



Close-Coupled Cooling

Intelligently controlled high performance InRow cooling
for the IT Environment



APC by Schneider Electric Close Coupled Cooling products provide a modular, scalable and predictable solution to meet the cooling needs of any IT environment.

APC[™]
by Schneider Electric

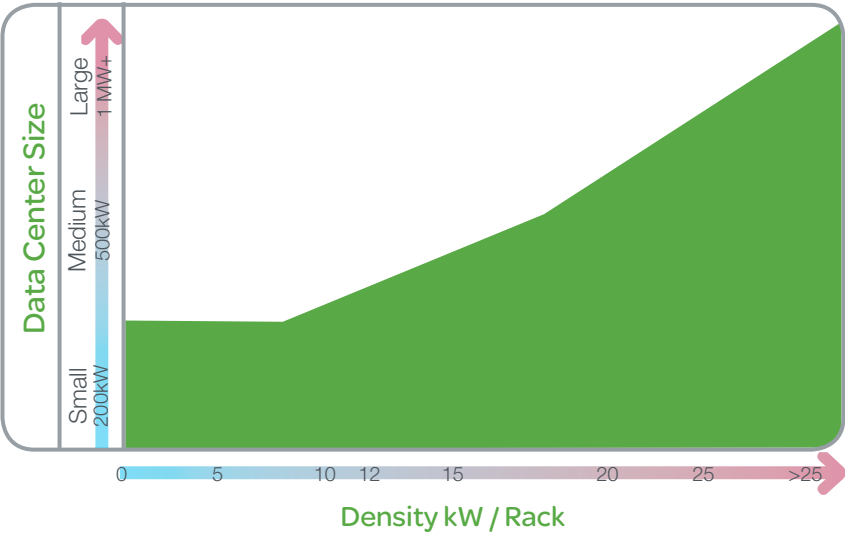


Close-Coupled Cooling for small to large data centers

The InRow cooling product design closely couples the cooling with the IT heat load. An unpredictable data center environment is common among IT managers. In today's data centers, traditional cooling approaches involve complex air distribution systems that tend to be unpredictable and leave many customers guessing where the cold air goes. With the InRow cooling products, Schneider Electric has taken the guess work out of data center cooling. Placing the unit in the row of racks moves the source of cooling closer to the heat load. This minimizes air mixing and provides a predictable cooling architecture.

Close-Coupled Cooling for small to large data centers

- Scalability with **InfraStruxure**
- Predictability at the rack and row level
- High density zones in larger data centers



★ Check out White Paper #130: “Choosing Between Room, Row, and Rack-Based Cooling for Data Centers”

<http://www.apc.com/wp?wp=130>

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> Flexibility

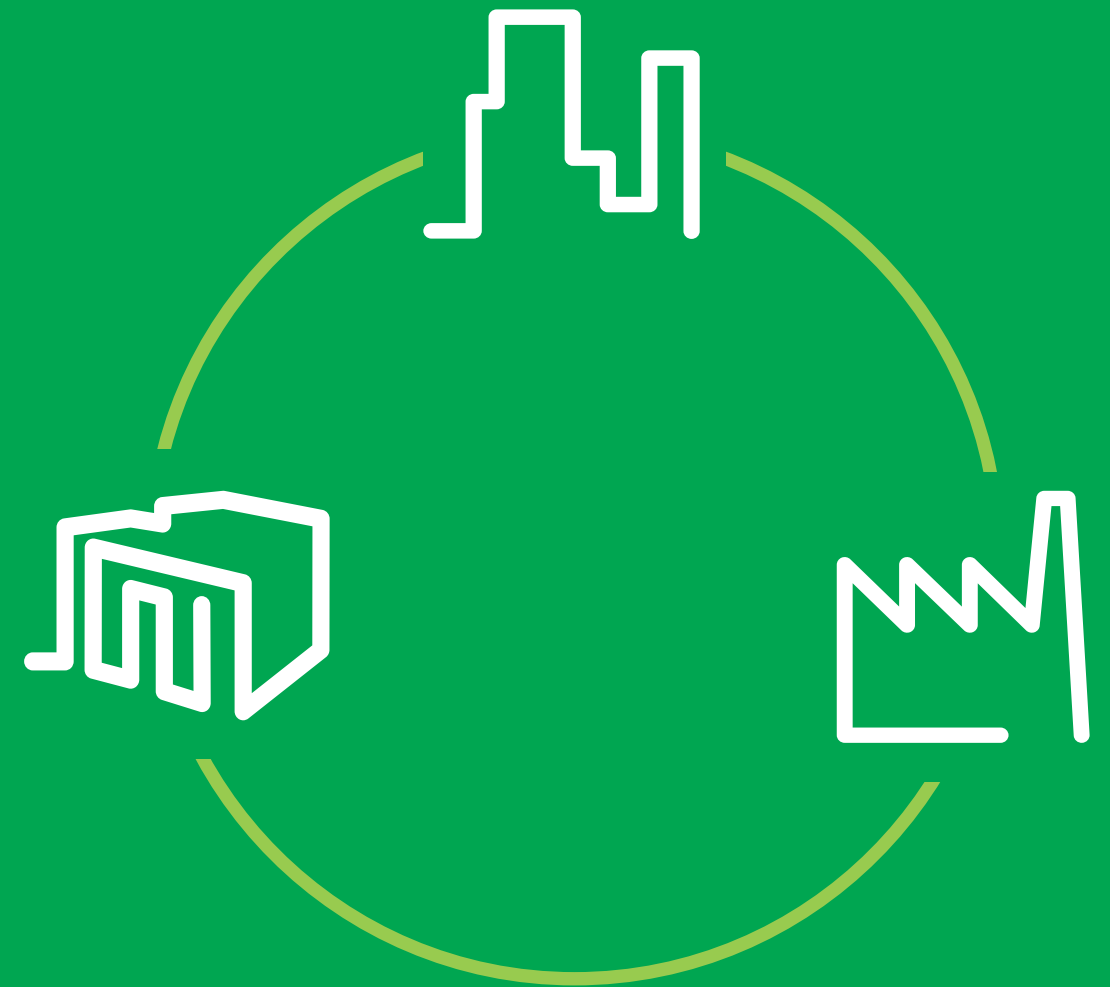
Modular and tailored solutions for any application

> Availability

Continuous operation to safeguard the customer's business

> Energy Saving

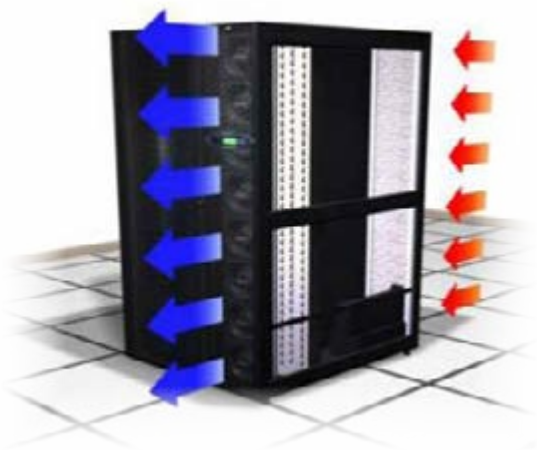
Technological excellence for efficient performance



Make the most of your energy. >

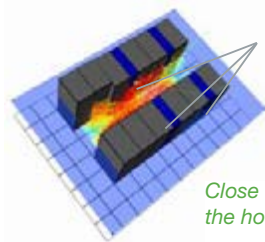
Close Coupled Architecture

Predictable Solution for the Unpredictable Environment!



A close coupled cooling architecture moves the cooling unit from a traditional perimeter placement to a location that is in the row or above the IT racks.

The InRow unit targets the heat that is generated by the IT equipment by pulling the hot air directly from the hot aisle where the heat is generated. The unit removes the heat and supplies cool air into the cold aisle/environment, which is the source of cool air for the IT equipment.



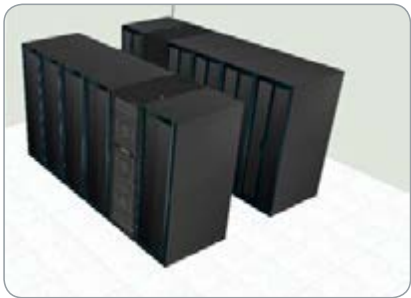
Cooling Units



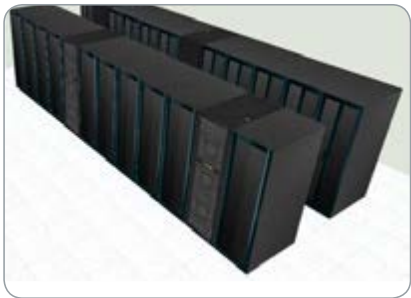
InRow Cooling with EcoAisle containment maximizes efficiency and predictability

Flexible, Reliable, Standardized Solutions

- Modular unit design allows a pod/zone expansion as IT needs change and grow
- Greenfield/Brownfield Environments
- Raised/Slab Floor
- Room Neutral
- Non conventional IT spaces / Office Space
- World Wide Availability



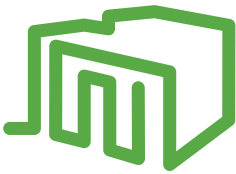
Initial Deployment



Expansion



Final Deployment



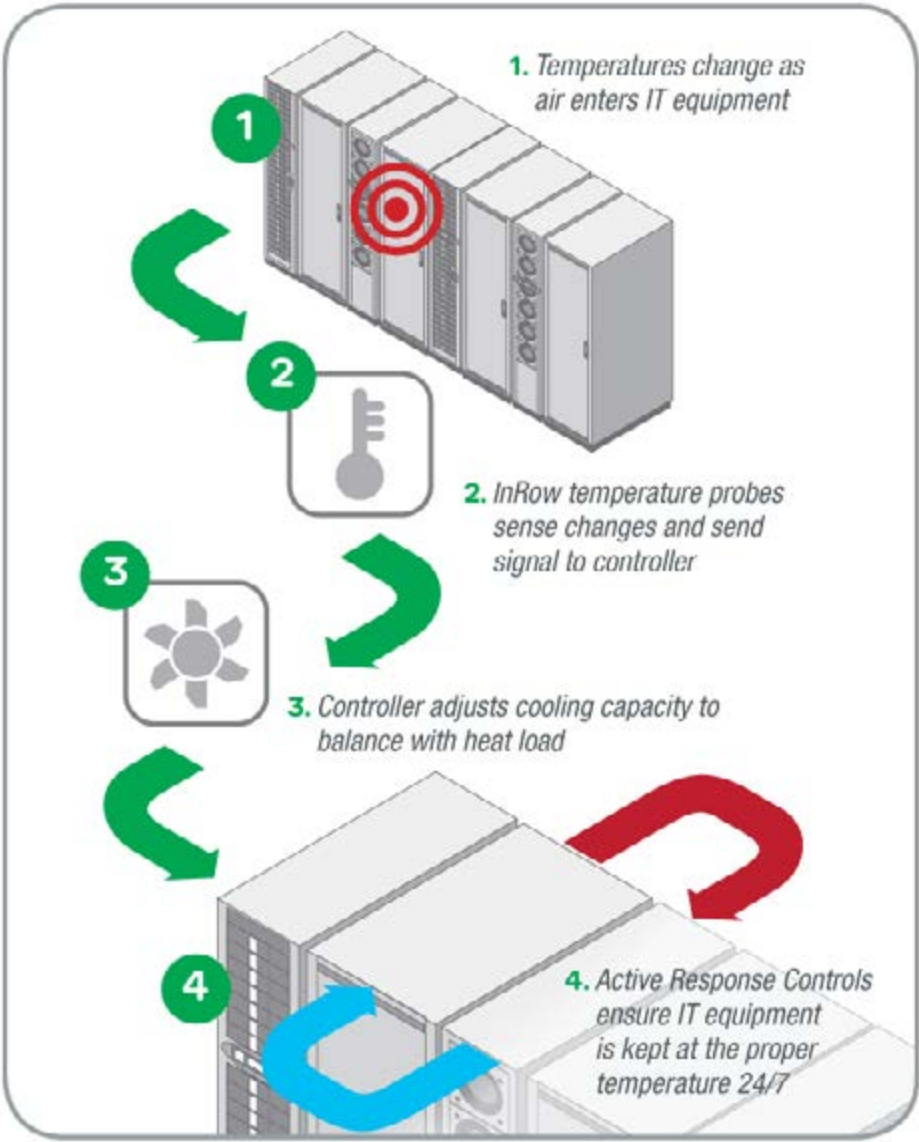
InRow cooling products are designed combining cutting-edge technology with extensive test for energy efficiency and continuous availability.

Energy savings, complete reliability and total flexibility guarantee TCO reduction

Active Response Controls

Increase Availability by Actively Responding to Thermal Changes

- Built into the Microprocessor Controller
- Provides visibility into the units operation, health and capacity



>25kW per rack when combined with thermal containment system

+80% of additional capacity* by capturing the heat at the source
*29.4C (85F) vs 22.2C (72F) return air temperature

40% energy savings when paired with Active Flow Controller

100% predictable*redundancy per pod / cluster
* each cluster is designed for N+1 redundancy

InRow Chilled Water

Up to 70 kW



Standard Features

Water Side Economization

- Allows maximum capacity at elevated water temperatures

Dual Power Inputs

- Offers redundancy and protection

Top / Bottom piping and power connection

- Flexibility of installation
- Field configurable

Variable speed fans

- Reduce energy consumption during off-peak hours

Intelligent control

- Network manageability, real time capacity monitoring, predictive failure notification, and rack inlet temp control.



Air Filter

- Removes airborne particles and protects cooling coil

Casters and Leveling Feet

- Easily adjustable leveling from top down

Integrated baying brackets

- 24in or 600mm spacing options
- Bays with other APC rack and power products

Field Configurable 2-way or 3-way chilled water flow operation

Remote temperature probe to control rack inlet temperature

Factory installed condensate pump (301S / 600mm (24in) only)

Condensate Management System

- Ensures coil temperature remains above dewpoint (optional 301H)

TECHNICAL DATA			
MODEL	300mm (12in) Wide		600mm (24in) Wide
Capacity	Up to 40kW	Up to 60kW	Up to 70kW
Input Voltage	ACRC301S: 100V-240V, 1ph, 50/60 Hz ACRC301H: 208V- 230V, 1ph, 50/60 Hz		200-240V, 3ph, 50/60Hz 380-415V, 3ph, 50/60Hz 460-480V, 3ph, 50/60Hz
Fans	Variable Speed EC Propeller Fans (Hot Swappable)		Variable Speed EC Plug Fans
Condensate Management	Dual-Float Condensate Pump	Optional	Dual-Float Condensate Pump
Options	Cable Water Detector		Electric Reheat Humidification Cable Water Detector
Controls	4.3" Touchscreen display with Active Response Controls		Four-Line Alpha numeric display with Active Response Controls
Communications	Network Protocols: SNMP, Telnet, HTTP, HTTPS, Modbus TCP/IP, FTP Serial Protocols: RS-232 Console, RS-485 Modbus RTU Remote Monitoring		
DIMENSIONS			
Height	1991 mm (78.4 in)		1991 mm (78.4 in)
Length	300 mm (11.8 in)		600 mm (23.6 in)
Depth	1095 mm (43.1 in)		1070 mm (42.1 in)

Options/Accessories



Flexible Piping



High Efficiency Filtration



Height Adapters



Aquaflair Chillers



Rack Air Containment



Aisle Containment

[Flexible chilled water and glycol distribution systems for InRow cooling units]

Chilled Water Distribution Unit

Up to 12 InRow RC (ACRC301S) cooling units



Standard Features

Top / Bottom piping connection

- Flexibility of installation
- Field Configurable

Isolation and Balancing Valve

- Allows isolation and coolant flow adjustments for installation and service

Top / Bottom piping and power connection

- Flexibility of installation
- Field configurable

Casters and Leveling Feet

- Easily adjustable leveling from top down

Insulated piping headers

- Prevents condensation in the unit

Options/Accessories



Flexible Piping

TECHNICAL DATA	
MODEL	ACFD12-T / ACFD12-B
Capacity	Up to 10.1 lps (160 GPM)
DIMENSIONS	
Height	1991 mm (78.4 in)
Length	1070 mm (42.1 in)
Depth	750 mm (29.5 in)



Maximum efficiency,
total availability
where no failure is allowed

InRow Pumped Refrigerant

Up to 31 kW



Standard Features

Top/Bottom piping and power connection (InRow RA)

- Flexibility of installation
- Field Configurable

Casters and Leveling Feet

- Easily adjustable leveling from top down

Integrated baying brackets (InRow RA)

- 24in or 600mm spacing options
- Bays with other APC rack and power products

Temperature Control

- Remote temperature probe to control rack inlet temperature

Dual Power Inputs

- Offers redundancy and protection

Variable speed fans

- Reduce energy consumption during off-peak hours

Intelligent control

- Network manageability, real time capacity monitoring, predictive failure notification and rack inlet temp control

Rack or ceiling mounted (InRow OA)

- Integrated containment over Hot Aisle

Mitigates Risk of Fluid Leaks

- Non-toxic refrigerant
- No water in data center

LED Aisle Lighting (InRow OA)

- Integrated lighting with motion detection

TECHNICAL DATA		
MODEL	300mm (12in) wide	600mm (24in) overhead
Capacity	Up to 31kW	Up to 27 kW
Input Voltage	100-120V, 1ph, 50/60 Hz 200-240V, 1ph, 50/60 Hz	
Fans	Variable Speed AC Axial Fans	
Condensate Management	Controlled relative to dew point	
Options	Cable water detector	Ceiling/Rack Mounting Kit
Controls	3-digit 7-segment numeric display with Active Response Control	
Communications	Network Protocols: SNMP, Telnet, HTTP, HTTPS, Modbus TCP/IP, FTP Serial Protocols: RS-232 Console, RS-485 Modbus RTU Remote Monitoring	
DIMENSIONS		
Height	1991 mm (78.4 in)	350 mm (13.9 in)
Length	300 mm (11.8 in)	600 mm (23.6 in)
Depth	1070 mm (42.1 in)	1415 mm (55.7 in)

Options/Accessories



Flexible Piping



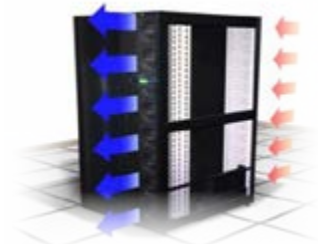
Distribution Piping



Height Adapters



Data and Power Troughs



Rack Air Containment



Aisle Containment

[An energy efficient alternative to chilled water within data centers]

Refrigerant Distribution Unit

Up to 160 kW



Standard Features

Top/Bottom piping and power connection

- Flexibility of installation
- Field Configurable

Variable speed pumps

- Reduce energy consumption during off-peak hours

Full Capacity Modulation

- No minimum loading

Casters and Leveling Feet

- Easily adjustable leveling from top down

Insulated piping

- Prevents condensation in the unit

TECHNICAL DATA	
MODEL	ACDA901
Capacity	Up to 160 kW
Input Voltage	100-240V, 1ph, 50/60Hz
Heat Rejection	Refrigerant to Chilled Water
Pumps	Variable Speed (Hot Swappable)
Controls	Four-Line Alpha numeric display with Active Response Controls
Communications	Network Protocols: SNMP, Telnet, HTTP, HTTPS, Modbus TCP/IP, FTP Serial Protocols: RS-232 Console, RS-485 Modbus RTU Remote Monitoring
DIMENSIONS	
Height	1991 mm (78.4 in)
Length	1070 mm (42.1 in)
Depth	750 mm (29.5 in)



InRow Direct Expansion

Up to 37 kW



Standard Features

Variable Capacity Control

- Allows for low load handling capabilities

Top / Bottom piping and power connection

- Flexibility of installation
- Field configurable

Variable speed fans

- Reduce energy consumption during off-peak hours

Intelligent control

- Network manageability, real time capacity monitoring, predictive failure notification, and rack inlet temp control.



Air Filter

- Removes airborne particles and protects cooling coil

Casters and Leveling Feet

- Easily adjustable leveling from top down

Integrated baying brackets

- 24 in or 600 mm spacing options
- Bays with other APC rack and power products

Lead/lag functionality

Remote temperature probe to control rack inlet temperature

Factory installed condensate pump

TECHNICAL DATA		
MODEL	300mm (12in) wide	600mm (24in) wide
Capacity	Up to 10kW	Up to 37 kW
Input Voltage	208-230V, 1ph, 60 Hz 220-240V, 1ph, 50 Hz	200-240V, 3ph, 50/60 Hz 380-415V, 3ph, 50/60 Hz 460-480V, 3ph, 60 Hz
Heat Rejection Options	Fluid-Cooled Air-Cooled Self-Contained	Air-Cooled
Fans	Variable Speed DC Axial Fans	Variable Speed EC Plug Fans
Condensate Management	Dual-float condensate pump	
Options	Cable Water Detector	Electric Reheat Humidification Cable Water Detector
Controls	Four-Line Alpha numeric display with Active Response Control	
Communications	Network Protocols: SNMP, Telnet, HTTP, HTTPS, Modbus TCP/IP, FTP Serial Protocols: RS-232 Console, RS-485 Modbus RTU Remote Monitoring	
DIMENSIONS		
Height	1991 mm (78.4 in)	1991 mm (78.4 in)
Length	300 mm (11.8 in)	600 mm (23.6 in)
Depth	1070 mm (42.1 in)	1070 mm (42.1 in)

Options/Accessories



Heat Rejection



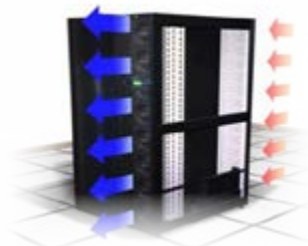
High Efficiency Filtration



Height Adapters



Data and Power Troughs



Rack Air Containment



Aisle Containment

Data center infrastructure management (DCIM)

Good design and quality construction alone do not ensure a highly available and efficient data center. Data centers require ongoing monitoring and management to ensure the facility lives up to its design intent. StruxureWare™ for Data Centers is a software management suite designed to collect and manage data about a data center’s assets, resource use, and operational status throughout the life cycle of the facility. This information is then distributed, integrated, and applied in ways that help managers optimize the data center’s performance and meet IT, business, and service-oriented goals. From IT assets to racks, rows, rooms, and buildings, StruxureWare for Data Centers delivers the right information to the right users at the right time.



Control level

Experts, on-site or remotely, can control process performance and ensure business continuity in real time, while tracking energy consumption in a highly critical and secure environment.

Operations level

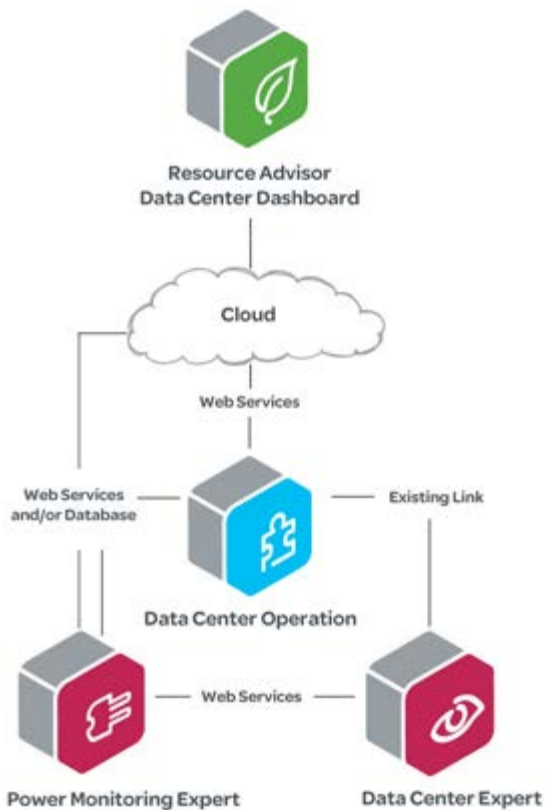
Functional managers can optimize operations, energy, and assets through smart analytical tools, often spanning multiple sites.

Enterprise level

C-level executives can drive their sustainability strategy efficiently, choosing the best scenario that meets their business objective to conserve enterprise-wide resources.

StruxureWare for Data Centers allows for flexibility when requirements and implementation strategies change over time. StruxureWare software applications and suites simplify integration time, improve reliability, enhance visibility to energy information, and streamline operational efficiency.

Visit www.apc.com/software to learn more about StruxureWare for Data Centers!

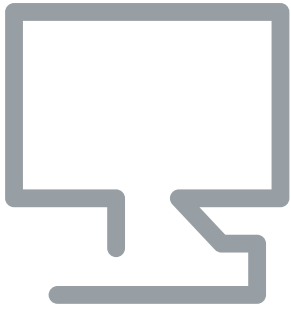


Technological solutions are constantly evolving and improving

Our experience and expertise in Cooling

100% State of the art technology

Many years of experience, combined with innovative technology, has enabled our designers to make the technological and operational choices necessary to reach technical excellence in our products and make them ideal in cutting-edge applications.



Online Resources

Product Showcase Videos

Cooling Capabilities

for the Data Center and Beyond
Visit <http://tv.schneider-electric.com>

InRow Pumped Refrigerant Cooling System

Visit <http://tv.schneider-electric.com>

Market Solutions

Visit <http://tv.schneider-electric.com>

Schneider Electric Interactive Cooling Application

Visit <http://www.apc.com/products/category.cfm?id=9#>

Additional Resources

White Paper #130:

“Choosing Between Room, Row, and Rack-based Cooling for Data Centers”

Visit www.apc.com/wp?an=130

White Paper #135:

“Impact of Hot and Cold Aisle Containment on Data Center Temperature and Efficiency”

Visit www.apc.com/wp?an=135

White Paper #153:

“Implementing Hot and Cold Air Containment in Existing Data Centers”

Visit www.apc.com/wp?an=153

InRow Chilled Water

Visit www.apc.com/products/family/index.cfm?id=339

InRow Pumped Refrigerant

Visit www.apc.com/products/family/index.cfm?id=415

InRow Direct Expansion

Visit www.apc.com/products/family/index.cfm?id=379

To learn more about Schneider Electric cooling solution visit www.schneider-electric.com

Make the most of your energySM

Schneider Electric Industries SAS

Head Office
35 rue Joseph Monier
92500 Rueil Malmaison Cedex- France
Tel.: +33 (0)1 41 29 70 00
www.schneider-electric.com

