

# Three-Phase VFI Padmount Transformers



Double Duty in a Single Package

**COOPER** Power Systems

# The Compact, Lower-Cost, Versatile Solution to Power Distribution

## Save Money. Save Space.

The Three-Phase VFI Padmount Transformer from Cooper Power Systems does everything a conventional transformer/switchgear package does — and, as you'll soon find out, does it better — in one money-saving, space-saving cabinet.

## The Right Choice.

Combining the Kyle® Vacuum Fault Interrupter (VFI) and a Cooper padmount transformer is the perfect alternative to traditional transformer/switchgear packages. And it's the superior choice for applications where conventional equipment doesn't provide adequate protection or coordination, where aesthetics are particularly important, or where space is at a premium.

Because there's only one piece of equipment, as little as half the space of a conventional set-up is required — and it makes installation simpler, less expensive, and more pleasing to the eye. And one piece of equipment means that costs associated with operation and maintenance are reduced.

But the benefits go beyond just saving money and space. System reliability is also improved with outstanding protection against faults or abnormal currents. And because trip settings are simple to modify in the field, changes in load and fault conditions are accommodated easily.

## Cost-Efficient. Compact. Convenient.

Whether indoor or outdoor, the compact Three-Phase VFI Padmount Transformer from Cooper Power Systems provides superior protection, coordination, and flexibility.

Unconventional? Maybe. But that's what innovation is all about.



Combining VFI switchgear and a transformer in a single enclosure is more aesthetically pleasing in a residential setting.



# The Cost of Delivering Electricity the "Old Fashioned" Way

You know the components that make up a conventional large padmount transformer installation: a transformer and a separate piece of switchgear. You might also figure that both pieces cost about as much as a single Cooper VFI Padmount Transformer. But here's something else you may want to keep in mind: the purchase price of any equipment is just the beginning of its true life-cycle cost.

Just think about it: the total costs incurred by buying a transformer and switchgear separately — including warehousing, transporting, installing, maintaining and retiring — far outweigh any "deal" you may think you might be getting at the time of their purchase.

Sure, a transformer and separate switchgear might be the conventional solution to power distribution ... but if you think it's the cost-effective solution, better think again.



A "traditional" transformer/switchgear combination.

Using a separate transformer and switchgear requires extra elbows, cabling, fault indicators, concrete and grounding. Many other total life-cycle costs can also increase, including:

#### Purchasing

- Specification
- Ordering
- Receiving
- Accounting

#### Warehousing

- Unloading & Stocking
- Burden
- Staging & Kitting
- Carrying Costs

#### Transportation

- Loading
- Delivery
- Unloading on Site

#### Installation

- Engineering & Design
- Site Preparation
- Installation & Testing

#### Operation

- Service
- Maintenance
- Repair

#### Retirement

- Disconnection
- Removal
- Disposal



# Cooper's Three-Phase VFI Padmount Transformer

## It's a Perfect Fit.

Whether your application is residential, commercial or industrial, a Three-Phase VFI Padmount Transformer from Cooper fits right in, wherever conventional loop-protection packages are inadequate, or real estate is at a premium. It's the ideal choice for applications requiring:

- Large kVA pads: where the full load current is greater than 120 amps, too high for Bay-O-Net™ fuses
  - \* Larger than 2,500 kVA at 12,470 volts
  - \* Larger than 750 kVA at 4,160 volts
- Loop protection — breaking a URD loop into smaller lengths to improve reliability
- Limited spaces: where a separate transformer and switchgear aren't feasible
- Gang trip — where all three phases should be tripped simultaneously to protect three-phase power equipment
- Single-phase trips for single-phase loads — limiting outage scope in large residential areas
- 35 kV three-wire sub-transmission: where voltages are too high for Bay-O-Net fusing
- Remote control of the transformer
- Auxiliary trip: where the transformer can be automatically tripped in response to operating problems, including secondary ground faults, high fluid temperature or low fluid level, or any other user-defined parameter.

A VFI Transformer provides protection and transformation in a single, space-saving package.



Large kVA VFI Transformer with gang trip to protect industrial equipment from single phasing.

## What Does Your Specific Application Need?

Cooper's Three-Phase VFI Transformer is a flexible solution to many distribution problems. Let us know your ideas.

The Three-Phase VFI Transformer with transformer protection not only protects the transformer, it provides proper coordination with upstream protective devices. When a transformer fault or overload condition occurs, the VFI breaker trips and isolates the transformer, leaving the distribution line uninterrupted (see Schematic A).

The VFI Transformer with loop protection protects the transformer from a downstream cable fault. When a fault occurs downstream, the VFI breaker trips and isolates the fault; the transformer load remains uninterrupted (see Schematic B).

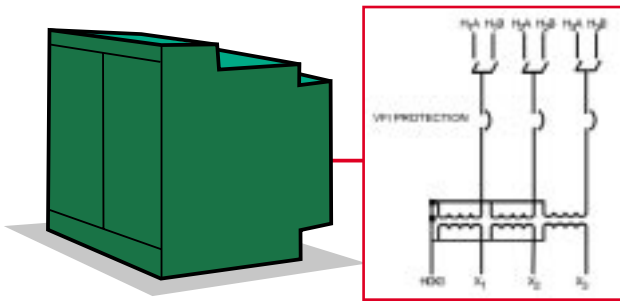
Simply put: a Cooper Three-Phase VFI Padmount Transformer makes technological — and practical — sense.



Step-down VFI Transformer with single-phase trip for outgoing residential feeder protection to limit outage scope.

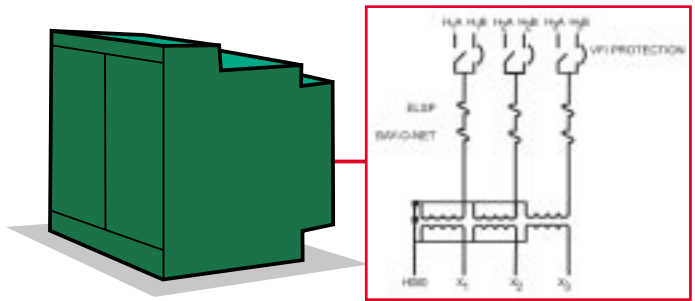
### Schematic A:

Three-Phase VFI Transformer with transformer protection



### Schematic B:

Three-Phase VFI Transformer with loop protection



## Take Advantage of These Advantages.

- Reduced space requirements — one product, one pad, less cable, fewer elbows, fewer arresters
- Resettable fault protection eliminates the need for fuses; reduces outage time
- Better performance than possible with fuses
- No single phasing of three-phase loads and associated ferroresonance problems
- Single-phase or three-phase trip, depending on load requirements
- Breaker can be used as loadbreak or sectionalizing switch
- Easier to locate faults and sectionalize them
- Safe, dead-front construction
- Aesthetically more pleasing
- Easier to coordinate with other protective devices
- Lower installed cost than transformer plus separate switchgear

## Superior Performance Expect it from Our Products ...and Our People.

### Product Scope

- kVA range: through 10,000
- Primary voltage: through 35kV (150 kV BIL)
- Secondary voltage: 208Y/120 - 24,940Y/14,400
- VFI rating: 600 A continuous; 12,000 A RMS interrupting
- TCC curves for the Tri-Phase control can approximate either an S & C "E" fuse, a McGraw Edison® "K" or "T" link fuse, or resemble a recloser or relay curve
- R-Temp® fluid for indoor and restricted outdoor applications (optional)
- Envirotemp® FR3™ seed oil-based fire-resistant dielectric fluid (optional)
- Motor operator for SCADA control (optional)
- Tri-Phase Ground (TPG) Trip Control (optional)
- SCADA accessory (optional)

### How To Specify

"Transformer shall be a Cooper Power Systems liquid-filled transformer designed in accordance with the requirements of ANSI C57.12.00. The overcurrent protection shall be provided with a Kyle® Vacuum Fault Interrupter (VFI) integral to the transformer tank. The VFI electronic breaker shall have a maximum interrupting rating of 12,000 amps RMS symmetrical with resettable fault protection up through 35kV."

Cooper Power Systems manufactures a wide range of high-quality medium voltage electrical equipment, components and systems that help bring electric power to homes, industries, businesses and institutions throughout the world. With our strong customer focus, superior products, controls and systems applications expertise, nobody does a better job than Cooper Power Systems of supporting your ability to profitably supply your customer with clean, reliable power.



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P.O. Box 1640, Waukesha, WI 53187  
Bulletin No. 02039 (12/02); New Issue  
PRINTED IN USA