

SEC

TRANSFORMER



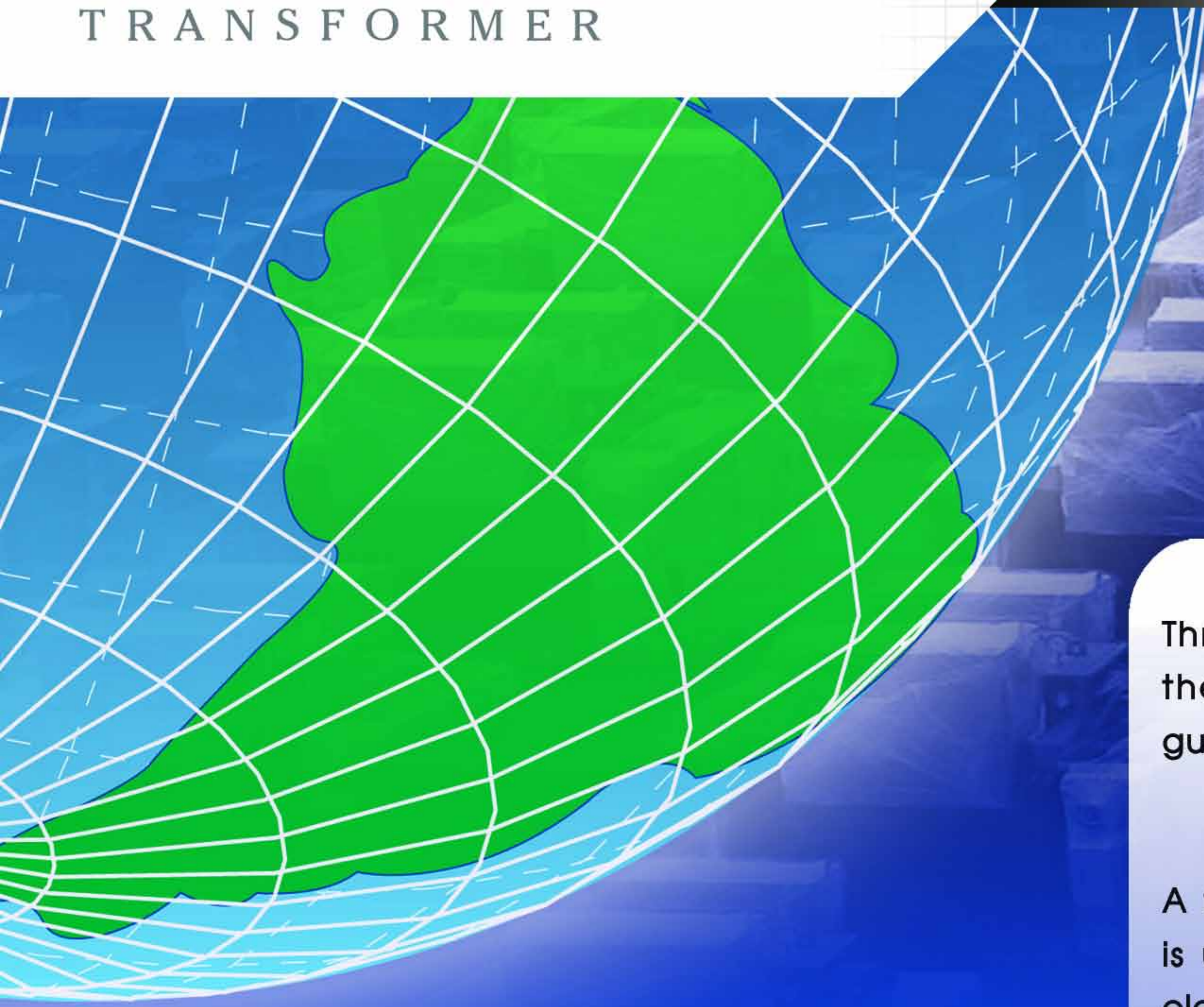
T.H. IN OWNERSHIP, PRODUCTION AND SERVICE SUPPORT!

Long Life & High Efficiency

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Through precise calculation of electrical, mechanical and thermal stresses, SEC ensures adequate design margins, guaranteed performance values and high reliability standards.

A fully parametric, Solid work computer-assisted design program is used to combine customer specifications and proprietary electrical design parameters into a finished mechanical design. SEC's proprietary mechanical design rules - developed using finite element analysis tools for the highest accuracy of stress calculations are preprogrammed into the design software. A tank-sizing program uses the same information to generate the optimal tank design. Before production, the design is reviewed, verified and finalized by a mechanical designer to assure proper electrical clearances and optimal use of oil. If a modification is needed, the dynamic model makes 3-D changes in one-millimeter increments! Approval and final drawings, created to scale from the actual parametric model, allow for precise overall dimensions and major equipment/accessory location.

DESIGN ::::

The fundamental SEC power transformer design and engineering technology is based upon design criteria which is focused on reliability and has been field proven in more than thirty years of production. SEC has decades of renowned transformer design and manufacturing experience. Every SEC transformer features core form construction. Our transformers are built with copper windings in a circular configuration and are continuous disc and/or helical in design.

We utilize many sophisticated computer programs for designing transformers including:

- Cost and performance optimizing programs
- Electromagnetic flux plotting software
- Electrical Transient calculation software
- Short Circuit Analysis software
- Stray and Eddy Loss calculation software
- Reactance calculation software
- Thermal modeling software
- Cable and Lead Temperature Rise calculation software
- Tank Wall, Clamp, Flux Shield Loss and Temperature Rise calculations



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RELIABILITY :::

Every SEC power transformer design is analyzed for proper management of through-fault initiated mechanical forces and to assure that maximum hot-spot temperature ratings are within allowable limits by substantial margins. State-of-the-art analytical tools test the ability of our products to withstand all known stresses. Stresses analyzed include the following:

- Through-fault events caused by line-to-line and/or line-to-ground faults
- Transient overvoltages due to natural (lightning) and man-made (switching) surges
- Overheating from improper design of windings and structural parts
- Overloading beyond nameplate ratings
- Mechanical stresses caused by transportation and seismic activities



Many manufacturing processes and procedures are used to increase reliability, including:

- Drying and vacuum filling to ensure maximum of 0.5% moisture content
- Minimum bolted electrical joints - we use brazing or crimping wherever practical
- SEC quality assurance and product testing exceed industry standards



TIS. 384-2543



OMS 060571086



Quality Management Systems Q 002



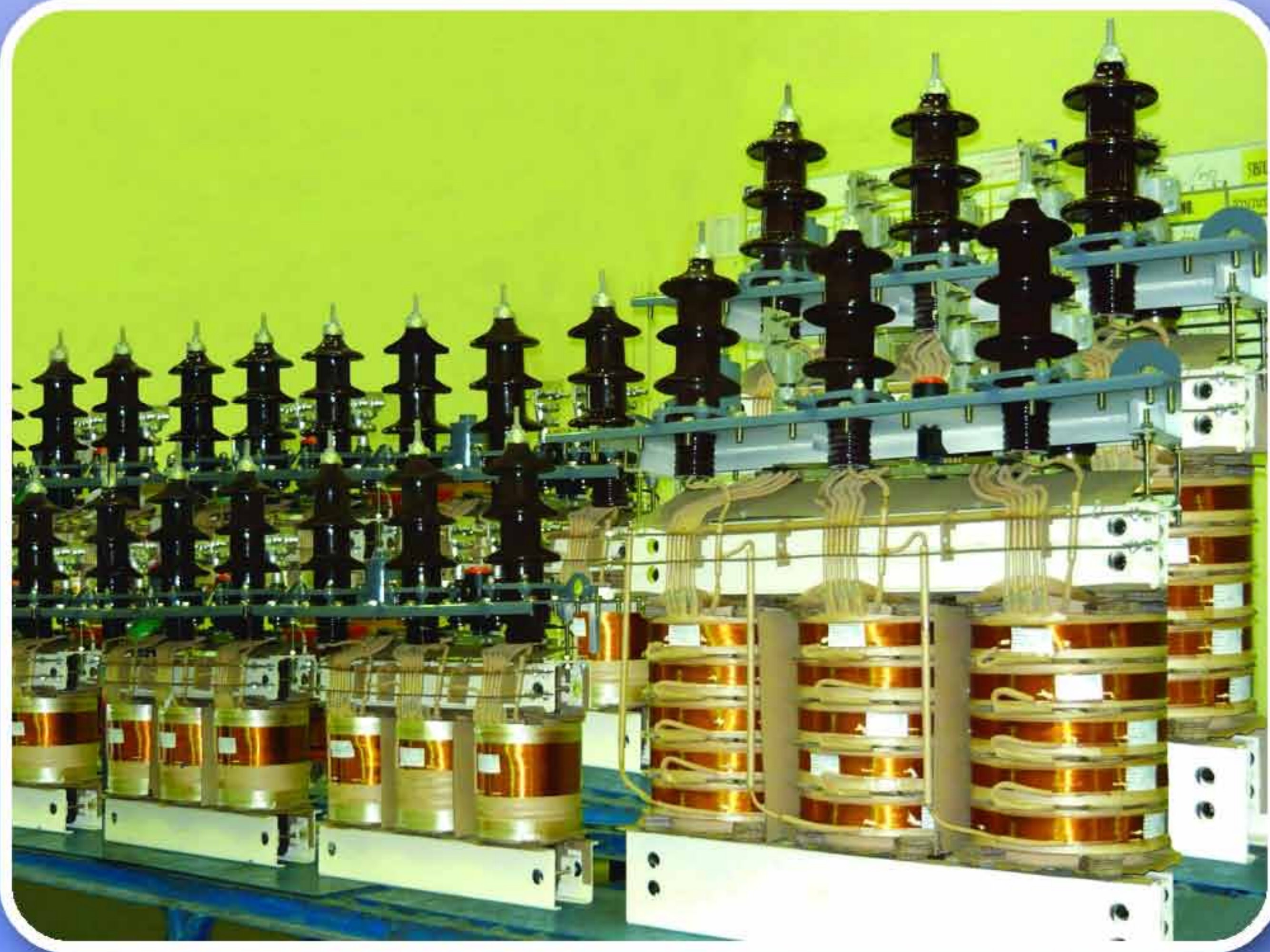
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EXPERIENCE ::::

SEC operates manufacturing facilities. With 30+ years of combined manufacturing experience, our strength in design, engineering, manufacturing, testing and customer service is unrivaled.



Surveys conducted by independent industry organizations indicate our transformers rank among those of top tier industry manufacturers. Our substantial design margins for electrical, mechanical and thermal stresses - developed and tested over years of manufacturing transformers - combined with our manufacturing expertise help make these rankings possible.

ISO
9001:2008
CERTIFIED



Our commitment to product advancement is demonstrated by a dedicated Research and Development team, complete with engineering staff. SEC supports and participates in many industry groups and organizations including IEC76, VDE0532, ANSI C57.12 BS171, JEC204 Including, TIS384-2543



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SERVICE :::

SEC Service provides total transformer service solutions up to 230 kV. Our service team focuses on maximizing the performance, reliability and working life of all the transformers and load tap changers throughout a customer's electric power system, whether manufactured by SEC or other suppliers. Our team's mission is to keep transformers up and running 24 / 7 / 365 by providing responsive and cost-effective service and maintenance support.

The dedicated technicians in the SEC Service organization receive extensive factory-supported technical and safety training. Each technician is backed up by the engineering and technical support resources of SEC an industry leader in transformer design, manufacturing and product support.

Our services include:

- Transformer Installation
- Transformer Testing Services
- Transformer Maintenance
- Transformer Oil Processing
- LTC Maintenance
- Engineering Services
 - Thermal Upgrades
 - Retrofits
 - Condition Assessments
 - Electrical Testing and Oil Diagnostics
 - Technical Support
- Natural Ester Fluid Retrofills
- Operations and Maintenance Training



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COMMITMENT ::::

Delivering on our COMMITMENTS every day with the highest standards of quality to

- Our Customers
- Our Employees
- Our Suppliers and Channel Partners
- Our Shareholders
- Our Community

We pledge our commitment to provide the products, services and support that meet or exceed our customers, expectations - every day, every order, every unit.

That is *The SEC Experience*

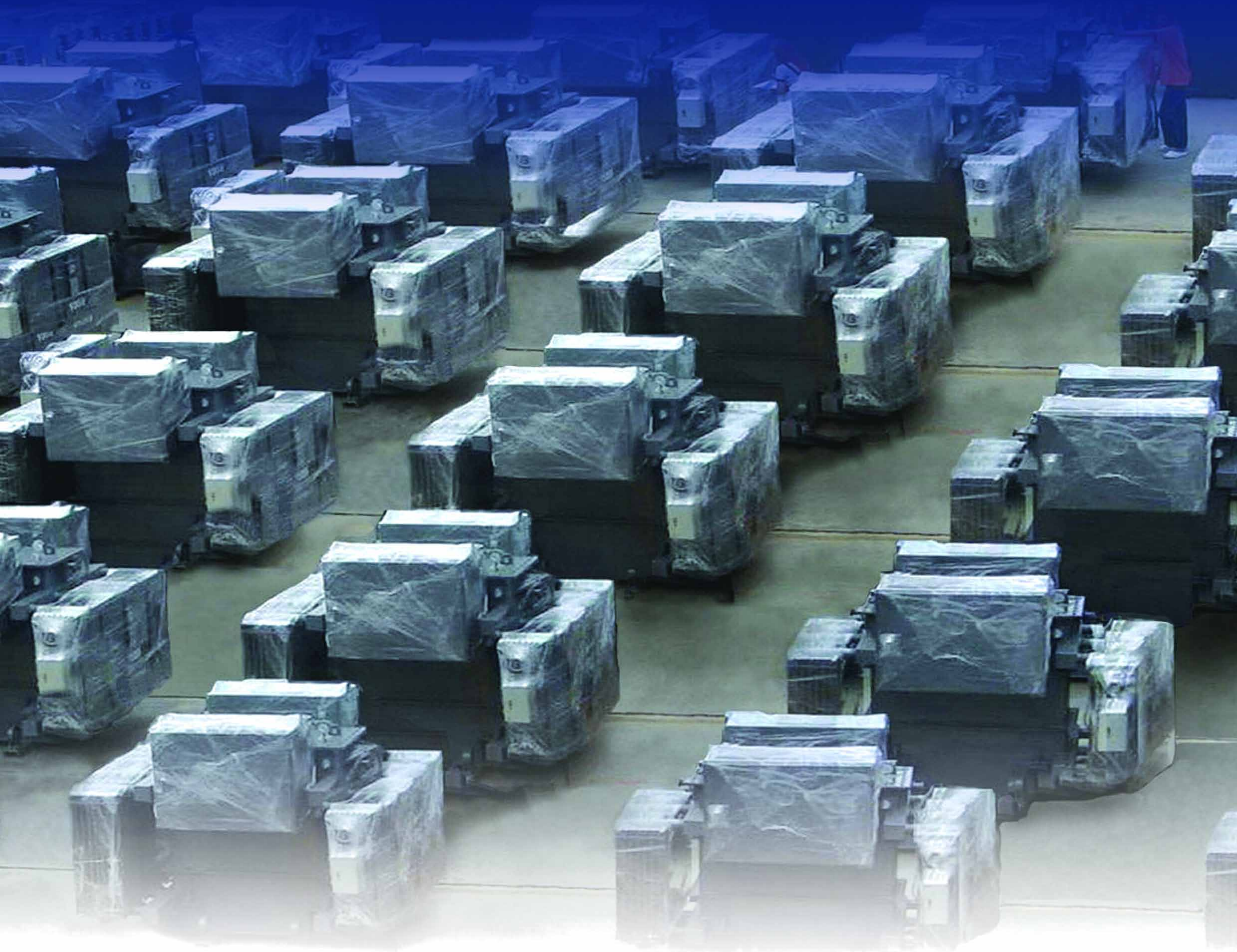
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