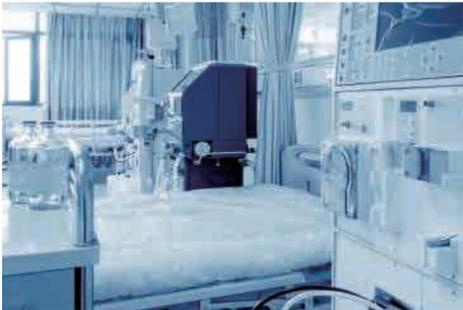
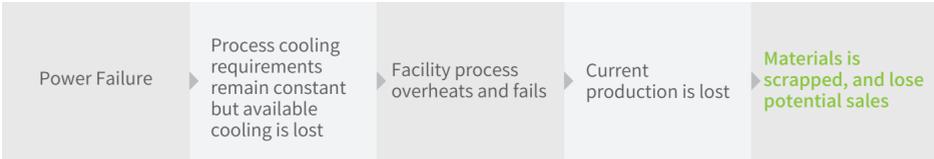


EFFECT OF POWER FAILURE TO PROCESS COOLING



EFFECT OF POWER FAILURE TO HOSPITAL



www.carrier.com

CARRIER SWIFT RESTART ELIMINATE SYSTEM DOWNTIME

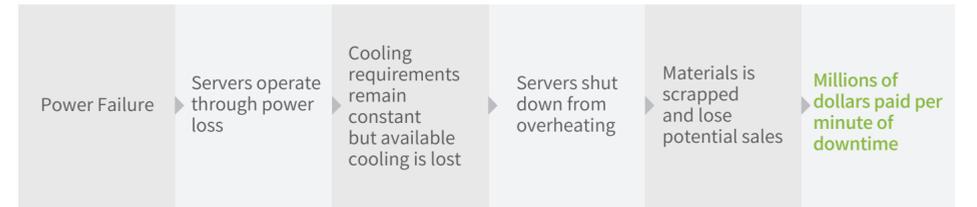
Optimized solution to save your time and money



Operations such as data center, manufacturing facilities and hospital are sensitive to temperature and humidity which require constant cooling for equipment and processes. Reliable chilled water supply is of top priority along with the requirements over efficiency and reliability. With power loss and the cooling supply being interrupted, increasing indoor temperature will lead to serious consequences such as equipment failure and operational downtime, even life will be in danger.



EFFECT OF POWER FAILURE TO DATA CENTER



What if we can save you both Time and Money

Try to activate **Carrier® Swift Restart**

- This function is designed for the customers who want to reduce the effect from unexpected power failure, and it allows the chiller to be restarted swiftly to meet the building load requirements.
- In order to have a quick restart be performed, the power failure must be no more than about 15 minutes in length. Longer power failures will result in a normal restart rather than a swift restart once power has been restored.



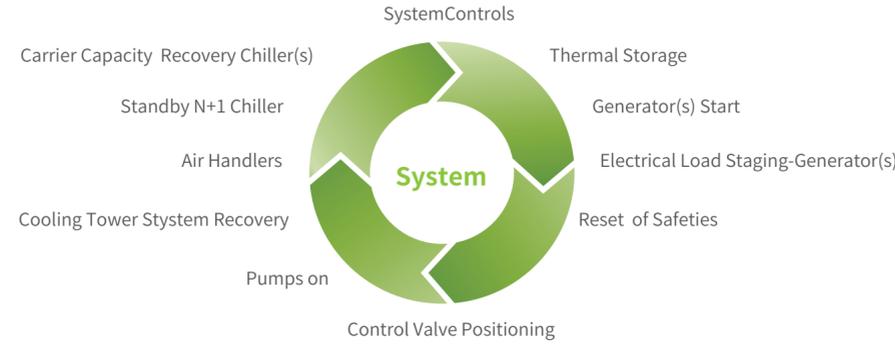
The Carrier® Swift Restart Feature

Carrier Swift Restart feature is designed for critical cooling installations, such as data centers and process applications, where the goal is to re-establish cooling as fast as possible after a power failure. The Swift Restart feature accomplishes this goal by minimizing time to restart and loading the chiller as quickly as possible, to rapidly achieve the leaving chilled water temperature setpoint. The main objective is to provide minimum down time and the fastest restart/loading as possible.

- Reduces time for chiller restart after power failure**
- Loading the chiller faster too**
 - Rapidly re-establishes chilled water temperature
 - Keeps process equipment cooled
 - Reduces the risk of unexpected downtime
- Less investment cost to build more reliable system**
 - Reduces or eliminates buffer tanks or thermal storage systems
 - No additional space required
 - Much less expensive



Chiller Restart = System Restart ?

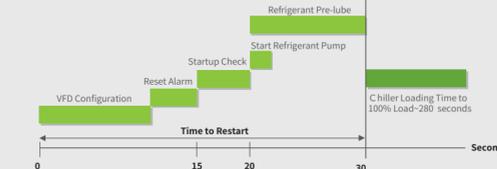


- Chiller Restart ≠ System Restart, but Swift Restart could help the system recover faster.
- Generators require staggered chiller starts.
- Stand-by chiller may start first.
- System designers shall accommodate restart exclusions.

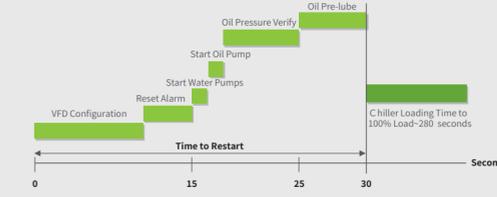
More than fast with Carrier Swift Restart

- Carrier's chillers are equipped with the latest and powerful Carrier® SmartVu™ control system, which provides smart auto control and monitoring functions for chiller stable operation. With its helps, chillers can automatically identify short power failure and optimize verification programs, and the centrifugal chiller can be restarted within **30 seconds** once swift restart is activated.
- The factors that may impact the restart time.
 - Chiller structure/compressor type.
 - Power failure time.
 - The system restart sequence/logistic.
 - Oil pressure.
 - Setting temperature/environment temperature.
 - Auto diagnostic capability.
 - Etc.

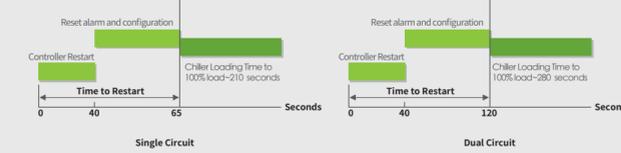
19DV Centrifugal Chiller with Swift Restart



19XRV Centrifugal Chiller with Swift Restart



30KAV Air-cooled Screw Chiller with Swift Restart



30XW-V Water-cooled Screw Chiller with Swift Restart



- Above time is based on Carrier lab testing results which are under specified configurations and conditions.
- No alarm or override trip when restart.
- The indicator of centrifugal chiller's full load is reaching full load amp.
- The indicator of screw chiller's full load is reaching target VFD speed.
- There could be +/- 5 seconds deviation due to various site conditions' impact.
- Please contact with local Carrier sales office for more information if necessary.

Turn to Carrier for powerful chiller operation and exceptional building performance.

| Efficiency | Reliability |
|---|---|
| <p>Carrier's AquaEdge® 19DV centrifugal chiller with PUREtec™ refrigerant and Greenspeed® intelligence is the ultimate innovation that provides you with unmatched ease and industry-leading efficiency in installation, operation, and maintenance without compromising the environment. 19DV chillers can achieve up to 7.3 full load COP_s and 12.3 IPLV.IP at AHRI conditions.</p> | <p>Oil system free, no maintenance fee of oil system. Unit mounted Greenspeed™ variable speed drive and single two stage compressor with dual IGV can reduce energy consumption and improve efficiency and stability of the chiller system during variable lift at both full and part loads. Hybrid-cooled VFD minimizes VFD size and ensures proper cooling of transistors for extended life. IP54 VFD cabinet can well protect the electrical components from dirt and drip-water. Low starting current (inrush). Low harmonic distortion: THD<5%(optional).</p> |
| <p>Carrier's AquaEdge® 19XRV centrifugal chiller, which is equipped with a factory-installed variable speed drive that maximizes efficiency by optimizing compressor operation. Electric power consumption drops dramatically when the motor speed slows. The 19XRV chiller delivers industry-leading integrated part-load values: with AHRI certified efficiencies up to 11 IPLV.IP and more than 60% higher than general fixed speed centrifugal chiller.</p> | <p>Single compressor design increases product reliability by eliminating additional compressor parts associated with multi-compressors chillers. Optimized VFD cooling solution minimizes VFD size and ensures proper cooling of transistors for extended life. Low starting current (inrush). Low harmonic distortion: THD<5%(optional).</p> |
| <p>The AquaForce® 30KAV is new generation Carrier Inverter-driven air-cooled screw chiller, with new VFD 06z compressor, Gen 6th VFD fan, "W" coil design, advanced Carrier® SmartVu™ touch screen controller, IPLV 5.5-5.69, COP_s 3.0-3.2@AHRI condition, meeting different customer needs in various industry.</p> | <p>06z new VFD Compressor, removing slide valve, less moving parts and increasing efficiency, new VI valve, reducing noise. "W" shaped coils to reduce the length and weight, make 30KAV to be the smallest in industry. Carrier SmartVu™ touch screen controller, standardly configure Modbus/BACnet 6th generation of inverter driven flying bird™ fans, Fruit of a long experience in designing low noise. Wide operation range -20°C - 50°C (part load). AHRI certified for full series models.</p> |
| <p>The exclusive inverter-driven Carrier compressor and extremely efficient heat exchanger used for the AquaForce® 30XWV ensures high energy efficiency. The full load COP_s is up to 6.3 and the IPLV is up to 10.1 at AHRI condition which is 30% higher than traditional fixed-speed chiller, and with payback time less than 2 years.</p> | <p>Industrial-type 06T screw compressors with oversized bearings and motor cooled by suction gas. Electronic paddle-free flow switch, auto-setting according to cooler size and fluid type. The intelligent and dynamic algorithm of Carrier® SmartVu™ controller ensures optimal, effective and reliable chiller operation. AquaForce® 30XW-V can operate even at high condensing temperatures without surge risk. Automatic compressor unloading in case of abnormally high condensing pressure or discharge. The low total harmonic current distortion rate (THDi) is optimized to 5% and 10% (options). 30XW-V conducts strict controls over product quality during design, testing and manufacturing process, implementing global manufacturing standard for product specification with rigorous testing standard.</p> |