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# PURESTREAM ACT DRYERS



BY FRIULAIR



ULTIMATE   
ENERGY SAVING  
TECHNOLOGY

# ALUMINUM COOLING TECHNOLOGY (ACT)

ULTIMATE ENERGY SAVING TECHNOLOGY 

Purestream dryers by Friulair reduce the energy consumption of its range of compressed air dryers with the development of the ACT series (Aluminum Cooling Technology).

## Main features include:

- low pressure drop even with load variances
- low power consumption thanks to the ALU-DRY heat exchanger, high efficiency compressors, innovative hot gas by-pass valve and zero loss condensate drains
- constant pressure Dew Point with differing load conditions
- functional even at maximum working conditions (air inlet 70°C and ambient 50°C)

The components of the ACT dryers including the refrigerant and materials of construction, have been selected with maximum respect for the environment and their ability to be recycled.



## CONTROL PANEL TECHNICAL DETAILS



Pressure Probe (BP2)

### DMC34 CONTROLLER

Operation of the ACT 20-500 model dryers are controlled and monitored by the **DMC34** controller. The controller incorporates a digital dew point read out selectable in degrees F or degrees C scale. As a standard feature the controller also displays a visual alarm condition with the built-in capability to send a remote alarm signal and controls the fan.

### CONTROL AND PROTECTION DEVICES

All models are fitted with a Pressure Probe (BP2)

#### ACT 200 and larger models come equipped with devices designed to protect the unit components:

- high refrigerant pressure cut-out with re-set is standard on models ACT 300 - 500
- low refrigerant pressure cut-out with re-set is standard on models ACT 300 - 500
- high temperature cut-out c/w with reset is standard on models ACT 200 - 500. Designed to stop the refrigerant compressor when discharge temperature is too high (e.g. clogged or blocked condenser).

### KEY DRYER FEATURES

Conforms to TSSA and ASME standards, CRN approved and electrically certified for Canada, environmentally friendly, energy saving design, low pressure drop heat exchanger, compact design, powder paint coated finish, npt connections on small models and flanges on larger models, power cord on 115 volt models, no air-loss drains, illuminated on/off switch on smaller models and disconnect switch on larger models, thermally protected fans and compressors and oversized air-cooled condensers.

## ALU-DRY HEAT EXCHANGER

The air-to-air and the air-to-refrigerant heat exchangers plus the demister type condensate separator are housed in a unique module.

The vertical arrangement ensures that moisture removed flows down to the automatic drain. The counter flows of compressed air ensures maximum heat transfer.

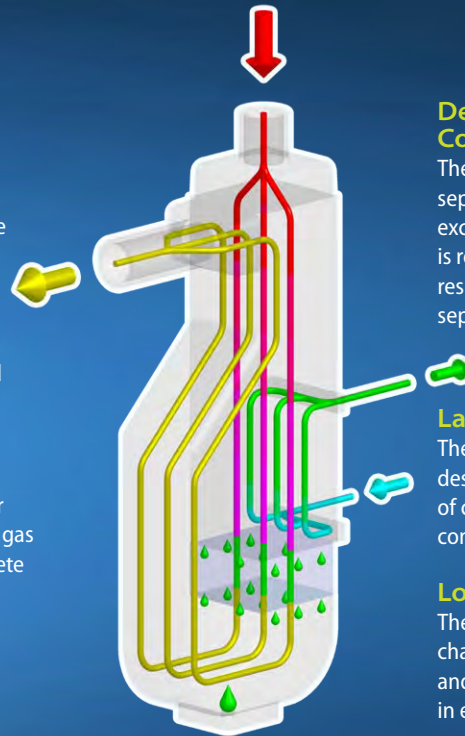
**CRN APPROVED**

### Air/Air Heat Exchanger

The air-to-air heat exchanger pre-cools the air entering into the dryer in order to reduce the cooling power required when the air subsequently passes into the evaporator. The air exiting the dryer is heated in the same way in order to prevent condensation from forming on the compressed air piping.

### Evaporator

The generous dimensions of the air-to-refrigerant heat exchanger combined with the counter flow gas streams allow for full and complete evaporation of the refrigerant, therefore preventing liquid from returning to the compressor.



### Demister Type Condensate Separator

The high efficiency condensate separator is located within the heat exchanger module. No maintenance is required and the coalescing effect results in a high degree of moisture separation.

### Large Capacity

The large capacity separator is designed to capture large volumes of condensate in high humidity compressed air environments.

### Low Pressure Drop

The large cross section of flow channels lead to low air velocities and reduced pressure drop resulting in energy savings.

## COMPRESSORS

### PISTON COMPRESSOR

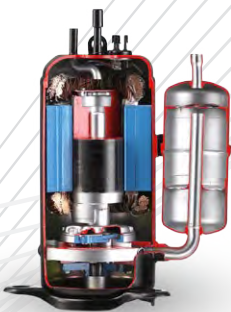
Models **ACT 20 - 150** are fitted with high efficiency piston compressors.

### ROTARY COMPRESSOR

For models **ACT 200 - 500** (with single phase power supply). This new technology for compressing refrigerants is an alternative to the traditional piston compressor. Compression of refrigerant is achieved by way of interaction between a cylindrical stator and a rotating eccentric nucleus. Due to this method of operation, the parts which come into contact with one another are wear resistant and therefore more reliable.

### SCROLL COMPRESSOR

From model **ACT 600** and larger, the scroll compressor is the standard refrigerant compressor used for this range. The scroll compressor is widely used in the air conditioning and refrigeration market sectors due to its reliable performance and low energy consumption. Compression of the refrigerant is achieved by way of concentric coils, one moving and one fixed. The scroll is wear resistant, highly reliable and guarantees a high level of noise reduction.



### EASY MAINTENANCE

The **ACT** series has been designed and built to allow for ease of inspection and necessary maintenance. The metal access panels are easily removed and offer immediate access to all parts of the system. The layout of the components, the simple composition of the refrigerant circuit and the numbering of the wires in the electrical system, facilitate the technician when servicing the dryer.

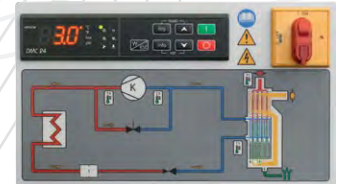


## TECHNICAL DETAILS

### ACT 600 - ACT 5000

#### DMC 24 CONTROLLER

The **DMC 24** controls all the unit operations, alarms and dryer set-up. The display includes LEDs which show all the operating conditions and includes a RS485 interface for connection to a PC. The controller receives information from four temperature probes and the pressure transducers record and display the parameters of the dryer when in use. This enables the function of the **AFC (Advanced Fan(s) Control)** which controls the condensing of refrigerant and also controls the **ASW (Advanced Service Warning)** in order to receive advance warning of defects or maintenance requirements. The **DMC 24** is now interfaced to the **ADS (Advanced Draining System)** which allows the controller to test the no air-loss drain(s) and signal drain alarm and maintenance requirements. The **DMC 24** also includes an **AAL (Advanced Alarm Log)** feature which provides a history of alarm conditions allowing for easier troubleshooting for maintenance staff. The **DMC 24** includes added protection for monitoring the sequence of voltage supply phases and auto shut-down of the compressor in conditions of high and low refrigerant pressure and/or high discharge temperature. The controller also has an added feature which includes a built-in timer to advise service interval requirements.

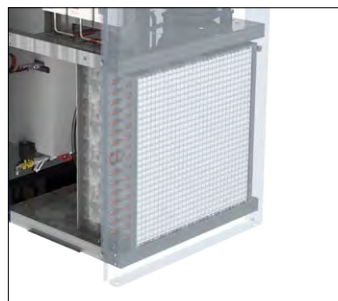


#### TAC-ANTI CORROSION TREATMENT

For harsh environments, as an option the **ACT dryers** can be supplied with a anti corrosion paint treatment. The **TAC** consists of covering the refrigerant circuit components surface exposed to ambient air. The treatment, combined with the characteristics of the **ALU-DRY** heat exchanger, enables the **ACT dryer** to to operate in adverse conditions.

#### CONDENSER

Generous sizing of the condenser ensures maximum performance of the refrigerant circuit and the ability to operate in high ambient conditions. Access to the condenser for cleaning and maintenance is easily achieved. **ACT 600 to 5000** model dryers are equipped with a stainless steel protective filter designed to be removed and cleaned as required. Water-cooled condenser versions are available upon request at no extra cost.



#### CONDENSATE DRAIN

All **ACT dryers** are equipped with energy saving zero-loss drain(s), that are designed to ensure that condensate is discharged without the loss of compressed air. This drain enhances an already energy saving dryer design.



#### HOT GAS BY-PASS VALVE

All model dryers are fitted with a stainless steel hot gas by-pass valve designed to prevent freezing and provide a constant dew point. This diaphragm valve is controlled by both temperature and pressure making the accuracy of operation unmatched in the industry. This valve is set during final factory testing and no further adjustments are required.



# STANDARD FEATURES & OPTIONAL ACCESSORIES

Description	ACT MODELS				
	20-75	100-150	200-250	300-500	600-5000
ALU-DRY ALUMINIUM HEAT EXCHANGER	•	•	•	•	•
HIGH EFFICIENCY REFRIGERANT COMPRESSORS	•	•	•	•	•
TROPICALISED AIR CONDENSER	•	•	•	•	•
AIR-COOLED CONDENSER PROTECTION FILTER					•
HIGH EFFICIENCY FAN(S)	•	•	•	•	•
WATER-COOLED CONDENSER			‡	‡	‡
ENVIRONMENTALLY FRIENDLY REFRIGERANT	•	•	•	•	•
HOT-GAS BY-PASS VALVE	•	•	•	•	•
AUTOMATIC CONDENSING PRESSURE CONTROL	•	•	•	•	•
HIGH AND LOW REFRIGERANT SAFETY PRESSURE SWITCH				•	•
HIGH REFRIGERANT TEMPERATURE SWITCH PROTECTION	‡	‡	•	•	•
ZERO LOSS DRAIN	•	•	•	•	•
DMC14 CONTROLLER	•	•	•	•	
DMC24 CONTROLLER					•
• Standard ‡ Optional					

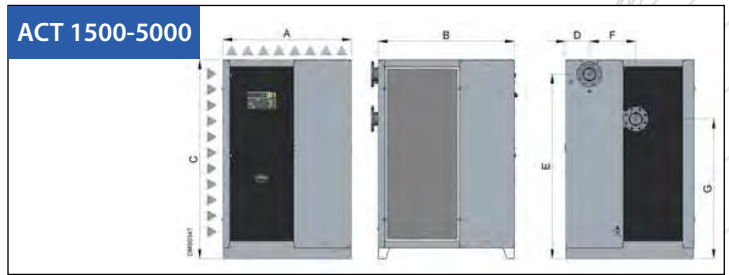
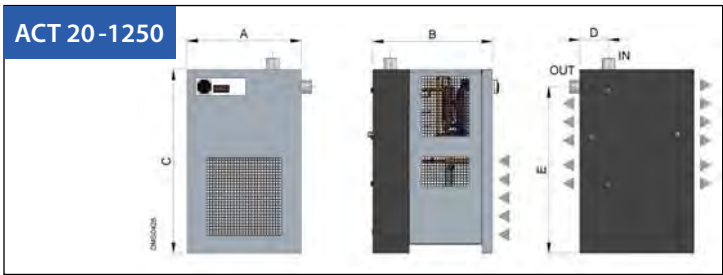
Correction factor for operating pressure changes:									
Inlet air pressure	psig	60	80	100	120	140	160	180	203
	barg	4	5.5	7	8	10	11	12	14
	Factor (F1)	0.79	0.91	1	1.07	1.13	1.18	1.23	1.27

Correction factor for ambient temperature changes (Air-Cooled):									
Ambient temperature	°F	80	90	95	100	105	110	115	122
	°C	27	32	35	38	40	43	45	50
	Factor (F1)	1.11	1.09	1.06	1	0.94	0.87	0.78	0.69

Correction factor for inlet air temperature changes:									
Inlet air temperature	°F	90	100	110	122	130	140	150	158
	°C	32	38	43	50	55	60	65	70
	Factor (F1)	1.16	1	0.82	0.68	0.61	0.52	0.45	0.40

Correction factor for Dew Point changes:									
Dew Point	°F	38	41	45	50				
	°C	3	5	7	10				
	Factor (F1)	1.00	1.08	1.20	1.36				

# TECHNICAL DATA



MODEL	FLOW RATE SCFM	VOLTAGE				REFRIG.	PIPE SIZE	WEIGHT (lbs)	DIMENSIONS IN INCHES						
		115/1/60	230/1/60	460/3/60	575/3/60				A	B	C	D	E	F	G
ACT20	20	115/1/60	230/1/60	-	-	R134.a	1/2"NPT	64	13.58	16.54	29.13	6.22	27.56	-	-
ACT30	30	115/1/60	230/1/60	-	-	R134.a	1/2"NPT	68	13.58	16.54	29.13	6.22	27.56	-	-
ACT50	50	115/1/60	230/1/60	-	-	R134.a	1/2"NPT	71	13.58	16.54	29.13	6.22	27.56	-	-
ACT75	75	115/1/60	230/1/60	-	-	R134.a	1"NPT	79	13.58	16.54	29.13	5.12	25.87	-	-
ACT100	100	115/1/60	230/1/60	-	-	R134.a	1 1/4"NPT	101	19.09	17.91	32.48	5.12	29.33	-	-
ACT125	125	115/1/60	230/1/60	-	-	R407C	1 1/4"NPT	106	19.09	17.91	32.48	5.12	29.33	-	-
ACT150	150	115/1/60	230/1/60	-	-	R407C	1 1/4"NPT	110	19.09	17.91	32.48	5.12	29.33	-	-
ACT200	200	115/1/60	230/1/60	460/3/60	575/3/60	R407C	1 1/2"NPT	121	21.85	22.83	34.84	5.31	31.50	-	-
ACT250	250	-	230/1/60	460/3/60	575/3/60	R407C	1 1/2"NPT	139	21.85	22.83	34.84	5.31	31.50	-	-
ACT300	300	-	230/1/60	460/3/60	575/3/60	R407C	2"NPT	227	21.85	24.61	38.39	9.45	34.06	-	-
ACT350	350	-	230/1/60	460/3/60	575/3/60	R407C	2"NPT	236	21.85	24.61	38.39	9.45	34.06	-	-
ACT400	400	-	230/1/60	460/3/60	575/3/60	R407C	2 1/2"NPT	331	26.18	28.54	43.50	14.76	36.61	-	-
ACT500	500	-	230/1/60	460/3/60	575/3/60	R407C	2 1/2"NPT	375	26.18	28.54	43.50	14.76	36.61	-	-
ACT600	600	-	-	460/3/60	575/3/60	R407C	3" 150# FL.	529	31.10	39.37	57.68	19.88	48.43	-	-
ACT800	800	-	-	460/3/60	575/3/60	R407C	3" 150# FL.	534	31.10	39.37	57.68	19.88	48.43	-	-
ACT1000	1000	-	-	460/3/60	575/3/60	R407C	3" 150# FL.	606	31.10	39.37	57.68	19.88	48.43	-	-
ACT1250	1250	-	-	460/3/60	575/3/60	R407C	3" 150# FL.	686	31.10	39.37	57.68	19.88	48.43	-	-
ACT1500	1500	-	-	460/3/60	575/3/60	R407C	4" 150# FL.	1168	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT1750	1750	-	-	460/3/60	575/3/60	R407C	4" 150# FL.	1283	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT2000	2000	-	-	460/3/60	575/3/60	R407C	4" 150# FL.	1312	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT2500	2500	-	-	460/3/60	575/3/60	R407C	4" 150# FL.	1567	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT3000	3000	-	-	460/3/60	575/3/60	R407C	6" 150#FL.	2000	51.18	68.90	71.26	10.24	64.57	17.13	48.23
ACT3750	3750	-	-	460/3/60	575/3/60	R407C	6" 150#FL.	2070	51.18	68.90	71.26	10.24	64.57	17.13	48.23
ACT4000	4000	-	-	460/3/60	575/3/60	R407C	8" 150#FL.	2469	55.12	86.61	73.62	10.24	66.34	18.31	48.23
ACT5000	5000	-	-	460/3/60	575/3/60	R407C	8" 150#FL.	3090	55.12	86.61	73.62	10.24	66.34	18.31	48.23

Flow rates are based on the following nominal conditions: Ambient temperature of 37.8°C, 7 barg inlet air pressure, entering air temperature of 37.8°C and 3°C pressure Dew Point. Maximum working conditions: Ambient temperature 50°C, inlet air temperature 70°C and inlet air pressure 14barg (16barg for ACT 20 to ACT50).

CAG Purification

3770B Laird Road Unit 2 Mississauga Ontario L5L 0A7  
Tel: 905-820-3348 1-800-951-0777 Fax: 905-820-3490

[www.cagpurification.com](http://www.cagpurification.com)

# PURESTREAM

## ACT - ES

BY FRIULAIR



**NEW - ENERGY SAVING CYCLING DRYERS**



ULTIMATE  
ENERGY SAVING  
TECHNOLOGY





# PURESTREAM ACT ES CYCLING DRYER

The NEW range of PURESTREAM ACT ES Energy Saving dryers are now available for the energy conscious user. This new range comes from the need to match precision compressed air drying with energy saving features. The new range uses the design characteristics of the PURESTREAM ACT series, which is already well recognized by the compressed air industry. By adding new technological components along with a modified design, the end result is reduced electrical consumption resulting in lower operating costs.

The effect of compressed air as a provider of energy for industrial processes is broadly known. What is usually neglected however, is the regard to offer quality air treatment. In reality, the air entering the system contains moisture, which when cooled, will turn into liquid water, thus causing major damage not only to the compressed air lines, but also to the finished product. However, by installing the ACT ES cycling dryer, these costly contamination problems can be eliminated while saving energy.

The new Purestream ACT ES cycling dryer features include:

- Low pressure drop (even with load variances)
- Low power consumption due to low pressure drop (thanks to the ALU-DRY heat exchanger)
- High efficiency compressors
- Innovative hot gas by-pass valve
- Zero loss condensate drain
- TMVG: Thermal mass valve grouping designed to conserve energy
- Functional even at maximum working conditions (air inlet 70°C and ambient 50°C)



The new Purestream ACT ES cycling dryer offers dependability with an efficient design while lowering your hydro bill. Purestream ACT ES dryers will give you dry air and enormous value in a compact energy saving package. All the components of the Purestream ACT ES dryers, including refrigerant and materials of assembly, have been chosen with maximum respect for the environment.



## DMC51 Electronic Controller

All ACT ES models are fitted with a DMC51 electronic controller which measures the Dew Point temperature and controls the switching on or off of the refrigerant compressor. When the temperature approaches the minimum temperature the DMC51 switches off the compressor. When the temperature increases the compressor is turned on again. The DMC 51 also has the ability to operate the dryer in standard ACT mode as well as ES mode.



## Bekomat Zero-loss Drain

To maximize the Energy Savings the Purestream ACT ES range is equipped with an electronic Zero Loss Drain.





## HEAT EXCHANGER

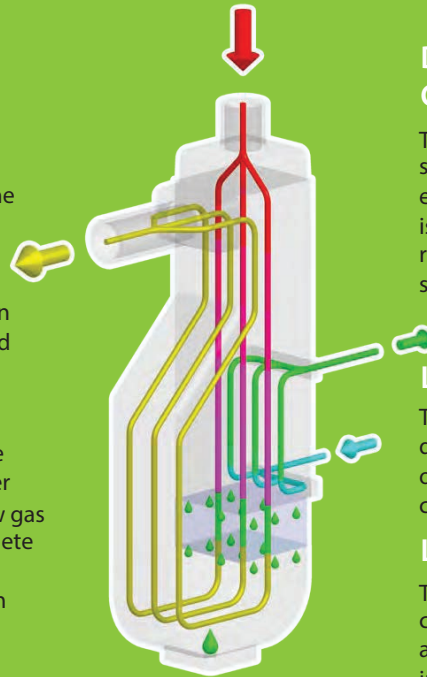
The air-to-air and the air-to-refrigerant heat exchangers plus the demister type condensate separator are housed in a unique module. The vertical arrangement ensures that moisture removed flows down to the automatic drain. The counterflow of compressed air ensures maximum heat transfer.

### Air/Air Heat Exchanger

The air-to-air heat exchanger pre-cools the air entering into the dryer in order to reduce the cooling power required when the air subsequently passes into the evaporator. The air exiting the dryer is heated in the same way in order to prevent condensation from forming on the compressed air piping.

### Evaporator

The generous dimensions of the air-to-refrigerant heat exchanger combined with the counter flow gas streams allow for full and complete evaporation of the refrigerant, therefore preventing liquid from returning to the compressor.



### Demister Type Condensate Separator

The highly efficient condensate separator is located within the heat exchanger module. No maintenance is required and the coalescing effect results in a high degree of moisture separation.

### Large Capacity

The large capacity separator is designed to capture large volumes of condensate in high humidity compressed air environments.

### Low Pressure Drop

The large cross section of flow channels lead to low air velocities and reduced pressure drop resulting in energy savings.

## COMPRESSORS

### PISTON COMPRESSOR

For models ACT 20 -100 as well as three phase voltage models ACT 200-500 are fitted with high efficiency piston compressor.

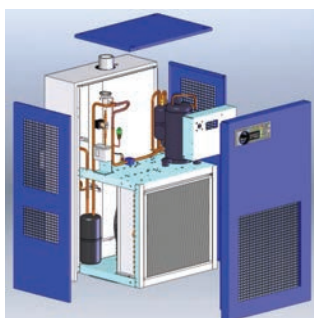


### ROTARY COMPRESSOR

For models ACT 125 - 500 (with single phase power supply). This new technology for compressing refrigerants is an alternative to the traditional piston compressor. Compression of refrigerant is achieved by way of interaction between a cylindrical stator and a rotating eccentric nucleus. Due to this method of operation, the parts which come into contact with one another are wear resistant and therefore more reliable.

### HOT GAS BY-PASS VALVE

All model dryers are fitted with a stainless steel hot gas by-pass valve designed to prevent freezing. This diaphragm valve is controlled by both temperature and pressure, making accuracy of operation unmatched in the industry. This valve is set during final factory testing and no further adjustments are required.



### EASY MAINTENANCE

The ACT series has been designed and built to allow for ease of inspection and necessary maintenance. The metal access panels are easily removed and offer immediate access to all parts of the system. The layout of the components, the simple composition of the refrigerant circuit and the numbering of the wires in the electrical system, facilitate the technician when servicing the dryer.

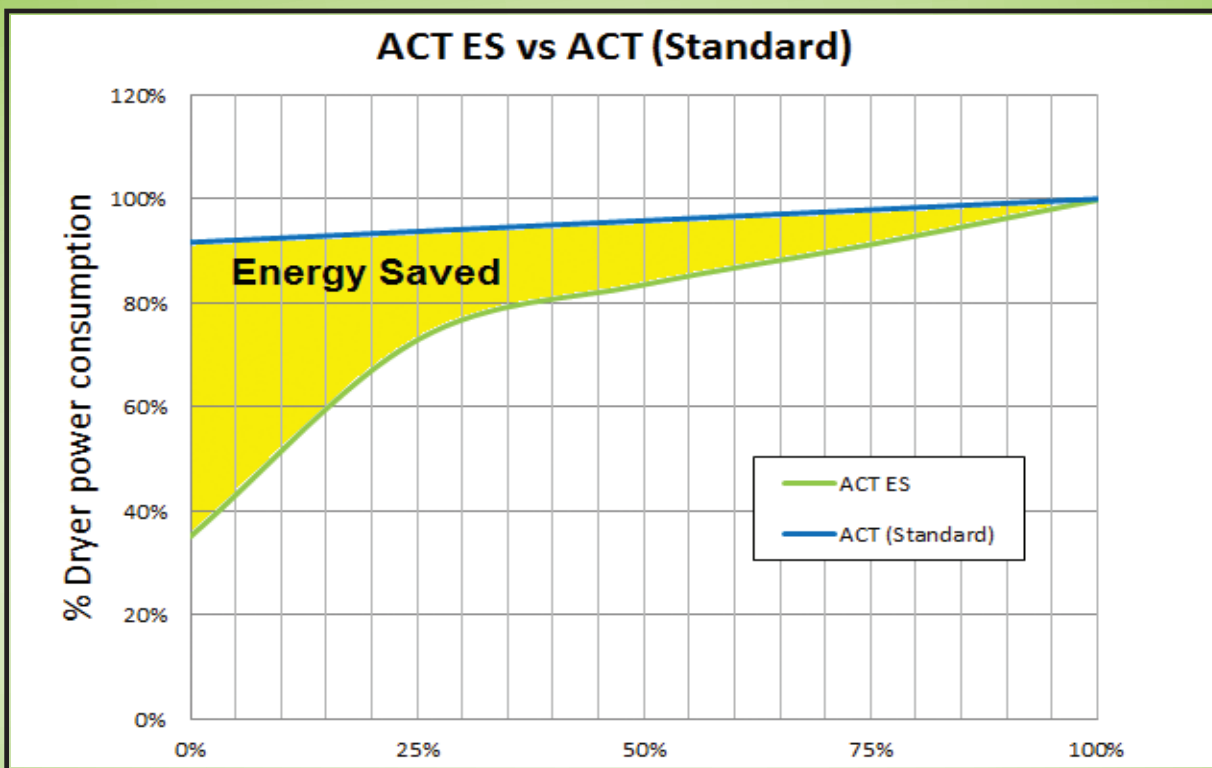
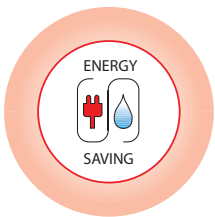
## WHY CHOOSE THE ACT ES ENERGY SAVING DRYER

The industry standard is to size dryers based on considering the worst case working conditions of a specific installation. In cases where maximum flow rate load capacities vary along with air temperature and ambient conditions energy consumption can be a major issue. For these applications the standard ACT dryer, while ensuring optimum performance in all operating conditions has a nearly constant power consumption even in reduced load situations which results in lost energy.

HOWEVER THE ACT ES CYCLING DRYERS ARE ABLE TO ADAPT THEIR ENERGY CONSUMPTION ACCORDING TO THE LOAD, ALLOWING SUBSTANTIAL ECONOMIC SAVINGS, EVEN WHEN APPLIED TO TYPICAL INDUSTRY DRYER SIZING.

## HOW MUCH CAN BE SAVED WITH AN ACT ES ENERGY SAVING DRYER?

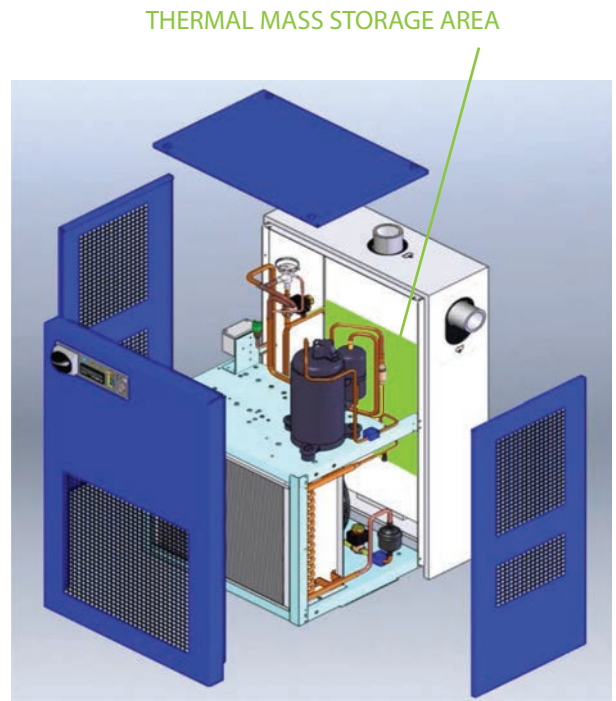
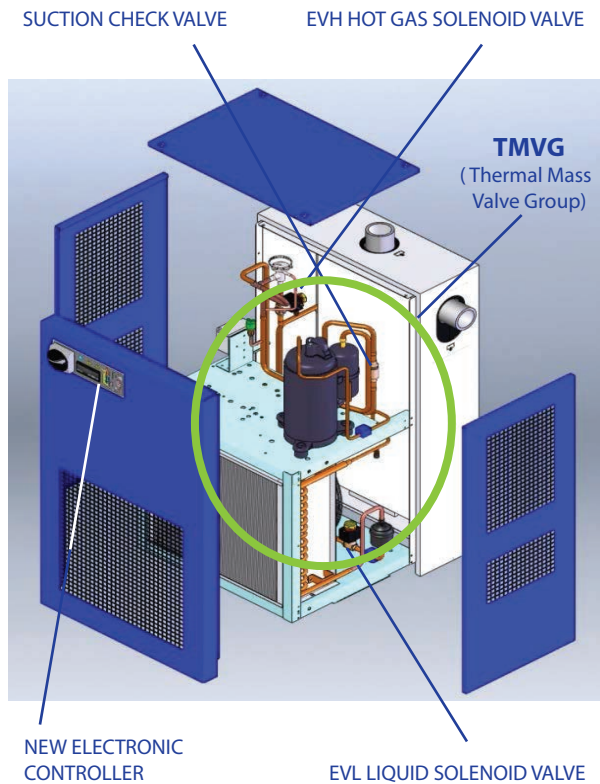
The graph compares the average power consumption of the ACT ES Energy Saving dryer compared to the equivalent non-cycling ACT (standard) model at different load conditions. The curves of the graph below show the ACT ES version's energy efficiency and illustrates the energy saving difference at the reduced load conditions verses our traditional non-cycling ACT dryers.



## HOW DO WE ACHIEVE ENERGY SAVINGS?

With the added components shown in the lower left illustration, we are now able to create substantial energy savings with our ES CYCLING Dryers. Due to the characteristics of the ALU-DRY heat exchanger and the operation of the TMVG (Thermal Mass Valve Group), the refrigeration circuit now creates a thermal mass storage area when the valves are activated. This is achieved by isolating a portion of the heat exchanger and inter-connecting piping, as shown in the lower right illustration.

### WHAT HAS CHANGED FROM OUR STANDARD ACT DRYER TO THE NEW ACT ES SERIES?



### ACT ES CYCLING DRYER BENEFITS:

- VERTICAL HEAT EXCHANGER WITH LOW PRESSURE DROP
- REFRIGERATION COMPRESSOR CYCLES ON AND OFF
- NO AIR LOSS ENERGY SAVING DRAIN
- TMVG: **THERMAL MASS VALVE GROUP** CREATES A THERMAL MASS COMPARTMENT
- GENEROUSLY SIZED CONDENSER
- ENERGY EFFICIENT REFRIGERANT COMPRESSOR
- ELIGIBLE FOR LOCAL POWER AUTHORITY REBATE PROGRAM
- ENERGY SAVINGS PROVIDE A QUICK ROI

**COMBINE ALL THESE BENEFITS AND IT'S ALMOST FREE!**

# STANDARD FEATURES & OPTIONAL ACCESSORIES

Description	ACT ES MODELS			
	20-75	100-150	200-250	300-500
ALU-DRY ALUMINIUM HEAT EXCHANGER	•	•	•	•
HIGH EFFICIENCY REFRIGERANT COMPRESSORS	•	•	•	•
TROPICALISED AIR CONDENSER	•	•	•	•
HIGH EFFICIENCY FAN(S)	•	•	•	•
WATER-COOLED CONDENSER			‡	‡
ENVIRONMENTALLY FRIENDLY REFRIGERANT	•	•	•	•
HOT-GAS BY-PASS VALVE	•	•	•	•
AUTOMATIC CONDENSING PRESSURE CONTROL	•	•	•	•
HIGH AND LOW REFRIGERANT SAFETY PRESSURE SWITCH				•
HIGH REFRIGERANT TEMPERATURE SWITCH PROTECTION	‡	‡	•	•
ZERO LOSS DRAIN	•	•	•	•
TMVG: THERMAL MASS VALVE GROUP	•	•	•	•
DMC 51 CONTROLLER	•	•	•	•
• Standard    ‡ Optional				

## CORRECTION FACTORS

### Correction factor for operating pressure changes:

Inlet air pressure	psig	60	80	100	120	140	160	180	203
	barg	4	5.5	7	8	10	11	12	14
	Factor (F1)	0.79	0.91	1	1.07	1.13	1.18	1.23	1.27

### Correction factor for ambient temperature changes (Air-Cooled):

Ambient temperature	°F	80	90	95	100	105	110	115	122
	°C	27	32	35	38	40	43	45	50
	Factor (F1)	1.11	1.09	1.06	1	0.94	0.87	0.78	0.69

### Correction factor for inlet air temperature changes:

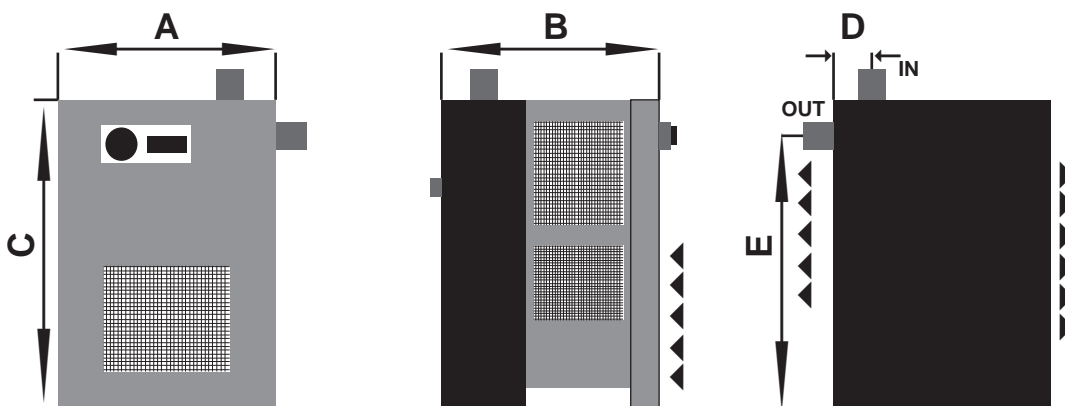
Inlet air temperature	°F	90	100	110	122	130	140	150	158
	°C	32	38	43	50	55	60	65	70
	Factor (F1)	1.16	1	0.82	0.68	0.61	0.52	0.45	0.40

### Correction factor for Dew Point changes:

Dew Point	°F	38	41	45	50				
	°C	3	5	7	10				
	Factor (F1)	1.00	1.08	1.20	1.36				

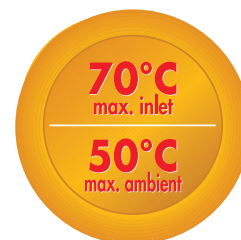
# TECHNICAL DATA - ACT ES SERIES

ACT ES 20-500



MODEL	FLOW RATE SCFM	VOLTAGE				REFRIG.	PIPE SIZE	WEIGHT (lbs)	DIMENSIONS IN INCHES						
		115/1/60	230/1/60	460/3/60	575/3/60				A	B	C	D	E	F	G
ACT20ES	20	115/1/60	230/1/60	-	-	R134a	1/2"NPT	64	13.58	16.54	29.13	6.22	27.56	-	-
ACT30ES	30	115/1/60	230/1/60	-	-	R134a	1/2"NPT	68	13.58	16.54	29.13	6.22	27.56	-	-
ACT50ES	50	115/1/60	230/1/60	-	-	R134a	1/2"NPT	71	13.58	16.54	29.13	6.22	27.56	-	-
ACT75ES	75	115/1/60	230/1/60	-	-	R134a	1"NPT	79	13.58	16.54	29.13	5.12	25.87	-	-
ACT100ES	100	115/1/60	230/1/60	-	-	R134a	1 1/4"NPT	101	19.09	17.91	32.48	5.12	29.33	-	-
ACT125ES	125	115/1/60	230/1/60	-	-	R407C	1 1/4"NPT	106	19.09	17.91	32.48	5.12	29.33	-	-
ACT150ES	150	115/1/60	230/1/60	-	-	R407C	1 1/4"NPT	110	19.09	17.91	32.48	5.12	29.33	-	-
ACT200ES	200	115/1/60	230/1/60	460/3/60	575/3/60	R407C	1 1/2"NPT	121	21.85	22.83	34.84	5.31	31.50	-	-
ACT250ES	250	-	230/1/60	460/3/60	575/3/60	R407C	1 1/2"NPT	139	21.85	22.83	34.84	5.31	31.50	-	-
ACT300ES	300	-	230/1/60	460/3/60	575/3/60	R407C	2"NPT	227	21.85	24.61	38.39	9.45	34.06	-	-
ACT350ES	350	-	230/1/60	460/3/60	575/3/60	R407C	2"NPT	236	21.85	24.61	38.39	9.45	34.06	-	-
ACT400ES	400	-	230/1/60	460/3/60	575/3/60	R407C	2 1/2"NPT	331	26.18	28.54	43.50	14.76	36.61	-	-
ACT500ES	500	-	230/1/60	460/3/60	575/3/60	R407C	2 1/2"NPT	375	26.18	28.54	43.50	14.76	36.61	-	-

Flow rates are based on the following nominal conditions. Ambient temperature of 37.8°C, 7 barg inlet air pressure entering air temperature of 37.8°C and 3°C pressure Dew Point. Maximum working conditions: Ambient temperature 50°C, inlet air temperature 70°C and inlet air pressure 14 barg (16 barg for ACT 20 to ACT 50)



## *Other Refrigerated Dryers Available From The ACT Series.*

### **ACT VS Series**

### **ACT Standard Series**



***For more information contact CAG Purification.***

CAG Purification Inc.  
3770B Laird Road, unit 2, Mississauga ON. L5L 0A7  
Tel: 800-951-0777 Fax: 905-820-3490  
[www.cagpurification.com](http://www.cagpurification.com)

ULTIMATE   
ENERGY SAVING  
TECHNOLOGY

# PURESTREAM

## ACT - VS

BY FRIULAIR



**NEW - ENERGY SAVING VARIABLE SPEED DRYERS**



**ULTIMATE  
ENERGY SAVING  
TECHNOLOGY**





# PURESTREAM ACT VS VARIABLE SPEED DRYER

The NEW range of PURESTREAM ACT VS Energy Saving dryers are now available for the energy conscious user. This new range comes from the need to match precision compressed air drying with energy saving features. The new range uses the design characteristics of the PURESTREAM ACT series, which is already well recognized by the compressed air industry. By adding new technological components along with a modified design, the end result is reduced electrical consumption resulting in lower operating costs.

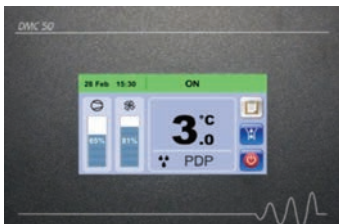
The effect of compressed air as a provider of energy for industrial processes is broadly known. What is usually neglected however, is the regard to offer quality air treatment. In reality, the air entering the system contains moisture, which when cooled, will turn into liquid water, thus causing major damage not only to the compressed air lines, but also to the finished product. However, by installing the ACT VS variable speed dryer, these costly contamination problems can be eliminated while saving energy.

The new Purestream ACT VS variable speed dryer features include:

- Low pressure drop (even with load variances)
- Low power consumption due to low pressure drop (thanks to the ALU-DRY heat exchanger)
- High efficiency compressors
- Zero loss condensate drain
- Condenser fan inverter
- Refrigerant compressor inverter
- Functional even at maximum working conditions (air inlet 70°C and ambient 45°C)



The new Purestream ACT VS dryer offers dependability with an efficient design while lowering your hydro bill. Purestream ACT VS dryers will give you dry air and enormous value in a compact energy saving package. All the components of the Purestream ACT VS dryers, including refrigerant and materials of assembly, have been chosen with maximum respect for the environment.



## DMC 50 Electronic Controller

The complete management of the ACT VS dryer is entrusted to the innovative DMC 50 electronic control unit, which continuously monitors the pressure and operating temperature, calculates the heat load and adjusts the rotation speed of the compressor and fans. This ensures an extremely stable Dew Point in all operating conditions and power consumption proportional to the applied heat load. The large touch screen display, rich in information, provides an intuitive operator interface. The current operating parameters are constantly displayed with additional information such as data logging, scheduled maintenance, hour meter, energy saving and alarm memory are easily accessible. The RS485 interface is already included for remote monitoring of the dryer. Alarm contacts are included as standard for remote on-off requirements.



## Bekomat Zero-loss Drain

To maximize the Energy Savings the Purestream ACT VS range is equipped with an electronic Zero Loss Drain.





## HEAT EXCHANGER

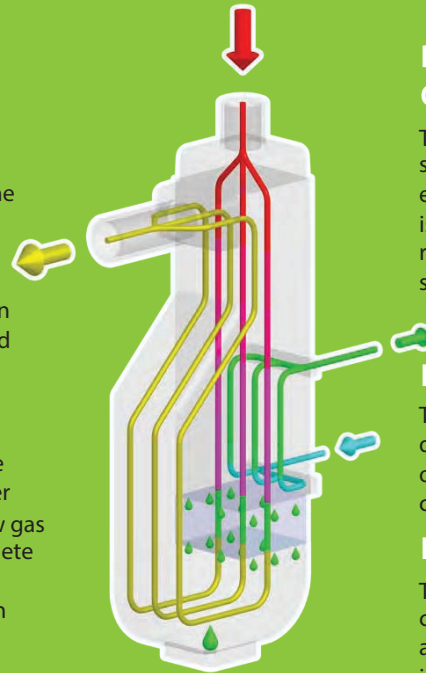
The air-to-air and the air-to-refrigerant heat exchangers plus the demister type condensate separator are housed in a unique module. The vertical arrangement ensures that moisture removed flows down to the automatic drain. The counterflow of compressed air ensures maximum heat transfer.

### Air/Air Heat Exchanger

The air-to-air heat exchanger pre-cools the air entering into the dryer in order to reduce the cooling power required when the air subsequently passes into the evaporator. The air exiting the dryer is heated in the same way in order to prevent condensation from forming on the compressed air piping.

### Evaporator

The generous dimensions of the air-to-refrigerant heat exchanger combined with the counter flow gas streams allow for full and complete evaporation of the refrigerant, therefore preventing liquid from returning to the compressor.



### Demister Type Condensate Separator

The highly efficient condensate separator is located within the heat exchanger module. No maintenance is required and the coalescing effect results in a high degree of moisture separation.

### Large Capacity

The large capacity separator is designed to capture large volumes of condensate in high humidity compressed air environments.

### Low Pressure Drop

The large cross section of flow channels lead to low air velocities and reduced pressure drop resulting in energy savings.

## COMPRESSORS

### VARIABLE SPEED SCROLL COMPRESSOR WITH INVERTER

From model ACT 800 and larger, the VS scroll compressor is the standard refrigerant compressor used in the air conditioning and refrigeration market sectors due to its reliable performance and low energy consumption. Compression of the refrigerant is achieved by way of concentric coils, one moving and one fixed. The scroll is wear resistant, highly reliable and guarantees a high level of noise reduction.



### EASY MAINTENANCE

The ACT VS series has been designed and built to allow for ease of inspection and necessary maintenance. The metal access panels are easily removed and offer immediate access to all parts of the system. The layout of the components, the simple composition of the refrigerant circuit and the numbering of the wires in the electrical system, facilitate the technician when servicing the dryer.

### CONDENSER FAN WITH INVERTER



\* Developed For Inverter Control In DC Voltage

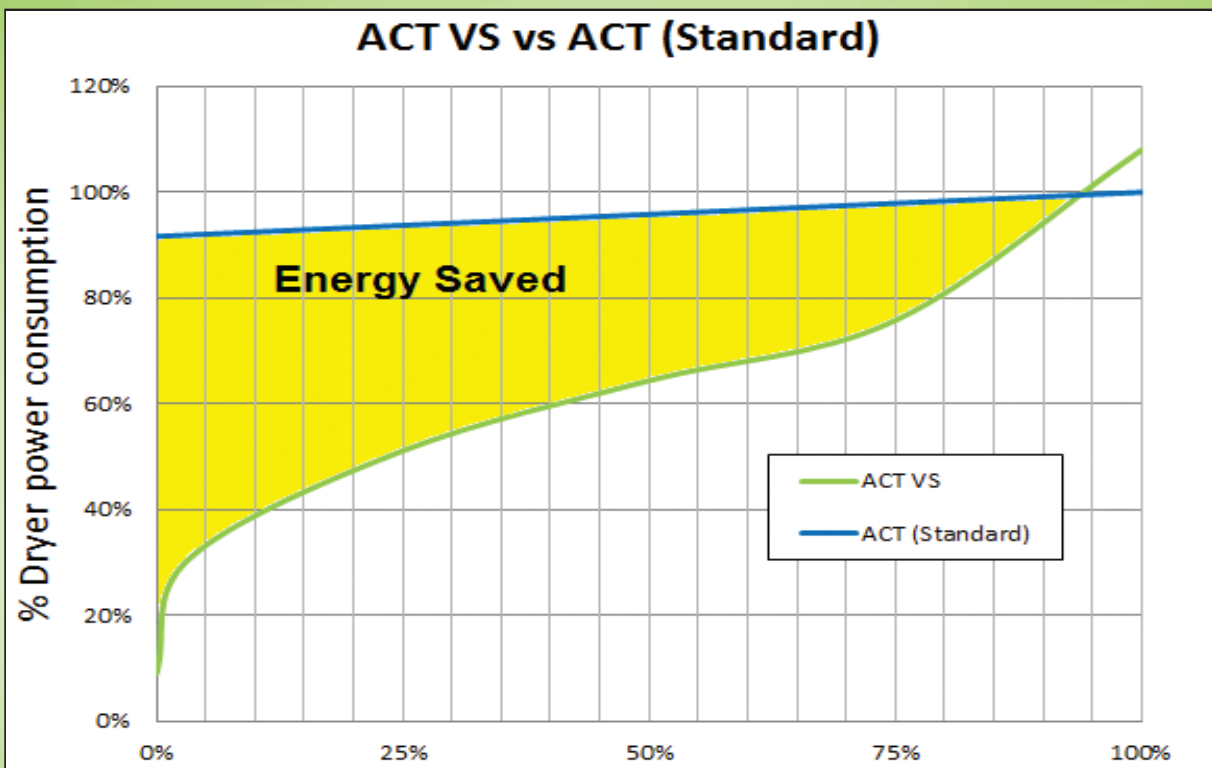
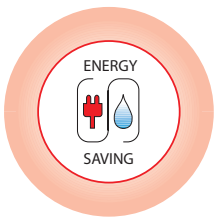
## WHY CHOOSE THE ACT VS VARIABLE SPEED DRYER

The industry standard is to size dryers based on considering the worst case working conditions of a specific installation. In cases where maximum flow rate load capacities vary along with air temperature and ambient conditions energy consumption can be a major issue. For these applications the standard ACT dryer, while ensuring optimum performance in all operating conditions has a nearly constant power consumption even in reduced load situations which results in lost energy.

HOWEVER THE ACT VS VARIABLE SPEED DRYERS ARE ABLE TO ADAPT THEIR ENERGY CONSUMPTION ACCORDING TO THE LOAD, ALLOWING SUBSTANTIAL ECONOMIC SAVINGS, EVEN WHEN APPLIED TO TYPICAL INDUSTRY DRYER SIZING.

## HOW MUCH CAN BE SAVED WITH AN ACT VS VARIABLE SPEED DRYER?

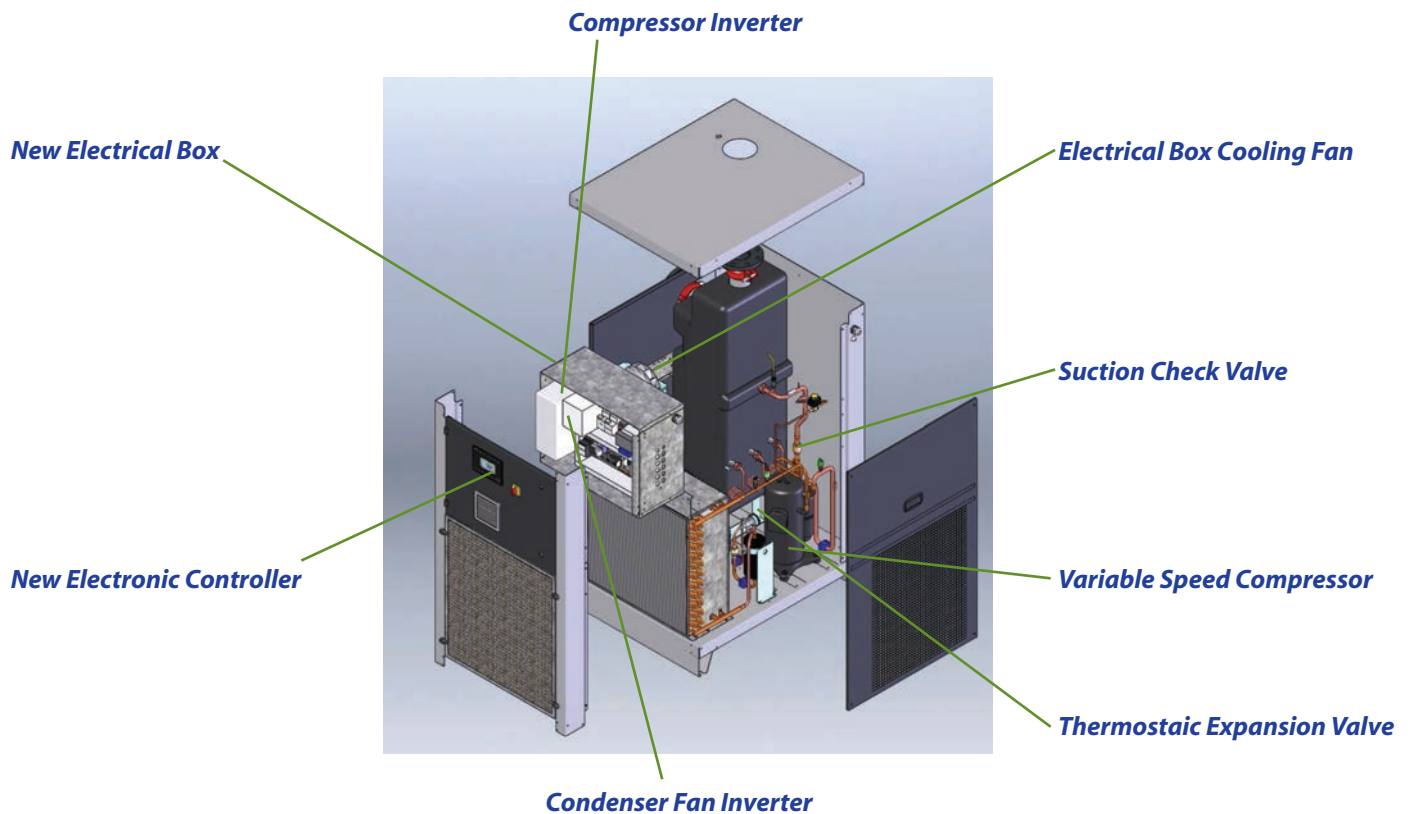
The graph compares the average power consumption of the ACT VS Energy Saving dryer compared to the equivalent non-cycling ACT (standard) model at different load conditions. The curves of the graph below show the ACT VS version's energy efficiency and illustrates the energy saving difference at the reduced load conditions versus our traditional non-cycling ACT dryers.



## HOW DO WE ACHIEVE COST AND ENERGY SAVINGS?

Due to the characteristics of the ALU-DRY heat exchanger and the low pressure drop we initiate the ACT VS energy savings; combine this with the addition of the variable speed refrigeration compressor and condenser fan(s) with inverters this now allows the new DMC 50 electronic controller to control the refrigerant compressor and condenser fan speed as the load fluctuates. As the load changes the variable speed compressor and condenser fan will operate to meet the lower or higher load as required, resulting in energy savings. With the standard no air loss Bekomat drains, additional energy savings are also accomplished. Once you add up the energy savings as well as the possibility to receive Local Power Authority Rebates, the ROI is extremely short.

### WHAT HAS CHANGED FROM OUR STANDARD ACT DRYER TO THE NEW ACT VS SERIES?



### ACT VS VARIABLE SPEED DRYER FEATURES AND BENEFITS:

- REFRIGERANT COMPRESSOR INVERTER
- VERTICAL HEAT EXCHANGER WITH LOW PRESSURE DROP
- ENERGY EFFICIENT VARIABLE SPEED REFRIGERANT COMPRESSOR
- NO AIR LOSS ENERGY SAVING DRAIN
- NEW DMC 50 CONTROLLER
- CONDENSER FAN INVERTER
- GENEROUSLY SIZED CONDENSER
- VARIABLE SPEED CONDENSER FAN
- ELIGIBLE FOR LOCAL POWER AUTHORITY REBATE PROGRAM
- ENERGY SAVINGS PROVIDE A QUICK ROI

**COMBINE ALL OF THESE FEATURES AND BENEFITS AND IT'S ALMOST FREE!**

# STANDARD FEATURES & OPTIONAL ACCESSORIES

Description	ACT VS MODELS	
	800-6000	
ALU-DRY ALUMINIUM HEAT EXCHANGER	•	
HIGH EFFICIENCY REFRIGERANT COMPRESSORS	•	
TROPICALISED AIR CONDENSER	•	
AIR-COOLED CONDENSER PROTECTION FILTER	•	
HIGH EFFICIENCY FAN(S)	•	
WATER-COOLED CONDENSER	‡	
ENVIRONMENTALLY FRIENDLY REFRIGERANT	•	
AUTOMATIC CONDENSING PRESSURE CONTROL	•	
HIGH AND LOW REFRIGERANT SAFETY PRESSURE SWITCH	•	
HIGH REFRIGERANT TEMPERATURE SWITCH PROTECTION	•	
ZERO LOSS DRAIN	•	
DMC 50 CONTROLLER	•	
	• Standard	‡ Optional

## CORRECTION FACTORS

Correction factor for operating pressure changes:									
Inlet air pressure	psig	60	80	100	120	140	160	180	203
	barg	4	5.5	7	8	10	11	12	14
	Factor (F1)	0.79	0.91	1	1.07	1.13	1.18	1.23	1.27

Correction factor for ambient temperature changes (Air-Cooled):									
Ambient temperature	°F	80	90	95	100	105	110	115	
	°C	27	32	35	38	40	43	45	
	Factor (F1)	1.11	1.09	1.06	1	0.94	0.87	0.78	

Correction factor for inlet air temperature changes:									
Inlet air temperature	°F	90	100	110	120	130	140	150	158
	°C	32	38	43	50	55	60	65	70
	Factor (F1)	1.16	1	0.82	0.68	0.61	0.52	0.45	0.40

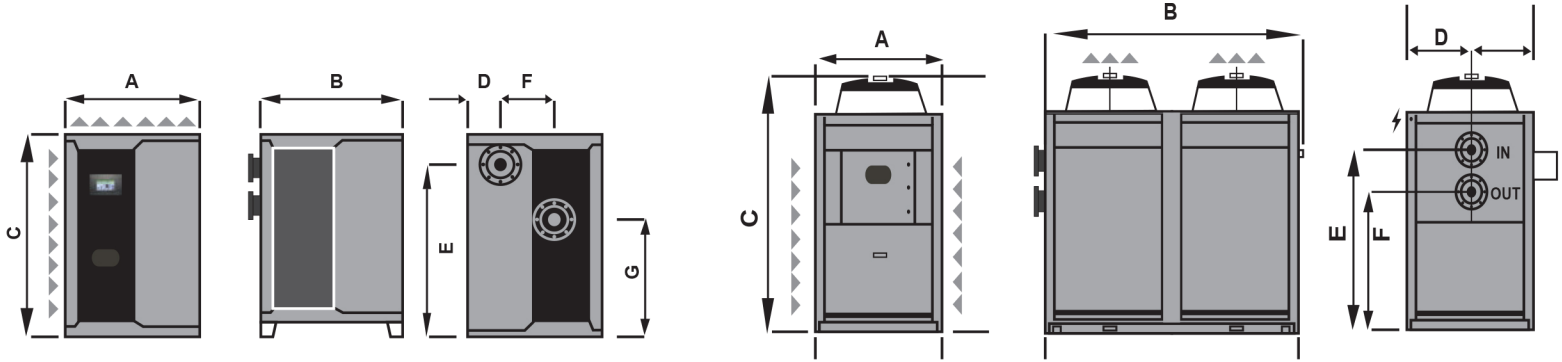
  

Correction factor for Dew Point changes:									
Dew Point	°F	38	41	45	50				
	°C	3	5	7	10				
	Factor (F1)	1.00	1.08	1.20	1.36				

# TECHNICAL DATA - ACT VS SERIES

## ACT VS 800-5000

## ACT-6000



MODEL	FLOW RATE SCFM	460/3/60	575/3/60	REFRIG.	PIPE SIZE	WEIGHT (lbs)	DIMENSIONS IN INCHES						
							A	B	C	D	E	F	G
ACT800VS	800	460/3/60	575/3/60	R134A	3"150#FL	546	31.10	39.37	57.68	19.88	48.92	-	-
ACT1000VS	1000	460/3/60	575/3/60	R407C	3"150#FL	620	31.10	39.37	57.68	19.88	48.92	-	-
ACT1250VS	1250	460/3/60	575/3/60	R407C	3"150#FL	671	31.10	39.37	57.68	19.88	48.92	-	-
ACT1500VS	1500	460/3/60	575/3/60	R407C	4"150#FL	1036	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT1750VS	1750	460/3/60	575/3/60	R407C	4"150#FL	1133	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT2000VS	2000	460/3/60	575/3/60	R407C	4"150#FL	1208	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT2500VS	2500	460/3/60	575/3/60	R407C	4"150#FL	1366	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT3000VS	3000	460/3/60	575/3/60	R407C	6"150#FL	1855	51.2	68.9	71.3	10.2	64.6	17.1	48.2
ACT3750VS	3750	460/3/60	575/3/60	R407C	6"150#FL	2099	51.2	68.9	71.3	10.2	64.6	17.1	48.2
ACT4000VS	4000	460/3/60	575/3/60	R407C	8"150#FL	2356	55.1	86.6	73.6	10.2	65.7	18.3	48.2
ACT5000VS	5000	460/3/60	575/3/60	R407C	8"150#FL	2680	55.1	86.6	73.6	10.2	65.7	18.3	48.2
ACT6000VS	6000	460/3/60	575/3/60	R407C	8"150#FL	3212	57.1	85.3	96.1	28.6	65.5	48.1	

Flow rates are based on the following nominal conditions. Ambient temperature of 37.8°C, 7 barg inlet air pressure entering air temperature of 37.8°C and 3°C pressure Dew Point. Maximum working conditions: Ambient temperature 45°C, inlet air temperature 70°C and inlet air pressure 14 barg.

## ACT VS Energy Savings? Find out with our VS-E-CALCULATOR

The ACT VS dryers can offer impressive energy savings and in order to give the customer and the local Power Authority personnel an accurate energy usage in real dollars, using real numbers, we have developed our **VS-E-CALCULATOR**. We designed the calculator to provide you with model selection details and display energy savings versus our standard non cycling ACT dryers. By simply inputting just a few numbers that relate to your application, the **VS-E-CALCULATOR** within seconds will provide you with a detailed calculation of energy usage based on actual variable loads over a 24 hour period and then display the energy savings versus our standard non-cycling dryers. The capital cost ROI can be impressive on most models allowing the end user to present the savings to management and the local power authorities for potential eligibility for their energy saving rebate programs that are commonly offered provincially across Canada.

## CONTACT US FOR ACCESS TO OUR VS-E CALCULATOR

### Economic Comparison: Variable Speed Dryer vs Standard Dryers

#### General Data

Total working hours per day:	24 h/day
Total Pressure Drop cost:	2.68 \$/day

#### VS Dryer Data

VS Dryer model:	ACT 2000
VS Dryer electrical energy required:	VS
VS Dryer electrical energy cost:	35.8 kWh/day
Total (Power Supply + Pressure Drop) VS Dryer energy cost :	4.92 \$/day
	7.60 \$/day

#### Standard Dryer Data

Standard Dryer Model:	ACT 2000
Standard Dryer nominal power:	8.60 kW
Standard Dryer electrical energy required:	206.4 kWh/day
Standard Dryer electrical energy cost:	29.41 \$/day
- Condition #1:	10.32 \$
- Condition #2:	11.35 \$
- Condition #3:	7.74 \$
Total (Power Supply + Pressure Drop) Standard Dryer energy cost :	32.09 \$/day

#### Economic Benefit

Money saved in 24 hours using VS Dryer: \*(EXAMPLE ONLY) 24.49 \$/day

\* All model dryers energy savings will vary.

#### ACT ES Series



#### ACT Standard Series



CAG Purification Inc.  
3770B Laird Road, unit 2, Mississauga ON. L5L 0A7  
Tel: 800-951-0777 Fax: 905-820-3490  
[www.cagpurification.com](http://www.cagpurification.com)