

# CASE Study #1

## Pharmaceutical

### Protecting Pharmaceutical Manufacturing

Apotex is the largest Pharmaceutical manufacturer in Toronto. Their facilities have been affected by poor power quality, mostly due to weather, animals and older utility infrastructure.

Most pharmaceutical manufacturing processes have an obligation to comply with the stringent sterility standards set by various drug regulatory bodies (WHO, FDA, MHRA etc). HVAC (Heating Ventilation and Air Conditioning) systems are usually used to maintain this sterile environment at the production area by enforcing a positive pressure difference between the production area and the external areas surrounding it. This could be imagined as concentric layers, with the most sterile environment at its core (production area) and relaxed sterility as layers move far away from the production area.

An HVAC system that consists of ducts, fans, motors, etc. maintains this sterility, by providing a constant flow of clean air circulation to enable positive difference in pressure. Induction motors, typically used as a constituent part of HVAC system are generally driven/controlled by Variable Speed Drives (VFDs). Though VFDs offer various advantages namely, increased efficiency, variable speed, reduced maintenance etc., they are also widely recognized as one of the most susceptible equipment to voltage sags and short interruptions.

Voltage sags and short interruptions are, by far, the two most common types of power quality disturbances and the most frequent causes of disrupted operation of many industrial processes, particularly those using power electronics equipment

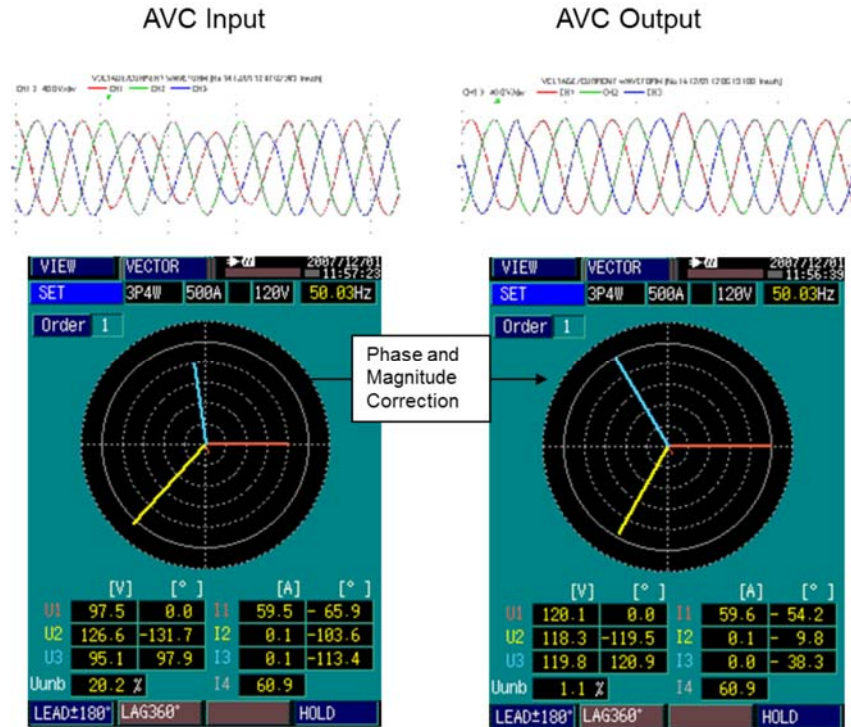


AVC Installed on the roof at Apotex

## **The Issue**

There are many types of loads used in Pharma manufacturing, each with its own unique characteristics. There is one common denominator, which is they all need a reasonable amount of voltage to operate.

It is very important to have metering on your incoming voltage to capture these sub-cycle events as the most cost effective way to correct the voltage issues is to protect for the problem on that site rather than to protect for all and any eventuality.



### AVC Performance

#### The solution

In order to reduce or eliminate the losses in manufacturing as a result of these possible voltage sags, one must install a product designed to correct all types of voltage conditions.

This voltage conditioner must be available in Low and Medium Voltage and be able to perform the following functions:

1. Correct for deep voltage sags (1-phase up to 60% correction) in less than 1/2 a cycle
2. Continuously provide voltage regulation for +/-10% voltage
3. Maintain voltage balance to all loads it feeds
4. Reduce voltage harmonics
5. Be 99% efficient, as every kWh lost is expensive
6. Have a small foot print, and have an option for storage so that you can get the back up diesel generators online without dropping the load.

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## 4800kVA AVC

The AVC was installed on the 4th floor rooftop and commissioned in Feb 2015. The unit corrected voltage fluctuations almost immediately and the customer advised that the complete project payback was less than 3 months.

While there were more outages in the first few weeks than expected the AVC compensated for 42 events in the initial 6 weeks.

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Sag End

Running , 60 ms, 73%,  
95%, 74%, 99%, 99%,  
95%

This was a typical event, 73% on two phases corrected to 99%

## Site Application

Apotex Inc., installed an AVC rated 4800kVA, 600V at their Signet Drive Facility.



**Apotex Inc 4800kVA AVC installed on the roof.**



tame your power—keep your profits

570 Hood Road  
Suite 20  
Markham, Ontario  
L3R 4G7 Canada  
Tel: 416 849-2299  
Fax: 416 849-2298  
[info@omniverter.com](mailto:info@omniverter.com)  
[www.omniverter.com](http://www.omniverter.com)

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