



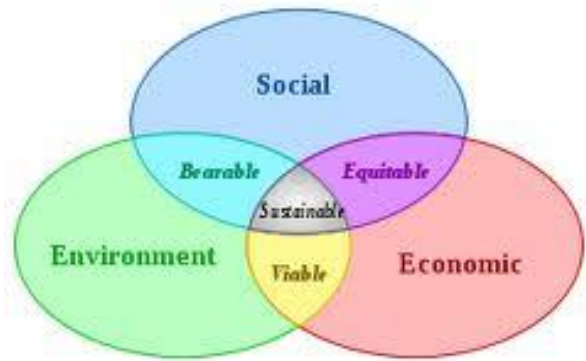
**YOU CARRY
WE CARE**




“Environmental Stewardship is our Culture.”

October 2013

Carrier - Sustainability In and Out



Through 2012, UTC Climate, Controls & Security accomplishments included:

	36% reduction in water consumption	42% reduction in greenhouse gas emissions	48% reduction in total industrial process waste	68% reduction in air emissions
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Baseline: 2008 data adjusted for acquisitions and divestitures

Since 2000, UTC Climate, Controls & Security's high-efficiency products and energy services have avoided the emission of 133 million metric tons of greenhouse gas. www.naturalleader.com

Source: Carrier Internal Study

Our Environmental Stewardship is a Mindset



34% Carbon footprint reduction on Vector 1550 - July 2010



75% improvement in refrigerant containment on Pulsor - Nov. 2011

10% reduction in energy consumption since 2007 on France production site



60 dB(A) achieved on City urban distribution units – April 2004



17 serviceable parts removed thanks to electric technology – Sept 1999



94% of Vector components are recyclable



Source: Carrier Internal Study

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Our F-Gas Position



Global consistency

Commercial Refrigeration

2020 phase-out to natural refrigerants

Transport Ref.

**Include Transport Refrigeration in revised EU F-Gas Regulation
2025 phase- out to natural refrigerants**

Marine Ref.

**Include Marine Refrigeration in revised EU F-Gas Regulation
2025 phase- out to natural refrigerants**

Commercial HVAC

2020 phase- down to GWP 150

Residential HVAC

2025 phase down to lowest possible GWP

For A Sustainable Cold Chain

improve

shipping™



NaturaLINE™ uses recycled CO₂ as a natural refrigerant lowering environmental impact for marine shipping



eDRIVE all-electric technology enables fuel, noise and emissions reductions for trailer refrigeration

improve

freshness™

improve

refrigeration™

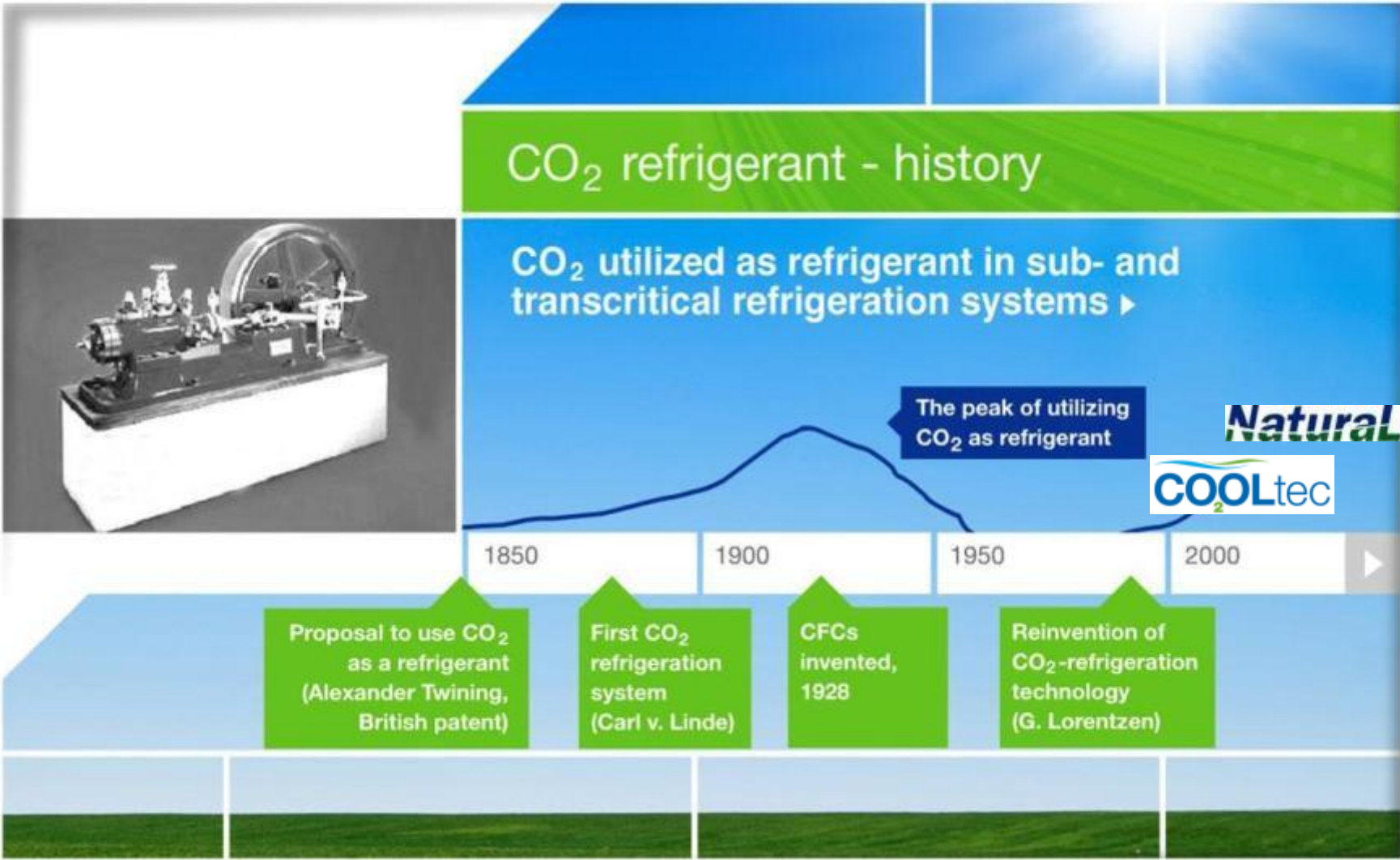


CO2OLtec™ system

Carrier's natural refrigerant Technology reduces **Greenhouse gas Emissions** for retailers

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Supported by Technology Evolution on CO₂



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Towards CO₂ in Refrigeration

COOLtec



Commercial Refrigeration success
(664 installations in Europe*; significant efficiency improvements)

NaturaLINE



Container Refrigeration commercially available after 2 years of intensive trials (training, reliability, performance, efficiency)

Road Transport

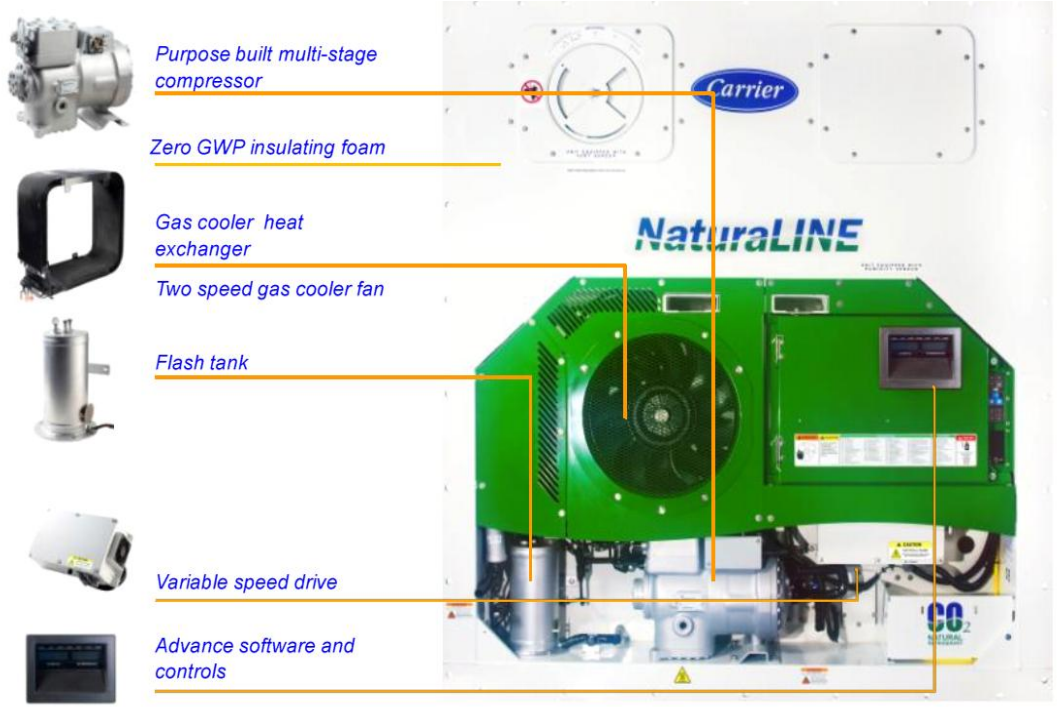


Road Transport Refrigeration Trials
(future)

*As of Aug. 2013

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Leveraging Container on Roads

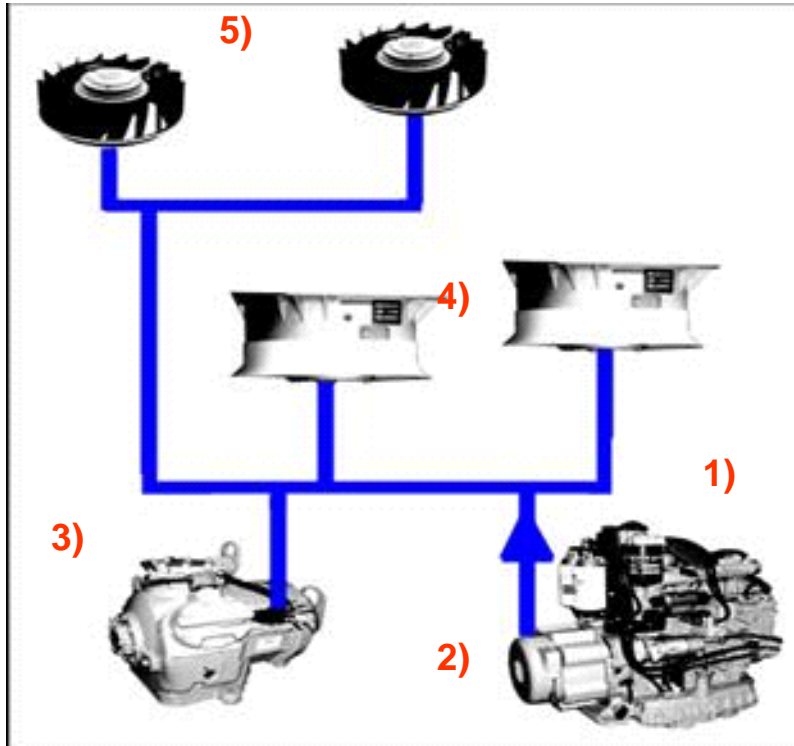


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Consistent with 14 years of Electric Design



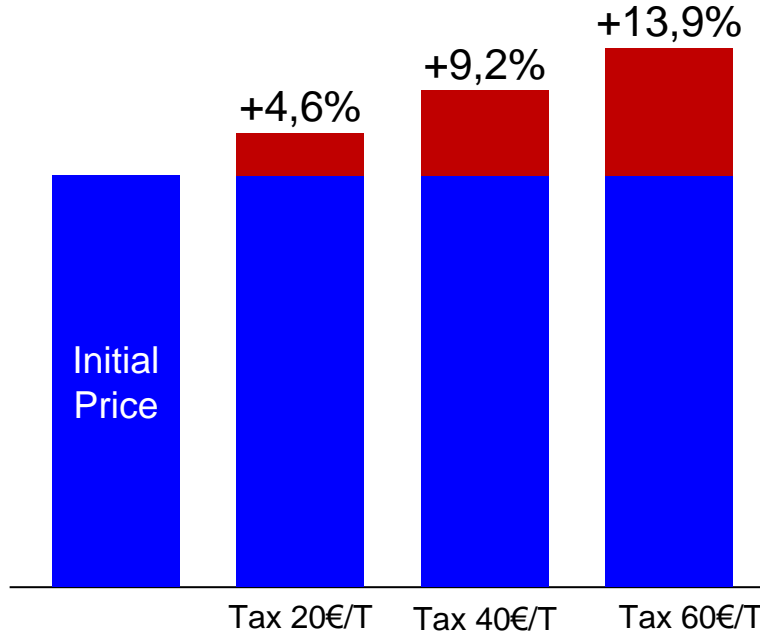
- 1) Engine
- 2) Generator
- 3) Semi-hermetic compressor
- 4) Condenser fans
- 5) Evaporator fans

CO₂ high-efficiency solutions
for warmer climates

Low GWP Refrigerant Selection

Technology	Refrigerant	Safety assessment
Conventional Electric	R404A	non flammable
Conventional Electric	R407F	non flammable
Conventional Electric	R32	mildly flammable
Conventional Electric	1234yf	mildly flammable
Conventional Electric	Propane R290	highly flammable
Conventional Electric	CO2	non flammable

HFC Tax impacts on Trailers
(Electric concept / 5% leak rate per year)

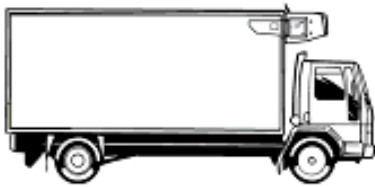


Source: Carrier Internal Study

Flammability mitigation, efficiency & glide remain a challenge for new chemical refrigerants.

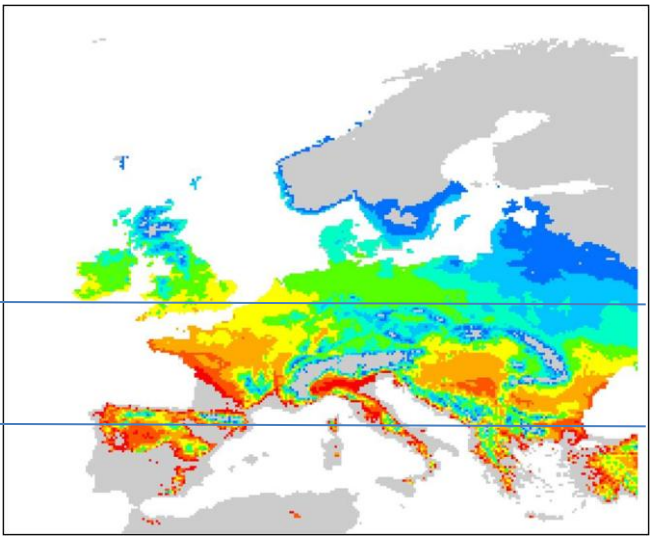
Thanks to technology improvements, CO2 high ambient roadblock is being removed.

Vehicle Presence within F-Gas countries



Estimated
Transport Refrigeration Vehicles
Segment Breakdown by ambient

17%
66%
17%



Source: Carrier Internal Study (TAS 2012)

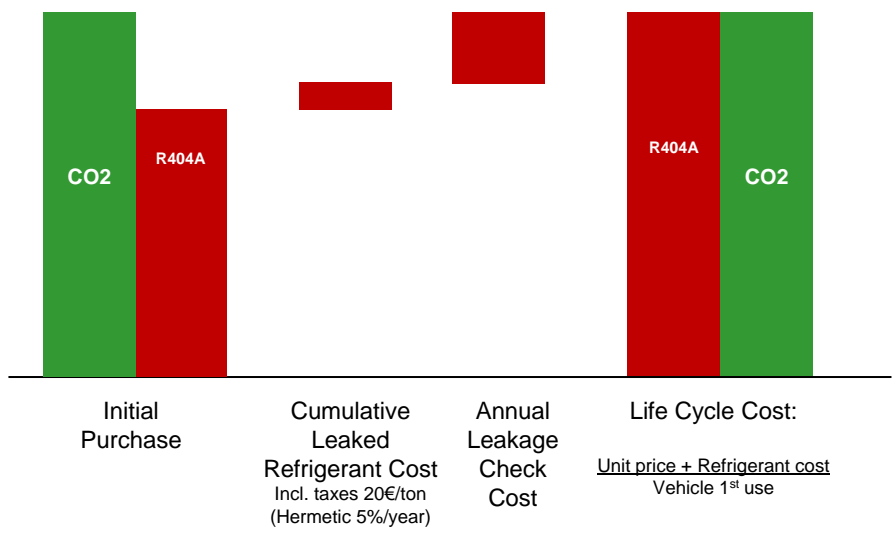


Attractive energy savings can be obtained with average annual temperatures of up 15°C

For reference, the annual average temperature in:
Stockholm: 7°C; Paris: 12°C; London: 11°C; Milan: 13°C, Madrid: 14°C
(Source: German National Meteorological Service 2007)

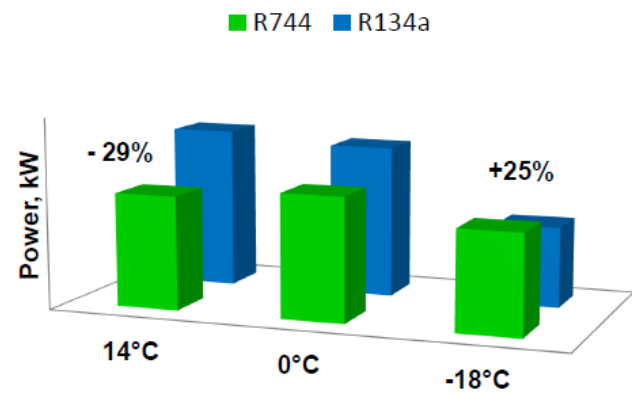
Our Choice: CO₂ for Better Cost of Ownership

7 years Refrigerant Life Cycle Cost estimate
At parity with R404A?



Source: Carrier Internal Study

Average efficiency equal @ 38°C
(as a result of NaturaLINE trials)



Typical control temperatures

Source: Carrier Internal Study



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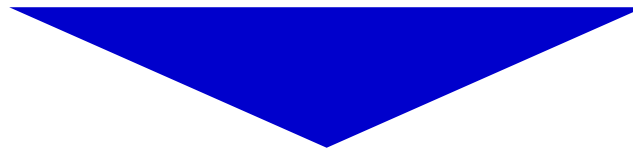
World's First CO₂ Trailer



Sainsbury's commitment to phase out HFCs

Project initiated June 2012

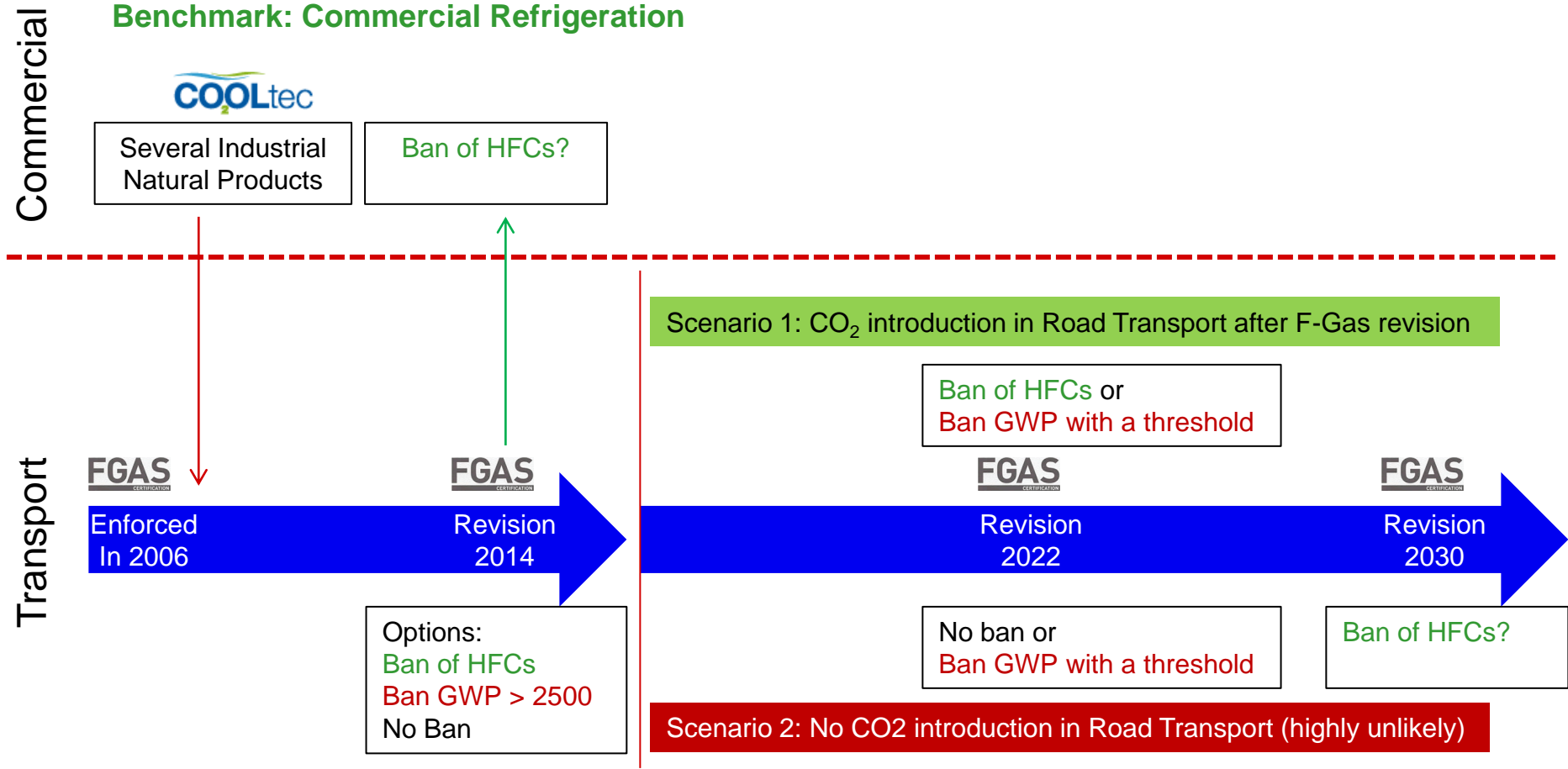
Carrier Transicold AdvanTE³C Transport Lead



World's first CO₂ unit for a trailer application (2 year trial)

NaturaLINE™ unit mounted on a Gray & Adams box

Trending Towards a Solution



New Intermediate Step in Refrigeration = Divert R&D Investments

Source: Carrier Internal Assessment



Thank you for your attention!

Innovative solutions,
naturally...



Carrier has the right refrigerant for every application, but every application will not have the same refrigerant solution.