



Your First Source for Stabilizer and Voltage Regulator



Stabilizers | Voltage Regulators |
Transformers | Reactors | Filters | Power Resistors

125
YEARS
1888-2013



Yaskawa|Welcome

YASKAWA STABILIZER AND VOLTAGE REGULATOR, EXPERIENCE FOR CREATING INNOVATIVE TECHNOLOGY

We are committed to contributing to the further evolution of our society by strengthening our core business of "stabilizer", "voltage regulator", "servo motor", "controller", "AC Drives" and "industrial robots" and by offering customers new solutions using these core technologies to the full.

We place value on manufacturing and development of human resources and create new markets.



Do you need to optimize the voltage quality in your low-voltage network? Do you want to improve operational reliability by means of voltage stabilization? Automatic voltage stabilizers from **Yaskawa** are used wherever long-term voltage fluctuations have to be stabilized.



Our quality management system was certified according to DIN EN ISO 9001 in 1993. This ensures you that our customer, receive only the highest quality products based on certified quality standards. By choosing Yaskawa you can be rest assured that you have chosen the right partner. You will find our commitment to quality not only on paper but in every contract, every single product we deliver.

Facts:

Our products offer solutions for electrical test engineering, voltage stabilization and transformers, reactors and filters encompass power outputs from 200 VA to 8 MVA and voltages up to 36 kV:

- Electrical test engineering
- Voltage optimization
- Low-voltage and medium-voltage transformers
- Variable transformers
- Toroidal core transformers
- Reactors
- Filters



Power resistors:

Our test and power resistors cover a spectrum from 50 W to 5 MW:

- Load resistors
- Variable resistors
- Brake resistors
- Earthing resistors

Our expertise in air and oil cooled transformer technology, power resistors, electrical cabinet construction, PLC and control systems make us a leading manufacturer in the world of electrical engineering.



We offer Stabilizer solutions

Yaskawa Voltage Stabilizers are universally recognized as the finest range of servo-controlled voltage stabilizers. The units are designed to correct power quality problems like brownouts, surges, over voltage, sags, voltage imbalance, unbalanced current, line noise etc.

At Yaskawa we always approach tasks in their entire complexity, so our solutions to customer requirements are developed as a team.



Our systems are the optimal solution for applications with regulating accuracy of 1%. The major advantage of our systems is their simple and robust technology, which ensures extremely reliable operation even under heavy loads and harsh ambient conditions.



Comprehensive product line

"Reliability, to our team, means much more than just coming to work on time. Being there for others, helping each other and sharing individual experience goes without saying for everyone here."

Sabine Thiele, Design Engineer mechanical Design

Facts:

Power up to 2 MVA or 1 MW

Voltage up to 30,000V

Current up to 30,000A

Optionally available:

- Control panels with fuses, contactors, operation and monitoring elements
- Controller for switching, regulation, control and monitoring of relevant processes



Products:

- AC/DC power supplies
- AC high-current supplies
- Test resistors
- Inductive load banks
- RLC load banks

Applications:

- Drive technology
- Cable testing
- Renewable energies
- Switchgear temperature rise tests
- E-mobility



Rock-solid technology for every application

"We do not rest on the laurels of our success. Our goal is the continuous development of electrical engineering technology and the improvement of our products. This commitment is appreciated by our customers throughout the entire world."

André Witt, Project Manager Transformers

>> **Yaskawa** stands for innovation. One example is the development of DeltaVolt systems, a technology that helps our customers reduce their energy costs. This benefits both the customer and the environment.



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Facts:

- Power up to 2,000 kVA
- Voltage up to 20 kV
- Voltage stabilization up to $\pm 1\%$

Products:

- Magnetic voltage stabilizers
- Transformer-type voltage stabilizers
 - Certified for use in nuclear power plants
 - Optionally available in earthquake-proof design



DeltaVolt voltage regulation system:

DeltaVolt monitors and controls the supplied mains voltage and ensures that it remains at a constant level that is ideal in terms of business and technical requirements.

DeltaVolt systems from Ruhstrat reduce your energy costs:

- up to 20% in lighting systems
- up to 10% in general loads



The cheapest electricity is that which you don't use.

At Home here and around the world

"Reliability, to our team, means much more than just coming to work on time. Being there for others, helping each other and sharing individual experience goes without saying for everyone here."

Sabine Thiele, Design Engineer mechanical Design

You can depend on Yaskawa in every aspect: internally and externally, within the team, in dealing with our customers or with respect to our high-quality products and their delivery deadlines. We keep our word – acts of nature excepted.



Yaskawa transformers offer you a decisive advantage: they are manufactured exactly to your requirements. No matter what the application, the transformer solution for your needs already exists as a concept.



After implementation of your requirements we test the result extensively. This allows us to guarantee equipment that functions perfectly – manufactured in accordance with international standards and with UL approval. Of course, you will have to experience for yourself the robustness and reliability for which our low- and medium-voltage transformers are known.

Facts:

- Execution as auto- and isolation transformers
- Available as limb and toroidal core transformers
- Power up to 8 MVA
- Voltage up to 36 kV
- Current up to 30,000 A
- Frequencies up to 800 Hz
- Copper and aluminium windings
- Energy-efficient transformers with amorphous core



Products

- Low-voltage transformer
- Cast resin transformer
- Toroidal core transformer
- High-current transformer

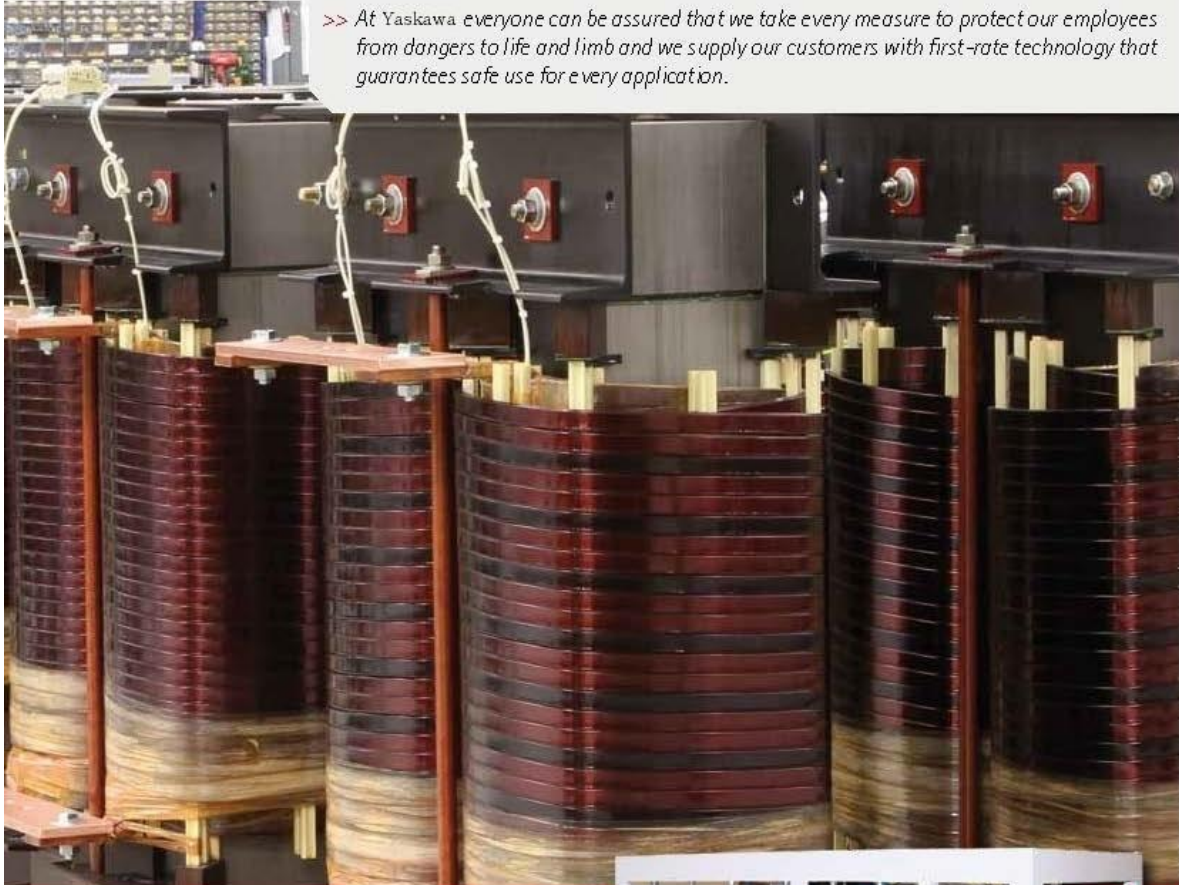


Careful work results in sound

"Our top priority is to manufacture safe equipment for our customers. To achieve this, we exercise maximum care in our work. It is a good feeling that optimal work safety is so important to our company."

Peter Ducksch, Manager Production Sector Transformers

>> At Yaskawa everyone can be assured that we take every measure to protect our employees from dangers to life and limb and we supply our customers with first-rate technology that guarantees safe use for every application.



Yaskawa reactors are the first choice for you if you value reliable and safe coilware. Thanks to high-quality materials and flawless craftsmanship our products ensure the trouble-free operation of your machines and drives.

Current smoothing is extremely important especially in the extensive field of drive technology.

Typical applications also include use as an inductive load in the test facility or for suppression of interference. For each individual case, we develop the optimal solution for diverse application conditions around the globe.



Facts:

- Reactors up to 3,000 A with selectable inductance values
- Filters up to 2,000 A
- Rated frequency of AC reactors 16 $\frac{2}{3}$ Hz to 400 Hz
- Voltage range of filters up to 690 V
- Pulse frequency of filters up to 10 kHz
- Low-loss and low-noise filters



Products:

- Power reactor
- Smoothing reactor
- Compensation reactor
- Filter circuit reactor
- Motor reactor
- Sinus filter
- dU/dt filter



Excellence is our standard

"In the construction of transformers we of course cannot afford to deviate from the standards. But when it comes to our ideas, we do not hesitate to force an open door."

André Männecke, Project Manager Transformers

>> *Our exemplary in-house suggestion system allows us to gather the best ideas where people use their heads to do things even better. And the one who benefits in the end is you, our customer. For you we strive to offer even more: more performance, more service, more value.*



Variable transformers from Ruhstrat for the power supply of diverse products are preferred for use in test engineering, the glass industry, as well as in electroplating applications.

In these areas, too, all solutions are tailored to individual customer requirements.



Whether for test facilities, the glass industry, electroplating or regulation of industrial furnaces – Yaskawa develops and manufactures specific variable transformers for continuously variable adjustment of voltages up to 30,000 volts and currents up to 30,000 amperes.

Facts:

Available as variable toroidal and variable column transformers

Also available as variable transformer aggregate in combination with a low-voltage, medium-voltage or high-current transformer

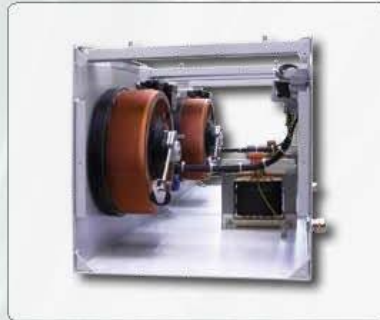
Power up to 2,000 kVA

Voltage up to 30 kV

Frequencies up to 400 Hz

For electrical test engineering available with:

- Control panels with fuses, contactors, operation and monitoring elements
- Controller for switching, regulation, control and monitoring of relevant processes



For your technical testing systems we offer you a complete line of transformer-controlled test engineering, including electronic controllers (SIEMENS, Beckhoff, etc.) if requested. For more information, see page 4/5.



Why I like working at Yaskawa

"Why I like working at Yaskawa. Because everyone of us strives everyday to do things better. Because we are truly there for our customers, to give them help and advice. And because we are a great team!"

Much has happened since the first power resistors from Ruhstrat more than 120 years ago. The principle has remained the same, while the services have multiplied. We have constantly supported and driven this development.



For more than a century, Yaskawa power resistors have been indispensable in electrical engineering. Our customers especially appreciate our comprehensive service. Because no one buys "just any" product from us.

We are always a reliable partner for our customers, which means we first determine the specific

requirement. We remain true to our concept of offering the right solution in every individual case. At Yaskawa

we develop and manufacture power resistors for diverse applications in the power spectrum from 10 W up to 5,000 kW.



Facts:

Power up to 5,000 kW

Optionally available:

- Control panels with fuses, contactors, operation and monitoring elements
- Controller for switching, regulation, control and monitoring of relevant processes



Products:

- Load resistor/ load bank
- Ohmic, inductive or capacitive load resistor
- Discharge resistor
- Damping resistor
- Braking resistor
- Starting resistor
- Earthing resistor
- Tube resistor
- Variable resistor (potentiometer)



"A successful audit is only half the truth. The goal at Ruhstrat is continuous improvement of all processes and products – resulting in satisfied customers. The audit is then basically the positive confirmation of our conscientiousness."

Anja Duderstadt, Quality Management

>> At Yaskawa the processes are simply right. When everyone works together, in a process of active exchange and mutual respect, then work is enjoyable. That is especially apparent to outsiders: when we communicate with our customers, this is based on well-founded knowledge, binding information and a high level of commitment on the part of everyone involved.

Certificate

GL Systems Certification

GL Systems Certification herewith certifies, that the company

Yaskawa Electric Corporation
Leinetal / Auf der Mauer 1, D-37120 Bovenden

has established and maintains a Management System relevant for

Design, production and sales of

- Transformers, Variable Transformers, Reactors, Voltage Stabilizers and Resistors
- electrically and combustible-heated Furnaces

GL Systems Certification confirms that the Management System of the above mentioned company has been assessed and found to be in accordance with the requirements of the following standard:

ISO 9001:2008

The validity of this certificate is subject to the company applying and maintaining its Management System in accordance with the standard indicated. This will be monitored by GL Systems Certification.

The certificate is valid from March 30, 2013 until March 29, 2015

GL Systems Certification Hub Germany

Certificate No. **QS-329HH**

DAkkS
Deutsche
Akreditierungsstelle
D-234-16025-01-02
Germanischer Lloyd SE, Competence Centre Systems Certification, Beusthauer Str. D-20457 Hamburg



CERTIFICATE

Certificate Number: 20
Report Reference: E:
Issue Date: 2

Issued to:

This is to certify that representative samples of

Standard(s) for Safe

Additional Informa

Only those products bearing the UL Recognized Company listing number, model and Recognition as published in the UL Directory of Recognized Companies shall be used in construction with specified in the UL Directory of Recognized Companies manufacturer's identification marking for the particular Recognized components. Recognized components and are not to be used for direct separate installation and use in a Look for the UL Recogn

William R. Gray
UL Recognized Company Listing

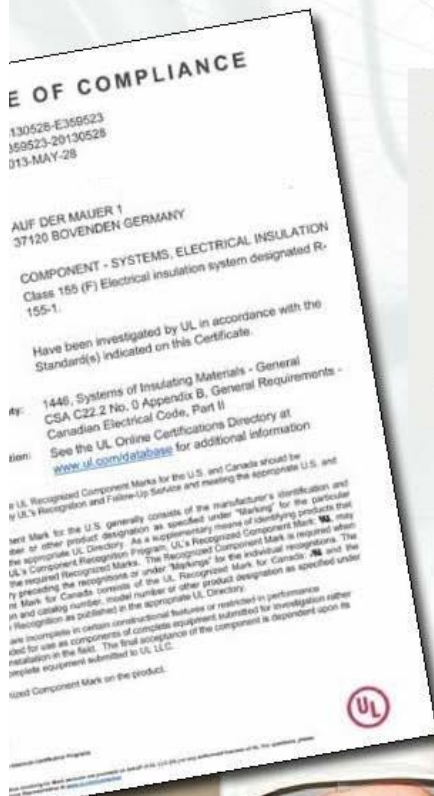
Yaskawa is not the only company that consistently insists on maximum quality. But our numerous customers around the world are proof: at Ruhstrat everything is a touch better.

We not only see to it that our products function perfectly. We are especially concerned about the environmental balance. That is why we continuously optimize the energy efficiency and service life of our products.

In Our eyes you are the king

In addition to uncompromising product quality, Ruhstrat customers experience genuine service, just like in the old days. On request, we offer individual, on-site consultation, develop customized turnkey solutions and install them, as well.

And after completion of the project you are not left alone: our after-sales service includes maintenance and repairs according to your specific requirements – also available on the basis of service contracts. Our experienced service teams ensure global supply.



- Consultation – also on your premises
- Planning – in close coordination with you
- Development – individual and customized
- Implementation – professional and from a single source
- Installation, maintenance, repair – around the globe, by our specialists



"What makes a good workplace for me? Modern and safe working conditions. Mutual respect throughout the hierarchy. Opportunities for development. A steadfast smile among the team when there is lots to do."

>> To achieve the best results requires a solid basis. At this basis is established primarily by the people behind the success. When you have so many strengths to build on, then it is possible to jump to the top as a company.



At Yaskawa we place strong emphasis on the well-founded training and development of our employees. To meet our social responsibility and to cover our own needs, we have a constant training rate of 10 to 15 percent.

Our trainees – like our products and our customers, of course – benefit from the rich store of

experience and extensive expertise of our designers, engineers, programmers and specialists.

Team spirit throughout the entire company is perhaps our greatest strength.



Technology lives on innovation

Our company contributes actively to the Central Association of the German Electrical and Electronics Industry (ZVEI) and cooperates intensively with universities, technical colleges and research institutes. This sustainable process of exchange is a constant source of new impulses in our own research and development.

Current scientific research has also led to our state-of-the-art production facilities – including the production technology and machine park. It is characterized by short distances, intelligent logistics and the effective coordination of development, production and administration.



Facts:

Our production facilities:

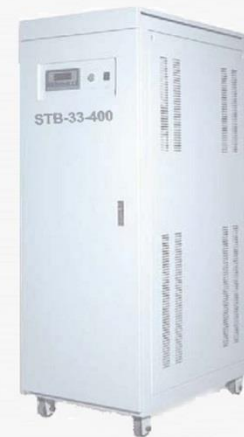
- Vacuum drying ovens
- Cranes, 2/5/10 ton
- Vacuum impregnating system
- Vertical edgewise winding machine
- Band and wire winding machines
- Toroidal core winding machines
- Modern test facility for product inspections in accordance with relevant standards
- Test system for PD measurement



Automatic voltage regulator

DESCRIPTION

Model	STB-33
Capacity	50-500KVA
Input voltage	Phase to phase: 380V±1-5%
Output voltage	Phase to phase: 0-380V
Frequency	50Hz
Insulation resistance	≥2M Ω
Noise	<55dB
Voltage regulation mode	Independent phase regulation
Wave deformation	nil
Insulation class of transformer	H class
Wire system	3-phase-5-wire-system
Operation time	≥80,000 hours
The number of carbon brush abrasion	140,000 times with only about 0.01mm roller carbon brush abrasion
Method of voltage regulation	By Rotation Of Converter
Insulated strength	Single phase: 2000V/1min without puncture Three phase: 2500V/1 min without puncture
Material of package	Carton for batch volume, wooden packing for small volume
Output accuracy	Selectable: ±1% to 5% Factory preset: ±2% Long term stability: <±2.0%
Efficiency	96%
Color of housing	Beige
Protection class	IP20(indoor)
Electrical safety	CE equivalent
Ambient temperature operating	-20 °C to +45 °C
Altitude	<1000m
Relative humidity	<90%
Functions	Power-on style, Surge Protection, Malfunction protection, Short-circuit protection, Lack of phase protection, Over voltage shutdown, Under voltage shutdown, Safe start





Stabilizers
Voltage Regulators
Transformers
Reactors Filters
Power Resistors

