POWERSMITHS

OPAL™ – EV Series

HIGH PERFORMANCE TRANSFORMERS OPTIMIZED FOR ELECTRIC VEHICLE CHARGING APPLICATIONS, WITH A POTENTIAL TO FACILITATE 15% FASTER CHARGING

OPAL-EV model with Input Breaker Option

APPLICATION

The OPAL™ - EV Series (Models 240V & 208V) are ultra-efficient low-voltage dry-type isolation transformers optimized specifically for feeding Level 2 Electric Vehicle (EV) Charger applications, where loading varies from many hours of idling, to periods of heavy demand.

KEY PERFORMANCE CHARACTERISTICS

The OPAL-EV design delivers top performance for EV Charger applications. Features include from minimizing idling losses when there are no cars charging, to leading efficiency under heavy charging load, as well as the rapidly fluctuating loads in between. Powersmiths leverages its design best practice called OPAL - Optimized Performance for the Application Load, which in addition to efficiency optimization, considers the system as a whole, including load profile, impedance, arc flash, fault level, inrush, harmonics, and more. One of the achievements is very quiet operation – which can be an important consideration. Verified Performance is achieved by tight feedback loop between design, onsite manufacturing, and extensive real-world testing.

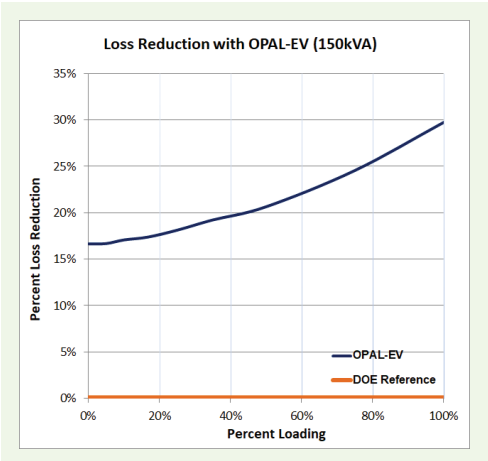
NET ZERO & LEED® CONTRIBUTIONS

OPAL-EV Series transformers makes several meaningful contributions to both Net Zero Energy and LEED objectives. These buildings benefit from choosing OPAL-EV transformers that deliver:

- Significantly lower operating losses. Compared to industry standard transformers, OPAL-EV reduces losses15-30% (depending on operating conditions), helping to drive down building energy consumption, resulting in reduced renewable energy offset requirements.
- Integrated energy metering/logging options. Since the EV energy is used offsite, this option enables EV Charger energy use to be subtracted from the overall NET ZERO energy building calculation. Tracking this translates into a smaller required capacity and lower cost of renewables to meet Net Zero.

POWERSMITHS WOW™ Sustainability Management Platform

The WOW platform is a natural fit with the OPAL-EV as WOW's education and outreach component combines animations and other visuals with real-time data showing the contribution of the Electric Vehicles to the sustainability objectives of the organization. For more information see Powersmiths WOW™ product information or contact us.



MODEL ADVANTAGES

OPAL-EV 240V

Dedicated transformer for feeding charging stations, with potential for 15% faster charging. The OPAL-EV 240V model is optimized for applications where there is a dedicated transformer feeding multiple EV Charging Stations. The 15% faster charging time is a result of feeding the many current-limited (30A) 'Level 2' chargers at 240V instead of 208V.

This opportunity exists because charging station manufacturers build a single product to be compatible with both residential (240V) and non-residential (typically 208V) installations. For non-residential applications, the traditional distribution transformer is 3-phase 480V input, 208/120V output throughout the building, so using the same 208/120V model for the charging station is the typical design approach.

With the OPAL-EV 240V model, the charging stations are fed at 240V instead of the typical 208V. Since the same amps at higher voltage delivers proportionally more power, this secures a faster charging time for current limited chargers.

Even if none of the 'Level 2' charging stations are current limited, the load compatibility and the ongoing OPAL-EV energy savings are always there.

OPAL-EV 208V

Transformer for feeding mixed load applications (feeding EV charging stations + other loads). In some applications, typically those with fewer charging stations, the transformer that feeds the charging stations also feeds other loads. Since these other loads will typically be a combination of 120V and 208V equipment, the OPAL-EV 208V model matches this application requirement by providing a 208/120V output, while significantly reducing losses associated with feeding the fluctuating mixed load profile

INTEGRATED OPTIONS

Powersmiths offers many integrated options, all with Arc Flash safety in mind, such as lockable hinged doors, integrated metering and meter ports to provide information about capacity utilization, load profiles, power and energy use, and a patented Rotatable IR Port™ to enable safe, quick, cost-effective and non-invasive thermal imaging of the live transformer.

KEY FEATURES

- Minimizes building energy waste
- Reduces renewable energy requirement in Net Zero projects
- Optional EV charger energy tracking
- Potential for 15% faster charging with OPAL - EV 240V*
- Low lifecycle cost
- Performance guarantee – 32 Years

*See 'Model Advantages - OPAL-EV 240V'

[1] U.S. Department of Energy, 10 CFR Part 431, [Docket No. EERE-2010-BT-STD-0048] Energy Conservation Program: Energy Conservation Standards for Distribution Transformers; Final Rule, April 18, 2013

TECHNICAL SPECIFICATIONS

OPAL-EV is a dry-type isolation transformer with a common-core, 10kV BIL, 200% rated neutral, built to NEMA ST-20, UL1561 and other applicable ANSI and IEEE standards, and is cULus Listed and CSA Efficiency Verified. OPAL-EV models come standard in a NEMA 1 ventilated, drip-proof, indoor, steel enclosure finished with polyester powder coating for durability and low environmental impact. Other enclosures options are available. Both primary and secondary terminals and voltage taps (typically six 2.5%) are readily accessible by removing the front enclosure panel. OPAL-EV is UL Listed for 2" clearance for ventilated openings – a significant improvement over the typical industry 6" limit. OPAL-EV's 220°C class insulation system is NOMEX-based with an Epoxy Co-polymer impregnate with technical performance characteristics that embed lower environmental impact, long-term reliability and long-life expectancy.

Low Noise: Keeping audible noise at a minimum is key, yet NEMA ST20 only calls for a type test, not a production test, so transformers on your project may be noisy. NEMA ST-20 also allows K13 transformers to be even noisier. Powersmiths builds 3dB quieter than NEMA standard values, and 6dB quieter than the K13+ allowance. Furthermore, every unit is tested to ensure quiet operation. For very sensitive environments, an additional 2dB lower noise option is available.

Charge EVs using 'Level 2' chargers up to 15% faster with OPAL-EV 240V

The OPAL-EV delivers typically operational savings of 25% compared to a DOE 2016 transformer.

OPAL-EV has a delta-wye configuration, copper primary-aluminum secondary windings and comes with a K13 rating and low 105°C temperature rise.

SUSTAINABILITY, CERTIFICATIONS & TESTING

Sustainable design is evident in the substantial reduction in energy losses compared to legislation, backed by our ISO 14001 certified Environmental Management System superior epoxy co-polymer impregnate with lower emissions during manufacturing and longer life, and innovative recyclable product packaging. Our pursuit of excellence is shown in our manufacturing quality (ISO 9001), and ISO 17025 Efficiency Test Lab Certification.

32-YEAR PERFORMANCE GUARANTEE

EFFICIENCY & LOSSES: Powersmiths guarantees that ALL units meet or exceed the performance levels listed in their technical data sheets for 32-years.
SEISMIC: Powersmiths warrants the unit will remain functional after a seismic event up to rated severity.

ORDERING INFORMATION

OPAL PRODUCT NAME - kVA - PV - SV - OPT

- OPAL PRODUCT NAME: ESAVER-25V
- kVA: kVA Rating Unit (10-1000 kVA)
- PV: Primary Voltage Input (Up to 600V)
- SV: Model: 240V or 208V
- OPT: Options if Applicable (See Available Options)

TECHNICAL DATA

kVA	Audible Noise	33L, 20M, 25H Model Weight Range (lbs)	Standard Case Size (in)
15	42 dB	260-340	17.5W x 17D x 27.5H
20	42 dB	300-380	25.5W x 18D x 30H
25	42 dB	340-420	25.5W x 18D x 30H
30	42 dB	380-470	25.5W x 18D x 30H
45	42 dB	490-590	25.5W x 18D x 30H
50	42 dB	540-600	31.5W x 21.5D x 40H
63	47 dB	600-720	31.5W x 21.5D x 40H
75	47 dB	650-800	31.5W x 21.5D x 40H
100	47 dB	800-900	31.5W x 21.5D x 40H
112	47 dB	900-1000	31.5W x 21.5D x 40H
125	47 dB	1050-1150	37.5W x 26.5D x 48H
150	47 dB	1170-1300	37.5W x 26.5D x 48H
175	52 dB	1260-1450	37.5W x 26.5D x 48H
200	52 dB	1375-1550	37.5W x 26.5D x 48H
225	52 dB	1500-1700	37.5W x 31.5D x 52H
250	52 dB	1650-1850	37.5W x 31.5D x 52H
300	52 dB	1850-2000	37.5W x 31.5D x 52H
400	57 dB	2150-2350	51.5W x 38D x 61H
450	57 dB	2400-2650	51.5W x 38D x 61H
500	59 dB	2800-3000	51.5W x 38D x 61H
600	59 dB	3500-3800	64W x 47D x 67H
750	61 dB	4000-4300	64W x 47D x 67H
850	61 dB	4300-4850	64W x 47D x 67H
1000	61 dB	4800-5500	64W x 53D x 67H

AVAILABLE OPTIONS

Metering: Express Logger™, SMART™ or Cyberhawk TX™ (See product cut sheets for more info)
N3R: NEMA 3R, ventilated enclosure
N2S: Indoor sprinkler proof enclosure
OSEC: Enclosure for outdoor public areas
OV: Enclosure for outdoor secure areas
IRP: Rotatable IR Port™
HD: Hinged Door
1S: Single electrostatic shield
2S: Dual electrostatic shields
3S: Triple electrostatic shields
SPD: (120/208 V OR 277/480V)
- **PRO80:** 80kA, 7 mode, Filter
- **PRO120:** 120kA, 7 mode, Filter
- **PRO200:** 200kA, 7 mode, Filter
- **PRO240:** 240kA, 7 mode Filter
- **PROXX:** Where XX is custom ID

LKS: Lug kit, screw-type
LKC: Lug kit, compression type
LI: Low inrush
COL: Custom color
TS: Thermal sensors at 170°C and 200°C
SE: Sensitive environment, extra low noise
SB: Seismic bracing
(Contact Powersmiths for seismic certification details)

IMP: Custom Impedance
RTR: Routine Test Report
2016TR: DOE 2016 Test Report
CU: Copper windings

NOTE: The above data applies to the standard configuration of each kVA. Selection of some options may change enclosure size and/or transformer weight. Consult factory for detailed product data sheet for these and other configurations. Efficiencies tested according to U.S. Dept. of Energy's 10 CFR Part 431, a linear load test at 35% of nameplate capacity.

Technical specifications subject to change without notice.

POWERSMITHS

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