



Business Case for  
Natural Refrigerants

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11-12/04/2018 – Beijing

# Variable speed R290 compressors in Chinese light commercial refrigeration

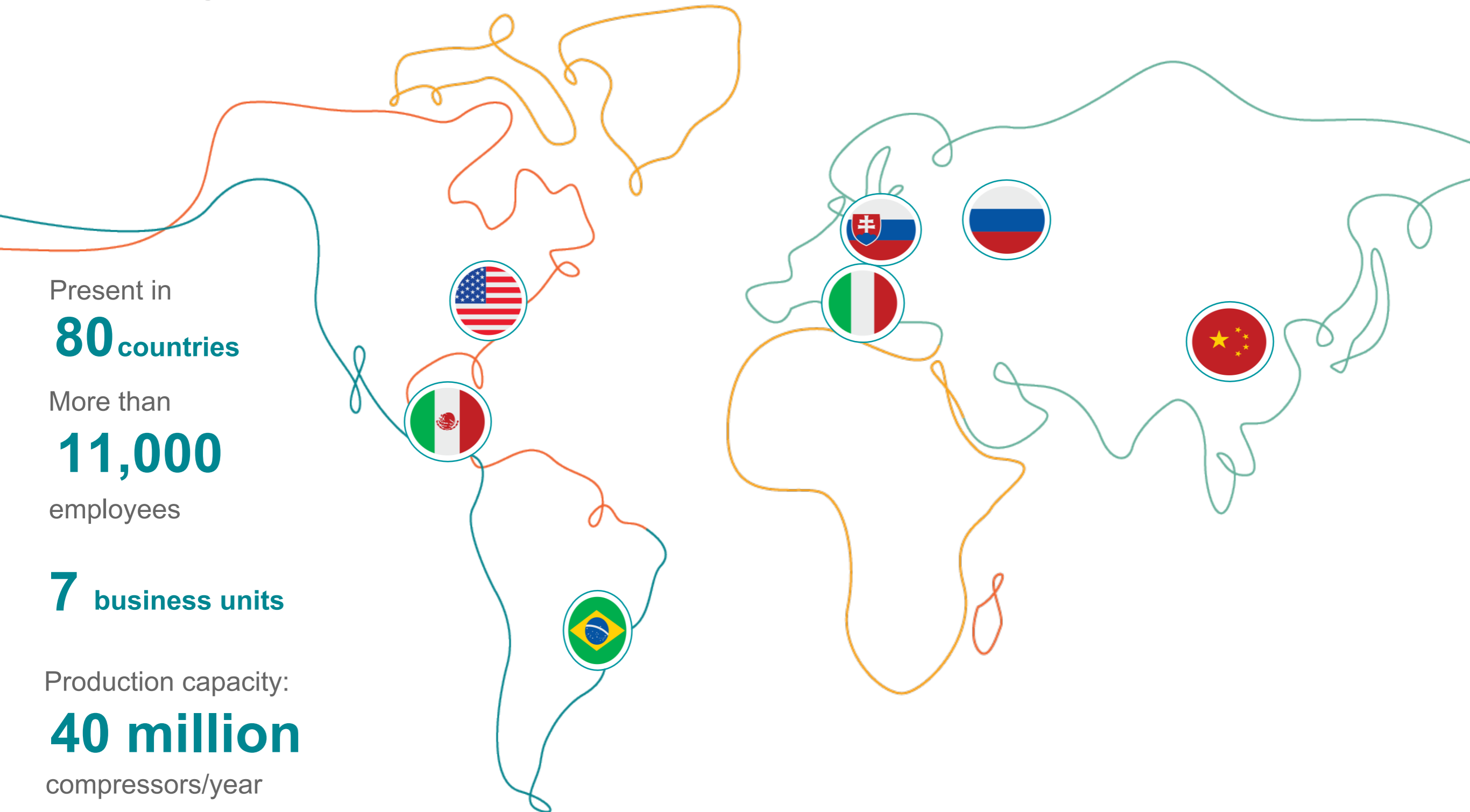
**André Paz Rosa**  
Embraco China R&D

Present in  
**80 countries**

More than  
**11,000**  
employees

**7** business units

Production capacity:  
**40 million**  
compressors/year

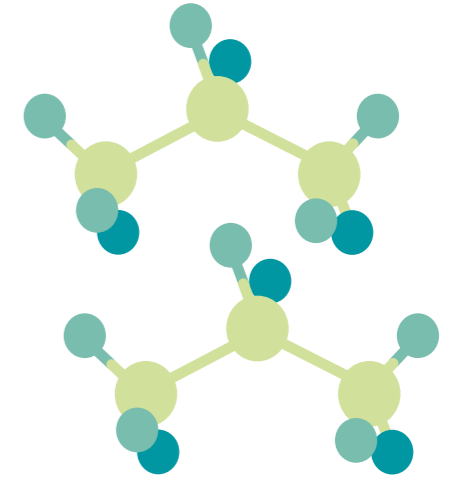


**What is**

**the best option**

**for Light Commercial**

**systems in low GWP for the future ?**



# Hydrocarbons

are the most sustainable choice.



# Why Natural Refrigerants?

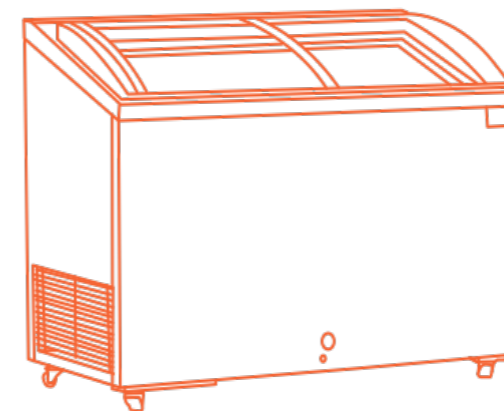
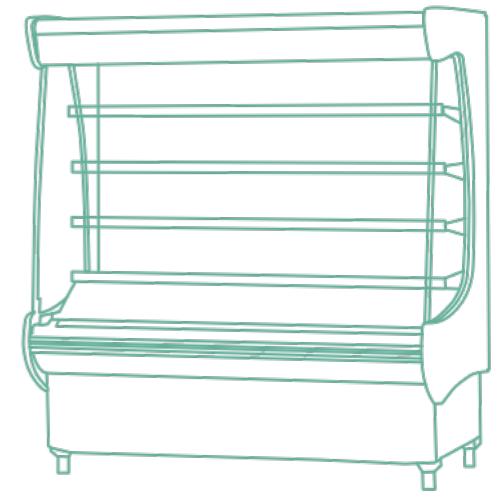
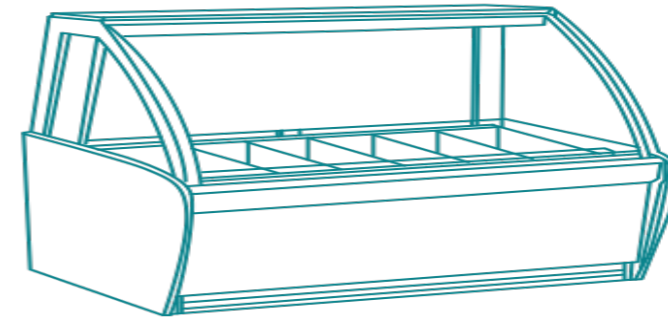
## Light commercial applications

- Low GWP
- Hydrocarbons are very efficient
- It's safe

150g limit of HC (e.g.: R290) already can cover most light commercial applications.

Multiple circuits can be used for equipment requiring more than 150g of R290.

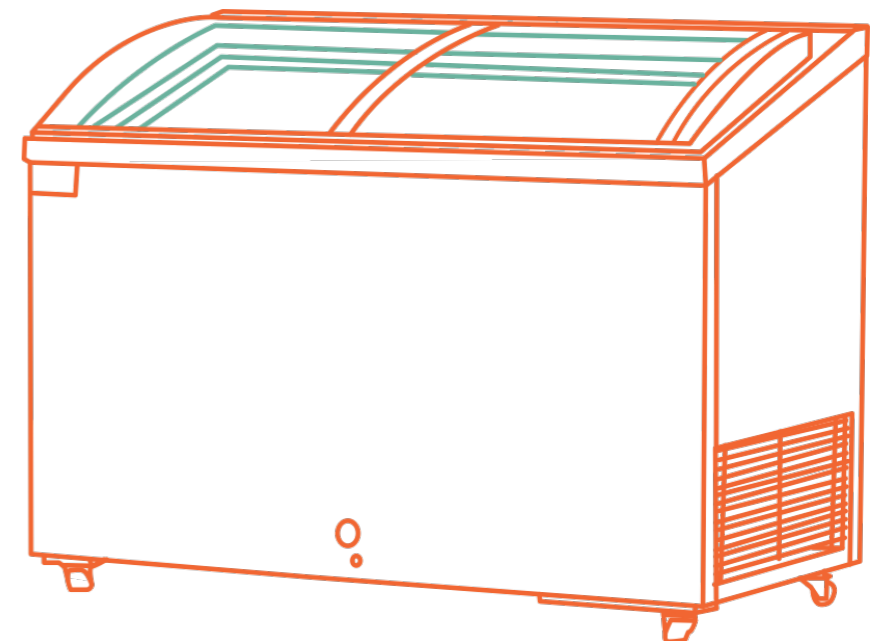
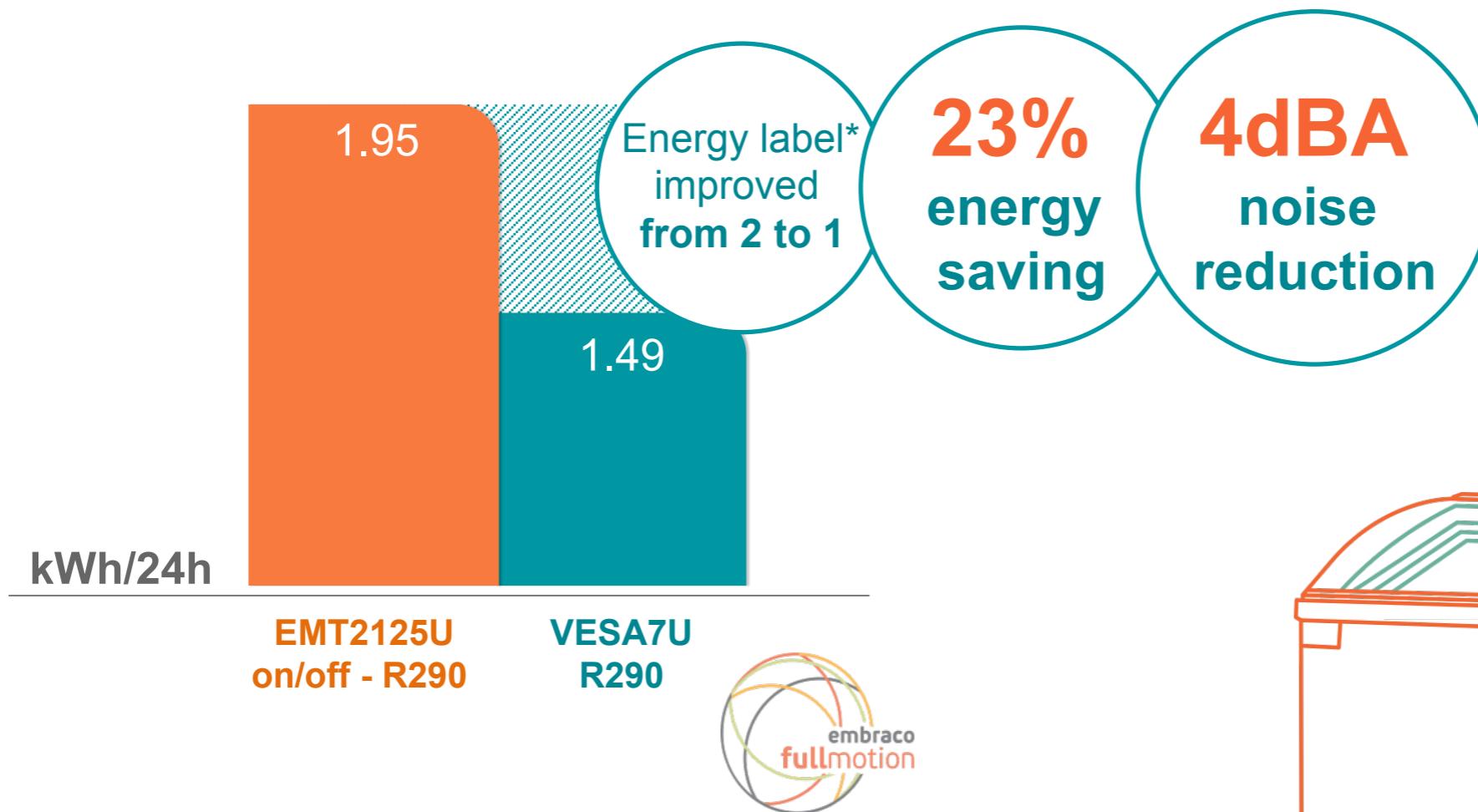
IEC 60335-2-89 is expected to **allow up to 500g**. Final decision should be taken within this year and published in 2019.



# Fullmotion technology & R290 in an ice cream freezer (369L)

Keeping pace with toughest energy requirements every new season

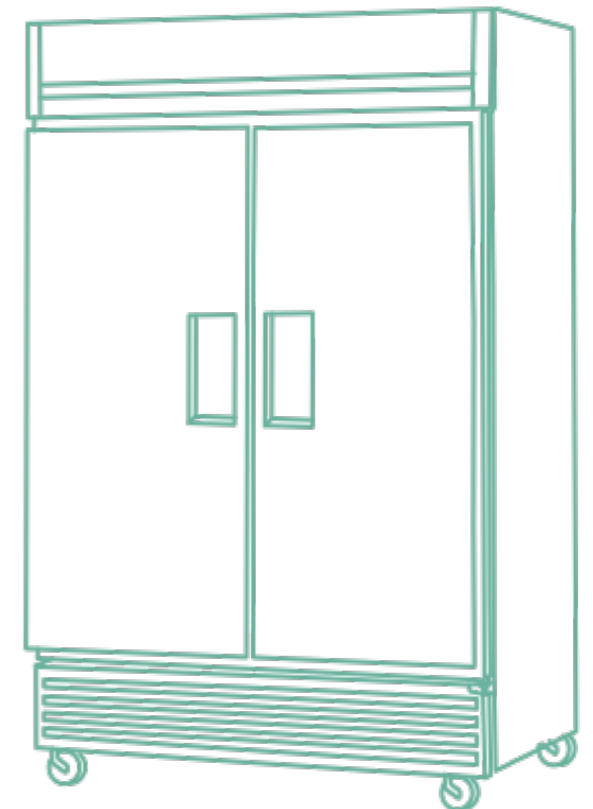
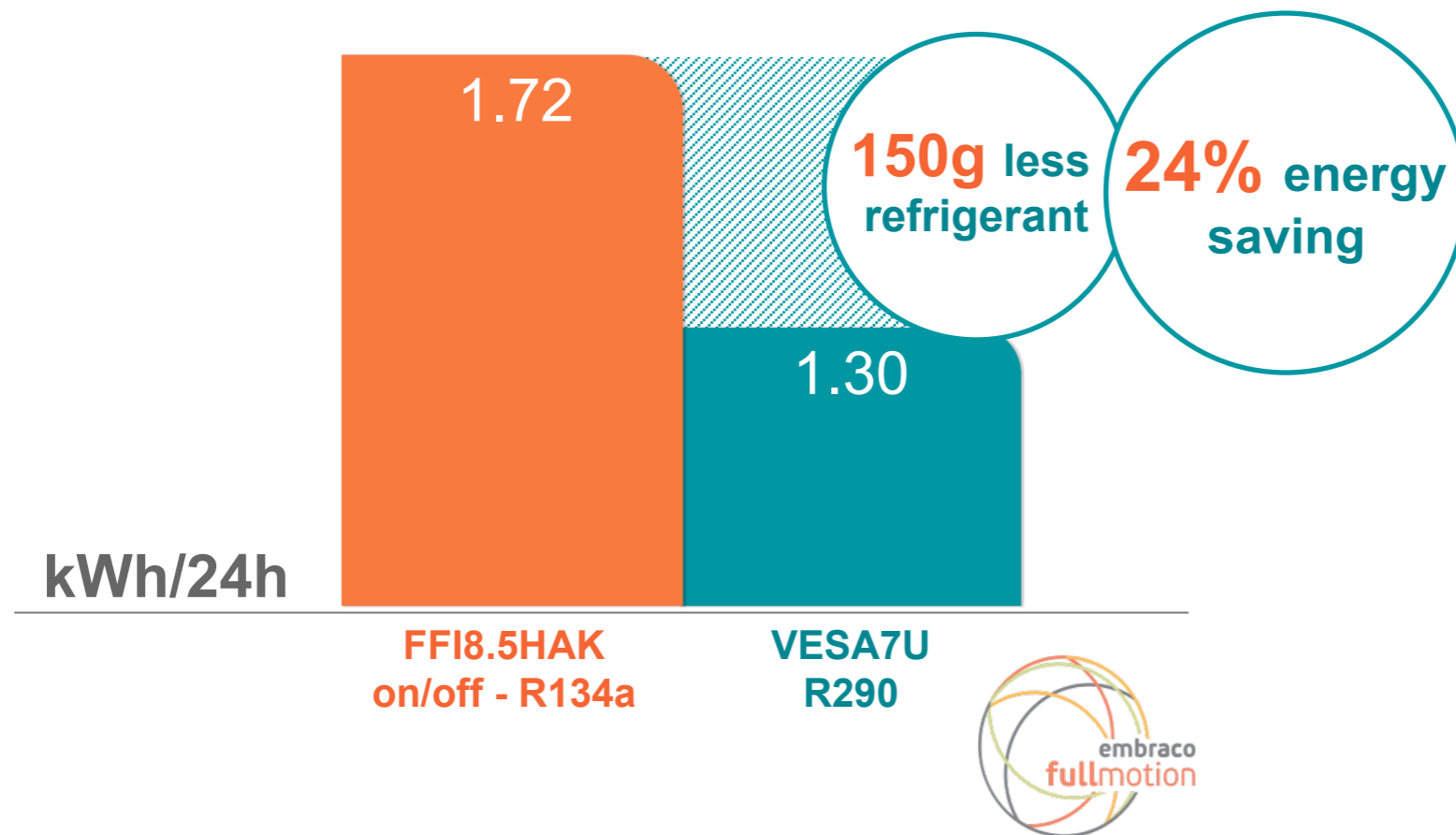
Energy consumption @ 25°C  
results for Embraco compressors



\* GB 26920.2-2015

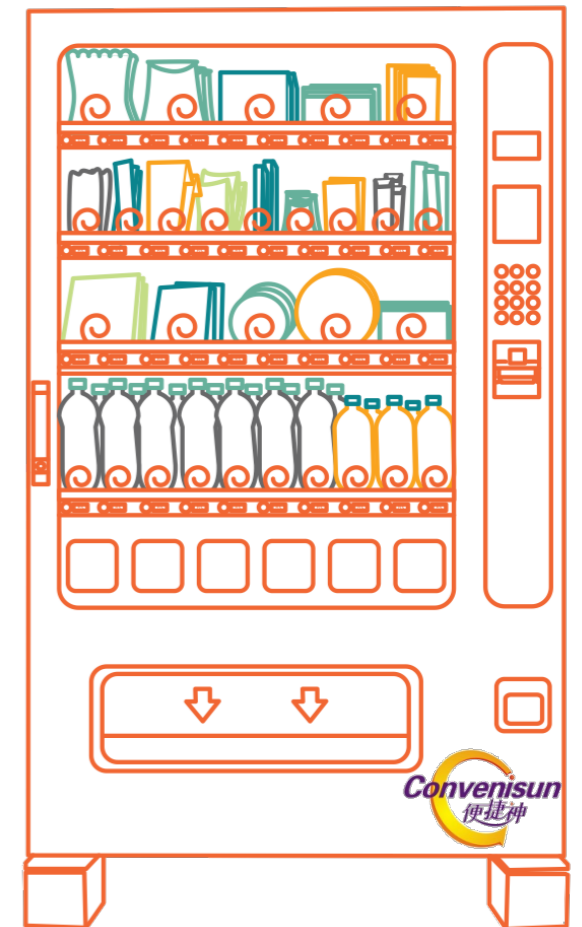
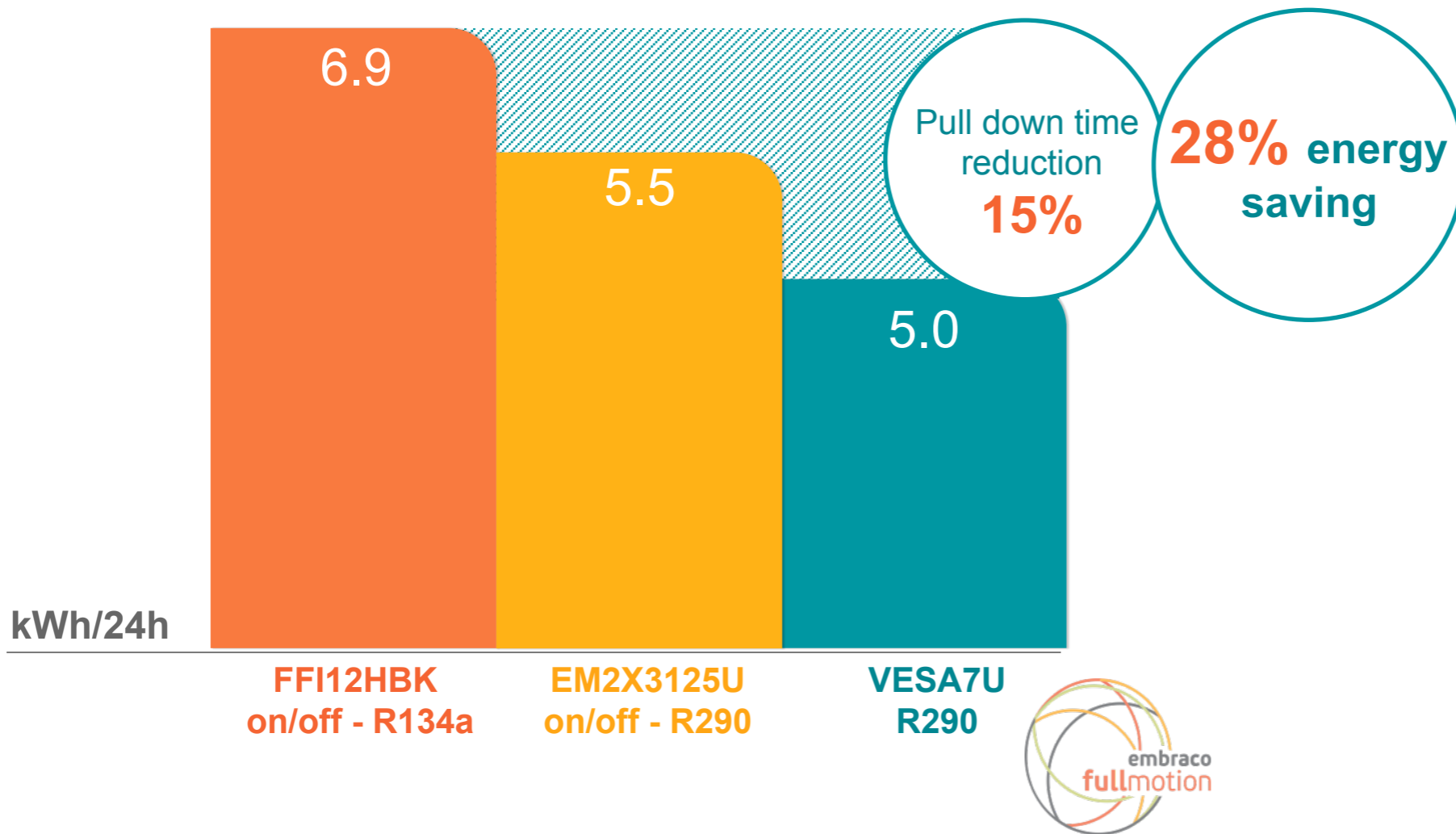
# Fullmotion technology & R290 in a kitchen refrigerator (557L)

Energy consumption @ 25°C  
results for Embraco compressors



# Fullmotion technology & R290 in a vending machine (500L)

Energy consumption @ 32°C  
results for Embraco compressors







## CONCLUSION

- R290 compressors are a growing trend for Chinese market of self contained cabinets.
- R290 performance (cooling speed and efficiency) are main attractive for OEM's and end users.
- **Variable speed technology** is arriving to the market as next evolution step: further every saving and improved noise.





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Thank you very much!

