



# UNCLAD<sup>®</sup> Transformers

utility | industrial | commercial

*Our Premium Encapsulated Dry Type Transformer.  
The superior choice to traditional cast coil.*

Individual solutions | from a global perspective.



VIRGINIA TRANSFORMER CORP

[www.vatransformer.com](http://www.vatransformer.com)



What you need. Where you need it. When you need it.

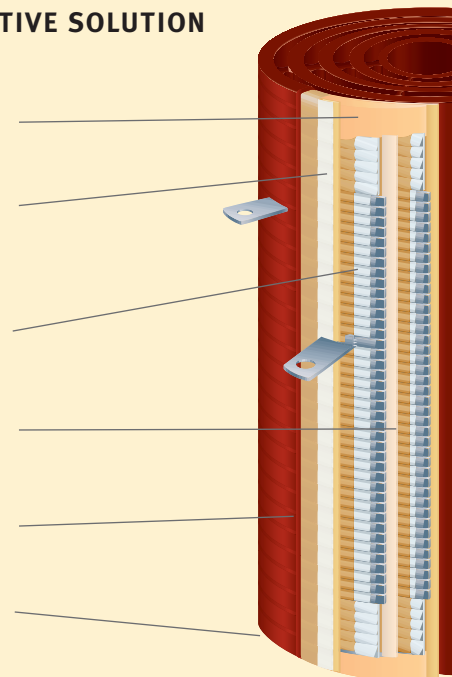
### UNICLAD: DESIGN INTEGRITY, EVEN IN TOUGH ENVIRONMENTS

Since 1983 Virginia Transformer Corp (VTC) has offered a superior encapsulated dry type transformer that withstands the toughest environments. We call it UNICLAD®. Our customers know it as the system that offers unmatched design integrity and strength compared to traditional cast coil products. UNICLAD is simply the best choice for your applications with high humidity, contaminated conditions, short-circuit loading and impact loading. And you'll spend less for UNICLAD than a conventional unit because we design exactly the transformer you need. With VTC, you never have to overbuy simply because what you need isn't standard.

VTC unveiled UNICLAD in the early 1980s to address the growing need for a product that could outperform traditional systems. Standard cast coil construction can withstand short-circuit forces, but its brittle epoxy construction is prone to cracking from thermal, mechanical and electrical forces. This cracking allows moisture and corrosion to attack the coil causing failure. Our UNICLAD coils withstand thermal cycling forces, short-circuit shock and operating core vibration without cracking, thanks to our unique encapsulation and sealing process. We completely seal UNICLAD coils with a 220°C-rated, flexible polyester varnish applied under vacuum and pressure.

### UNICLAD: THE COST-EFFECTIVE SOLUTION

- Epoxy sealed coil (top and bottom, does not contact the conductor)
- A flexible insulation system allow coils to withstand mechanical and thermal shock without compromising coil protection
- NOMEX® 220°C insulation system for turn and layer protection
- Vacuum processed coils reduce operating temperature and corona level
- A tough cladding skin assures reliable operation for contaminated and humid environments
- Circular coils for short circuit protection



NOMEX® is a DuPont registered trademark  
UNICLAD® is a registered trademark of Virginia Transformer Corp

This tough, flexible cladding material is also highly chemical and moisture resistant. Besides our vacuum sealing process, VTC uses NOMEX on UNICLAD coils to ensure flexibility of the insulation system and the highest thermal rating for the longest life. UNICLAD can even withstand total water immersion for 24 hours with no change in seal integrity.

### BETTER DESIGN MEANS LONGER UNIT LIFE

By filling the coils with low-viscosity 100% solid polyester varnish under vacuum and pressure, VTC also assures void-free coils. UNICLAD coils exhibit very low partial discharge levels, which means longer life, a reduction in the possibility of internal dielectric failure, and partial discharge-free operations maintained for the life of the transformer. We seal coil ends using an evacuated resin system formulated to match the coefficient of thermal expansion of the coil.

UNICLAD's 220°C insulation system and 115°C temperature rise design provides a continuous overload capability of approximately 15%. Even under overload conditions UNICLAD will maintain temperatures within the insulation rating. The solid filling of our coils improves thermal conductivity, allowing the coils to run cooler and resulting in longer unit life. On average, the life expectancy of a UNICLAD is 40 years at a constant rated load, subject to proper application, protection, maintenance and duty cycle.

### UNICLAD'S CUSTOM DESIGNS SAVE MONEY

VTC custom designs all UNICLAD units, resulting in significant dollar savings to you. We simply don't believe in forcing customers to choose from



### UNICLAD FEATURES

- Circular design above 750 KVA
- Copper conductor – aluminum available
- 115°C rise – 80°C rise optional
- 220°C insulation class
- Distribution class KV BIL ratings
- Sealed winding utilizing UNICLAD construction



pre-determined molds, designs, or specifications. Such one-size-fits-all product offerings often force customers to "size-up" their unit, wasting money and taking up extra space at their site. With UNICLAD, you'll pay only for what you need. And you can expect delivery of your UNICLAD system in about half the time needed for standard cast coil units thanks to our commitment to global sourcing.

### UNICLAD: THE PREMIUM ENCAPSULATED DRY-TYPE TRANSFORMER

- Epoxy sealed coil (top and bottom) – evacuated resin system formulated to match the coefficient of thermal expansion of the coil.
- Flexible, polyester insulation system allows coils to withstand mechanical and thermal shocks.
- UL listed 220°C rated insulation system for turn and layer protection.
- Vacuum and pressure processed coils reduce operating temperature and corona level.
- Tough, flexible polyester cladding assures reliable operation in contaminated and humid environments.
- Circular coil construction for best short-circuit and impact-loading strength.

## UNICLAD VS. CAST COIL: THE CHOICE IS CLEAR

VTC developed UNICLAD to operate under demanding applications in increasingly harsh environments. Because it is designed to withstand industrial fumes and vapors, fibrous and particle contamination, high temperature and humidity, short circuit forces, and electrical voltage impulses, UNICLAD is the cost effective alternative to liquid filled or cast coil transformers. Uniclاد. For power, rectifier, drive isolation and generator exciters up to 15,000 KVA, 35 KV class.

### WHY HAVE CAST RESIN WHEN YOU CAN HAVE UNICLAD?

| Desired Features                                | UNICLAD   | Cast Coil   |
|---|---|---|
| High Thermal Rating                             | Excellent – 220°C   | Acceptable – 150°-185°C   |
| Overload Capability                             | Very good – 15% overload without fans   | Limited – Fans necessary for overloading  |
| Seal Integrity                                  | Yes – Flexible insulation and cladding system eliminate coil cracking   | No – Cracking of coils because of rigid casting and high thermal coefficient of expansion of epoxy  |
| Void-Free Coil                                  | Void density is low because of low varnish viscosity and vacuum/pressure process  | Void density is higher because of high viscosity of epoxy resin   |
| Superior Short Circuit Test Performance         | Yes – Performed with 0% impedance change in a 4-second duration test, which is 60 times longer than required per ANSI standards   | No – Passes standard ANSI test of 4 tests of 4 cycles (60 hz.) each, with less than 2% impedance change   |
| High Percent Tensile Elongation of Coil Filling | >20%  | <5%   |
| Flexible Designs                                | Yes – All UNICLAD units are designed to customer specifications   | No – Must choose from existing molds  |
| Design Tested                                   | <ul style="list-style-type: none"> <li>• 100% humidity 48 hrs.</li> <li>• Water submersion 24 hrs.</li> <li>• Internal/external are self-extinguishing</li> <li>• Vibration shock 30G</li> <li>• Thermal shock</li> </ul> | Not available   |
| Quick Delivery                                  | Yes – Typically 10-12 weeks   |   |
| Strong Warranty                                 | Yes – 3 years   | No – Up to 26 weeks   |
| Competitive Pricing                             | Yes – Never need to "up-size"; UNICLAD units designed exactly for customer application  | Limited – Typically 12 months<br><br>Sometimes – Choosing from pre-set molds can result in a 10-15% premium because any nonstandard designs may force customer to order larger size unit than actually needed |



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