



## OPAL™ Series - Low Voltage Transformers



### OPAL™ OPTIMIZED PERFORMANCE FOR THE APPLICATION LOAD

To achieve 25-50% more savings than the DOE 2016 requirement, Powersmiths' developed and implemented a design best practice called OPAL™ - Optimized Performance for the Application Load. Recognizing that the transformer has much more impact in an electrical system than just efficiency, OPAL considers the system as a whole, including managing impedance, arc flash, fault level, inrush, harmonics, and more. OPAL™ is possible thanks to the tight feedback loop between design, onsite manufacturing, & extensive ongoing real world operating performance verification. The result is more savings for the same dollar.

### Expandable kVA selection enables right-sizing

Powersmiths enables right-sizing of electrical infrastructure by offering a much broader selection of transformer kVA sizes. The capital cost, operating cost and footprint reductions can be dramatic – on the order of 30-50%, through smaller transformers, breakers, conductors, and distribution panels.

### Guaranteed Performance over 32 years

Powersmiths guarantees that every transformer we manufacture meets our published technical data, and furthermore, that this performance is met over the full term of the **32-year pro-rated warranty**.

### K-Rating requirement

Many general-purpose transformers are purchased & installed because they have the lowest first cost, however, they carry a UL label on the basis of feeding only linear loads. Since most connected loads today are electronic with nonlinear profiles, a low-voltage transformer needs to be K-rated to have a valid UL listing for most applications. E-Savers are appropriately K-rated.

### Environmental / Green Building / LEED® / Net Zero

By going meaningfully beyond the DOE 2016 baseline efficiency, the E-Saver™ contributes to green building, LEED®, Net Zero and carbon footprint reduction goals. Additional benefits include our ISO14001 certified manufacturing, integrated metering and ability to integrate with the Powersmiths WOW™ Sustainability Management Platform.

### Metering & Arc Flash options

Integrated metering can provide information about capacity utilization, load profiles, power quality and energy use. The lockable hinged door and our patented 360° Rotatable IR Port™ options, both provide quicker maintenance access and reduce arc flash safety risks.

### Other Features & Options

Low Noise

Electrostatic Shield comes standard, dual and triple also available

Type 3R, Stainless Steel, Rotatable IR Ports, Hinged Doors & SPDs available





## E-SAVER OPAL™ Series - Low Voltage - High Efficiency Transformers

### E-SAVER APPLICATION & KEY ADVANTAGES

The E-SAVER OPAL™ Series is a family of ultra-efficient dry-type isolation transformers that has been optimized for different application load profiles, to maximize energy savings and ensure electrical system compatibility. These energy optimized units are perfect for Net Zero, LEED® and High Performing Buildings.

## T1000 OPAL™ Series - Low Voltage – Harmonic Mitigating Transformers (HMT)

### HMT APPLICATION & KEY ADVANTAGES

The OPAL™ Series T1000-30H™ model is an ultra-efficient dry-type low-voltage harmonic mitigating isolation transformer that delivers an average of 30% less losses than a comparable U.S. DOE 2016 transformer, under a heavy harmonic-rich load. T1000-30H is optimized to reduce voltage distortion in harmonic-rich environments.

OPAL-T1000™ transformers treat the 3rd harmonic through secondary flux cancellation and reduce fundamental current imbalance. Unlike delta-wye transformers, OPAL-T1000 windings are configured such that 3rd and other zero sequence currents in the transformer do not couple into the primary winding. 5th and 7th harmonics are treated on a system basis at the common point upstream, by alternating phase-shifted models.

### E-SAVER OPAL MODEL COMPARISON MATRIX <sup>2</sup>

Model	Optimized Load Range	Saving beyond DOE 2016 *	Temp. Rise	Winding Material ***	Continuous Overload Capacity	K-Rating ** /****	Applications
E-Saver-33L	0-25%	33%	<130°C	CU	5%	K7	Most Applications - office, education, healthcare, most other institutional, commercial (light load feeding electronic equipment).
E-Saver-20M	0-100%	20%	<115°C	CU	15%	K1, K9, K13	Where equipment or process loading varies widely, or where the load is expected to change significantly over time.
E-Saver-25H	75-100%	25%	<105°C	CU/AL CU opt.	20%	K13	Dedicated equipment (fans, pumps, elevators, etc.), labs, broadcast, datacenter, industrial where loading is significant.
T1000-30H	50-100%	30%	<105°C	CU	20%	K20	Harmonic Mitigation Transformer - for heavy, harmonic-rich loads, high densities of electronic equipment, where voltage distortion could become excessive.
E-Saver-35H	75-100%	35%	<80°C	CU/AL CU opt.	33%	K20	Heavy loading for extended hours, and need for lower losses & operating costs, overload capacity, faster payback if high energy rate.
E-Saver-50H	75-100%	50%	<65°C	CU	50%	K30	For Special Applications close to full continuous load, where full load losses & heat output must be minimized, significant overload capacity.
E-Saver-S0L	0-100%	30%	<105°C	CU/AL CU opt.	20%	K20 (but not required for app)	Solar Applications - to avoid solar production waste - minimize transformer idling and full load losses, continuous overload capacity for longer life.

### Conformity to Standards

Quality: ISO 9001  
 Environment: ISO 14001  
 Efficiency Test Lab: ISO 17025  
 UL and CSA  
 Production Integrated Nonlinear Load Test Program  
 IPMVP Compliant Field Measurement  
 Certified Test Lab Load Profile Test Reports

