An Engineering Company
Manufacturing Transformers

The Commitment Company

VIRGINIA TRANSFORMER CORP
History

Virginia Transformer Corp has been manufacturing custom designed power transformers since 1971. VTC got its start providing power transformers for the underground mining industry in the Appalachian Mountains. These liquid and dry type units were custom designed to meet a low profile construction in a high temperature environment.

VTC evolved into a custom solution provider to drive isolation for steel and mining and subway traction applications. In addition to industrial and commercial applications, VTC provided units for underground nuclear testing and particle accelerator and wind tunnels for NASA.

Thus, from its beginning VTC has been an engineering based company providing solutions for power transformers. The available oil designs were perfected in the 80’s, the design process was automated in the early 1980’s, dry type transformer cooling and insulation systems were perfected in the mid 80’s, the LTC designs were developed in the late 80’s. Air core and Iron core reactors were developed to add to the DC and AC drives offerings.

Also in the 80’s, the company became the leading supplier to switch gear OEM’s such as Siemens, Cutler Hammer and GE. This was also when VTC’s UNIClad® transformer was developed. A premium-duty, air-cooled, resin encapsulated transformer with a flexible insulation system. Product range steadily increased in kVA size and voltage capability to 10 MVA, 69 kV class. The utility market was added with the sale of the company’s first LTC transformer in the late 1980’s. In the 90’s the product range continued to grow to 30 MVA 69 kV class.

The 90’s showed continued growth for VTC, not only in product range but facility space as well. VTC moved into a new 120,000 sq. ft. facility in Roanoke. In the mid 90’s the Chihuahua Mexico facility was built and the lower end of the product range was moved to this new plant. This facility provides both dry type and liquid filled transformers.

In 2003, VTC acquired the assets of U.S. Transformer West in Pocatello, ID. This was a repair facility at the time, handling units up to 300 MVA, 230 kV class. The plant has been converted to a new transformer manufacturing facility with VPD processing, new test equipment and environment controlled winding and assembly.

Over the last 3 decades VTC has become one of the leading transformer suppliers in the industry. Serving the industrial, utility, commercial and specialty markets as well as wind, solar and geothermal markets world wide.

Today, with a product range from 300kVA to 300MVA, dry and oil, the resources of three (3) ISO certified plants in North America, it’s strength in design, engineering, automation, and customer driven service and quality, VTC is the 4th largest manufacturer of power transformers in the USA.

• 1971 – VTC established
• 1982 – Current president assumes management
• 1989 – Manufactures first LTC transformer
• 1993 – Opened 2nd manufacturing facility in Chihuahua, Mexico
• 1997 – First achieves ISO 9001 certification
• 2003 – Acquired medium power transformer facility, Pocatello, Idaho

VTC Roanoke, Virginia/Corporate Headquarters
Manufactures Liquid and Dry Type units. State of the art facility in winding, complete core cutting line, modern, fully equipped testing room.

VTCU Pocatello, Idaho
Manufactures Liquid type to 300 MVA/230 kV, State of the art facility in winding, core cutting and test capability.

VTCW Chihuahua, Mexico
Manufactures Liquid and Dry type, Automatic winding machines, Georg core cutting, modern testing facility.
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Engineering/Design

VTC is an engineering company who manufactures transformers for power and specialty applications. For the last 30 years, VTC has steadily built its engineering strength in all aspects of transformer engineering, such as electrical, mechanical, thermal, materials, etc. Each of our three manufacturing plants, which specialize in specific size ranges, has a local engineering group, supported by the corporate engineering group. By locating the corresponding engineering group within the manufacturing location, we build expertise and ensure quick resolution of problems, maximum efficiency and short lead times. Corporate engineering controls and harmonizes the engineering practices and technical continuity throughout the corporation, and also directs the development work.

VTC prides itself on the large number of very experienced engineers and senior engineers with a cumulative transformer related experience of several hundreds of years up to 400 KV / 500 MVA range. They are supported by a team of well-trained junior engineers. All engineers are equipped with a variety of special purpose software such as Optimized core and coil design, no-load and load-loss optimization, Impulse Voltage calculation, Short circuit calculation and magnetic field calculation using Andersen's FLD 12. Thermal calculations including overloads, hot-spot temperature calculation for windings and core, clamping force and structure strength calculation, etc.

Under our ISO certified process: every design undergoes quality assurance process. VTC maintains a library of over 10,000 designs and test data archive, which are referred to while preparing new designs. The design manual is the repository of the knowledge base and a major vehicle of technical continuity, and is updated in line with our technological progress. Our engineers participate in professional/industry meetings and seminars to keep themselves abreast of the latest developments.

Engineering at VTC maintains its customer focus with timely submission of drawings, prepared in 3-D, which offers the customers a better visualization of the product. We supply transformers complying with a large number of national and international standards such as ANSI/IEEE, IEC, CSA, UL, CUL, CE, ABS, etc. VTC continues its on-going initiative to build reliable, more efficient, environmentally friendly transformers, including offering FR3, a bio-degradable fluid, as an alternative to mineral oil.

Virginia Transformer Corp Quality Statement

“To be an internationally recognized manufacturer and supplier of high quality, specialized power transformers and associated equipment and services by fulfilling our commitments to the customer, our employees and stockholders through continued growth and improvement.”
VTC offers a full product range up to 300 MVA in 230 kV class. With this range VTC offers power transformers for every industrial and utility market. VTC has been serving the needs of the Utility markets for more than 25 years. This includes IOU’s, Rural Electric Co-ops and municipalities. For more than 35 years VTC has been supplying the industrial, transit, drives rectifier market. We offer Liquid Filled transformers from 300 kVA to 300 MVA including furnace transformers for the metals industry. VTC is a leading manufacturer of Dry Type transformers. We provide Dry Type transformers for indoor and outdoor applications from 300 kVA to 20,000 kVA up to 35 kV class. VTC’s UNI Clad® construction dry type performs in humid and contaminated environments. Specialty transformers for rectifier, grounding and GSU and others are included in our product range. Each transformer design is optimized to achieve the required performance at minimum cost. VTC exceeds the world class quality and customer service through its continuous improvement process ‘TAKE IT TO THE PEOPLE’. VTC’s shop employees are certified in their skills building transformers. Our professional staff is trained in all areas within 90 days to contribute independently. Using our integrated custom software the process in engineering and shop is optimized to deliver each transformer on time. Through our manufacturing process assurance system each transformer will deliver the longest life and smooth installation. All designs are custom made to client specifications. Through automation, experience and intelligence, VTC is able to develop the best design for each need. VTC looks at all details of the transformer design to assure electrical and magnetic performance to optimize every phase of production. VTC’s value proposition is a one stop shop engineering company making transformers, offering technical solutions from sales and custom products for all applications, continuous improvement for better quality every year, shortest lead time in engineering and manufacturing, on time shipment and outstanding field service.
Product Scope

LIQUID TYPE TRANSFORMERS

<table>
<thead>
<tr>
<th>Ratings</th>
<th>DRY TYPE TRANSFORMERS</th>
<th>SPECIALTY TRANSFORMERS</th>
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<tbody>
<tr>
<td>- 300 kVA to 300 MVA</td>
<td>VPI (Vacuum Pressure Impregnated)</td>
<td>- Neutral Deriving Transformers</td>
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<tr>
<td>- Up to 230 kV Class</td>
<td>- 300 kVA to 15 MVA</td>
<td>- Drive Isolation Transformers</td>
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<td></td>
<td>- Up to 35 kV Class</td>
<td>(18/24/36 Pulse Available)</td>
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<td></td>
<td>- 220º Class Insulation</td>
<td>- Rectifier Duty Transformers</td>
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<td>Cooling Fluids</td>
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<td>- Furnace Transformers</td>
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<tr>
<td>- Mineral Oil, Envirottemp (FR3), Beta, Silicone</td>
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<td>- Mobile Transformers</td>
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<td>Fluid Preservation</td>
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<td>- Three Phase Voltage Regulators</td>
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<tr>
<td>- Sealed Tank (Standard)</td>
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<td>(Up to 69 kV, 5000 kVA)</td>
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<td>- Automatic Nitrogen System</td>
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<td>- Air Core Reactors</td>
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<td>- Conservator</td>
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<td>- Scott T Transformers</td>
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<td>LTC</td>
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<td>- Single Phase Transformers</td>
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<td>- Up to 300 MVA</td>
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<td>- Phase Changers</td>
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<td>- Auto Transformers</td>
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<td>- Inter-Phase Transformers</td>
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<td>- Dual Voltage Transformers</td>
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<td>- Reconnectable Transformers</td>
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<tr>
<td></td>
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<td>- Other applications available</td>
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MARKETS / APPLICATIONS

INDUSTRIAL
- Rectifier Duty
- Paper & Cement Mills
- Steel Mills
- Motor Start
- Fan, Pump & Compressor Operation
- Hoists
- Mining
- Drive Isolation - AC, DC
- Chemical Plants/Ethanol
- Oil & Gas; Refineries, Pipelines, Storage, etc.
- Grounding Transformer
- Cycloconverter Application
- Dynamic Voltage Regulator
- Unit Substation
- Special Fluid Transformers - Silicone, Envirottemp (FR3), Beta Fluid
- Chemical/Hazardous Environment - Class I, Division II, Group C & D
- Coastal Environment/Offshore

UTILITY
- Substation
- Voltage Regulator
- Auto Transformer
- Grounding Transformer
- Transmission

POWER GENERATION
- Generator Step Up (GSU)
- Unit Auxiliary Transformer (UAT)
- Station Service Transformer (SST)
- Excitation
- Generator Start Up
- Reverse Auxiliary Transformer
- Wind Power
- Geo Thermal

SWITCHGEAR MATCH-UP
- General Electric
- Cutler Hammer
- Siemens
- Square D
- Others

QUALIFICATIONS
- Three ISO 9001-2008 Certified Manufacturing Plants
- UL Listed Dry Type up to 3000 kVA, 35 kV Class 220º Insulation System, NEMA 1 or 3R
- Liquid Filled up to 100 MVA, 69 kV Class
- NC, IEEE Standards CSA, IEC, UL, CUL, CE, ABS

FIELD SERVICE OPTIONS
- Field Installation
- Crane Service/ Offloading
- Assembly On Site
- Field Testing
- Hot Oil Vacuum Processing
- On Site Training

International Organization for Standardization
Virginia Transformer Corp designs and manufactures custom built power transformers in a range of sizes. From 300 kVA up to 300 MVA. With 3 plants in North America, we service a global market. Over the last 3 decades VTC has grown into one of the leading transformer suppliers in the industry. VTC services the industrial, utility, commercial and government markets as well as wind, solar, hydro, geothermal, government facilities and transit markets.

With Virginia Transformers’ strength in engineering, automation, experience and goal driven quality, no other transformer manufacturer has evolved as much in the past 20 years.

www.vatransformer.com