



DATA CENTER COOLING for ABB DRIVES

Compatible for: ACS550, ACS800 and ACS850 Series



Solutions for AC Drives

Information Overload

Whether it is tweets, pictures, or business documents, consumers are demanding more from "the cloud." The cloud is a data center like the one pictured, which houses numerous servers that store data. Servers are in high demand and continue to evolve to allow **more data storage in a smaller space**. Unfortunately, **servers of this magnitude emit high levels of heat and require powerful and reliable cooling systems**.



Roughly 1.8 trillion gigabytes of data was created in 2011 and according to researchers, data volumes are doubling every two years!

Data Center Cooling

Heat continues to be the enemy of data center servers. Servers emit high levels of heat, but **must remain below a certain temperature to operate**.

This requires an efficient cooling system that consists of multiple motor-driven components, including pumps and chillers that require constant power. **If a chiller loses power it can take a considerable amount of time before it's able to restart, leaving the data center without cooling.**

Variable speed drives are used to make the cooling system more efficient by offering variable flow rates on motors instead of simply off and on. This saves power, reduces maintenance costs, and allows extensive remote monitoring.



Heat Exchanger

Heat is extracted from system

Air Handler

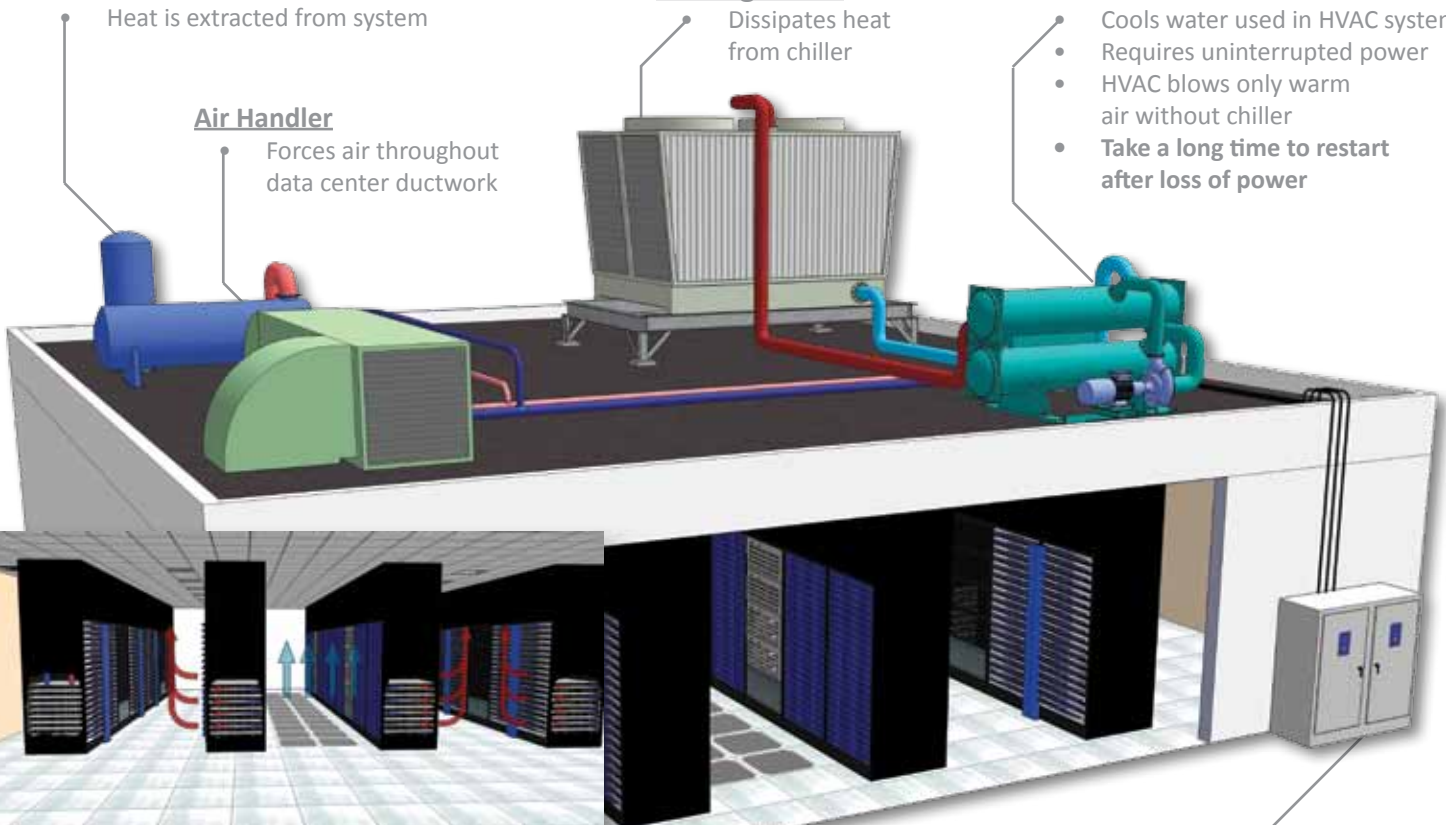
Forces air throughout data center ductwork

Cooling Tower

Dissipates heat from chiller

Chiller

- Cools water used in HVAC systems
- Requires uninterrupted power
- HVAC blows only warm air without chiller
- Take a long time to restart after loss of power**



There are several styles of data center cooling. A common method delivers cold air to an aisle, then is drawn through the servers and hot air exits into the hot row, and is drawn from the room.

Control Cabinet or Room

- Contains drives to adjust speed of motors controlling HVAC equipment
- Contains Bonitron Uninterruptible Power for Drives



Power Disturbance

A simple fluctuation in power can quickly cause chaos in a data center. While the servers may have backup power, the cooling system may not. Without cooling, data centers must shut down within seconds to prevent overheating and damage. This leaves critical data unavailable.



An Emerson study suggest that the average downtime lasts around 90 minutes and costs roughly \$500,000!



How do you keep your cool?

Uninterruptible Power for ABB Drives



With Bonitron Uninterruptible Power for Drives (UPD) installed, your cooling process never sees a power disturbance!

Bonitron UPD systems monitor the AC line and when power sags or is lost, the UPD system provides efficient power to the DC bus of your drive system. This allows a seamless transition from utility power to Bonitron UPD backup.

A common cost effective method involves using Bonitron UPD systems as a power bridge until generators are started. Since Bonitron UPD systems are installed at the drive location, power quality problems within the facility will not affect power being delivered to the drive system like they would affect a plant-wide UPS.

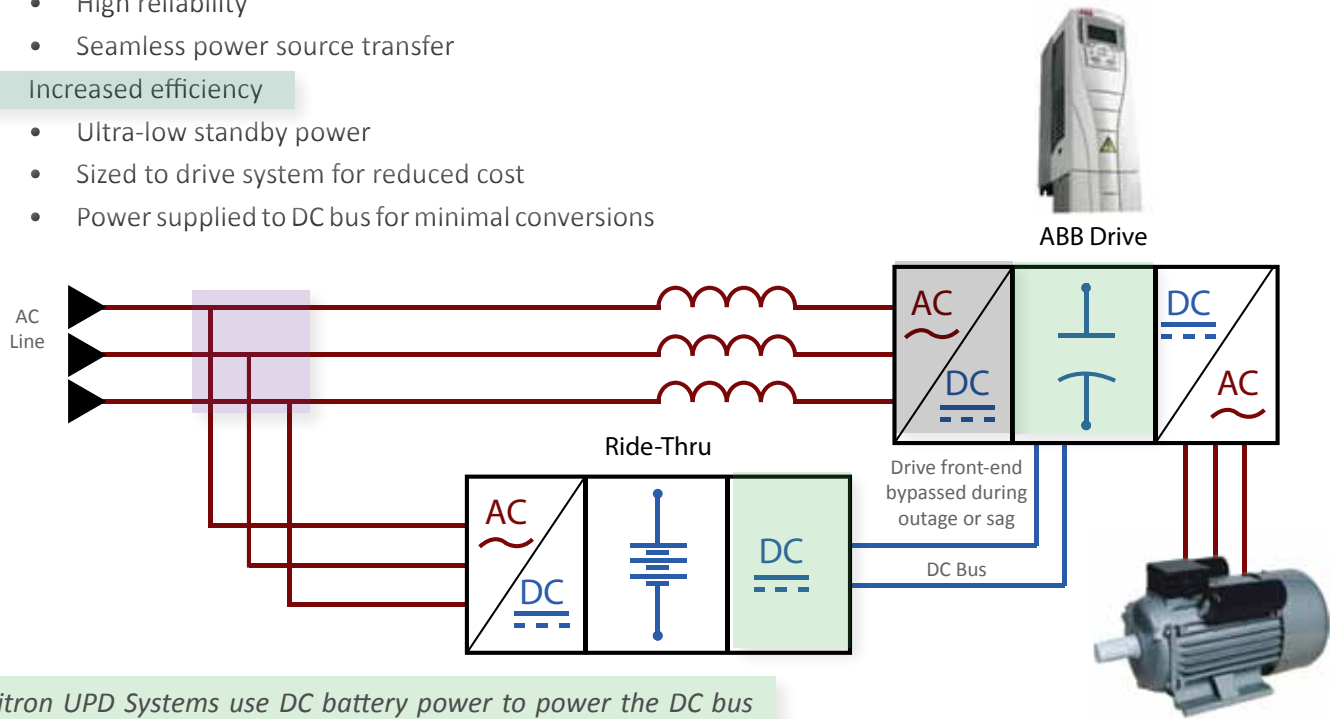
Bonitron Highlights

- Ultra-low standby power
- Easily installs at drive location
- Delivers DC power for increased efficiency
- Scalable to your power and outage specifications
- Sag correction solutions available with no energy storage required
- Parallel connection for high reliability and remarkable life expectancy
- Monitor power quality events with a digital user interface with data logging



Bonitron UPD Advantages

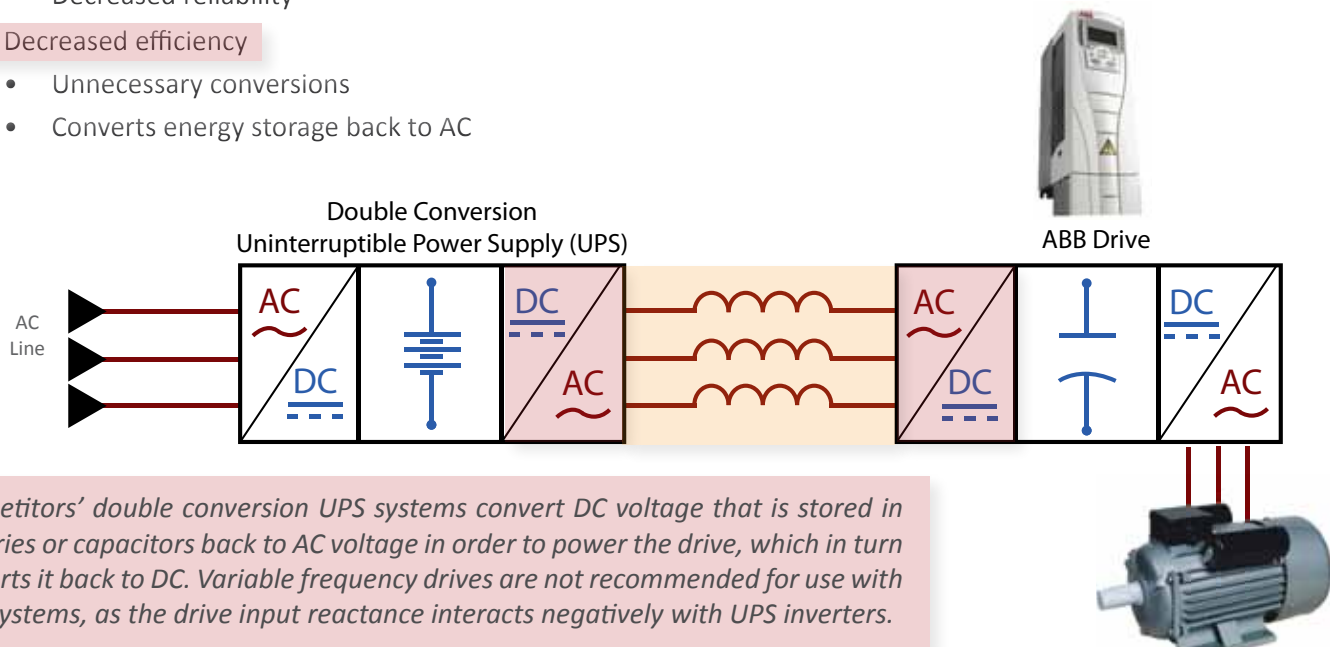
- Parallel Connection
 - High reliability
 - Seamless power source transfer
- Increased efficiency
 - Ultra-low standby power
 - Sized to drive system for reduced cost
 - Power supplied to DC bus for minimal conversions



Bonitron UPD Systems use DC battery power to power the DC bus of the drive via DC bus connection terminals on the drive. This eliminates an unnecessary and energy wasting DC to AC conversion.

In-line UPS Disadvantages

- Series Connection
 - Decreased reliability
- Decreased efficiency
 - Unnecessary conversions
 - Converts energy storage back to AC



Competitors' double conversion UPS systems convert DC voltage that is stored in batteries or capacitors back to AC voltage in order to power the drive, which in turn converts it back to DC. Variable frequency drives are not recommended for use with UPS Systems, as the drive input reactance interacts negatively with UPS inverters.