

Power Factor Correction Capacitors

Increasing your power factor and profits is easy with LVNQ products from ABB!

AC 1503



Registered by UL to
ISO 9002

ABB Control Inc.

What is power factor?

Power factor is the relationship between working (active) power and total power consumed (apparent power). Essentially, power factor is a measurement of how effectively electrical power is being used. A higher power factor represents a more effective use of electrical power.

A distribution system's operating power is composed of two parts: Active (working) power and reactive (non-working magnetizing) power. The ACTIVE power performs the useful work – the REACTIVE power does not. Reactive power's only function is to develop magnetic fields required by inductive loads.

Why improve low power factor?

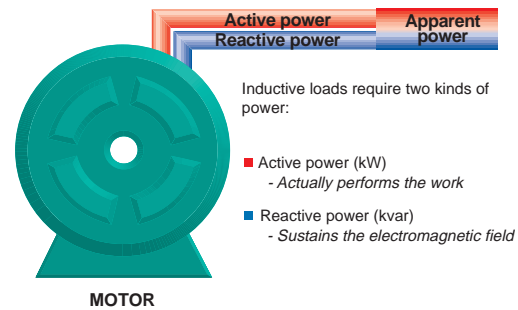
Low power factor means poor electrical efficiency. The lower the power factor, the higher the apparent power drawn from the distribution network.

When low power factor is not corrected, the utility must provide the nonworking reactive power *in addition* to the working active power. This results in the use of larger generators, transformers, bus bars, wires, and other distribution system devices that otherwise would not be necessary.

As the utility's capital expenditures and operating costs are going to be higher, they are going to pass these higher expenses to industrial users in the form of power factor penalties and higher utility bills.

ABB's Power Factor Correction Capacitors solve the problem

Solve low power factor problems by adding power factor correction capacitors to your electrical network. As illustrated below, power factor correction capacitors work as reactive current generators "providing" needed

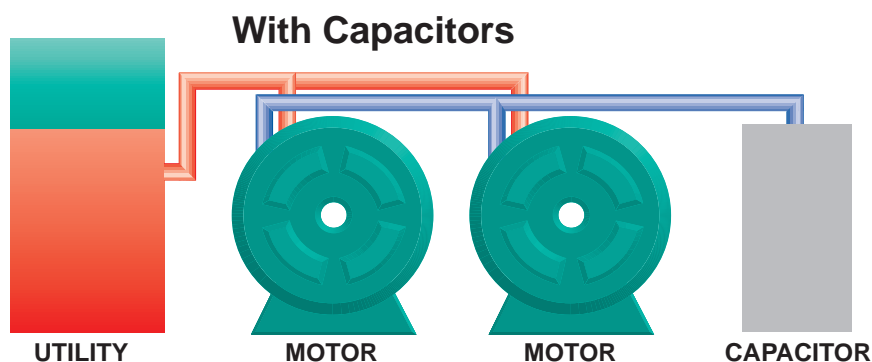
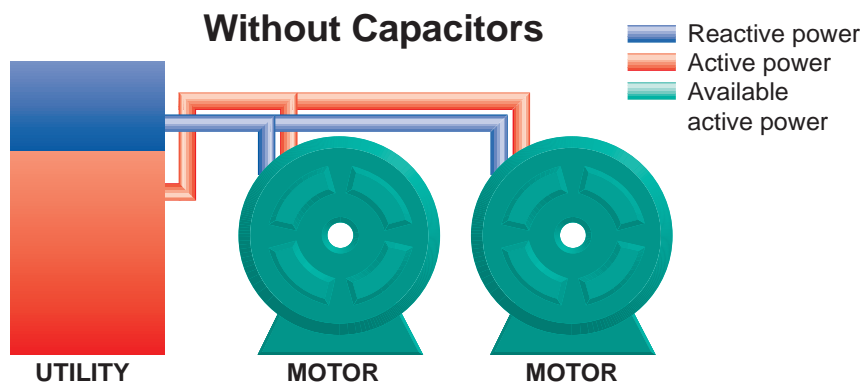


reactive power (kvar) to the power supply. By supplying their own source of reactive power, the industrial user frees the utility from having to supply it; therefore, the total amount of apparent power (kVA) supplied by the utility will be less.

Power factor correction capacitors reduce the total current drawn from the distribution system and subsequently increase system capacity.

Who can benefit?

Many industrial and commercial applications can benefit from improving power factor levels. These include: manufacturers, hospitals, shopping malls, office building & institutions, pulp & paper mills, saw mills, textile mills, printing plants, plastic manufacturers, etc.



How much can be saved?

In the following example, if power factor correction is applied to the electrical network, increasing power factor to 90%, the potential annual savings on utility bills would be \$4,322.23, or an average of \$360 per month, a savings of up to 15%!

Typical installations will pay for themselves within 18 months, and in many cases, within 1 year!

Period Of the Year (month)	Actual KW Demand (KW)	Actual KVA Demand (KVA)	Actual Power Factor (%)	New Power Factor (%)	New KVA Demand (KVA)	Reduction KVA Demand (KVA)	Reactive Power Required (KVAR)	Money Saved (\$)
January	200	245	81.63%	90.00%	222	23	45	\$213.41
February	150	224	66.96%	90.00%	167	57	94	\$537.16
March	125	175	71.43%	90.00%	139	36	62	\$338.33
April	224	256	87.50%	90.00%	249	7	15	\$66.62
May	208	289	71.97%	90.00%	231	58	100	\$542.36
June	210	299	70.23%	90.00%	233	66	111	\$615.23
July	223	289	77.16%	90.00%	248	41	76	\$386.21
August	211	278	75.90%	90.00%	234	44	79	\$408.07
September	204	265	76.98%	90.00%	227	38	70	\$359.15
October	198	245	80.82%	90.00%	220	25	48	\$234.23
November	156	198	78.79%	90.00%	173	25	46	\$231.10
December	201	265	75.85%	90.00%	223	42	75	\$390.38

NOTE: Rate structures vary with utility and customer classification.

Not only will Power Factor Correction Capacitors save you money, they will:

- Reduce heat loss of transformers and distribution equipment
- Prolong the life of distribution equipment
- Stabilizes voltage levels
- Increase your system's capacity, etc.

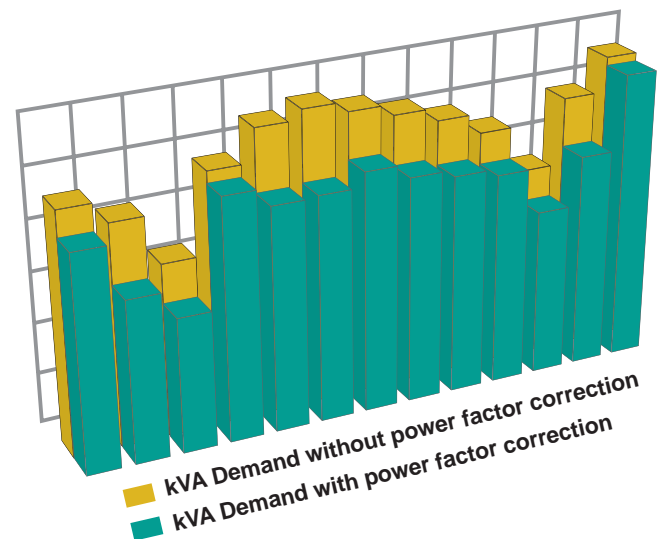
ABB has the solution to harmonics

Any device with non-linear operating characteristics can produce harmonics in your electrical network. **Harmonic current can cause a disturbance on the supply network and adversely affect the operation of other electrical equipment.**

Harmonic current can cause:

- Excessive heating and failure of different distribution apparatus
- Nuisance tripping of circuit breakers and fuses
- Noise that leads to erroneous operation of control system components
- Damage to sensitive equipment
- Electronic communication interference, etc.

ABB Control can perform an on-site harmonic evaluation of your electrical network and provide you with a detailed plan to control and reduce harmonics.



For more information, contact your local ABB Control representative today and request our free capacitor literature:

- AC 1500 – LVNQ capacitor catalog & application manual
- AC 1502 – The ABB Solution to Harmonics
- AC 1504 – LVNQ capacitors brochure



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