



VIRGINIA TRANSFORMER CORP

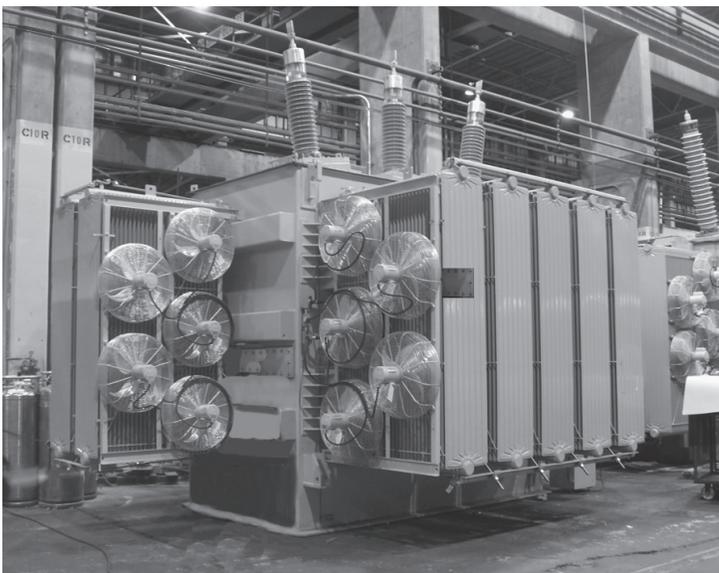
Reliable Power for Data Centers

Virginia Transformer has vast experience in designing and building transformers for data centers and we understand all the necessary critical elements for this type of power application.

The main requirements of data centers are continuous, uninterrupted power, and power that is free of voltage fluctuation, with frequency within strict limits. Virginia Transformer possesses the technical expertise, both in design and manufacturing, to produce reliable transformers that can easily manage fluctuations in the incoming voltage. Every design draws on our extensive library archive of more than 12,000 previous transformer designs and tests. We are expert in producing maximum efficiency, cost-optimized designs capable of meeting any level of specifications in terms of no-load and load losses. The work of the Project Engineer, the primary person responsible for designing your transformer to meet your specific requirements, is both checked by a Senior Engineer and further reviewed by the Manager of Engineering. In the design process, each aspect of the specifications – electrical, mechanical, controls, etc. – is handled by respective experts in each area. A critical reliability check which occurs during the design process is using the Anderson short circuit program. This simulation program reliably checks the transformer's ability to withstand extreme short circuit forces.

Once you have approved the design drawings (all of which are done in 3D), our Engineering Department begins work on the manufacturing drawings. This is done in concert with Manufacturing Department supervisors, so that every potential issue in the manufacturing process is handled before the manufacturing process begins.

Our ISO-9001 certified manufacturing processes insure that every stage of construction is done with maximal efficiency and with quality checks all along the way of every step. The transformer windings – the



One of two 120 kV/ 25 MVA transformers built for NASA Ames Supercomputing facility

most critical element of any transformer – are done by experts who have been extensively trained in the specific type of windings that they perform, and are done in an atmospherically-controlled and temperature-controlled winding room. Circular disc windings are standard on all transformers rated above 3 MVA, as they insure better short circuit withstand, and therefore better reliability. Circular windings also extend the life of the transformer, as compared to rectangular windings. Supervisors, Managers, and ISO Internal Auditors, depending on the complexity of the winding, may check the

accuracy of turns and welds as often as every 15 minutes as they're being performed, to make certain that they adhere to the exact specifications. Checklists are utilized at every step of the manufacturing process, so that not even the smallest detail is overlooked.

All three of our manufacturing facilities located in North America are state of the art in terms of manufacturing technology and computer-guided automation – thus, we offer features such as vapor phase drying and robotic welding. Everything we do is done with the goal of producing the best transformer possible for the application. VT is familiar with the most up-to-date, digital control equipment, such as ETM, SEL, and Annunciator configuration, and can provide whatever accessories you desire to have attached to your transformer. Every transformer is produced to meet industry standards such as ANSI and IEEE, and thoroughly tested using the most accurate and reliable test equipment. All of our facilities offer you the option to witness the actual testing of your transformer.

The main transformer in the data center substation is one of the most important pieces of equipment in the data center's power supply. Load tap changers (LTCs) are often used on this transformer in order to handle voltage fluctuation, and VT has decades of experience in manufacturing transformers with a variety of LTC designs. We understand that the critical importance of uninterrupted power means that data centers usually have redundant power sources, including dedicated generators, and therefore our transformers are designed and built to seamlessly handle transitions in the main incoming power supply without any disruptions in output or distribution.

In addition, VT can readily design transformers with suitable K-factor to accommodate any harmonics issues. Our vast experience in designing transformers with tight space requirements (the very first transformers VT produced were for the underground mining industry) enable us to meet virtually any specifications in this area, including matching the existing footprint for a replacement transformer. Our transformers are built to withstand even the harshest environmental conditions – cold/heat, high humidity, atmospheric contamination – including handling the potential vibration loads of seismic zone IV.

Finally, our awareness of the high growth and expansion rate in data center sizes insures that we will construct your transformer to be adaptable and easily integrated to accommodate changes in the size and layout of your data center over the years.

The unique experience and expertise that Virginia Transformer possesses in custom design guarantees that we will provide you with the transformer that best suits your specific application requirements, and we stand behind it with a #1-rated Field Service Department to insure years of reliable service at your facility.

- J.B. Maverick