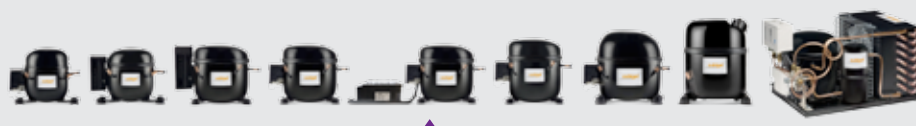


VARIABLE SPEED COMPRESSORS

Top Efficiency



VARIABLE SPEED COMPRESSORS for Commercial Refrigeration
The most efficient compressor



cubigel[®]
compressors
by
HUAYI
COMPRESSOR
BARCELONA



Variable Speed Compressors

The top efficiency compressor for commercial refrigeration



Commercial Refrigeration manufacturers are focusing their efforts to produce more efficient applications in order to satisfy the needs of reducing operating costs of the refrigeration equipment installed in supermarkets, retails and restaurants; where, the energy savings topic has become one of the major concerns.

The accurate design of the application and the right selection of the components - such as efficient compressors, fan motors, bigger insulation thickness of the cabinet walls, bigger condensers, low consumption lighting - is the key to reduce the total energy consumption of the application. The compressor is one of the components with highest impact in terms of energy consumption in the appliance.

To meet these needs, Huayi Compressor Barcelona, S.L. has been working to provide compressors that offer the top level of efficiency, reliability and flexibility.

Variable Speed Compressors are the solution for obtaining the maximum energy reduction, basically because the full compressor capacity is not always needed, so this technology dynamically adapts the compressor's cooling capacity to the appliance needs by adopting electronically-controlled running speed, optimizing the system performance.

Its high efficiency mechanics and brush-less electrical motor, along with a system that regulates the speed in accordance with the needs of the system, makes the thermodynamic cycle more efficient, allowing up to a 50% decrease in energy consumption compared to a standard compressor.

Variable Speed Compressors dynamically adapts the compressor's cooling capacity to the appliance needs by adopting electronically-controlled running speed

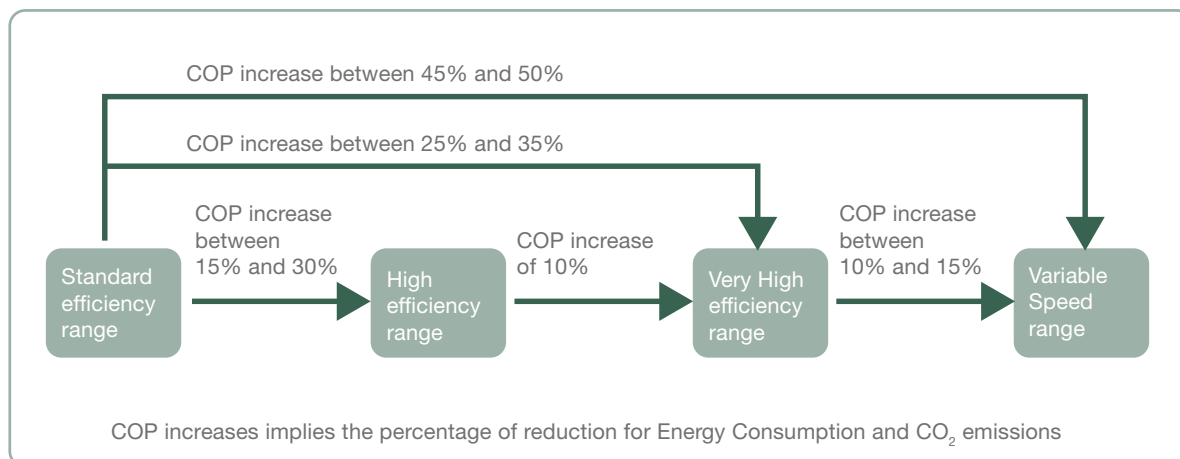


Benefits obtained by using Variable Speed Compressors

- Possibility of covering several standard compressor models for different cabinet volumes with just one compressor model.
- Compressor power consumption reduction up to 45% and 50% in comparison to standard compressors. This energy saving can be over 40% considering the total appliance power consumption (just due to the compressor).
- Reduces the pull-down time by means of running at a higher speed when it is needed.
- Reduces the number of start-ups/stops of the compressor.
- Modifies speed until the achieving the longest-duty cycle possible.
- Lower noise level
- Longer expected compressor's life due to the fact that the compressor is usually running at a lower speed than a standard compressor.
- Drop in electronic driver system for automatically self-adapting compressor speed to current thermal load by means of the "Smart Speed" programming option.
- Compatible for electromechanical and electronic thermostats.

For instance, supposing a 350 liters bottle cooler with an energy consumption of 4.8 kWh/24h assembling a standard efficiency compressor, the CO₂ emissions in 5 years due to its energy consumption would be around 3,9 tons CO₂ (taking into consideration an average of 0.45kg CO₂ emissions for each kWh of energy consumption). Replacing the standard compressor by a VSC one, CO₂ emissions would be reduced in around 1,7 tons of CO₂ due to its top efficiency.

COP increase when using different level of efficiency.



Variable Speed Compressors available today

Variable Speed Compressors are available for R134a with GLT99FSN in HMBP application model and for R290 with NPT12FSC (LBP), NLT60FSN (HMBP). With these 2 last models, it's been obtained a major benefit derived from the use of Natural Refrigerants: A better performance and the avoidance of a contribution to global warming.

Performances of Cubigel Compressors® VSC range

R134a HMBP range

Refrigeration capacity in function of evaporating temperature and speed ASHRAE46 working conditions

Model	Speed rpm	-25°C	-10°C	+7,2°C	
		kcal/h	kcal/h	kcal/h	(W/W)
GLT99FSN	1800	109	255	560	2,92
	2100	128	300	651	2,98
	2400	145	341	734	2,92
	3000	178	420	894	2,77
	3600	210	485	1065	2,62

R290 HMBP range

Refrigeration capacity in function of evaporating temperature and speed ASHRAE46 working conditions

Model	Speed rpm	-25°C	-10°C	+7,2°C	
		kcal/h	kcal/h	kcal/h	(W/W)
NLT60FSN	1800	134	260	466	3,08
	2100	156	307	545	3,12
	2400	177	352	619	3,07
	3000	215	433	770	2,94
	3600	252	498	920	2,85

R290 LBP range

Refrigeration capacity in function of evaporating temperature and speed ASHRAE32 working conditions

Model	Speed rpm	-40°C	-23,3°C	-10°C	
		kcal/h	kcal/h	kcal/h	(W/W)
NPT12FSC	1800	123	300	1,52	557
	2100	143	352	1,65	645
	2400	162	405	1,63	727
	3000	190	485	1,60	-
	3600	230	585	1,57	-

R290 HMBP • 50Hz | 60Hz

MODEL	DISPLACEMENT cm ³	APPLICATION	COOLING	VOLTAGE FREQUENCY	MOTOR	EXPANSION	SPEED rpm	REFRIGERATION CAPACITY						WEIGHT Kg	
								COP in W/W 1 W = 0,864 kcal/h = 3,415 BTU/h Evaporating Temperature °C							
								Cecomaf (W)			Ashrae				
								+5			+7,2				
								W	COP		kcal/h	(W/W)			
GLT99FSN	9,95	HMBP	F	220-240V 50/60Hz ~1	ECM	C-V	1800	115	205	542	2,52	658	560	2,92	11,2
							2100	135	242	630	2,6	764	651	2,98	
							2400	153	275	712	2,54	860	734	2,92	
							3000	188	340	868	2,42	1046	894	2,77	
							3600	222	391	1030	2,30	1253	1065	2,62	
NLT60FSN (*)	5,98	HMBP	F	220-240V 50/60Hz ~1 100-127V 50/60Hz ~1	ECM	C	1800	101	180	476	2,76	578	466	3,08	10,8
							2100	119	214	557	2,79	675	545	3,12	
							2400	136	244	633	2,75	764	619	3,07	
							3000	171	308	787	2,63	948	770	2,94	
							3600	203	358	941	2,55	1144	920	2,85	

R290 LBP • 50Hz | 60Hz

MODEL	DISPLACEMENT cm ³	APPLICATION	COOLING	VOLTAGE FREQUENCY	MOTOR	EXPANSION	SPEED rpm	REFRIGERATION CAPACITY						WEIGHT Kg	
								COP in W/W 1 W = 0,864 kcal/h = 3,415 BTU/h Evaporating Temperature °C							
								Cecomaf (W)			Ashrae				
								-25			-23,3				
								W	COP		kcal/h	(W/W)			
NPT12FSC (*)	12,10	LBP	F	220-240V 50/60Hz ~1 100-127V 50/60Hz ~1 (**)	ECM	C	1800	115	196	257	1,18	521	300	1,52	12,1
							2100	134	233	306	1,28	601	352	1,65	
							2400	152	268	349	1,26	680	405	1,63	
							3000	178	326	419	1,25	-	485	1,60	
							3600	216	393	506	1,22	-	585	1,57	

(*) Different electronic driver depending on the voltage range.



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