

## PQI now includes Transformer Performance Meters™ on all Ultra-Efficient e-Rated® Transformers

Type TM Integrated Performance Meters™ are installed on all PQI **e-Rated™** Distribution Class Transformers. In addition to their revenue class metering and data logging capabilities, these integrated meters, with CSA C802.5 compliant software, determine each transformer's Total Losses and Energy Efficiency under their measured nonlinear loading profiles.

In addition, PQI's IEEE Std. C57.110 compliant software also determines each transformer's No-Load Losses and Load Losses, including its nonlinear 'Penalty Loss' component, and EPA Environmental Benefits. In its 'Transformer Comparison mode', given the cost of each transformer and the cost of energy, the software will compare the performance of any two transformers, including A/C costs, and calculate an annual saving, payback and return-on-investment, in a 'substitution' or a 'before end-of-life replacement' scenario.

These best-in-class multifunction power and energy meters may also be used as data gathering devices for intelligent electrical distribution or plant automation systems. All monitored data is available via a digital RS485 communication port running Modbus RTU and DNP 3.0 protocols.

Additional communication options include Ethernet, Profibus DP, and BACnet. With its flexible, modular I/O and communication options, the Type TM metering system is the most versatile and cost-effective solution available. With these capabilities, the Type TM Integrated Performance Meter is LEED® Qualified for EA Credit Points.



Multi-Platform Access



Additional Communication Options



Ultra-Efficient-e-Rated Transform with Integrated Type TPM Transformer Performance Meter™

efficient transformers. Using the proposed CSL 3, 4 and 5 efficiency levels as targets, we concluded that CSL 3 & 4 efficiencies were achievable, at a cost that could be justified on the basis of return-on-investment and payback, if the transformer was 'right sized' for a more demanding loading profile. We also discovered that our harmonic mitigating transformers, with CSL 3 efficiencies, would exceed NEMA TP 1 requirements, under the nonlinear loading profiles for which they were designed.



Dry-Type Power TransFilter™

### US DOE 2016 Transformer Efficiency Requirements

For those who may not be aware, on April 18, 2013, the United States Department of Energy (US DOE) released its Final Rule regarding minimum efficiency requirements for Medium and Low Voltage Class, Dry Type Power and Distribution Transformers. These requirements may be found on page 694, Section §431.196 (a)(2), in their Code of Federal Regulations, Title 10, Energy. The effective date of this rule was June 17, 2013. Compliance with the new standard was required as of January 1, 2016.

What exactly did this mean for the transformer industry? In summary, it meant that the former NEMA TP 1-2002 standard for transformer efficiency would remain in effect until December 31, 2015. However, on January 1, 2016, the higher US DOE 2016 minimum efficiency requirements would go into effect, requiring all transformer manufacturers to meet or exceed the new minimum levels.

### Pqi's Z3, Z3+ & Z4 Efficiencies Exceed US DOE 2016

Although the new U.S. DOE 2016 efficiency requirements are significantly higher than NEMA TP 1, they do not meet their Candidate Standard Level (CSL) 3, 4 or 5 efficiencies, which they proposed in 2004.

Understanding the benefits of higher efficiency and anticipating the requirement for higher efficiencies in the future, in 2007 Pqi prioritized the development of more

Pqi has been offering its ultra-efficient **e-Rated®** Power and Distribution Class Transformers for nearly a decade. Our Z3 efficiency levels meet or exceed the US. DOE CSL 3 and US DOE 2016 requirements. To optimize ROI and payback opportunities, we also offer Z3+ efficiencies, which are between CSL 3 & 4 requirements and Z4 efficiencies, which meet or exceed CSL 4. These levels are unprecedented in the industry.

The attached table, entitled NEMA TP1 / DOE 2016 vs. Pqi **e-Rated®**, details the energy efficiencies by classification, for each standard kVA rating.

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