



CO₂ (R744)

Imbera Development Update

March 2015

Agenda



- ✓ CO₂ Implementation update
- ✓ Remaining challenges
- ✓ Next steps

Implementation milestones



Five challenges to introduce CO₂ refrigeration systems for Coca-Cola cold drink equipment:

- ✓ **Full product portfolio offered in CO₂ by January 2016.**
- ✓ **Performance (energy consumption).**
- ✓ **Noise level.**
- ✓ **Acquisition cost.**
- ✓ **Maintenance requirements.**

Current certified coolers by Region



Family	G319	G326	G342	VR08	VR10	VR12	VR17	VRD37	VRD35	VRD43	VRS16	VRS19	
Model	G319 C BMAD UL 115/60 G319 C BMAD CO2 115/60 G319 D BMAD CO2 115/60 G319 C BMAD 220/50 G319 C BMAD CO2 220/60 G326 C BMAD CO2 115/60 G326 D BMAD CO2 115/60 G326 C BMAD CO2 220/50 G342 C BMAD CO2 115/60 G342 D BMAD CO2 115/60 VR08 D BMAD CO2 115/60 VR08 C BMAD CO2 115/60 VR08 C BMAD CO2 220/60 VR08 C BMAD CO2 220/50 VR08 D BMAD CO2 127/60 CIF VR08 D BMAD CO2 220/60 CIF VR10 C BMAD UL 115/60 VR12 C BMAD UL 115/60 VR12 D BMAD CO2 115/60 VR12 C BMAD CO2 115/60 VR17 C BMAD CO2 115/60 VR17 C BMAD CO2 220/50 VR17 C 220-60 (Tolva Trasera) VRD37 C BMAD UL 115/60 VRD37 C BMAD 115/60 UL SD VRD37 D BMAD CO2 115/60 VRD37 C BMAD CO2 220/50 SD VRD35-CO2 C BMAD NA 115/60 VRD43 C BMAD CO2 115/60 VRD43 C BMAD CO2 115/60 SD VRS16 D BM/AE 127/60 3DVIS CIF VRS16 D BM/AE 220/60 3DVIS CIF VRS16 D BM/AE 127/60 3DVIS EMIS VRS16 D BM/AE 220/60 3DVIS EMIS VRS19 D BMAD CO2 220/60 VRS19 D BM/AE CO2 127/60 VRS19 D BM/AE CO2 220/60 VRS19 C BMAD CO2 220/60 VRS19 D BM/AE CO2 220/50 VRS19 C BMAD CO2 220-60 VRS19 C BMAD CO2 220/60 COEL CU-CU VRS19 C BMAD CO2 220/60 COEL												

Next Models to be completed

- March 2015
 - VRD21 C 115/60 UL (USA)
 - VRD14 C 115/60 UL (USA)
 - VR06 C 115/60 (USA)
 - G372 C 115/60 (MEX / LC)
- April 2015
 - VRD20 C 115/60 (USA)
 - VR08 CLASSIC C 115/60 (USA)
 - VR18 C 115/60 (MEX/ LC)

Product Portfolio



Imbera CO₂ Models availability (Certified Models) by January 2015

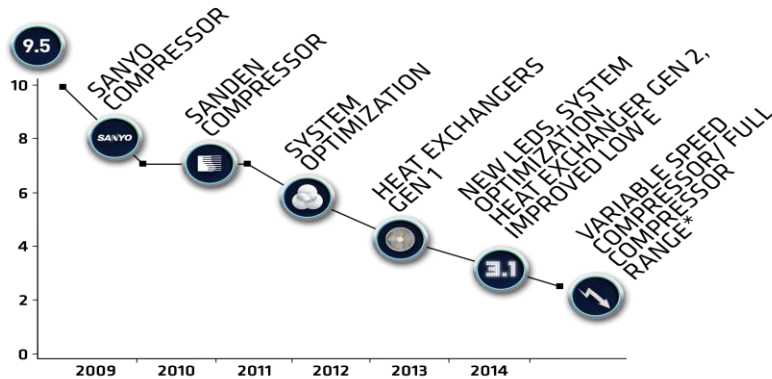
NA	Mexico	Latin Center	South Latin	Brazil	Other
G319	G319	G319	G319	VRS16	VRS19
VR10	G326	VRS19	VR08	VR08	VR08
VR12	VR08	VR08	VRS19	VRS16 BRIX	VRD37
VR08	G342	G342	G342		G326
VRD35	G372	VRS16 BRIX	MT400		
VRD37	VR17	VR17	G326		
VRD43	G322				
VRD21					
VR06					
VRD12					
Potential Imbera sales covered with CO2 Models (Dec 2014)					
99%	93%	90%	94%	86%	90%
	Certified Models				
	Models in Process				

Models in process to be completed no later tan march 2015

Energy consumption



REDUCTION IN ENERGY CONSUMPTION



By 2014, we have been able to reduce energy consumption by 67%.

*2009 BASE YEAR

**BASE ON G3-19 C CONDITION.

Energy Star 3.0 (mandatory from October 2014) for CCNA
Authorized CO₂ models

CO2 Model	ASHRAE Energy Usage Co2 (kWh/24h)	EnergyStar 3.0 Compliant Limit (kWh/24h)	Meets Requirements
VR10	1.740	1.970	Yes
VR12	1.980	2.230	Yes
G319	3.020	3.200	Yes
VRD37	5.190	5.270	Yes
VRD37	5.160	5.360	Yes

Noise level

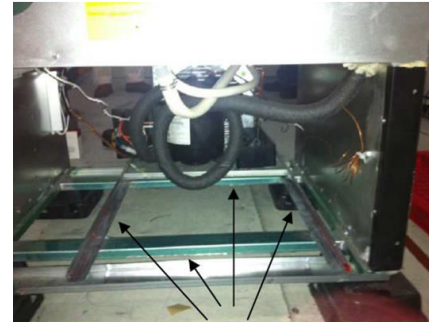
Noise plays a crucial role in CO2 systems. With internal fluid pressure increasing **10 times** compared to R134a systems.

The mounting elements and support components have been **redesigned** in order to meet **TCCC requirements**.

CO2 Model	Sound Level according to TCCC test procedure	Sound Limit
VR10	58.6 dBA	65 dBA
VR12	61.7 dBA	65 dBA
G319	60.5 dBA	65 dBA
VRD35	63.7 dBA	65 dBA
VRD37	63.8 dBA	65 dBA
VRD43	63.8 dBA	65 dBA



Elastomeric grommets



Damping foil tape

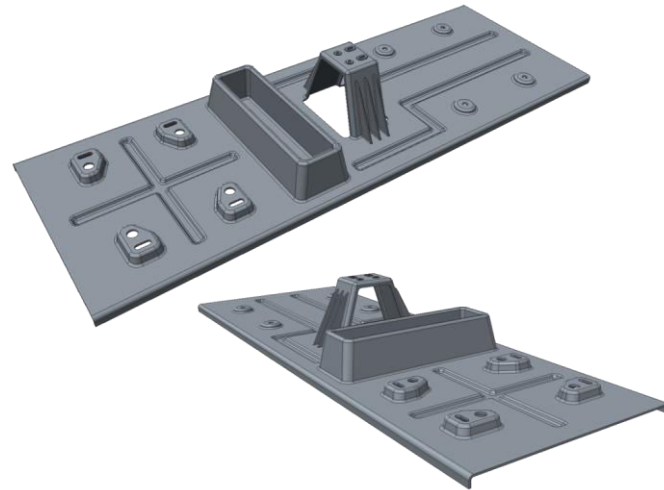


Noise level improvements 2015



Next year Imbera will redesign the mounting base substituting **metal** for **plastic**.

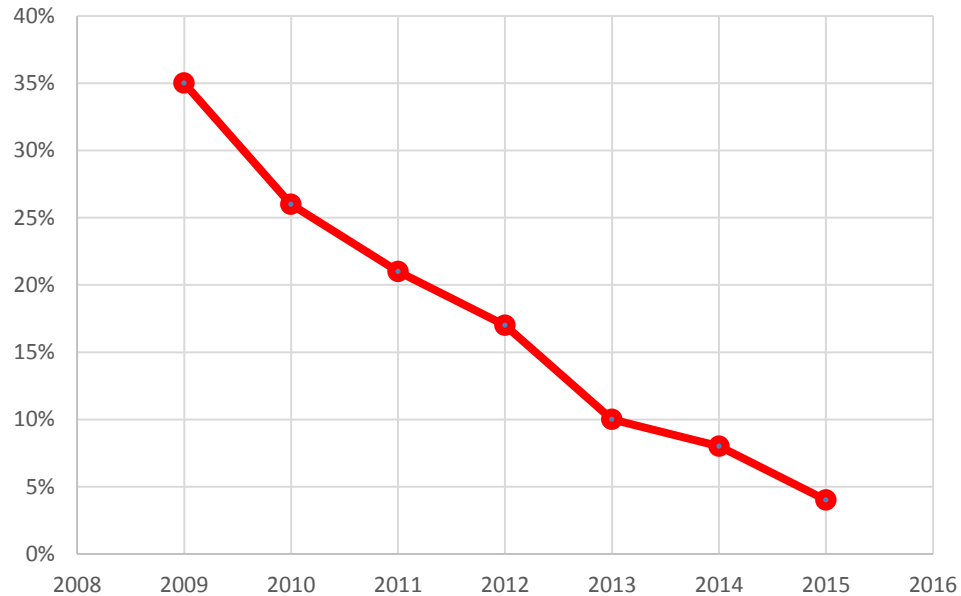
This new component will help **reduce** the **noise** coming from **vibration** caused by the current metal-to-metal assembly.



Acquisition cost



CO2 models **price upcharge** evolution (2009-2015) compared to R134a technology



2013-2014 CO₂ Total Production



Imbera Yearly CO₂ Units Production

Year	Production
2013	19,110
2014	75,113
2015	18,201
Total	102,424

**SUSTAINABLE
COOLING
INNOVATION.**



THANK YOU!

Contact Information:

Carlos Montoya

R&D

carlos.Montoya@efemsa.com

+5214272268004

www.imberacooling.com