurements are possible.

## PREVENT POWER OUTAGES

NIM 1000 helps prevent power outages that can lead to a variety of problems. SebaKMT's new grid impedance meter makes a significant contribution to the availability and safety of the LV grid, especially in areas with photo voltaic LV feeds. The ZVEI (German Central Association of the Electrical Engineering and Electronics Industry) and several other international associations recommend analysing the impact of harmonics on neutral conductors in particular.

With its simple operation, handy size, and bright color display, NIM 1000 is a user-friendly device, developed specifically for the needs of LV utilities and their testing technicians who work in today's demanding and competitive market conditions. 

*For further information, please email [ausales@megger.com](mailto:ausales@megger.com) or visit [www.megger.com](http://www.megger.com)*