

22
expo
acaire
2023



District Energy

LATAM Conference 2023

SEP 27 - 29 | CARTAGENA | CO



Cartagena

| 27, 28 y 29 de septiembre |

Enfriadores Industriales de Bajo Impacto Ambiental

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Gerente – Audit Air Colombia
Representante CARRIER

28 / 09 / 2023



Como ingeniero mecánico con más de 20 años de experiencia en el sector HVAC, he mantenido un compromiso en la construcción de proyectos y soluciones eficientes y sostenibles. Mi trabajo con diferentes marcas me ha permitido extraer lo mejor de cada una, a fin de ofrecer el equipo adecuado para cada aplicación.

Hoy como representante comercial de CARRIER para Colombia, tenemos el compromiso de ofrecer siempre la unidad más eficiente; en el lado del consumo de energía; así como la responsabilidad ambiental de promover el cambio en el uso de refrigerantes de bajo impacto para nuestro planeta.



Frases como:

“Uy, ¿inteligente y además bonita?”

“¡Todos tenemos las mismas oportunidades! No entiendo por qué molestan tanto con el tema de género”

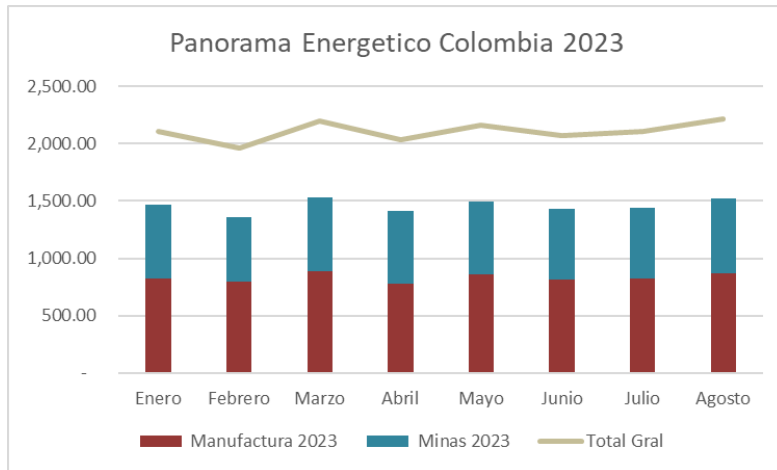
Son microagresiones



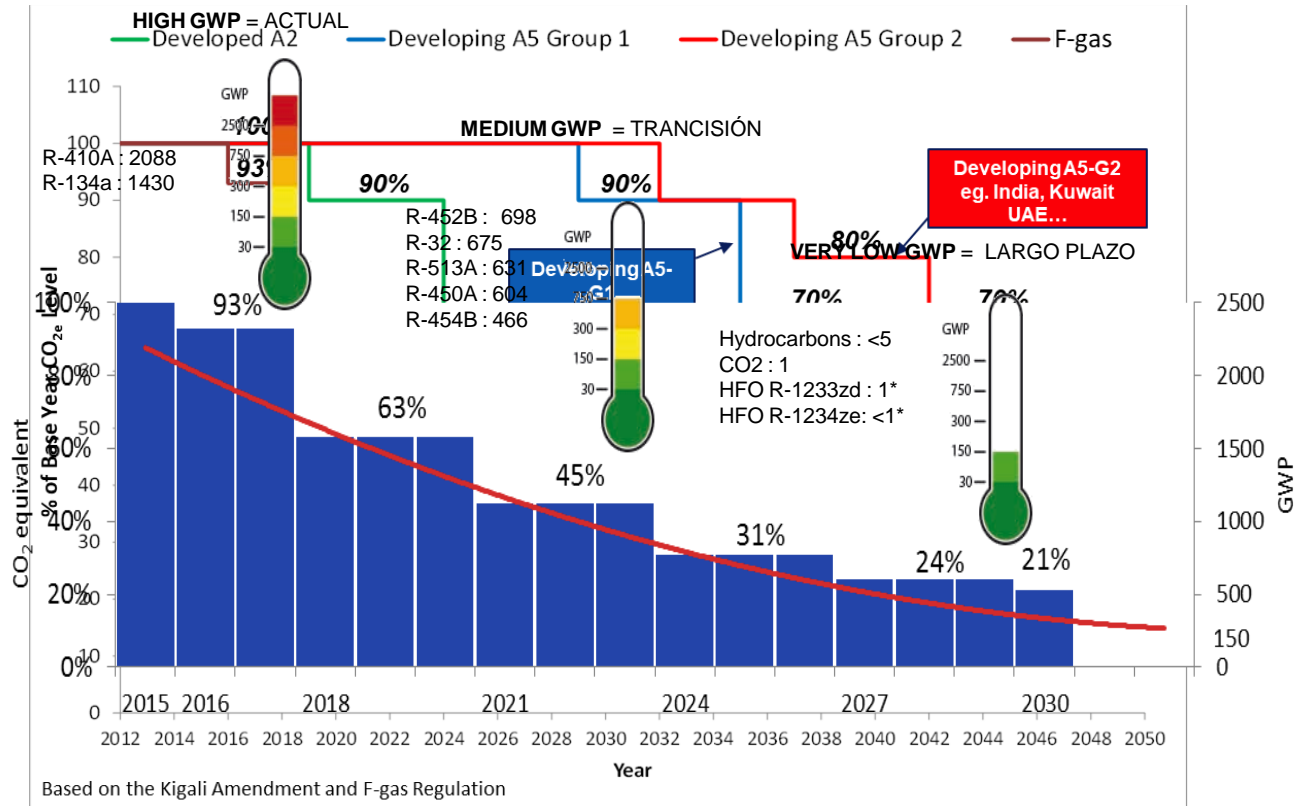
\$ 19,4 Billones de Inversión

653 GWh Producción

1400 GWh Requeridos



Impacto Ambiental



Eficiencia Energética

ASHRAE 90.1 - 2010

TABLE 6.8.1C Water Chilling Packages—Efficiency Requirements^a

Equipment Type	Size Category	Units	Path A		Path B		Test Procedure ^e
			Full Load	IPLV ^b	Full Load	IPLV	
Air-Cooled Chillers	<150 tons	EER	≥9.562	≥12.750	NA ^d	NA ^d	AHRI 550/590
	≥150 tons	EER	≥9.562	≥12.750	NA ^d	NA ^d	
Air-Cooled without Condenser, Electrically Operated	All Capacities	EER	Air-cooled chillers without condensers must be rated with matching condensers and comply with the air-cooled chiller efficiency requirements.				AHRI 550/590
Water-Cooled, Electrically Operated, Reciprocating	All Capacities	kW/ton	Reciprocating units must comply with water-cooled positive displacement efficiency requirements				AHRI 550/590
	<75 tons	kW/ton	≤0.780	≤0.630	≤0.800	≤0.600	
Water-Cooled, Electrically Operated, Positive Displacement	≥75 tons and <150 tons	kW/ton	≤0.775	≤0.615	≤0.790	≤0.586	AHRI 550/590
	≥150 tons and <300 tons	kW/ton	≤0.680	≤0.580	≤0.718	≤0.540	
	≥300 tons	kW/ton	≤0.620	≤0.540	≤0.639	≤0.490	
	<150 tons	kW/ton	≤0.634	≤0.596	≤0.639	≤0.450	
Water-Cooled, Electrically Operated, Centrifugal	≥150 tons and <300 tons	kW/ton	≤0.634	≤0.596	≤0.639	≤0.450	AHRI 550/590
	≥300 tons and <600 tons	kW/ton	≤0.576	≤0.549	≤0.600	≤0.400	
	≥600 tons	kW/ton	≤0.570	≤0.539	≤0.590	≤0.400	
	<150 tons	kW/ton	≤0.634	≤0.596	≤0.639	≤0.450	
Air-Cooled Absorption, Single Effect	All Capacities	COP	≥0.600	NR ^e	NA ^d	NA ^d	AHRI 560
Water-Cooled Absorption, Single Effect	All Capacities	COP	≥0.700	NR ^e	NA ^d	NA ^d	
Absorption Double Effect, Indirect Fired	All Capacities	COP	≥1.000	≥1.050	NA ^d	NA ^d	
Absorption Double Effect, Direct Fired	All Capacities	COP	≥1.000	≥1.000	NA ^d	NA ^d	

^a The centrifugal chiller equipment requirements after adjustment per Section 6.4.1.2 do not apply to chillers where the design leaving evaporator temperature is <39°F. The requirements do not apply to positive displacement chillers with design leaving fluid temperatures >32°F. The requirements do not apply to absorption chillers with design leaving fluid temperatures <40°F.
^b Compliance with this standard can be obtained by meeting the minimum requirements of Path A or Path B. However, both the full load and IPLV^b must be met to fulfill the requirements of Path A or Path B.
^c Section 12 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.
^d NA means that this requirement is not applicable and cannot be used for compliance.
^e NR means that there are no minimum requirements for this category.

ASHRAE 90.1 - 2022

Table 6.8.1-3 Liquid-Chilling Packages—Minimum Efficiency Requirements^{a,b,c}

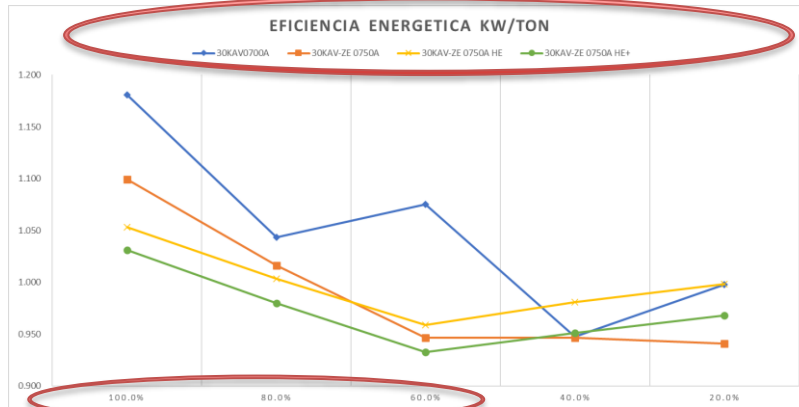
Equipment Type	Size Category	Units	Path A	Path B	Test Procedure ^e
Air-cooled	<150 tons	EER (Btu/Wh)	≥10.100 FL	≥15.800 IPLV ^f IP	AHRI 550/590
	≥150 tons	EER (Btu/Wh)	≥10.100 FL	≥15.800 IPLV ^f IP	
Air-cooled without condenser, electrically operated	All capacities	EER (Btu/Wh)	Air-cooled without condenser must be rated with matching condensers and comply with air-cooled chiller efficiency requirements.		AHRI 550/590
Liquid-cooled, electrically operated positive displacement	<75 tons	kW/ton	≤0.750 FL	≤0.780 FL	AHRI 550/590
	≥75 tons and <150 tons	kW/ton	≤0.600 IPLV ^f IP	≤0.500 IPLV ^f IP	
	≥150 tons and <300 tons	kW/ton	≤0.720 FL	≤0.750 FL	
	≥300 tons and <600 tons	kW/ton	≤0.560 IPLV ^f IP	≤0.490 IPLV ^f IP	
Liquid-cooled, electrically operated centrifugal	<150 tons	kW/ton	≤0.660 FL	≤0.680 FL	AHRI 550/590
	≥150 tons and <300 tons	kW/ton	≤0.540 IPLV ^f IP	≤0.440 IPLV ^f IP	
	≥300 tons and <400 tons	kW/ton	≤0.610 FL	≤0.625 FL	
	≥400 tons and <600 tons	kW/ton	≤0.520 IPLV ^f IP	≤0.410 IPLV ^f IP	
Air-cooled absorption, single effect	<150 tons	kW/ton	≤0.560 FL	≤0.585 FL	AHRI 560
	≥150 tons and <300 tons	kW/ton	≤0.500 IPLV ^f IP	≤0.380 IPLV ^f IP	
	≥300 tons and <400 tons	kW/ton	≤0.610 FL	≤0.635 FL	
	≥400 tons and <600 tons	kW/ton	≤0.550 IPLV ^f IP	≤0.400 IPLV ^f IP	
Liquid-cooled absorption, single effect	<150 tons	kW/ton	≤0.560 FL	≤0.595 FL	AHRI 560
	≥150 tons and <300 tons	kW/ton	≤0.520 IPLV ^f IP	≤0.390 IPLV ^f IP	
	≥300 tons and <400 tons	kW/ton	≤0.610 FL	≤0.635 FL	
	≥400 tons and <600 tons	kW/ton	≤0.560 FL	≤0.585 FL	
Absorption double effect, indirect fired	All capacities	COP (W/W)	≥0.600 FL	NA ^d	AHRI 560
	All capacities	COP (W/W)	≥0.700 FL	NA ^d	
Absorption double effect, direct fired	All capacities	COP (W/W)	≥1.000 FL	NA ^d	AHRI 560
	All capacities	COP (W/W)	≥1.050 IPLV ^f IP	NA ^d	
Absorption double effect, direct fired	All capacities	COP (W/W)	≥1.000 FL	NA ^d	AHRI 560
	All capacities	COP (W/W)	≥1.000 IPLV ^f IP	NA ^d	

^a The requirements for centrifugal chilling packages shall be adjusted for nonstandard rating conditions per Section 6.4.1.3.3 and are only applicable for the range of conditions listed there. The requirements for air-cooled, liquid-cooled positive displacement and absorption chilling packages are at standard rating conditions defined in the reference test procedure.
^b Both the full-load and IPLV^b requirements must be met or exceeded to comply with this standard. Where there is a Path B, compliance can be with either Path A or Path B for any application.
^c Section 13 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.
^d NA means the requirements are not applicable for Path B, and only Path A can be used for compliance.
^e FL is the full-load performance requirements, and IPLV^f IP is for the part-load performance requirements.
^f Free-cooled chilled water packages employing a freeze-protection liquid in accordance with Section 6.4.1.2.2 shall be tested or rated with water for the purpose of compliance with the requirements of this table.

Caso Industrial

Requerimientos 200 TR

Localización Colombia



Honeywell

Eficiencia Estándar / Alta /
Alta Plus

Compresores de Larga
Duración

Variadores de Velocidad

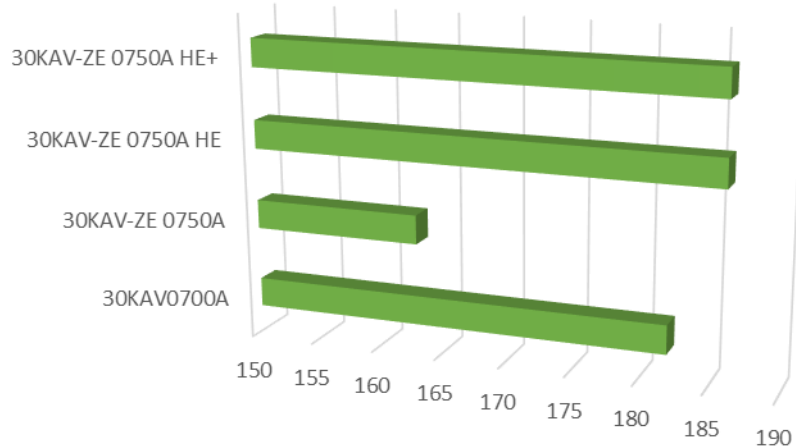
Refrigerante GWP<100

Motores EC

Medición de Energía

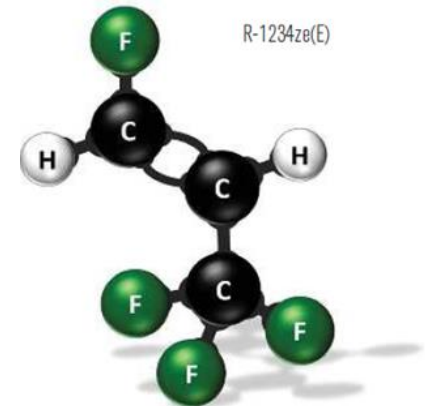
Caso Industrial - Ambiente

Refrigerante Kg (R134A vs R1234ze)

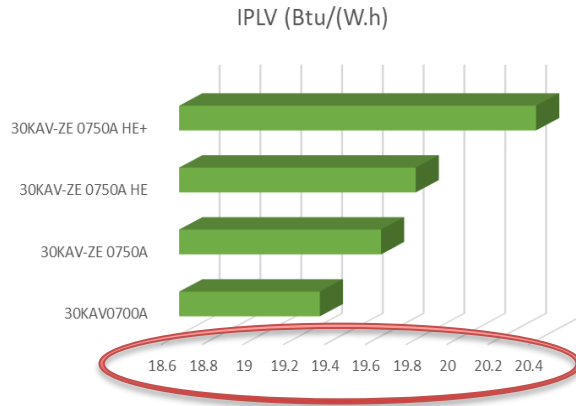


- Refrigerante con Ultra bajo GWP.
- No consumo de agua de condensación.
- Algoritmos de detección de fugas de refrigerantes
- Uso Condensador Microchannel para reducir 30% el uso de refrigerantes.

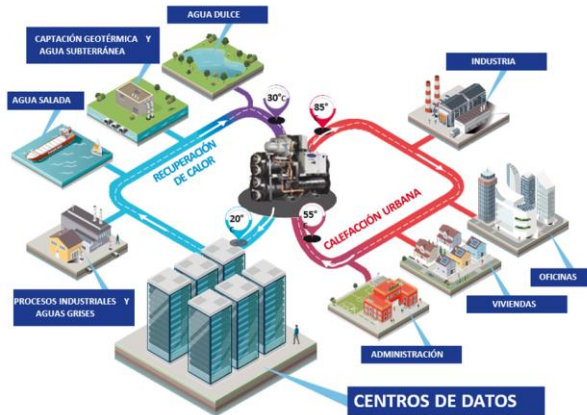
	Vida Atmosferica	GWP
R-134a	13,4 years	1430
R-1233zd(E)	26 days	1
R-1234ze(E)	16 days	<1



Caso Industrial - Eficiencia



- IPLV supera los estándares de eficiencia.
- Disminuye el consumo de energía.
- Genera ahorros del 5% en el consumo al 100%.
- Acometidas Eléctricas menores.
- Motores Tipo EC Condensación
- Aprovechamiento de energía



AQUAFORCE
PUREtec

Air-cooled screw chillers
 30XWV-ZE (450 - 1350 kW)



AQUAFORCE
PUREtec

High temperature water sourced heat-pump
 61XWHZE (200 - 2500 kW)



AQUAEDGE
PUREtec

Water-cooled centrifugal chiller
 19DV (1400-3500 kW)



AQUAFORCE
PUREtec

Air-cooled variable-speed screw chillers
 30KAV-ZE (350-850 kW)





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¡GRACIAS!

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REPRESENTACIÓN - DISTRIBUCIÓN - VENTA

