

SYSTEM ELECTRIC Power Quality GmbH

System Electric - History

System Electric Power Quality was founded in 1975 and has become an internationally acknowledged solution and system provider for power factor correction and voltage quality improvement over the years.

1992 System Electric acquired VEB ELEKTRONIK Gera, East Germany, today known as Electronicon.

2004 System Electric founded System Electric Power Quality in Beijing, China.

The System Electric group has all important core competences to produce high-quality components and ready-to-install systems for power factor correction, voltage quality improvement and unloading of the electrical network.

Innovative development engineers and a professional service team with a powerful measurement technology assist and consult you in finding the solution for your compensation and electrical network problems.



**SYSTEM
ELECTRIC**

SYSTEM ELECTRIC Group

Electronicon

Component Business
Capacitors & Reactors



SYSTEM ELECTRIC
Power Quality
Germany

SYSTEM ELECTRIC
Power Quality
China

System Business
Power Factor Correction Systems & Harmonic Filters



**SYSTEM
ELECTRIC**

SYSTEM ELECTRIC Group

Component Business Capacitors & Reactors

Electronicon

ELECTRONICON Kondensatoren GmbH have been associated with the manufacture of capacitors in Gera since the late 1930s, when the SIEMENS organization moved part of their production facility from Berlin to eastern Thuringia in the heart of Germany. Since then, the company has extended considerably. Highest quality and reliability of all products have been the core of our philosophy from the very start. Continual development in its product ranges has resulted in ELECTRONICON becoming one of Europe's leading capacitor manufacturers supplying customers worldwide.

System Business Power Factor Correction Systems & Harmonic Filters

SYSTEM ELECTRIC Power Quality Germany

Leading manufacturer of detuned and tuned power factor correction systems.

SYSTEM ELECTRIC Power Quality stands for innovative, easy-to-install system solutions for power correction and quality improvement of the electrical network - made in Germany.

Strong visible quality, excellent price-performance ratio of our products and our service portfolio will convince you. Full product scope to solve all your power quality issues at site. Highly motivated and excellent skilled team take care about your needed solution.

SYSTEM ELECTRIC Power Quality China

Leading manufacturer of detuned and tuned power factor correction systems.

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SYSTEM ELECTRIC

SYSTEM ELECTRIC Group in figures

■ Turnover 2013: more than 70 Mio.€

■ Employees in 2013: more than 550

■ Locations:

■ Germany: 3 plant in Gera (Thüringen) and 1 plant in Linsengericht (Hessen)

■ International: 1 plant in Beijing China

■ Currently 8 Partners covering Asia and Europe



**SYSTEM
ELECTRIC**

Component Business - Electronicon



**SYSTEM
ELECTRIC**

System Business – Power Quality



Your expert for innovative PFC solutions since 1975



SYSTEM ELECTRIC Power Quality GmbH
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GERMANY



**SYSTEM
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SYSTEM ELECTRIC Group – synergie of Component & System Business

Komponenten

von ELECTRONICON

trockene

LV/MV Leistungskondensatoren



Filterkreis-
Drosseln



Schalt- und Entlade-
Vorrichtungen



Blindleistungs-
Regler



Lösungen

von SYSTEM ELECTRIC

fertige

Kompensationsanlagen



BSK-/Filter-
Module



**SYSTEM
ELECTRIC**

What do we stand for?

We intend to be an open-minded, helpful and flexible partner to our customers. We would like to turn customers into friends.

Our aim to find simple, sustainable, energy-efficient solutions of visible quality and a top user benefits. Listening and understanding the user requirements is key to the perfect product portfolio.

All staff members give their best, where they are, to serve the customer in a fast, effective and reliable manner. We are committed to the location of Germany and to the „made in Germany“ standard.



**SYSTEM
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Application - overview

- ✚ industry
- ✚ renewable energies
- ✚ power supply systems
- ✚ stand-alone operation
- ✚ public buildings etc.



**SYSTEM
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Customer worldwide & in each segment (1)



On the Olympic complex, in cement or, aluminum plants, in harbour facilities, hospitals, undergrounds and in many other buildings and industrial companies of the Chinese metropolis Peking as well as everywhere in China, 700.000 kVAr of compensation power with a detuned reactor of 5.67% or 7% from SYSTEM ELECTRIC leads to reduced electricity costs, an unloading of the electrical network and an improved voltage quality.



In the oil refinery of MAZEIKIU NAFTA, an enterprise of ORLEN GROUP in Lithuania, 63 units from SYSTEM ELECTRIC with a total power of 23, 400 kVAr ensure an optimized power factor and unload the power system.



At the German finance metropolis Frankfurt, the load caused by the 5th harmonic is especially high. More than 400 units from SYSTEM ELECTRIC with a 5.67% or 7% detuned reactor reduce the energy costs for many customers and improve the voltage quality in the Frankfurt region.



**SYSTEM
ELECTRIC**

Customer worldwide & in each segment (2)



The airport of Zurich in Switzerland is compensated with 51 units of SYSTEM ELECTRIC. The 7% detuned reactor systems with a total power of more than 7000 kVAr have been in operation for many years without any disturbances so far. Also the Swiss Federal Railroad and many industrial companies, for example Swiss Stahl AG, trust in equipment from SYSTEM ELECTRIC. More than 350 000 kVAr of installed power testify to the confidence shown by Swiss companies.



Two automatically regulated filter units of 1500 kVAr each, 690 V, 60 Hz, 5% detuned reactor, consisting of an 2500 incoming feeder and three control cabinets with 5 capacitor switching modules of 2 x 50 kVAr each, with overload switch and freely adaptable number of steps as well as step power. All devices were equipped with a large back-up in line with SYSTEM ELECTRIC's security philosophy. Special importance was attributed to the air cooling system and the temperature control. The units operate to full customer satisfaction. In the meantime, other drilling platforms have been equipped with filter units from SYSTEM ELECTRIC.



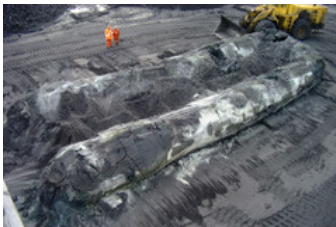
**SYSTEM
ELECTRIC**

Customer worldwide & in each segment (3)



A 5.67 or 8.3% detuned reactor power factor correction system, which can be operated with 400 V / 50 Hz or 450 V / 60 Hz. The unit with a total power of 1200 kVAr is controlled in 24 steps. 600 kVAr are dynamically operated with a thyristor switch, the remaining 600 kVAr are operated conventionally using a contactor.

In order to cope with the special system and load conditions as well as the operation through 2 voltage and 2 frequency ranges a special software was developed for the reactive power controller.



The company ESD-Sic b.v. in the Netherlands is one of the leading manufacturers of silicon carbide. During the production process, a mixture of pure quartz sand and petroleum coke is heated under a plastic tarpaulin to a temperature of approximately 2300° C by supplying electric energy with a rated voltage of 500 - 600 V, 50 Hz. Both source materials react to silicon carbide. The reactive power load of the process is 7000 - 8000 kVAr.

A 700 kVAr oven capacitor bank from SYSTEM ELECTRIC. Ten of these units are necessary per process line to keep the energy and production costs within reasonable limits. The capacitors are self-healing and environment-friendly.



**SYSTEM
ELECTRIC**

Core Components

ELECTRONICON®
always in charge

✚ LV/MV dry type capacitor – 12KV up to $2,5I_N$

✚ LV/MV reactor -10KV up to $3I_N$



**SYSTEM
ELECTRIC**

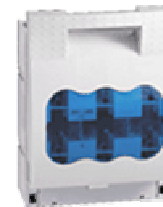
Core Components



≠ contactor



≠ NH-fuse base



≠ cabinet



**SYSTEM
ELECTRIC**

Core Components

Controller

- simple commissioning
- menu-driven
- measuring voltage from 58V up to 700V
- min/max storage of relevant datas
- integrated temperature control
- contactor or thyristor outputs



~~≠~~ Thyristor switch

- ✦ U, I, S, P, Q, $\cos \varphi$, THDU/THDI
- ✦ protection features for capacitor bank (overvoltage, overcurrent, temperature, THDU, etc.)

- ✦ 400V – 525V (690V under construction)
- ✦ 25kvar – 50kvar
- ✦ totally sealed
- ✦ compact design
- ✦ integrated fan (50kvar)
- ✦ terminal IP 20



Product portfolio - PFC system / compact design

✚ compact design



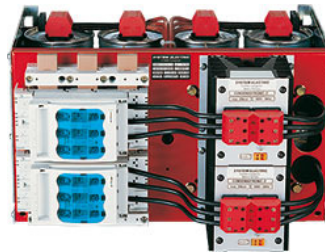
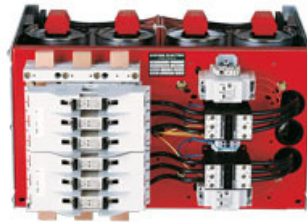
- ✚ 400V – 525V
- ✚ up to 200kvar without reactor
- ✚ up to 100kvar detuned
- ✚ contactor switched
- ✚ wall mounting
- ✚ max. hxd = 1250x600x350mm



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Product portfolio - Power modules

✚ modular design w=600mm



- ✚ 400V – 690V
- ✚ up to 100kvar without reactors
- ✚ up to 50kvar detuned
- ✚ contactor switched
- ✚ thyristor switched
- ✚ NH-fuse base, -disconnector, MCCB



**SYSTEM
ELECTRIC**

Product portfolio - Power modules

✚ modular design w=800mm



- ✚ 400V – 690V
- ✚ up to 100kvar without reactors
- ✚ up to 100kvar detuned
- ✚ contactor switched
- ✚ thyristor switched
- ✚ NH-fuse base, -disconnector, MCCB



**SYSTEM
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Product portfolio - PFC systems / modular design

- ✚ Modular design
- ✚ Detuned filters
- ✚ Tuned filters

✚ MV filters (under construction)

✚ Active filters (under construction)



- ✚ 400V – 690V
- ✚ w = 600mm / 800mm
- ✚ up to 500kvar per cabinet
- ✚ different designs



**SYSTEM
ELECTRIC**

Your benefit



- ✚ easy to install
- ✚ generous space for connection
- ✚ easy commissioning
- ✚ easy to extend
- ✚ easy to service



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SYSTEMS ELECTRIC Power Quality – partners worldwide



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Thank You !