



Power Factor / Harmonic Filtering High Voltage Capacitor Systems



Engineered for Safety and Reliability



Capacitor Systems

Harmonic Filter Solutions

QVARx Inc., 787 Rte Harwood – #102, Vaudreuil-Dorion, QC, Canada J7V 8P2

Tel 450-424-2900 Fax 450-424-9981 www.qvarx.com

Copyright © 2001 QVARx Inc.

Who are we?

QVARx. is the leading electrical engineering company specialized in the design and manufacture of capacitor systems and harmonic filters. Our mission is to provide dependable solutions to our customers that will improve the cost and quality of their electric power flow.

QVARx engineers are among the industry's top experts in power capacitor and harmonic filter systems. The end result to our customers is a product of superior design and quality, yielding very high reliability and requiring minimal maintenance.

Contact our technical experts or your **QVARx** sales representative today. Our experienced team may have a solution that will *cost effectively improve your electric billing and power quality.*

Some of our satisfied customers....

*ABB
Magnesium Corp
Agrium
Burbank Water&Power, California
Hatch Canada
Renewable Energy Systems, UK
Georgia Power Transmission
Sterling Pulp Chemical
Disney, California & France
Falconbridge
Hydro-Québec CITEQ
Dow Chemical
Eka Chemicals
INCO
IMC Potash
Ottetail Power Company
Freeport Power Bahamas
Formosa Plastics
PCS Potash
Florida Light & Power*

*Keystone Steel & Wire
Hoeganes Steel
Alton Steel
Steeldynamics
Texas Utilities
Toshiba Industrial Systems
Triquint Semiconductor
Vulcan Chemicals
United States NAVY
NASA
Allegheny Ludlum Steel
Wigton Windfarm Jamaica
AMEC
Cogema Mines
McConway Torley Steel
IRAQ ministry of electricity
Bechtel
Saskpower*



Capacitor Systems

Harmonic Filter Solutions

QVARx Inc., 787 Rte Harwood – #102, Vaudreuil-Dorion, QC, Canada J7V 8P2

Tel 450-424-2900

Fax 450-424-9981

www.qvarx.com

Copyright © 2001 QVARx Inc.

ENCLOSED CAPACITOR SYSTEMS

CAPACITOR AND HARMONIC FILTER BANKS

Up to 35 Kv:

SMC TYPE

STANDARD METAL ENCLOSED
CAPACITOR OR FILTER BANK



LMC TYPE

LOW MAINTENANCE ENCLOSED
CAPACITOR OR FILTER BANK



QVARx

Capacitor Systems

Harmonic Filter Solutions

QVARx Inc., 787 Rte Harwood – #102, Vaudreuil-Dorion, QC, Canada J7V 8P2

Tel 450-424-2900

Fax 450-424-9981

www.qvarx.com

Copyright © 2001 QVARx Inc.

OPEN RACK SYSTEMS

CAPACITOR AND HARMONIC FILTER BANKS

Up to 69 kV:



QVARx

Capacitor Systems

Harmonic Filter Solutions

QVARx Inc., 787 Rte Harwood – #102, Vaudreuil-Dorion, QC, Canada J7V 8P2

Tel 450-424-2900

Fax 450-424-9981

www.qvarx.com

Copyright © 2001 QVARx Inc.

Selection Guide

Which type of capacitor bank meets your needs?

	Type LMC Low Maintenance Metal enclosed	Type SMC Standard Metal enclosed	Type PMC Polemount	Type OSC Open Rack Substation
Kvar ratings:	KVAR / STEP			
Untuned Capacitor banks:	KVAR / STEP			
480v-600v	N/A	10-100	N/A	N/A
2- 5 kV:	150 – 3000	150 – 3000	150 - 2000	1000 – 10,000
< 15 kV:	150 – 25,000	150 – 25,000	150 - 2000	1000 – 25,000
< 27 kV:	225 – 25,000	225 – 25,000	150 - 2000	1000 – 35,000
< 36 kV:	N/A	300 – 25,000	N/A	1000 – 40,000
< 69 kV:	N/A	N/A	N/A	1000 – 50,000
Tuned Capacitors/Filters:				
480v-600v	N/A	10-100	N/A	N/A
2- 5 kV:	150 – 6000	150 – 10,000	150 - 2000	1000 – 10,000
< 15 kV:	150 – 6000	150 – 10,000	150 - 2000	1000 – 25,000
< 27 kV:	225 – 6000	225 – 10,000	150 - 2000	1000 – 35,000
< 36 kV:	N/A	Grounded wye only	N/A	1000 – 40,000
< 69 kV:	N/A	N/A	N/A	1000 – 50,000
Suitability by application	Legend: 1 = best, 2 = good, 3 = fair to poor			
Quick installation, integrated switching, control and protection, shipped preassembled	1	1	2	3
Safety against electrocution and ease of access for maintenance	1	1	3	2
Factory quality control and testing of complete assembly	1	1	n/a	n/a
High dust locations: mines, cement plants, smelters, steel mills, quarries, desert, nearby roads.	1	2	2	2
High humidity/salt: Coastal, offshore, tropical climates	1 Stainless steel recommended	1 Stainless steel recommended	1	1
Low profile, compact space, good aesthetics	1	1	3	3
Varmint protection	1	1	3	3
Lifetime Net Cost (1 = lowest):				
10 – 2000 kvar per bank	1	1	1	2
2000 – 10,000 kvar per bank	1	1		1
> 10,000 kvar per bank	2	2		1

QVARx

Capacitor Systems

Harmonic Filter Solutions

QVARx Inc., 787 Rte Harwood – #102, Vaudreuil-Dorion, QC, Canada J7V 8P2

Tel 450-424-2900 Fax 450-424-9981 www.qvarx.com

Copyright © 2001 QVARx Inc.

PRODUCT DESCRIPTIONS

Metal Enclosed Banks – Features

Standard

- Fully welded construction of CRS AISE gauge, outdoor or indoor;
- High Quality Paint system;
- All film, fluid impregnated, power capacitors. External or Internally fused;
- Self-cooled and Anti-condensation system sized to the ambient conditions;
- Interlocked doors ;
- 3 point latching of doors with padlock provision. Outer hardware is stainless steel;
- Unbalance signal transformer;
- Copper bus bars and conductors
- Primary fuses for short circuit protection;
- Harmonic tuning reactors
- Inrush limiting reactors
- Harmonic resistors
- Saturable Magnetic discharge, for rapid reclosing
- Phase CT's and overload/overcurrent protection relay;
- Unbalance protection relay;
- Power factor, VAR, or voltage controller;
- Customer paint colors; may need review of thermal calculations;
- Stainless steel enclosure

Options

- Switching contactor, SF6 or vacuum, depending on rating.
- Isolating disconnect/ground switch with interlock and padlock provision;

Testing & QA

- Production & type tests according to CSA, ANSI, IEEE ;
- In-house Hipot, BIL and high current testing;
- ISO 9001-2000 QA system ;



QVARx

Capacitor Systems

Harmonic Filter Solutions

QVARx Inc., 787 Rte Harwood – #102, Vaudreuil-Dorion, QC, Canada J7V 8P2

Tel 450-424-2900

Fax 450-424-9981

www.qvarx.com

Copyright © 2001 QVARx Inc.

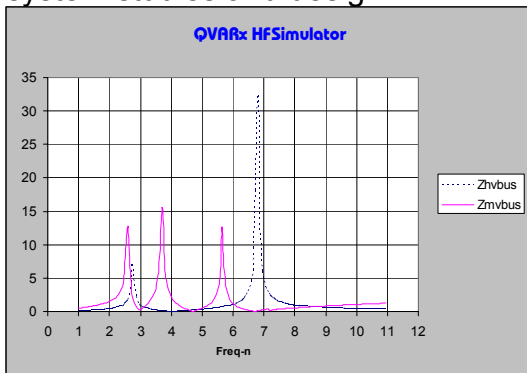
SYSTEMS ENGINEERING & SERVICE

Expert technical services are available in-house to conduct studies/design in these power applications:

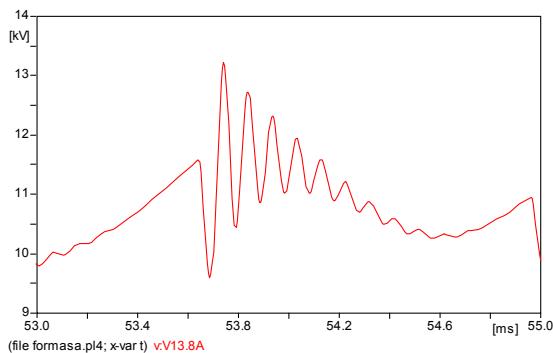
- Utility substation and distribution banks;
- Windfarms
- Rectifier loads in electrowinning and electrochemical processes;
- Large drives / cycloconvertors;
- Steelmaking Electric Arc Furnaces;
- Induction Furnaces;
- Mines/smelters/cement plants;
- General Industry;

Services :

Harmonic Filtering/PF systems - Advanced system studies and design



EMTP Switching Transient Studies



On-site surveys of power quality, investigations and testing. QVARx has state of the art power instrumentation in house.



High Voltage test laboratory, Hi-pot, BIL, high current testing



Capacitor Systems

Harmonic Filter Solutions

QVARx Inc., 787 Rte Harwood – #102, Vaudreuil-Dorion, QC, Canada J7V 8P2

Tel 450-424-2900

Fax 450-424-9981

www.qvarx.com

Copyright © 2001 QVARx Inc.