



United Technologies
turn to the experts 

39CQM Air Handling Unit

Modular air handling in a configurable package





A New Approach to Air Handling

From clean rooms to industrial applications, the 39CQM AHU offers advanced technology, reliability, and configurability in a streamlined package to satisfy the most taxing building demands. Easy assembly makes the 39CQM AHU ideal for new installations and retrofit projects alike.



Selecting the Right Tool for the Job

Every building is different—size, occupancy, environment, climate, materials, and function are just a few factors that should be considered when selecting an air handling unit (AHU). At Carrier, we place intense focus on equipment performance and quality. Likewise, we believe that selecting the right equipment for each application is essential to system performance, which is why our AHU selection process begins with a team of highly experienced design and application engineers working closely with you.

After our engineers fully understand your building's requirements, we use advanced selection software to optimize your equipment configuration and system design—now with more performance and efficiency options than ever before with the introduction of the 39CQM AHU. Custom-designed AHUs are expertly built in our Malaysia facility to exacting Carrier standards and quickly delivered to your site.

For comfort or process cooling, indoor or outdoor use, or constant or variable airflow, the 39CQM AHU can be configured to meet your design parameters. With configurable dimensions in 100mm increments, the 39CQM can fit in almost any space.

Design for Access and Service

Designed with maintenance in mind, the 39CQM uses many industry standard serviceable components. Servicing is a breeze with convenient access panels to the fan, coil, and filter.

High quality maintenance is essential to efficient and reliable performance of your equipment. Our skilled engineers and service technicians are equipped with the latest tools to ensure AHU and other chilled water systems are diligently maintained.



Certified Performance

Tested by independent laboratories and certified through the Eurovent Certified Performance Programme, the 39CQM AHU meets stringent mechanical and performance standards, such as casing strength, casing air leakage, thermal bridging factor, heating capacity, cooling capacity, and pressure loss on water side¹.



Indoor Air Quality

Keep air clean with high efficiency air filters and washable panels. A full line of compatible primary (panel type), secondary (bag type), and HEPA filters are available to meet a wide range of filtration performance requirements and building applications. Sloped drain pans allow for easy cleaning, and humidity is controlled by TB2 class thermal bridging to reduce airborne particulates and micro-organisms.



Energy Efficiency

Comfort does not have to come at the expense of efficiency. Optional features such as plug fans with electronically commutated (EC) motors are more efficient than conventional alternating current (AC) motors. Add optional recovery wheels, heat pipes, or DX coil loops to economically transfer energy between the exhaust and fresh air paths. A unique pentapost and interpost design with full access panel sealing creates an airtight seal preventing thermal intrusion, reducing inlet air temperatures.



Quiet Operation

Your cooling system should be felt, not heard. A well-designed insulation system delivers both superior thermal performance and efficient noise suppression. Case wall dampening both reduces noise generation and transmission of contact noise. For sound-sensitive applications, plenum fans with directional blades reduce the occurrence of recirculation, thereby increasing airflow and efficiency, and reducing leaks and noise.



Flexibility

Balance performance and efficiency with an optimized design for your application. Sophisticated variable air volume curves are modeled using AHU selection software to configure your 39CQM AHU with flexible energy-saving and performance-improving options. Modular units are configurable in 100mm increments generating airflow up to 75,000 m³/h at 2.5m/s.



Reliability

High quality materials and advanced engineering contribute to the reliability of the 39CQM AHU. A unique structural frame forms a solid foundation enabling safe, easy panel removal for servicing. A 125mm hot dipped base frame and painted frame are available for marine application. The laminated steel-panel construction withstands high-pressure applications while delivering superb deflection performance.



Ease of Installation

Standard modular sizing simplifies and speeds modeling and manufacturing. Each section has a base, enhancing unit strength and streamlining transport and assembly. Specified options are added at the factory for easy site connection, reducing installation time and improving installation quality.

Eurovent Certified

D1: Casing Strength

Carrier's robust and durable casing design enables it to withstand large positive or negative pressure with minimal deflection.

F9: Filter Bypass Leakage

Carrier's special filter frame and track construction effectively prevent air bypassing through the filter cells as a percentage of rated air volume.

L2: Air Leakage

A new casing design encloses the interior support members, and all access panels and pipes are carefully sealed to create an airtight structure.

TB2: Thermal Bridging

The pentapost and interpost are shielded from treated air, and junctions are treated with heat insulation to reduce thermal bridging. Reduced thermal bridging controls condensation and humidity, improving hygiene, helps prevent corrosion, and limits premature ageing due to an increased concentration of corrosive media in the condensate.

T2: Thermal Transmittance

Thick PU foam comprises the middle panel layer supplying rigidity and thermal conductivity, and the frame and frame connectors are specially insulated to prevent thermal transmission through the casing.



39CQM Options

UVC Lamp

- Effectively kill airborne bacteria and viruses
- Low energy consumption and pressure drop
- Link to building management system (BMS)
- CE tested and certified

Acoustic Liner

- Non-fibrous material
- Fire resistant properties (BS 476, 6 & 7)
- UL 94 classification

Heat Pipe

- Horseshoe heat pipe type
- Stacked configuration (optional)
- Humidity control and energy saving

Coils

- Aluminium/Copper fins
- Split duty coils
- SS drain pans
- Aluminium/SS frames
- Heresite coil protection (optional)

DX Coils

- Copper tubes with aluminum fins
- AHRI 410 performance rated
- Copper and blue fins (optional)
- Heresite coating (optional)

Humidification Nozzle

- Hollow cone spray nozzle
- SUS 304 header

Electric Heater

- U-shaped element
- Continuous spiral stainless steel fins
- SUS 304 sheath tubes
- N/A Australia

Silencer/Attenuator

- Pin galvanized steel sheet casing construction
- EN 12101-3:2002 performance rated

Droplet Eliminator

- Plastic or aluminum
- Face velocity up to 5m/s

Electronic Air Filter

- Filters smoke, odor, and airborne bacteria and viruses
- Low energy consumption and pressure drop
- Link to BMS
- CE tested and certified

Weather hood



Energy recovery wheel (optional)

- Humidity control and energy saving
- Enthalpy wheel type
- Reduction in required system cooling and heating capacity
- AHRI and Eurovent certified

Superior Casing Performance

- Eurovent certified D1/L2/TB2/T2/F9
- Solid 50mm double wall design
- Available in Skyblue or Lilywhite
- Thermal bridging is TB2 for 0.5mm inner/0.5mm outer skin casing. (0.8 mm and 1.0mm panel options are available too)

Pitched roof (optional)

- Painted galvanized steel to prevent rust
- Designed for outdoor applications



Filter

- Reduce particulates; improve indoor air quality
- Sealed to reduce leakage
- Wide selection range: G3 to H14
- ASHRAE 52 and EN 779 efficiency rated
- Carbon filter (Optional)



EC plugfan (optional)

- High efficiency (IE4)
- Compact & robust design
- Low noise and vibration level



Opposed blade damper

- Accurate air volume control
- Actuator driven (Optional)

Selection Guides

Standard AHU Configuration Guide

Rapidly estimate the appropriate unit size for your specific project requirement.

DIMENSION VS VOLUMETRIC AIR FLOW

Width Module Height	08	09	10	11	12	13	14	15	16	17	18	20	21	22	24	25	26	30	34	36			
06	0.56	0.83	0.83																				
07				1.11	1.39																		
08				1.39		1.94																	
09					1.94	1.94	2.22																
10								2.78	3.06														
11										3.61													
13											4.44	4.72	5.28		5.83								
14												5	5.56	5.83	6.11								
15													5.56	6.39	6.94	7.5	8.06						
16														6.94	7.22	8.06	8.33						
18															8.06	8.89	9.46						
20																		10.56					
21																			10.83				
22																				12.22	14.17	16.39	
23																					14.72	16.94	
24																						18.06	
26																						19.44	20.83*

*Note : Custom module sizes available to meet larger airflows and/or spatial requirements

Module dimension	: 100mm	Example	: 39CQM1418	<div style="background-color: #cccccc; padding: 5px; display: inline-block;"> Volumetric Air Flow X 1000 l/s </div>
External height	: (n x module) + 100mm	Height	: (14 x 100) + 100 = 1500	
External width	: (n x module) + 100mm	Width	: (18 x 100) + 100 = 1900	
Base Frame Height	: 100mm or 125mm	Nominal face velocity	: 2.5m/s	

Filter Selection

FILTER DETAILS

European Efficiency Guide	Filter Details	Media	Frame Material	MERV Rating
G3	Panel – Primary Filter	Pleated type: Synthetic Fibre	Galvanize Iron / Aluminium	MERV 5
G4	Panel – Primary Filter	Pleated type: Synthetic Fibre	Beverage Board / Aluminium	MERV 7
F5-F9	Bag – Secondary Filter	Pocket type: Synthetic Fibre	Galvanize Iron / Aluminium	MERV 10 -15
H13-H14	HEPA	Water resistance fiberglass	Particle Board	-

Computer Selection Software

Using advanced modeling through a user-friendly interface, we can help you generate comprehensive configuration and performance calculation reports with detailed specifications so you understand your design options. We offer convenient customization with a wide range of options, such as additional coils, fans, motors, or heat recovery. The software can even help design the casing splits for easy shipping and assembly on site.

Built for Your Application

Carrier offers a full line of 39CQM AHUs suited for a wide variety of commercial and industrial applications.

Data Centers

Compact vertical designs reduce footprint and allow for easier service ability of each AHU. Available filtration and humidification options keep space conditions clean and static free. Dependable materials and construction maximize system uptime.

Healthcare

High efficiency (HEPA and ULPA) particulate filtration, antimicrobial coated inner liners, UV light technology, and energy efficient unit design provide the ideal and economical air-conditioning system for healthcare's demanding requirements.

Hotels, Offices, and Museums

Optimized component selection and superior unit design satisfy the variable, modular space cooling requirements of hotels, offices, museums, and airports. Indoor air quality is achieved through efficient design to keep costs down and occupants comfortable.

Schools and Universities

Quiet outdoor air systems with enthalpy wheel, heat pipe and plate heat exchanger energy recovery technologies create the appropriate learning environment for students and teachers.

Revitalizing the Sistine Chapel: The Art of the Invisible by Carrier Air Experts



The Challenge

Since the completion of Sistine Chapel more than 500 years ago, Michelangelo's paintings have become one of the most celebrated masterpieces of our time. The awe-inspiring frescoes attract as many as 20,000 visitors a day. The heat, dust, sweat and carbon dioxide the visitors bring in can potentially damage the chapel's historic artwork.

In 2010, the museum's chapel's curators examined the condition of the frescoes, and they sounded an urgent alarm. Professor Antonio Paolucci, Director of the Vatican Museums, observed, "The Sistine Chapel is dying. That was when I contacted Carrier to design a solution that would protect the frescoes from further contamination and allow the Vatican to keep the chapel open to the public."

The Solution

With Carrier's innovative chiller and air handling solutions and deep engineering expertise, coupled with integrated controls, the new system would limit air motion around the historic paintings, closely control temperature and humidity levels, and minimize noise.

"It was critical to understand how the presence of thousands of visitors affected the chapel's air quality, temperature, and humidity. For that, we used modern simulation tools and state-of-the-art technology to collect data, simulate airflows, and model the chapel's interior atmosphere. The system also had to be invisible to the public, respect 'church-quiet' sound levels, and provide airflow capacity for up to 2,000 visitors in the chapel at one time" says Didier Da Costa, President, Carrier HVAC Europe.

The new system is now twice as efficient as the one it replaced and has three times the capacity.

¹ <http://www.eurovent-certification.com>

Arrestance and Dust Spot Efficiency ratings are based on the ASHRAE 52 test method. Minimum Efficiency Reporting Value (MERV) ratings are based on the ASHRAE 52 test method. European Efficiency Classes are based on European Standards EN 779 and EN 1882

² This project was completed with 39HQ AHU from Europe. However, we are capable of supplying this same clean air, humidity controlled & low noise type application AHU with the 39CQM.



Built on Willis Carrier's invention of modern air conditioning in 1902, Carrier is a world leader in heating, air-conditioning and refrigeration solutions.

We constantly build upon our history of proven innovation with new products, services, and relationships that improve local comfort and efficiency around the world.



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