



United Technologies  
turn to the experts 

# THINKING AHEAD.



**AQUAEDGE**<sup>™</sup> greenspeed 

AquaEdge 19PV  
Magnetic Bearing Chiller



# WE ARE THINKING AHEAD

Carrier's AquaEdge 19PV magnetic bearing chiller represents our commitment to thinking ahead of our customers and catering to their needs with our exceptional innovations and perfections. Incorporating the magnetic bearing compressor, GreenSpeed intelligence, optimized heat exchanger, and sophisticated system design, the 19PV chiller is a comprehensive solution that is tailored to our customer needs of quiet workplace, smart operation, peaceful mind and easy installation.



**SMART  
OPERATION**

**11.2**  
IPLV



**QUIET  
WORKPLACE**

**73<sup>dB(A)</sup>**  
sound level



**PEACEFUL  
MIND**

**110<sup>s</sup>**  
capacity recovery<sup>[1]</sup>

**≤5%THD**  
active filter



**EASY  
INSTALLATION**

**1.1<sup>m</sup>**  
minimum width

Notes: [1]. Recover to 80% capacity

# WE OFFER A SMART OPERATION

AquaEdge 19PV enhances the energy management performance and efficiency of buildings with its robust and distinct features such as magnetic bearing compressor, optimized heat exchanger and sophisticated system design and control.

11.2  
IPLV

6.3  
COP

Remote  
control

Cloud  
service

## Magnet Bearing Compressor ①

Together with the permanent motor, the magnetic bearing compressor maximizes compression efficiency and reduces mechanical loss.

### Higher mechanical efficiency

Direct driven magnetic bearings compressor eliminates efficiency loss from gear transmission and friction between shaft and bearing.

### Higher motor efficiency

Permanent magnet motor by pulse-width modulation

-75%  
mechanical loss

NO  
friction loss

>98%  
motor efficiency

## Sophisticated System Design & Control

Our innovative system design is incorporated with sophisticated control algorithm that boosts up overall performance and efficiency at both full and part loads.

### Optimized heat exchange system ②

- Copper tube bundle with internal and external grooves fins
- Flooded multi-pipe evaporator and condenser

### Evolved system design & Control ③

- Greenspeed boosts COP at 25% part load up to 14.5
- Single circuit design improves by 2% at part loads
- Advanced EXV precisely match actual loadings
- Auto-adaptive control and the sophisticated electronics result in precise operation at all conditions

+25%  
mechanical loss

14.5<sup>COP</sup>  
at 25% load

+2%  
motor efficiency

## Smart System Management ④



### Local chiller control

- 10.4 inch colored screen
- User friendly interface
- Comprehensive operational and diagnostic functions



### Remote communication

- Connection to BAS
- Diverse protocols
- Mail alarms



### Smart Service [1]

- Chiller operation records
- Prognostics and preventative maintenance
- Chiller data source for energy saving solution

Notes : [1]The cloud service is optional



# WE OFFER A QUIET WORKPLACE

AquaEdge 19PV features a number of innovative components bringing along exceptional acoustic performance which meets 18001 standard recommended by Occupational Health and Safety Advisory Services (OHSAS). Ideal for hospitality and health care industries.

73  
dB(A)

Free  
of friction

Vibration  
isolation

Rigors  
to acoustic  
design

## Optimized compressor sound



The compressor's rotating parts are completely levitated by electromagnetic force which results in reduced friction and vibration, and hence lower operational sound. The GreenSpeed drive also reduces compressor speed at part loads as the cooling load / condensing temperature goes down.

## Enhanced noise insulation



The cast aluminum casing and high strength thermoplastic electronic enclosure effectively insulate the compressor, which in turn, significantly reduce the noise generated within.

## Improved vibration isolation



The specifically designed cushions mounted between the compressor and heat exchangers effectively weaken the vibration noise spreading through connections.



## Comprehensive Protection

AquaEdge 19PV provides comprehensive protection against the expected and unexpected, allowing you to enjoy safe and secured chiller operation at any moment.

1

### Chiller Starting

- Greenspeed minimizes inrush current <math><2\text{ amps}</math>

2

### Daily Operation

- 19PV Chiller avoids nuisance trip under over load conditions
- Precise water temperature control within  $\pm 0.3^{\circ}\text{C}$
- 19PV chillers can handle large load variations while maintaining water temperature with in close tolerance <sup>[1]</sup>
- Antifreeze protection

3

### Electronic Interference

- Built-in EMC / EMI filter meets IEC61800 Class 3
- Unit mouted active filter with  $\text{THD} \leq 5\%$  <sup>[2]</sup>

4

### Emergency Care

- Capacity recovery to 80% within 110s <sup>[3]</sup>
- Prevents collision of shaft and bearing in case of power failure by electromagnetic force
- Circuit breaker interlock with high pressure switch

## Quick capacity recovery in 110s

In case of power outages, the intelligent control function of 19PV can restart the compressor in a short period of time once the power recovers, and its cooling capacity can be recovered to 80% in 110 seconds <sup>[3]</sup>. This outstanding recovery capability is perfect for workplaces such as data center that requires exceptional system reliability.

## Fewer failures due to elimination of oil system

The elimination of oil system and its necessities such as pipes, filters, pumps and separators in 19PV significantly reduces the overall failure frequency. Zero oil-related features also means reduced maintenance work for the chiller operators.

Notes :

[1].30% change in water flow per minute with +/- 1°C leaving chilled water temperature variation [2].Comply with IEEE519 (optional) [3].Optional

WE OFFER  
A PEACE OF MIND

110s  
recovery

<math><2\text{ Amp}</math>  
inrush  
current

$\leq 5\%$   
THD

Free  
of oil

# WE OFFER AN EASE OF INSTALLATION

Need to install chillers in new buildings or retrofit projects? The AquaEdge 19PV is built to address the technical and installation challenges that you face.

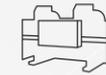
- 1.1<sup>m</sup> minimum width
- 80% lighter compressor
- CUSTOMIZED passes & water pipe configuration
- MAIN circuit breaker

### Scenario 1



#### Building owner

I am working on a retrofit project and wish to retain the existing building facilities as much as possible. How can we get the chiller through the door that is only 1.4 meters in width?



#### AquaEdge 19PV

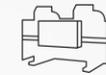
19PV comes with a maximum width & foot print of 1.3 meters and 5.5 square meters respectively. Smaller chiller with lighter compressor (80% less in weight comparing to that of the conventional chillers) not only addresses difficulties of limited space and on site installation, but also reduces transportation and rigging efforts significantly.

### Scenario 2



#### Chiller installer

Our plant room size is limited . Can we customize the water pipe connections?



#### AquaEdge 19PV

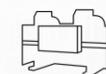
19DV chiller provides the greatest flexibility in customizing water pipe outlet / inlet and heat exchanger passes according to your specific needs. Our standard offering of victaulic connection can also help to further simplify the installation process.

### Scenario 3



#### Maintenance engineer

My responsibility is to ensure the system operational reliability. I am always concerned about safety of our operators and electricity network.



#### AquaEdge 19PV

Equipped with a main circuit breaker, 19PV can be completely disconnected from electricity power during routine maintenance and in the case of emergency such as chiller trips due to high condensing pressure. Moreover, extra device is NOT requested to comply IEC 61800 Class 3 thanks to built-in EMC / EMI filter, and the unit mounted active filter with low THD can reduce installation efforts.

# WE ARE THINKING AHEAD

Carrier's AquaEdge 19PV Magnetic Bearing Chiller with its innovative design, sophisticated control and rigorous attention to detail offers unparalleled building performance to customers across industries.



**110<sup>s</sup>**  
capacity recovery<sup>[1]</sup>

**11.2**  
IPLV

**73<sup>dB(A)</sup>**  
sound level

**1.1<sup>m</sup>**  
minimum width

**≤5%THD**  
active filter

**DATA CENTER**

**OFFICE/METRO**

**HOSPITALITY**

**HEALTH CARE**

**RETROFIT**

Notes: [1], to 80% capacity as option



We make the world a better place to live. We create comfortable, efficient, healthy, safe and secure environments, and ensure the global food supply is transported and preserved for safe consumption.

