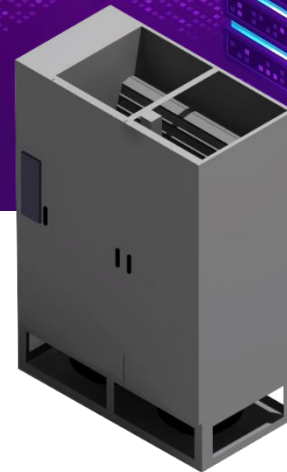




AFRA Chilled Water Room Cooling

ADVC series 30 – 175 kW



Chilled Water Room Air Conditioners with Underfloor Fans

Perimeter cooling for medium and large data centers

- Latest generation EC & VFD fans
- Underfloor Single Coil version for low/medium operating temperature (SC)
- Underfloor Dual Coil version for low/medium operating temperature (DC)
- Underfloor Single Coil version for high water temperature (HT)

Benefit

- Extended chilled water coil to deliver high specific cooling capacity with maximum efficiency in limited footprint
- Design based on economization with direct and indirect free-cooling operation
- Smart airflow and thermal load management for energy efficiency
- Highest reliability to safeguard business
- Modular and tailored configuration for many applications
- User friendly touch screen display for easy access to all parameters
- Easy maintenance and full-frontal access

Underfloor configuration for Opex and Capex savings

Large chilled water coil and high specific capacity

ADCV fans are located underneath the floor, enabling more coil surface in the unit and less internal air-side pressure drop.

- More heat exchanger coil and less pressure drop equals less power consumption and more capacity inside a compact footprint.
- Water circuits design is optimized to have low water pressure drop even with high water flow rate and tight water DT.

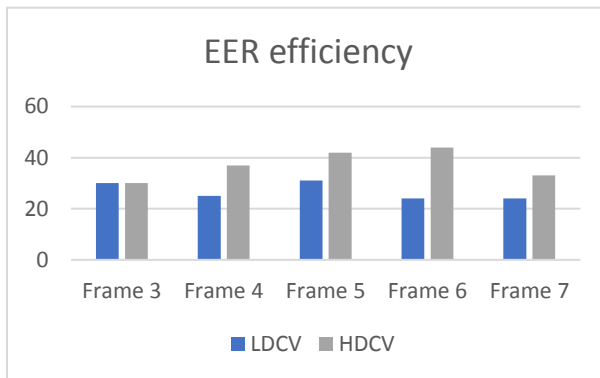
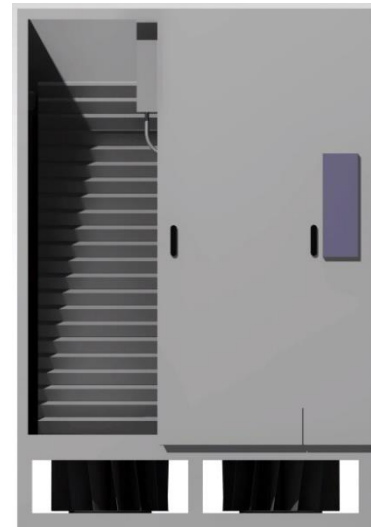


Figure 1. Comparison LDCV*-HDCV -same capacity -Air 35°C/30% -Water 16-24°C

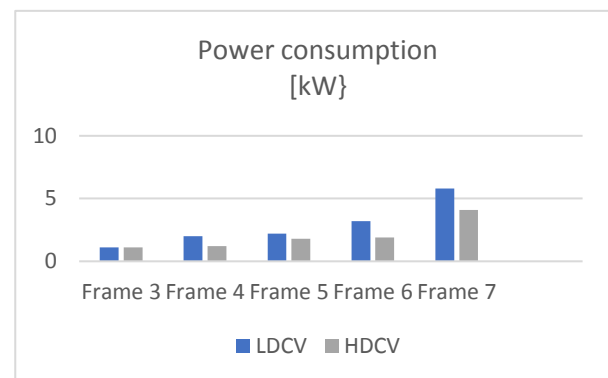


Figure 2. Comparison LDCV*-HDCV -same capacity -Air 35°C/30% -Water 16-24°C

Boosted capacity to save white space occupancy

While data center loads are increasing, there is less space available for cooling equipment that must therefore provide the required cooling capacity with a minimum white space occupancy. The ADCV series is designed to provide the highest cooling capacity in the linear occupancy compared with traditional units. This means:

- Maximum space available for the IT equipment
- Resized electrical infrastructure

* Traditional design units with fans inside unit cabinet

Economization strategies

Direct free cooling

Under certain climate and air quality conditions, the optional Free Cooling plenum enables the direct use of external air to cool the Data Center with enormous energy savings.

According to the site conditions the unit can be configured with specific free-cooling control logics to maximize the free cooling hours.

Room humidity is continuously monitored with the ability to disable free cooling in case of high room humidity. Maximum and minimum humidity levels are monitored

Indirect free cooling

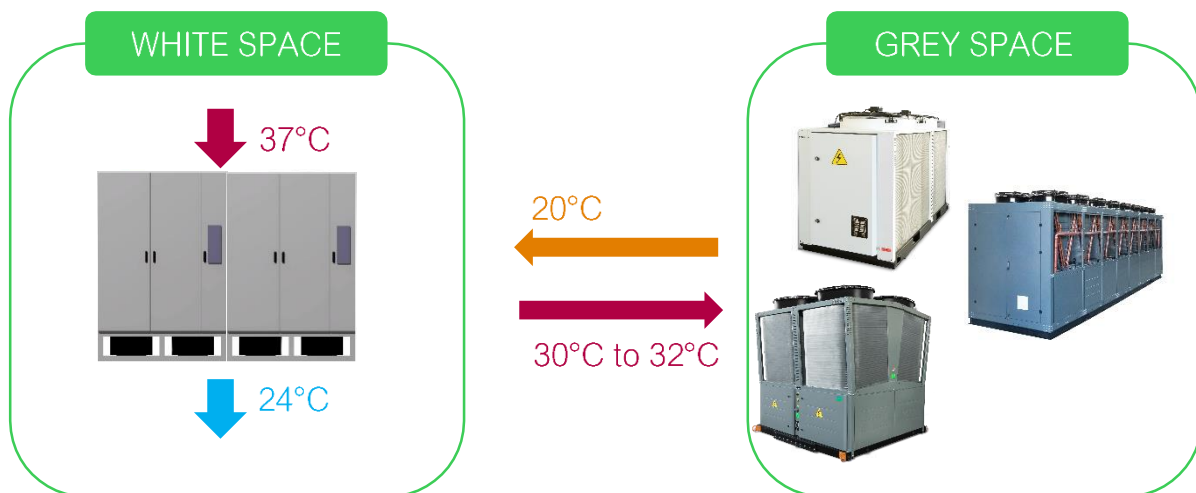
When combined with a free-cooling chiller, chilled water systems can leverage on the outdoor temperature to reduce the energy consumption throughout the year. In this case the free cooling effect is provided by the free-cooling coils of chillers.

If properly designed, this system can provide outstanding energy savings and can be applied regardless the outdoor air quality and humidity

Indirect free cooling and design on optimum temperatures

To further maximize energy efficiency, the ADCV series is available in a High Temperature version (20-250kW).

- Designed to maximize the efficiency of the thermal exchange and provide precise supply air temperature to the servers
- Optimized for a water regime of 20°C / 30°C, with airflow of 37°C on the return side and a supply air temperature between 24°C and 25°C.
- Wide water DT to reduce water speed in the coil and improve thermal exchange efficiency.



Smart airflow management

The Data Center is a dynamic working environment where required airflow can fluctuate considerably. If this is not correctly considered the cooling system will use more cold air than the actually needed. ADCV units manage the airflow to adjust the cooling system power consumption according to changes in IT load.

Cooling capacity regulation with fixed or variable airflow

Latest Generation composite EC & VFD Fans provide fan speed adjustment via the microprocessor control while the unit is running with the ability to regulate airflow depending on the actual thermal load. This means lower power consumption on the fan side and high part-load efficiency.



Last generation EC fans

Automatic Floor Pressurization System.

Fan speed changes to maintain a constant set point of pressure under the raised floor. The change in airflow is based on the pressure differential between the air under the floor and the air above the floor. Automatic Floor Pressurization System (AFPS) adapts the power consumption to IT Room load changes over the time, minimizing energy consumption in all operating conditions

Active stand-by management.

Up to 15 units can be linked to each other through the local LAN network to perform grouping logic. Units are rotated on a time basis to optimize operation. The stand by units integrated with AFPS can be switched on to maximize system efficiency.

Easy maintenance



- Ease of maintenance is key to reduce operating costs and avoiding downtime. Regular maintenance can be carried out while the unit is in operation and without airflow disruption.
- . Full frontal access for regular maintenance
 - . Easy maintenance and component replacement
 - . User friendly electrical connections
 - . The front panels can be opened without the need for special tools
 - . Easy removal of fans from front of the unit

Total reliability and connectivity

Continuous availability: dual power source

ADCV units are available in single and dual power supply with automatic electromechanical change over for complete redundancy without single point of failure, as Per TIER recommendations.

The ultracapacitor is included in the dual power supply version and is optional in the single power supply version. It keeps the microprocessor powered during the switching of the lines to save time for reboot of hardware and firmware and allow a quick restart

High redundancy: dual cooling source

ADCV units are available in Dual Coil (DC) version. These units have two separate hydraulic circuits that can be connected to separate cooling sources, providing redundancy and an emergency cooling source.

Different cooling strategies (tandem, redundant, dual input, single input) allow HXCV DC units to maximize the cooling capacity per linear occupancy.

Cybersecure your data

AFRA HVAC protects customer's security and privacy. ADCV units ensure:

- protection against cyber-attacks according to latest standards (TLS 1.2)
- the possibility to implement the unit in networks requiring HTTPS certificate
- a three-tier user access with trusted password management

Continuous monitoring and WEB integration

Metering and continuous monitoring of the operating parameters are key for a precise control of the cooling system operation to prevent system failures. ADCV units can measure operating conditions as well as cooling capacity and power consumption. All data can be easily shared with any Building Management System as units come with a complete set of integrated cards that ensure wide and secure connectivity. Native integration with EcoStruxure™ IT Platform via SNMP is also provided.

Advanced Control

Advanced control logics ensure an intelligent operation of ADCV units to meet the cooling and airflow needs without wasting energy.

- Air flow control adapts to specific data center air distribution strategies (hot or cold aisle) and ensures efficient air flow management
- Advanced microprocessor control system UG50 enables direct communication between multiple ADCV units (up to 15) enabling precise cooling and high reliability



7 inch
touch-screen
display

ADCV series main features

1 Coil module

- . For installation above the raised floor
- . Large surface copper and aluminum cooling coil
- . Designed for mid-low water temperatures and HT version for high water temperatures (20°C up to 32°C)
- . Internal aeraulic layout designed to optimize airflow and maximize fan efficiency

2 Air filters

- . High efficiency EU4 or EU5
- . surface maximization for low air pressure drops

3 Integrated user interface

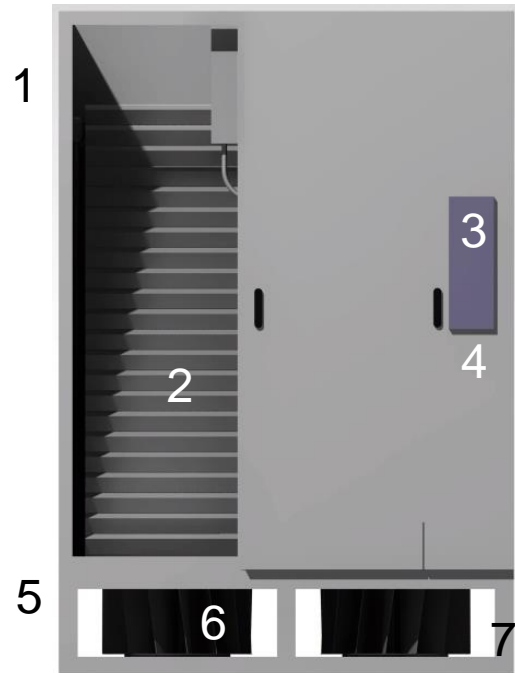
- . 7" touchscreen display
- . Native integration with EcoStruxure IT Platform via SNMP

4 Power supply

- . Single and double power supply
- . Ultracapacitor

5 Underfloor fan module

- . Optimum air distribution
- . Avoid turbulence to increase fan efficiency



6 Electronically Commuted Fans

- . Latest generation Radical composite EC & VFD fans
- . New impeller design maximizing efficiency
- . Microprocessor continuous fan speed regulation

7 Adjustable legs

- . Easier installation on raised floor

A wide choice of air flow configurations for any site layout

- Fan module open on all sides
- Fan module with frontal air discharge
- Fan module with frontal and lateral air discharge
- Fan module with all sides closed for installation above the floor
- Back discharge for installations in technical corridors out of the IT space

Technical data

SINGLE COIL VERSION										
ADCV MODEL		0800A	1400A	1800A	2500A	2900A	4600A	5100A	5300A	5500A
Fan type		VFD & EC								
Power supply	V/ph/Hz	400/3/50								
Fans	nr	1	1	2	2	2	3	3	4	4
Airflow	m3/h	10000	13000	19000	24000	24000	31000	35000	40000	42000
Net sensible cooling capacity	kW	34	54	78	76	99	136	156	173	181
DIMENSIONS										
Height	mm	2510								
Length	mm	1010	1310	1720	2170	2170	2570	3100	3100	3405
Depth	mm	865								

DUAL COIL VERSION										
ADCV MODEL		0800A DC	1400A DC	1800A DC	2500A DC	2900A DC	4600A DC	5100A DC	5300A DC	5500A DC
Fan type		VFD & EC								
Power supply	V/ph/Hz	400/3/50								
Fans	nr	1	1	2	2	2	3	3	4	4
Airflow	m3/h	7900	13000	17500	24000	-----	32000	-----	35000	42000
Net sensible cooling capacity	kW	28	42	57	82	-----	108	-----	125	151
DIMENSIONS										
Height	mm	2510								
Length	mm	1010	1310	1720	2170	2170	2570	3100	3100	3405
Depth	mm	865								

HIGH TEMPERATURE VERSION										
ADCV MODEL		0800A HT	1400A HT	1800A HT	2500A HT	2900A HT	4600A HT	5100A HT	5300A HT	5500A HT
Fan type		VFD & EC								
Power supply	V/ph/Hz	400/3/50								
Fans	nr	1	1	2	2	2	3	3	4	4
Airflow	m3/h	7400	11000	17000	-----	25500	28200	-----	33700	36400
Net sensible cooling capacity	kW	28	42	64	-----	98	108	-----	131	143
DIMENSIONS										
Height	mm	2510								
Length	mm	1010	1310	1720	2170	2170	2570	3100	3100	3405
Depth	mm	865								

- 1 - Data refer to nominal conditions: Room at 35 °C-30% RH water temperature 18/24 °C, fan module installed under a 900 mm raised floor, and glyco10%.
- 2 - Includes fan module.
- 3 - Cooling performance refers to one running CW circuit.
- 4 - Data refer to nominal conditions: Room at 36 °C-30% RH water temperature 20/30 °C, fan module installed under a 900 mm raised floor, and glyco120%.



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