Aircel

AES Series Energy Saving

Refrigerated Air Dryer

600 - 10,000 scfm

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Since 1994, Aircel has been delivering quality, industry leading compressed air dryers and accessories for production lines and facilities all over the world.

Our precise engineering and designs provide reliable products that will protect your operations for years to come.

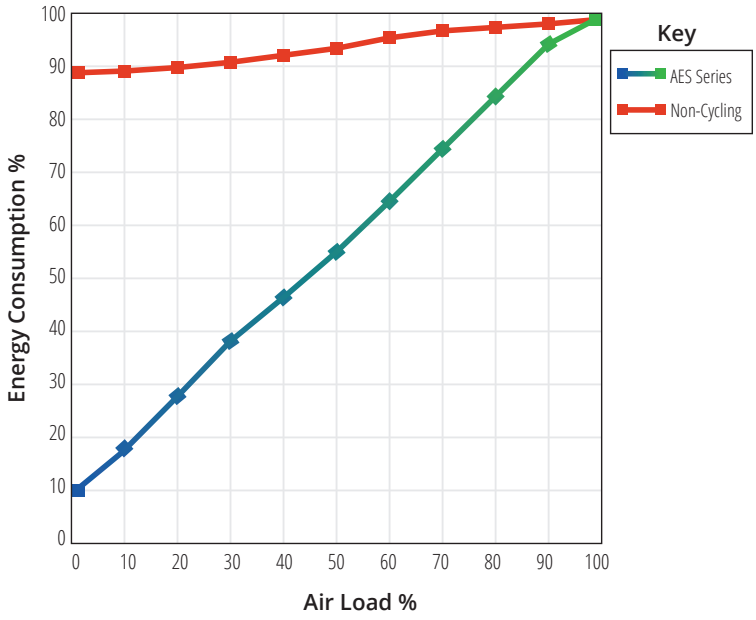
Based in Maryville, Tennessee, Aircel is a multi-industry manufacturing leader. Aircel's highly-specialized, engineered products and technologies are powering facilities all over the world. Our products serve industries such as textile, food and beverage, automotive, production, PET market, breathing air, pneumatic instrumentation, and more.

Significant Savings

Due to the increasing cost of energy around the world, the compressed air industry has been challenged to create a dryer to deliver long-term energy savings.

To address this need, Aircel engineers designed the **AES Series - a dryer that precisely matches power usage to inlet air demand.**

AES dryers automatically modulate the refrigeration compressor on and off, delivering significant power and energy savings to your bottom line.



Load %	Energy Consumption %	Power (kW)	Energy Savings (kW)	Yearly Savings
100%	100%	13.10	--	--
75%	79%	10.21	2.88	**$ 2,524**
50%	55%	7.20	5.89	**$ 5,162**
25%	34%	4.32	8.77	**$ 7,686**
0%	10%	1.31	11.79	**$ 10,325**

Based on AES-2000; Cost of power: $0.10 kWh; 8,760 operating hours

What Makes the AES Series Different?

Designed for Superior Performance • The compact, stainless steel heat exchangers pre-cool the air with the outgoing cold air to minimize energy consumption while maintaining the required dew point.

- Chevron design creates turbulent flow, allowing the air to flow freely and efficiently.
- Delivers ISO 8573-1:2010 Air Quality Class 4 pressure dew point.
- Heat exchangers and air lines are wrapped in non-degrading insulation to maintain highest thermal efficiencies.

Engineered for Savings· AES Series digital scroll compressors modulate on and off immediately and accurately based on system demand. This uses less energy when demand is lower, delivering proportional energy savings.

- Digital compressor is the most efficient compressor over widest range of inlet flow conditions.
- Highly reliable, proven design.
- 71% fewer parts provide greater reliability and significantly decreased maintenance than reciprocating compressors.
- Dryers utilize R-404a refrigerant.

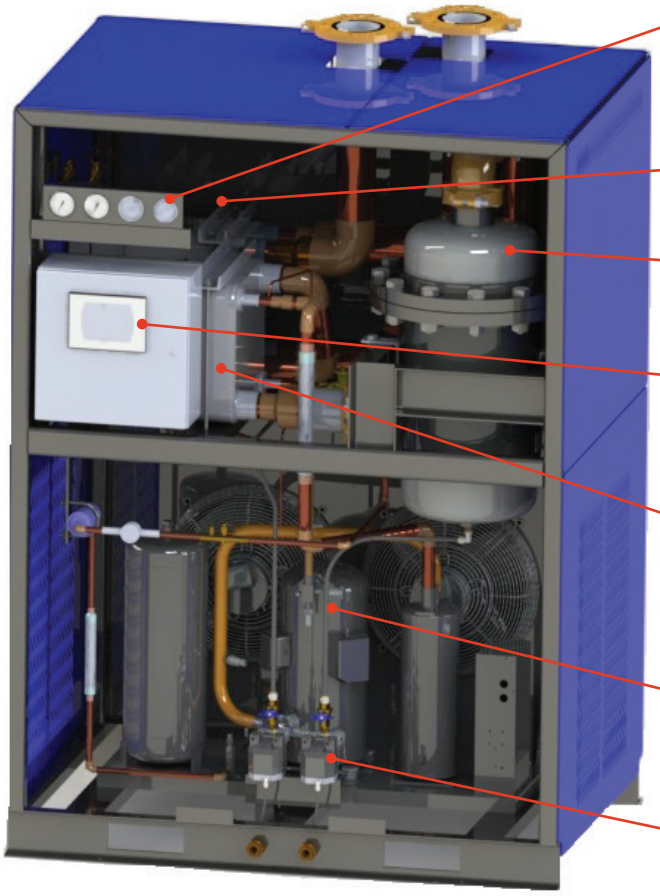
Created for System Protection· Aircel's zero loss condensate drain provide effective condensate removal without the loss of compressed air.

- Push to test button ensures system operation reliability.

Constructed for Ease· Each cabinet is designed for easy service accessibility. Each cabinet provides easy access to critical components located inside.

- Dryer enclosure opens, providing access for routine maintenance.
- Powder coated cabinets look great for years to come, while protecting the inner workings of the dryer from harsh environments.
- Inlet and outlet air connections located at the top provide installation ease.

AES Features



Easy-to-Read Pressure Gauges
2.5" air inlet pressure, air inlet temperature, suction pressure, and discharge pressure let you immediately see what is happening in the dryer

Air-to-Air Heat Exchanger
Utilizes outgoing air to cool the incoming air, providing additional energy savings

High Efficiency Separator
Removes 99% of bulk water while increasing dryer reliability

4" LCD Touch Screen
Ethernet connection ready screen displays energy savings feedback, hours saved, instantaneous load, alarms, status, and more

Air-to-Refrigerant Heat Exchanger
Each plate creates turbulent flow, providing a self-cleaning effect that provides corrosion resistance and increases longevity

Digital Scroll Compressor
Loads and unloads immediately to match inlet air system demand from 10% to 100%

Zero Loss Condensate Drain
Pneumatically operated demand drains waste no compressed air

The System That Expands With You

As your plant conditions grow and change, the AES Series is able to expand with you. **Increase drying power with modular units, configured in 500 and 1,000 scfm increments to precisely match your air flow demand from 10% to 100%.**

Interface up to five modular dryers with isolation valves to expand drying capability. These modular systems provide back-up drying and lower pressure drop without increasing power consumption.

More Control at Your Fingertips

AES Series dryers come standard with **industry leading controller technology** providing the easiest, most innovative way of monitoring dryer status.

Each AES Series dryer includes a user-friendly 4" LED touch screen with ethernet-ready capabilities to connect to your existing system. This screen control monitors system performance, operation of the digital scroll compressor, and tracks energy savings, while displaying system operational steps.

- Energy saving control for more efficient operation.
- Easy-to-read display provides continuous operating feedback.
- Event log stores critical data.
- Ethernet capability for web-based remote monitoring.
- Multiple alarms and safeties protect your investment.

On-Screen Features

- Main control menu
- Alarm status screen
- Immediate pop-up alarm banner
- History log with alarm date and time stamp
- Service option information
- Touch system control
- Days of operation, hours of energy savings, system timers, and mode of operation

Standard Control Features

- NEMA 4 steel electrical enclosure
- Ethernet-ready connectivity to connect to plant control system
- Allen-Bradley MicroLogix 1100E PLC controller
- 4" LCD color touch screen
- On-screen display of dryer operation status
- 10/100 mb/s with built-in peer-to-peer messaging
- Communication through RS-232/RS-486 combo port
- UL, CE, C-Tick, and Class 1 Div. 2 certified controller
- Supports DHCP
- Add up to four 1762 I/O modules
- Phase monitoring protects compressor while eliminating possible phase reversal, loss, and unbalance
- Energy savings based upon demand

Standard Control Alarms

- High discharge line temperature alarm
- Locked rotor alarm
- Three-phase refrigeration compressor open circuit alarm protects compressor while eliminating possible phase reversal, loss, and unbalance
- Maximum continuous current alarm
- Discharge line thermistor open sensor alarm, thermistor short alarm, and transducer failure alarm
- Suction line transducer failure
- Condenser transducer failure
- Refrigeration copressor low temperature alarm
- Refrigeration compessor high temperature alarm
- Condenser fan motor low temperature alarm
- Condenser fan motor high temperature alarm

Standard Control Readout

- Refrigerant suction line pressure
- Refrigerant suction line temperature (°F)
- Refrigerant discharge line pressure
- Refrigerant discharge line temperature (°F)
- Fan(s) on/off status
- Unloader solenoid on/off status
- Alarm warning

Refrigerated Dryer Styles Explained

Digital Scroll

Advanced digital scroll technology, utilized in AES Series dryers, maintains a constant dew point while saving up to 91% energy savings while in operation. This savings is achieved through a communication with the system evaporator via temperature probe, adjusting refrigeration capacity to the temperature of the air exiting the evaporator. This technology saves the highest amount of energy possible in a refrigerated air dryer.

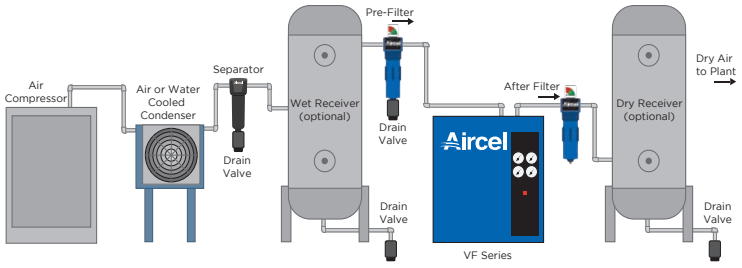
Non-Cycling

Non-cycling dryers utilize a hot gas bypass to maintain a constant dew point and conrol the amount of refrigerant flowing through the dryer. Energy consumption stays the same, no matter the flow and air demand. Dryers utilizing a hot gass bypass are ideal for situations running mainly at full load.

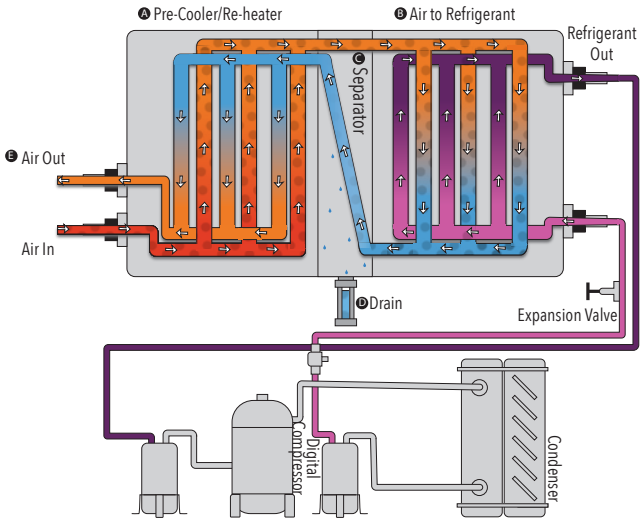
Thermal Mass Storage

Cycling systems typically rely on a thermal mass comprised of propylene glycol to store cool energy, allowing the compressor to be cycled on and off. Energy savings are realized when the compressor is turned off.

Recommended Installation



How It Works



- Saturated, compressed air enters the system and moves into the pre-cooler/re-heater (A), where it is pre-cooled by the cold outgoing air.
- The air is then directed through the air to refrigerant heat exchanger (B), where it is cooled to 38°F by the refrigeration system.
- The cold, saturated air flows into the three-stage separator (C), where liquids are removed from the air and ejected from the system via the Aircel condensate drain (D).
- The cold, dry air is then reheated by the incoming warm air (E) before leaving the dryer.

Model Number	Capacity	Voltage	Connection (FLG)	Weight (lbs)	Dimensions (in.) Height	Width	Depth	Refrigerant	Air-Cooled kW (full load)	Max. Pressure	Nominal Ref HP Installed [(quantity) size]	Optional Voltage Ratings
AES-600	600	460-3-60	3" NPT	645	45	34	45	R-404a	5.48	232	3	208/230-3-60; 460-3-60; 575/600-3-60
AES-800	800		3" NPT	805	48	38	54		6.55		4	
AES-1000	1,000		3" NPT	810	48	38	54		7.81		5	
AES-1250	1,250		3" NPT	860	48	38	54		9.49		6	
AES-1500	1,500		4"	1,650	84	58	41		11.49		7.5	
AES-1750	1,750		4"	2,250	84	58	41		14.88		10	
AES-2000	2,000		4"	2,300	84	58	41		17.53		10	
AES-2500	2,500		6"	2,370	52	114	65		18.98		(2) 6	
AES-3000	3,000		6"	3,980	110	124	44		22.98		(2) 7.5	
AES-3500	3,500		6"	5,180	110	124	44		29.75		(2) 10	
AES-4000	4,000		6"	5,258	110	124	44		35.06		(2) 10	
AES-4500	4,500		8"	6,408	102	186	44		36.46		(3) 7.5	
AES-5250	5,000		8"	8,208	102	186	44		46.63		(3) 10	
AES-6000	6,000		8"	8,358	102	186	44		54.58		(3) 10	
AES-7000	7,000		10"	11,623	109	247	44		59.50		(4) 7.5	
AES-8000	8,000		10"	11,823	109	247	44		70.11		(4) 10	
AES-8750	9,000		12"	15,528	111	308	47		74.38		(5) 7.5	
AES-10000	10,000		12"	15,778	111	308	47		87.64		(5) 10	

Capacity rated in accordance with CAGI ADF 100 @ 100 psig, 100°F inlet, 100°F ambient and a PDP of 38°F
Operating pressure: 40 to 232 psig | **Ambient air temperature:** 40°F to 120°F *(35°F with low ambient option)* | **Inlet air temperature:** 40°F to 120°F
For larger capacities and custom dryer options, please contact an Aircel factory representative

Capacity Correction Factors

To Size the Dryer Capacity for Actual Conditions

Adjusted Capacity = scfm x (C1 x C2 x C3 x C4)
Example:
Dryer Model: **AES-800**
Standard Capacity: **800 scfm**
Actual Operating Conditions:
90°F ambient: C1 = 1.05
50°F required dew point: C2 = 1.22
110°F inlet: C3 = 0.82
100 psig system pressure: C4 = 1

Adjusted Capacity: 800 scfm x 1.05 x 1.22 x 0.82 x 1 = 840.3 scfm

To Size the Dryer Model for Actual Conditions

Adjusted Capacity = scfm / (C1 / C2 / C3 / C4)
Example:
Given Flow: **2,000 scfm**
Actual Operating Conditions:
80°F ambient: C1 = 1.07
38°F required dew point: C2 = 1
100°F inlet: C3 = 1
200 psig system pressure: C4 = 1.2

Adjusted Capacity: 2,000 scfm / 1.07 / 1 / 1 / 1.2 = 1,557.6 scfm
Selected Dryer Model: AES-1,750

Correction Factors for Differing Ambient Temperature (C1)

Ambient Temperature (°F)	70	80	90	**100**	110	115	120
Correction Factor	1.1	1.07	1.05	**1**	0.94	0.85	0.65

Correction Factors for Differing Inlet Air Temperature (C3)

Inlet Temperature (°F)	80	90	**100**	110	120
Correction Factor	1.5	1.21	**1**	0.82	0.75

Correction Factors for Differing Pressure Dew Point Requirements (C2)

Dew Point (°F)	**38**	41	45	50
Correction Factor	**1**	1.12	1.17	1.22

Correction Factors for Differing System Air Pressure (C4)

System Pressure (psig)	50	75	**100**	125	150	175	200	225
Correction Factor	0.85	0.95	**1**	1.07	1.13	1.18	1.2	1.22

Aircel

MADE IN THE USA

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Please visit us at **airceldryers.com**