
AUSTRALIA
ATMO
sphere

Welcome & Introduction

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DORIN 100
1918 2018
A LEGEND IN PROGRESS

ARC AUSTRALIAN REFRIGERATION COUNCIL

ATMO sphere AUSTRALIA

global market accelerator for natural refrigerant based technologies

shecco Media

ACCELERATE NORTH AMERICAN EDITION ADVANCING HVAC&R NATURALLY MAGAZINE

744R.com

AMMONIA 21

HYDROCARBONS 21

shecco Events

ATMO sphere

ATMO sphere network

shecco MarketDevelopment

shecco Base

shecco Base Webinar

life front

SUPERSMART

guide shecco publications

Welcome to the world's largest database on Natural Refrigerants.

shecco Base

Find out more

www.sheccobase.com

World's largest NatRef database (updated daily)

Team of experts (Engineers, Analysts, Researchers, Journalists)

Credit-based system for tailor-made requests

Reports (Policy, Market, Technology)

Accelerate Magazines

Accelerate Magazines

first monthly / bi-monthly / quarterly news magazine about natural refrigerants for Japan, Europe, North America and Australia

about the **most progressive business leaders** working with natural refrigerants in all HVAC&R sectors

free digital distribution

Global ATMO events 2018

ATMO JAPAN
13 February
Tokyo

ATMO CHINA
11-12 April
Beijing

ATMO AUSTRALIA
7 May
Sydney

ATMO FRIGAIR
7 June
Johannesburg

ATMO AMERICA
12-14 June
Long Beach, CA

ATMO FRANCE
5 July
Paris

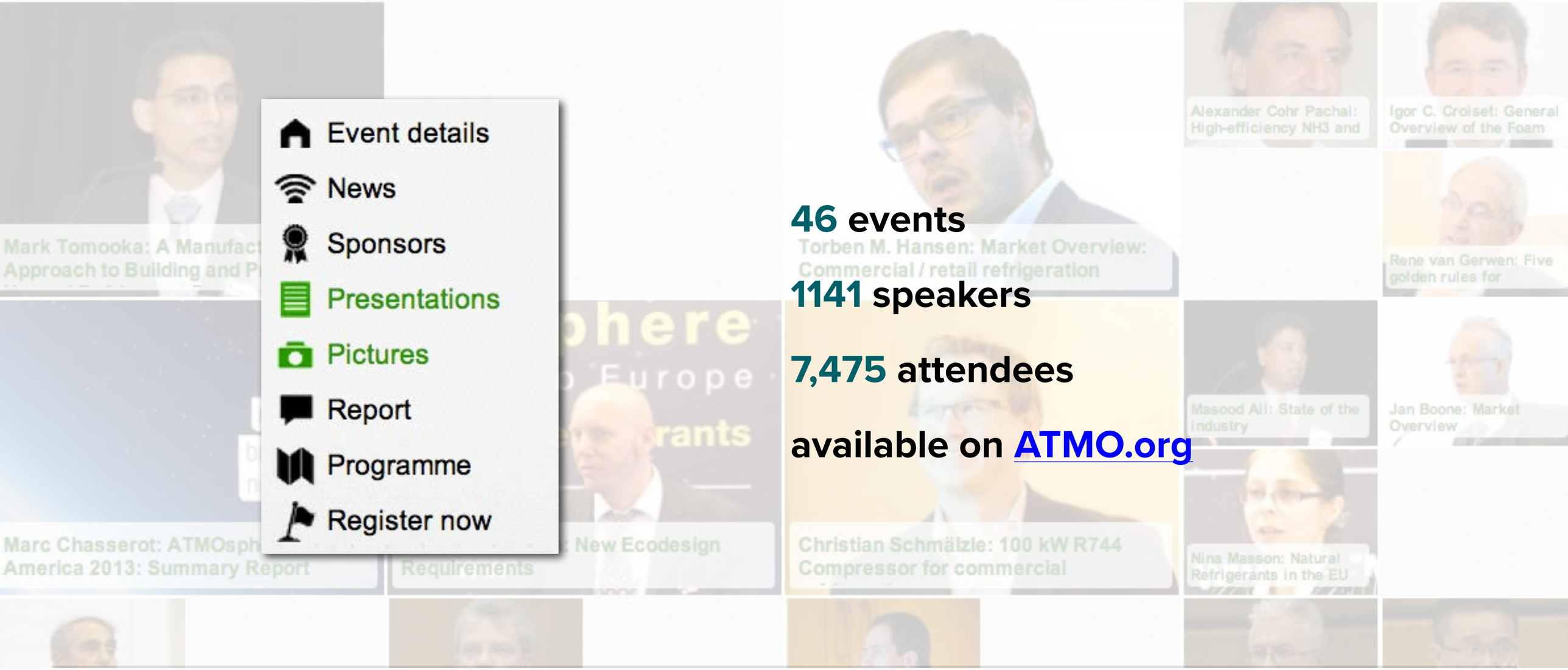
ATMO ASIA
4 September
Singapore

ATMO IBÉRICA
18 September
Madrid

ATMO EUROPE
19-21 November
Lago di Garda

More info on
www.ATMO.org

ATMO by the numbers



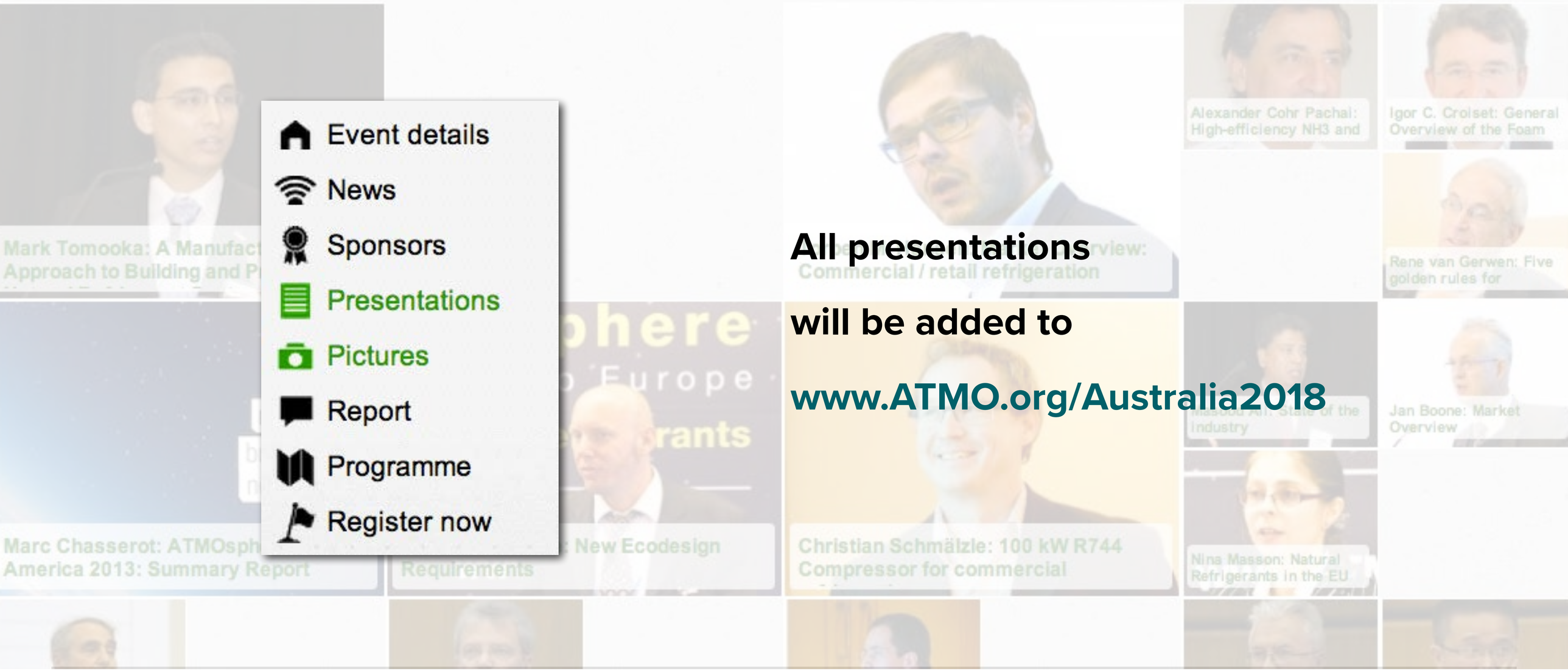
46 events

1141 speakers

7,475 attendees

available on ATMO.org

ATMO by the numbers



All presentations

will be added to

www.ATMO.org/Australia2018

Networking Dinner & Drinks

From 6.30pm - Drinks in the sponsor room

From 7.30pm - Dinner in Ballroom

Programme

Monday, 7 May

Programme

9:00am	Welcome & Introduction
9:20am	Technology Leadership Round Table
10:40am	Networking break
11:10am	Policy Session
11:50pm	Networking lunch
1:15pm	Future of the Industry End User Panel

2:45pm	Networking break
3:15pm	Technology Case Studies Part I OR Training Panel
4:45pm	Networking break
5:00pm	Technology Case Studies Part II OR Heatpump Workshop
6:30pm	Networking drinks
7:30pm	Networking dinner

Wifi connection

Network: Atmosphere

Password: Heatcraft

Social Media

Participate in the discussion on Social Media
by tagging your posts with the hashtag

#ATMOAustralia

Follow us

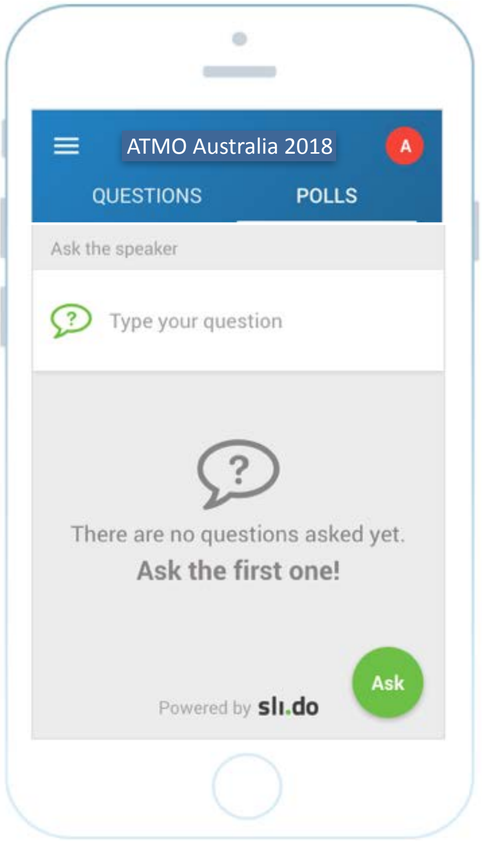
@ATMOEvents

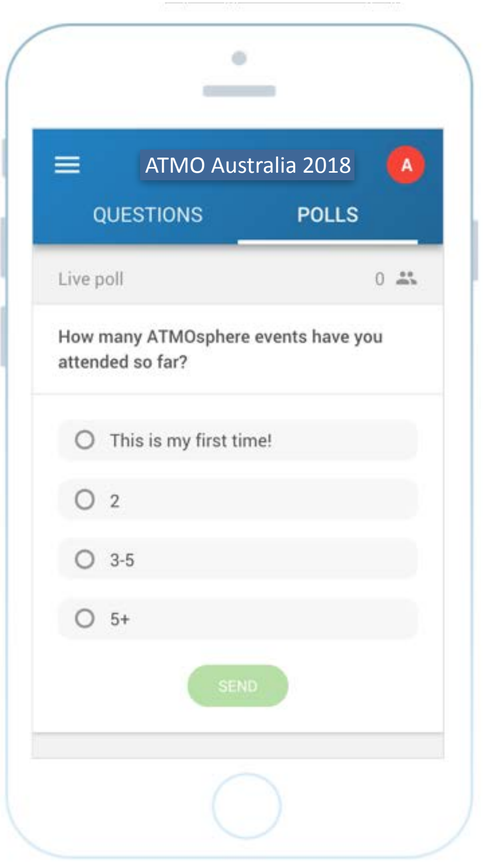
or on our LinkedIn group

ATMO Connect

Sli.do


CHINA
ATMO sphere
Join at
http://slido.com
#shecco


ATMO Australia 2018
A
QUESTIONS
POLLS
Ask the speaker
Type your question
There are no questions asked yet.
Ask the first one!
Powered by sli.do
Ask


ATMO Australia 2018
A
QUESTIONS
POLLS
Live poll
0
How many ATMOsphere events have you attended so far?
This is my first time!
2
3-5
5+
SEND

Live coverage of ATMOsphere Australia 2018,
including all news & key messages from the event

www.shecco.com www.naturalrefrigerants.com

#GoNatRef photo competition

Stick. Shoot. Share!

Please note

This conference is on record

All opinions stated are the speaker's own.

POLICY TRENDS

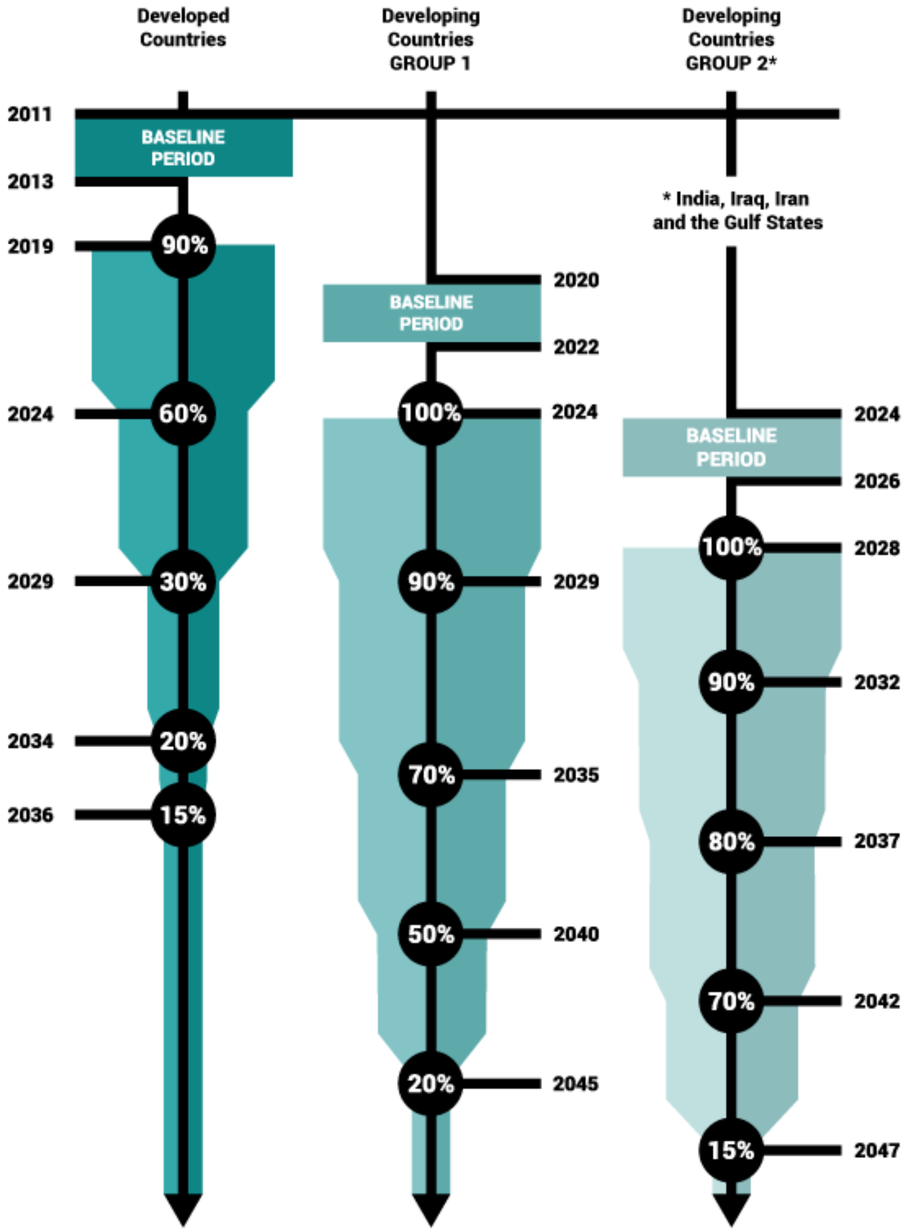
02

KIGALI AMENDMENT

Global phase-down of HFCs by **85% by late 2040s** - first reductions by developed countries as of 2019, by most developing countries as of 2024

> 0.4°C warming avoided by 2100; energy efficiency gains could significantly increase climate impact

Entry into force: 1 January 2019 (24 countries ratified so far)



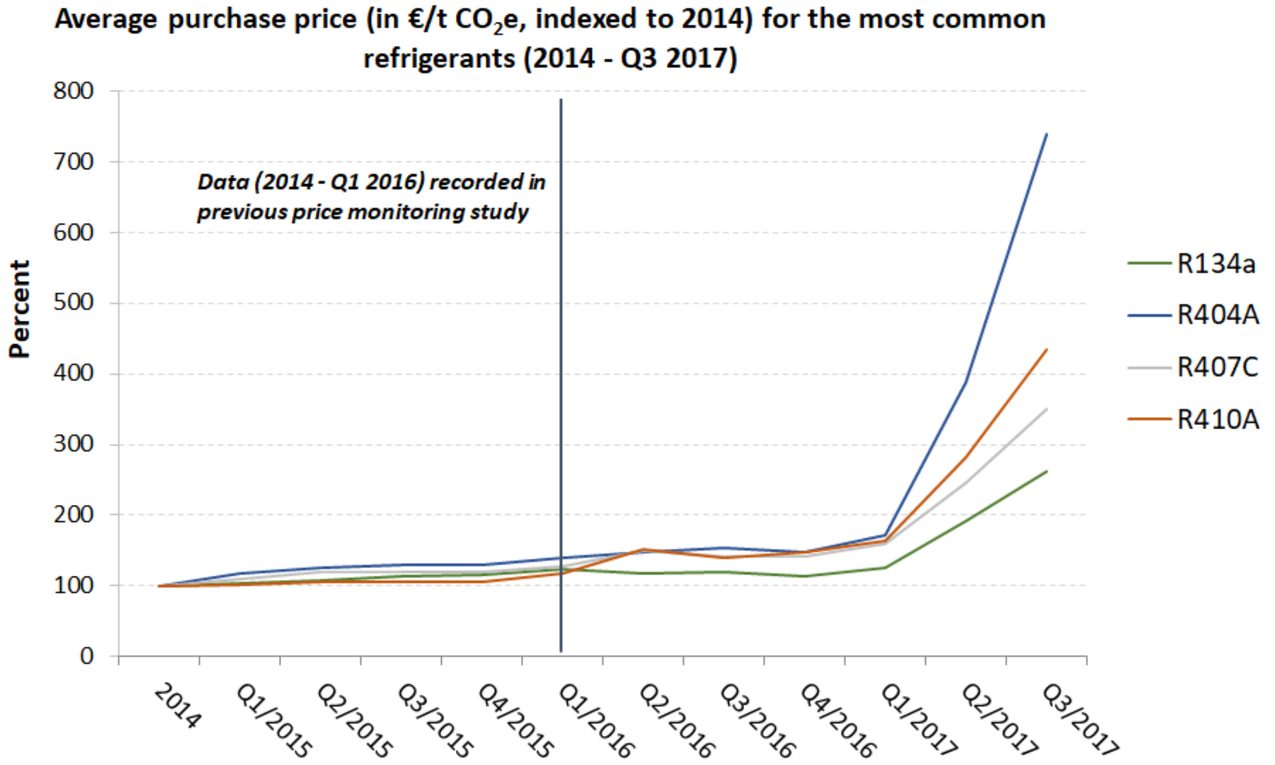
EU F-GAS REGULATION - HFC PRICES GROWING

HFC prices started to rise in **mid 2017**

In 2017, 5x increase

In 2018, **20x** increase expected

Prices growing proportionally to GWP



US - CALIFORNIA: LEADING THE WAY

Short-Lived Climate Pollutant (SLCP) Reduction Strategy - approved in March 2017

Aims to reduce HFCs by 25% below business-as-usual emissions by 2020; **by 40% by 2030**;

Adoption into state regulations of **SNAP Rule prohibitions of HFCs** in stationary refrigeration and air conditioning on 23 March 2018

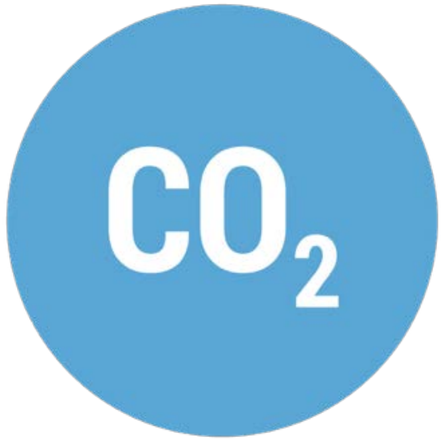
California Cooling Act - introduced on 7 Feb 2018 by Senator Lara

Intent to restrict the use of high GWP refrigerants & to introduce incentive program for lower GWP alternatives

California legislation expected to eventually influence federal level

JAPAN: OPENING MORE OPPORTUNITIES FOR CO_2

- **July 2017**: **CO_2 reclassified** under High Pressure Gas Safety Act
  - move from the strictest level of Group 3 to the **least restricted level of Group 1 = OPPORTUNITY for larger CO_2 refrigeration (commercial and industrial) systems** to be introduced in the market, creating more options for end users
- **Renewed subsidy scheme** (2018-2022) for natural refrigerant equipment = **major driver for CO_2 in commercial refrigeration & cold storage**



BUSINESS TRENDS

01

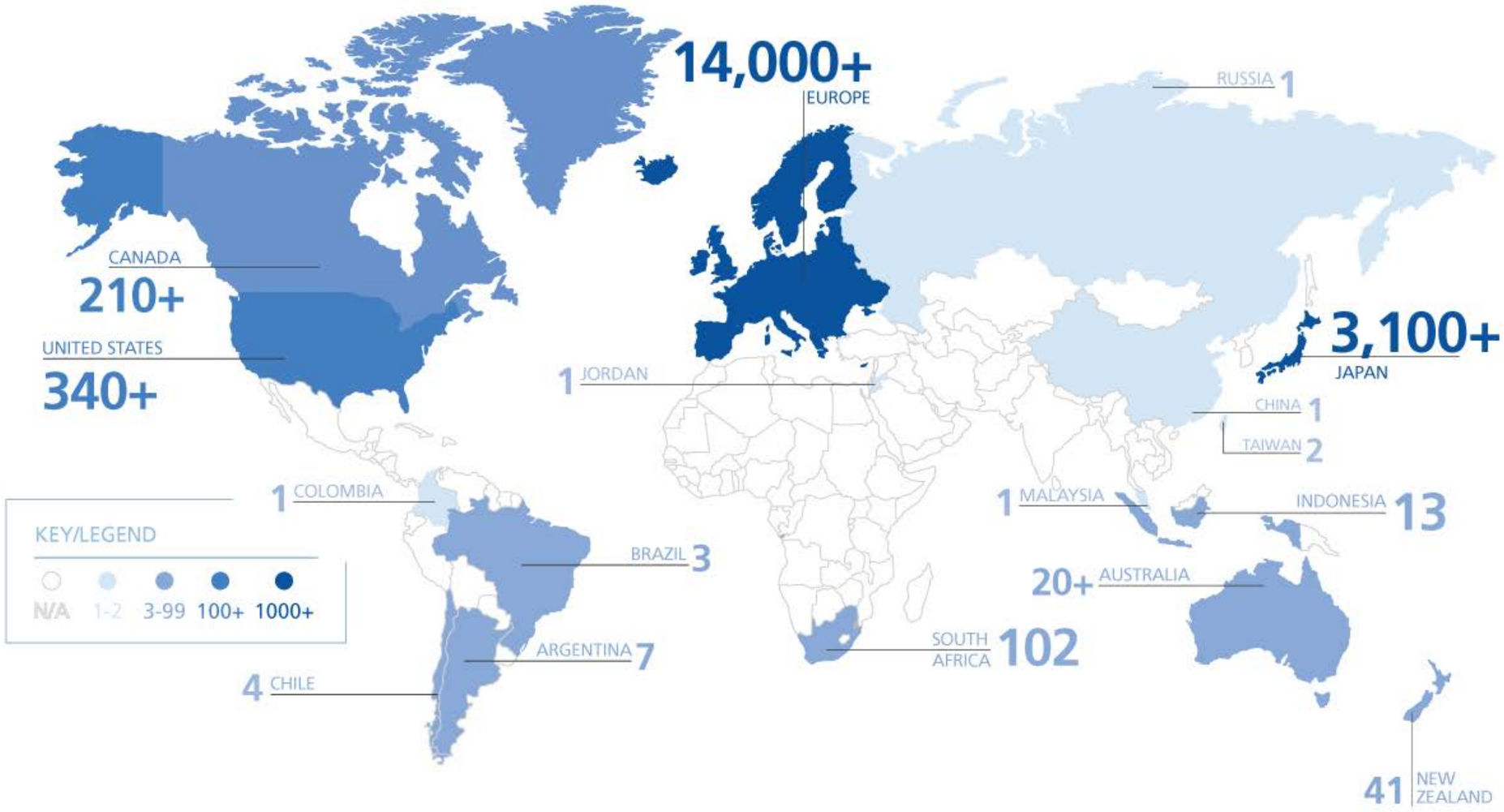
RECENT ACQUISITIONS* - TOWARDS CONSOLIDATION IN THE MARKET

* Subject to Regulatory approvals in some cases

MARKET TRENDS
COMMERCIAL REFRIGERATION

03

CO_2 STORES GROWING GLOBALLY



KEY TREND: INCREASING EFFICIENCY & TOWARDS SMALLER SYSTEMS

1. Higher efficiency in warm weather conditions

- Parallel compression

- Ejectors

- New innovations/ systems designs

2. Towards small capacity systems

- **Japan** - leader in CO_2 condensing units for smaller store formats

- **Europe:** increasing availability of condensing units/ small boosters

- **Australia:** Leading manufacturers ready to supply the market

Competition increasing = higher efficiency, lower prices

GROWING COMPETITION - HYDROCARBONS

1. Plug-in Units in Supermarkets with R290: A reality today. Drivers: simplicity, efficiency and trend towards smaller size stores

Global market estimate (April 2018) 2,000,000+ units worldwide

- Aldi, Lidl, Target, Wholefoods, etc..

Charge limits => the key to future evolution (globally)

- A higher charge limit would enable to units with one R290 circuit instead of multiple ones reducing cost and increasing energy efficiency

2. Emerging technology - Waterloop systems (with Hydrocarbons or CO_2) - Increased competition

AUSTRALIA

Overall more than **20 CO_2 transcritical stores**

- proven efficiency in high ambient in simplified format

\+ several **hundreds CO_2 cascade installations**

Main challenges:

- different climates in different states
- lack of trained technicians with experience in remote locations

MARKET TRENDS
INDUSTRIAL REFRIGERATION

05

COMPETITION BETWEEN DIFFERENT NR SYSTEMS INCREASING

Industrial refrigeration market traditionally dominated by **ammonia** and H(C)FCs

NR cutting edge technologies becoming strong trend and competing:

- **ammonia low charge**
- **CO_2 transcritical**
- **NH_3/CO_2**

Key drivers:

- **increased safety - lower risk**
- **higher efficiency**
- **easier servicing**
- **return on investment for the end user**
- **growing competition - prices pushed down, technology becoming more available**

LOW-CHARGE AMMONIA

Type of system

- optimized central plant low-charge system
- low-charge ammonia packaged system
- NH_3/CO_2 systems

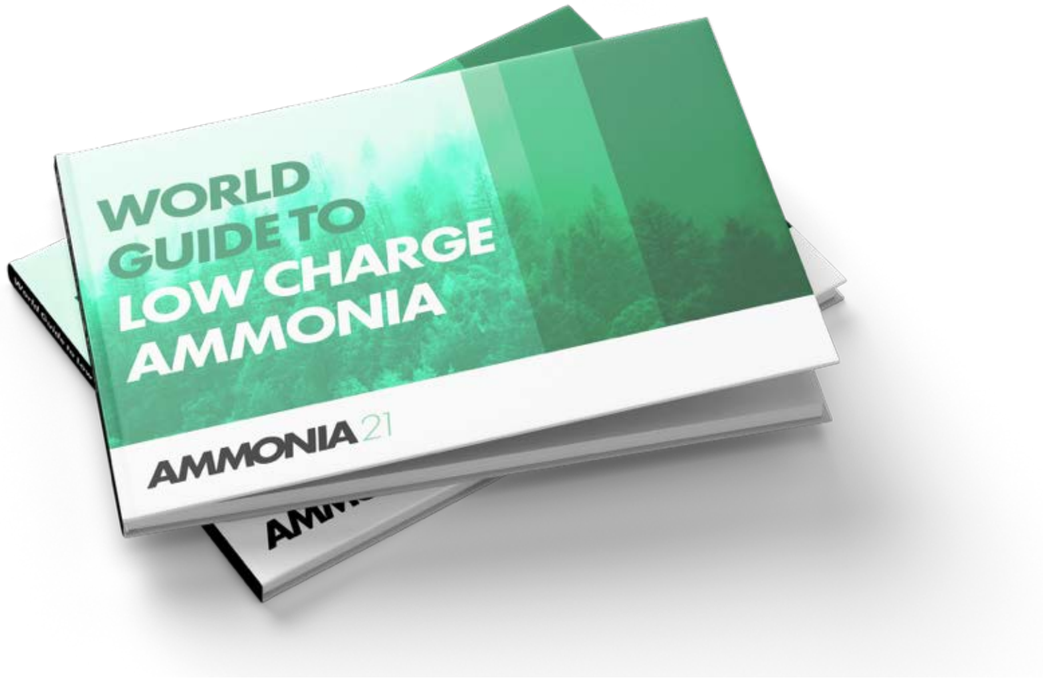
Definition of low-charge?

a) Total quantity of ammonia (lb or kg)

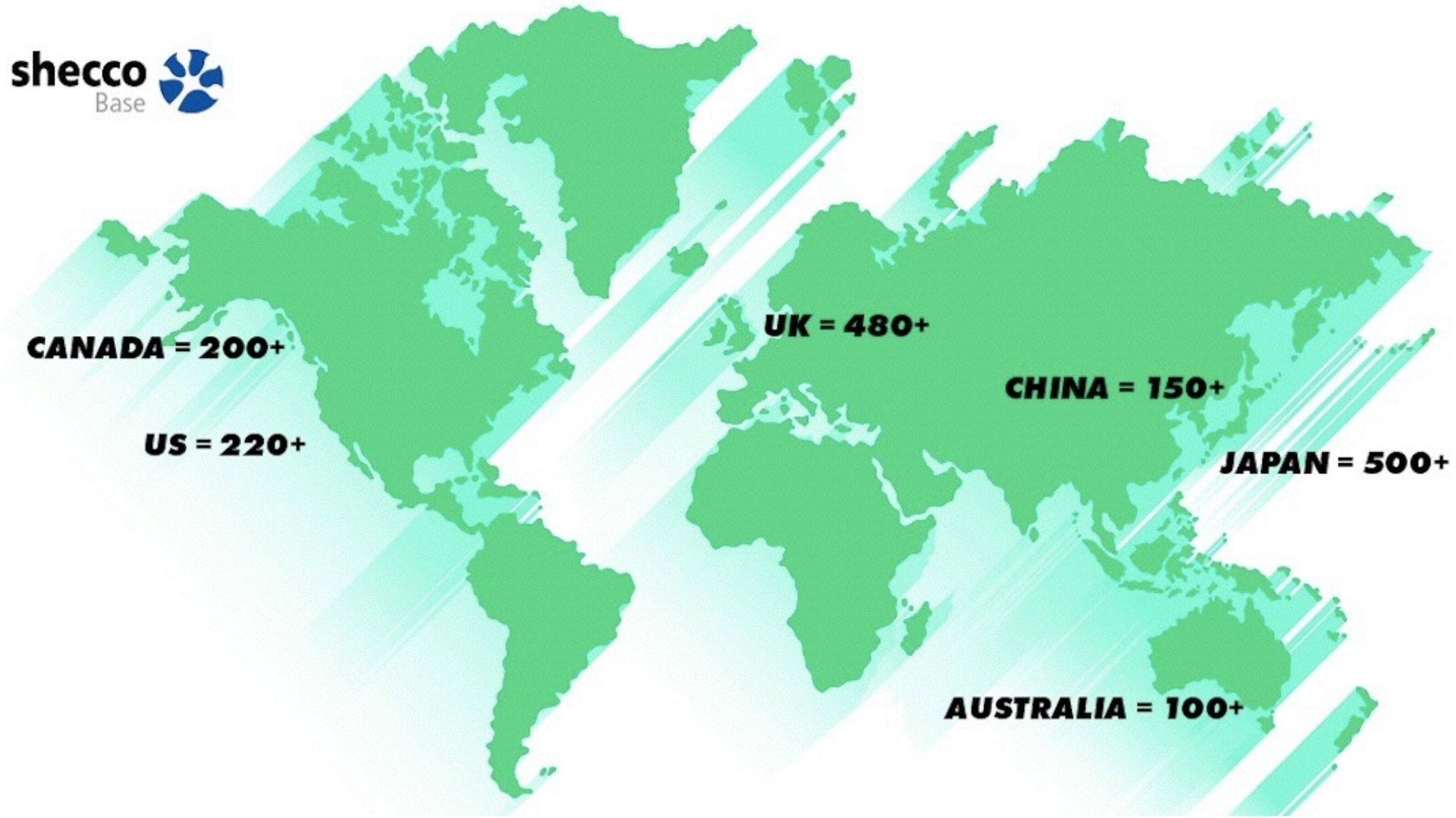
b) Specific ammonia charge (lb/TR or kg/kW)

c) Some combination of a) and b)

d) ‘Best endeavors’ design approach



LOW-CHARGE AMMONIA TODAY



AUSTRALIA

Estimated **100,000 refrigerated warehouses** in Australia - vast majority using HFCs and in need of conversion

Regulations and risk have driven interest in new low-charge ammonia technologies

Estimated **100+ low-charge ammonia packaged systems**

Increased competition with CO_2 systems

OVERVIEW

- Pressure on HCFCs and HFCS driving markets globally towards natural refrigerants
- Competition between different types of natural refrigerant-based systems increasing: leading to better performance & reduced costs

➡ **CO_2 transcritical** growing in commercial refrigeration, and also in industrial sector

➡ **Hydrocarbons** gaining ground in refrigeration in small and medium-sized capacities

➡ **Low-charge ammonia** systems increasing penetration in industrial refrigeration due to increased safety and efficiency

- **2018:** Key year to develop together the market for natural refrigerants
- Next sectors for development: HVAC

THANK YOU!

Stand up please!

AUSTRALIA ATMO sphere

Thank you very much!