

Voltage Regulators



333 Contact Duty
Cycle Monitor
36.492 %

Intelligent Solutions.
Endless Possibilities.



COOPER Power Systems

www.ElectricalPartManuals.com

As Electricity Continues To Improve The Quality of Life, Who's Improving the Quality of Electricity?

The ongoing challenge is how to continually meet the increasing demand for clean, reliable power. The more we use computers, communications, and automation in our daily lives, the more susceptible we become to power quality disturbances.

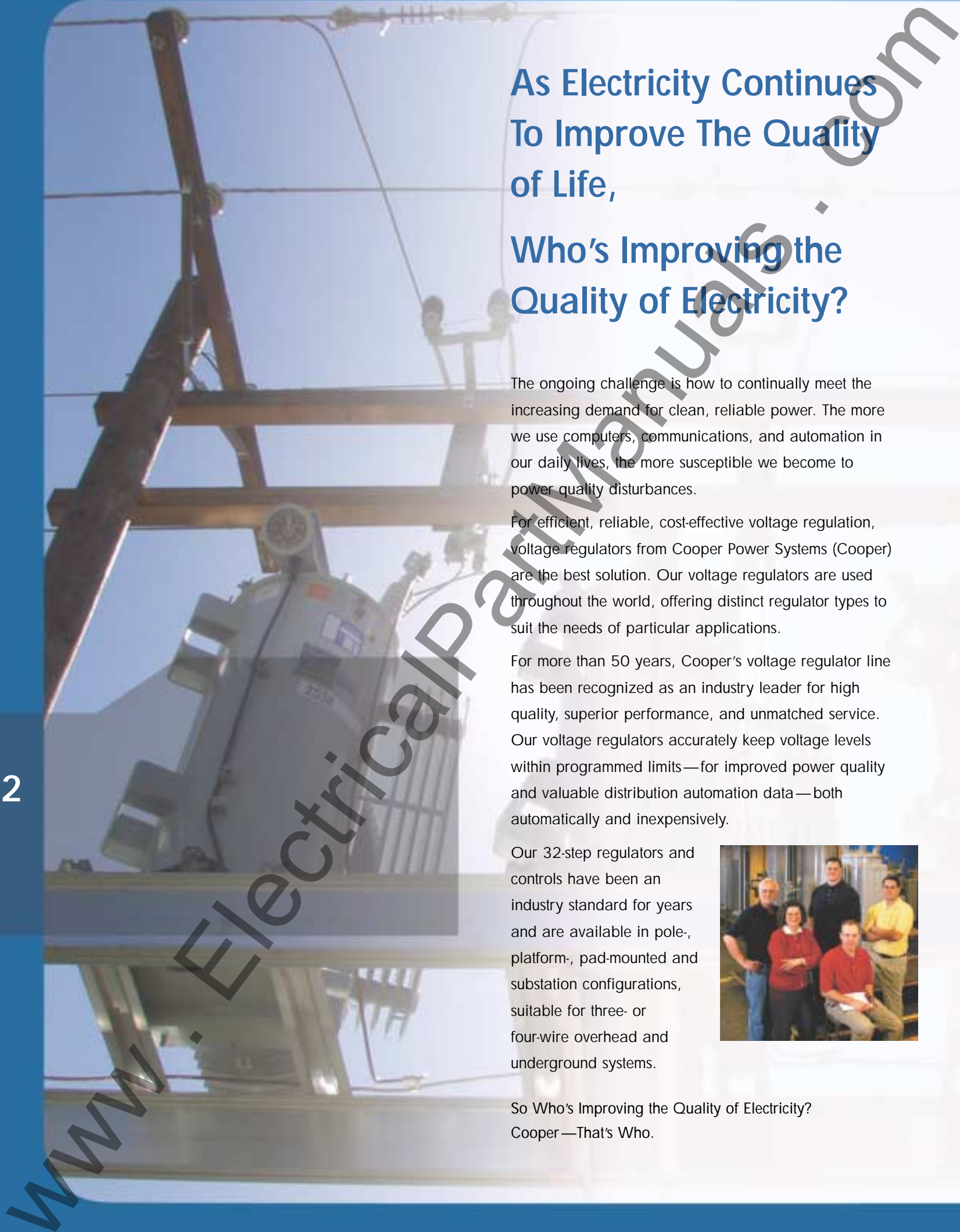
For efficient, reliable, cost-effective voltage regulation, voltage regulators from Cooper Power Systems (Cooper) are the best solution. Our voltage regulators are used throughout the world, offering distinct regulator types to suit the needs of particular applications.

For more than 50 years, Cooper's voltage regulator line has been recognized as an industry leader for high quality, superior performance, and unmatched service. Our voltage regulators accurately keep voltage levels within programmed limits—for improved power quality and valuable distribution automation data—both automatically and inexpensively.

Our 32-step regulators and controls have been an industry standard for years and are available in pole-, platform-, pad-mounted and substation configurations, suitable for three- or four-wire overhead and underground systems.



So Who's Improving the Quality of Electricity?
Cooper —That's Who.



Feature Rich

Predictable Proceeds

Save time and money by improving maintenance crew efficiency and scheduling with the **Duty Cycle Monitor** predictive maintenance feature—now standard in our Voltage Regulators. The winning combination of the CL-6A Regulator Control and Quik-Drive™ Tap-Changer allows you to collect data to predict and accurately measure the tap-changer contact wear. Schedule maintenance based on an actual need rather than calendar cycles. Don't be caught by unplanned outages.

Profitable Maintenance

The CL-6A Regulator Control in combination with the Quik-Drive Tap-Changer also allows for **Preventive Maintenance Tapping (PMT™)**. To minimize the effects of coking on tap-changer contacts and provide a periodic operational check, you no longer need to send a technician to the voltage regulator.



The two modes of the PMT feature tap automatically, using criteria you establish, such as when load is low—at your convenience, day or night.

PMT also extends the life of the tap-changer contacts, reducing maintenance costs and minimizing crew time.

Remote Rewards

In today's information world, Supervisory Control and Data Acquisition, or **SCADA**, enables you to analyze your system and take action to reduce costs and improve performance from one control center. Cooper voltage regulators make communicating fast and easy. With their digital communications capability, any function that can be performed locally can be performed remotely via phone or fiber-optic lines.

Example: Total System Savings*	
Regulator Installation	
Reduced communications configuration - CL-5 Series Control Communications Emulation	\$3,000–\$5,000
Monthly Maintenance Costs	
Eliminate service trip to operate tap-changer - PMT Mode A	\$5,200–\$7,200
Reduce profiler download frequency - increased memory	\$2,000–\$3,600
Bi-Yearly Maintenance Costs	
Eliminate service trip to operate reversing switch - PMT Mode B	\$800–\$1,200
Contact Wear Maintenance Costs	
Extend maintenance beyond 4 years or 100,000 operations - Duty Cycle Monitor	
Removal from service cost (crew, crane, trucking)	\$5,000–\$7,500
Shop costs (untank and inspect contacts)	\$1,000–\$1,500
Return to service cost (crew, crane, trucking)	\$5,000–\$7,500
Removal from Service	
Eliminate unplanned outage or failure due to over-worn contacts	
Duty Cycle Monitor Alarm	\$450,000–\$600,000
Savings over lifetime of 12 regulators	Total \$472,000–\$633,500

*Associated costs may vary with each application and, for an unplanned outage, can include equipment replacement, crew time, cleanup costs, and lost revenue.

A Solid Performer

The advanced capabilities of the Cooper Quik-Drive Tap-Changer complement the versatile design of the CL-6A Regulator Control—allowing for a complete, accurate, dependable voltage-regulating system. Their unique integration delivers revolutionary functionality, performance, and increased system reliability—all while improving your bottom line.

Quik-Drive tapping rotates through all 32 positions in less than 10 seconds. The

advanced design of the Quik-Drive Tap-Changer delivers amazing speed, improved contact life, and improved power quality.

Simple

Fewer tap-changer parts: easier to assemble and repair; fewer moving parts to fail or stock.

Fast

Correct for a large voltage excursion quickly. Tap eight steps (5%) in just 4 seconds.

Accurate

The tap-changer Geneva Gear drive ensures accurate steps without special calibrated springs. A tap-changer electrical feedback circuit ensures accurate indication of tap position by the CL-6A Regulator Control.

Reliable

Cooper voltage regulators offer the lowest regulator core and coil failure rate in the industry—depend on it. Uniform, computerized regulator tank cutouts—bank on it. Full-welded external parts to eliminate corrosion caused by moisture entrapment—rely on it.



Take Control

Only One Control—For Easy, Cost-Efficient Control Replacement

Our Control Replacement Assembly (CRA) regulator control is designed to work with every U.S. manufactured voltage regulator out there, so it's the only one you'll ever need to stock, install, or train your personnel to operate. It's also the one with the features and functions you need for easy, reliable, and trouble-free performance.



The CRA equipped with our CL-6A Regulator Control is the latest evolution in our continuing commitment to provide you the best regulator control technology—a commitment that dates back to 1954. We design and develop every aspect of the voltage regulator, including the control. We are also the largest producer of medium-voltage distribution equipment, components and systems.

Only one—and Cooper is it.

The Solution Factor

Whether your needs range from technical product or application support from one of our experienced engineers, to site studies and system analysis from our Thomas A. Edison Technical Center, or a complete turn-key package from our Systems Integration Group, you can count on Cooper for innovative designs and intelligent solutions. With millions of voltage regulators operating worldwide, we have the experience to meet the increasingly sophisticated demands for system reliability and power quality.

Recognizing the value of working together, our custom services include hands-on classes and in-depth seminars. Our customers can confidently depend on our expertise, while we look to our customers to join us in identifying their future requirements.

Cooper Power Systems remains committed to improving the quality of electricity with value-added features, high-quality standards and performance, all with a focus on industry needs.



Product Reference Guide*

Type/Mounting	Voltage Rating (V)	Current Ratings (A)	Design kVA	BIL	Hz
Distribution	2500/4330 grd Y	200-668	50-167	60	60
	5000/8660 grd Y	100-334	50-167	75	60
	6600/11430 grd Y	50-300	33-198	95	50
	7620/13200 grd Y	50-328	38.1-250	95	60
	11000	50-200	55-220	95	50
	13800	50-200	69-276	95	60
	14400/24940 grd Y	50-200	72-288	150	60
	15000	50-150	75-225	150	50
	19920/34500 grd Y	50.2-100.4	100-200	150	60
	22000	50-100	110-220	150	50
Substation	2500/4330 grd Y	1000-1665	250-416	60	60
	5000/8660 grd Y	500-833	250-416	75	60
	6600/11430 grd Y	300-600	198-396	95	50
	7620/13200 grd Y	219-1093	167-833	95	60
	11000	200-600	220-660	95	50
	13800	200-604	276-833	95	60
	14400/24940 grd Y	200-578	288-833	150	60
	15000	150-500	225-750	150	50
	19920/34500 grd Y	100.4-502	200-1000	150	60
	22000	100-400	220-880	150	50
	33000	50-200	165-660	200	50
	34500	50-200	172.5-690	200	60
	Pad-mounted	2500/4330 grd Y	200-600	50-150	60
7620/13200 grd Y		50-600	38.1-457	95	60
11000		50-500	55-550	95	50
14400/24940 grd Y		50-463	72-667	125	60
15000		50-300	75-450	150	50
19920/34500 grd Y		50-335	100-667	150	60
22000		50-200	110-440	150	50
34500	50-200	172.5-690	200	60	



* Other designs available. Contact your Cooper Power Systems representative for details.



A Valuable Combination —

Whether you find Cooper voltage regulators in paper mills, industrial parks, military bases, manufacturing plants, or at your local shopping mall—you can count on Cooper to bring you products that give you new freedom in improving safety, increasing reliability and innovative design.

Cooper voltage regulators in combination with the revolutionary new dielectric coolant, Envirotemp® FR3™ fluid, further enhances safety, increases reliability, and reduces costs—presenting the public with a smaller, safer, and environmentally preferred package.

Envirotemp FR3 fluid is the first dielectric coolant made from edible seed oil to receive the Environmental Technology Verification (ETV) from the U.S. Environmental Protection Agency (EPA).

It has the industry's highest published flash and fire points and the approval of Underwriters Laboratories and FM® Global. And it is also proven to extend insulating paper life by 5–8 times.

All of which translates to immediate and sustainable cost savings for you. It means a higher margin of fire safety and less money spent on fire protection and substation design. It means spills are non-toxic*, highly biodegradable events. It means being able to load up your equipment more and run it longer—deferring the purchase of new equipment.

The combination of the Cooper voltage regulator and Envirotemp FR3 fluid allows you to increase public safety and help protect the environment, all while maximizing the reliability and performance life of your capital investment.

Revolutionary. Reliable. Responsible.

For more information, visit us at www.cooperpower.com/fr3



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