



Propane in AHT's Refrigeration Portfolio



25 & 26 June 2015 - Atlanta, Georgia

ATMOsphere America, Atlanta, 24th of June 2015

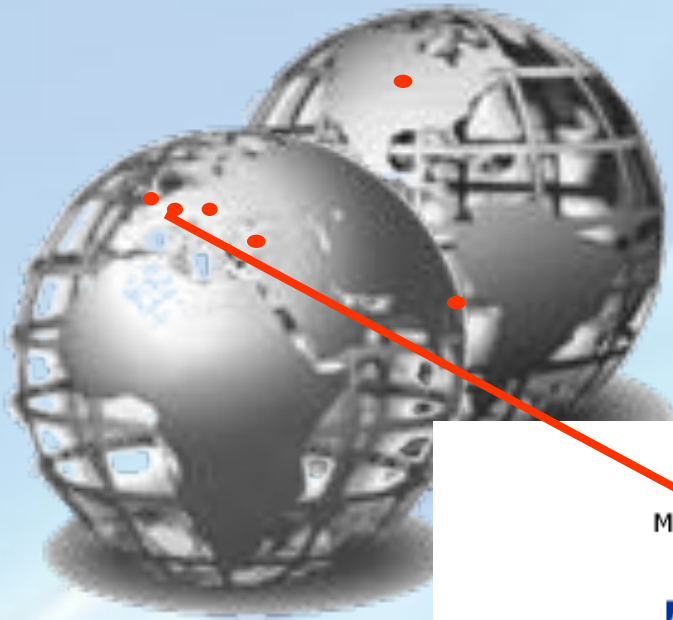
Reinhold Resch

AHT Cooling Systems, R&D Manager





AHT AUSTRIA and AHT Group



- AUSTRIA (head quarter)
- Germany
- Great Britain
- USA
- Turkey
- Hong Kong
- China
- Nordic
- Spain
- Brasil
- India





AHT's core business

- **Chilling and freezing – since 50 years!**
 - Supermarket equipment
 - Ice cream cabinets
 - Bottle coolers
 - Service
- **Strategic key factors**
 - Innovation
 - Leadership in Technology and Quality





Factories in Austria, China and Brazil

- **Quality management**
according ISO 9001:2008
- **Environment management**
according ISO 14001:2004
- **Safety & Health management**
according OHSAS 18001:2007
- **Social accountability**
according SA 8000:2008





COOLPOINT® – AHT Partner Network



Key benefits

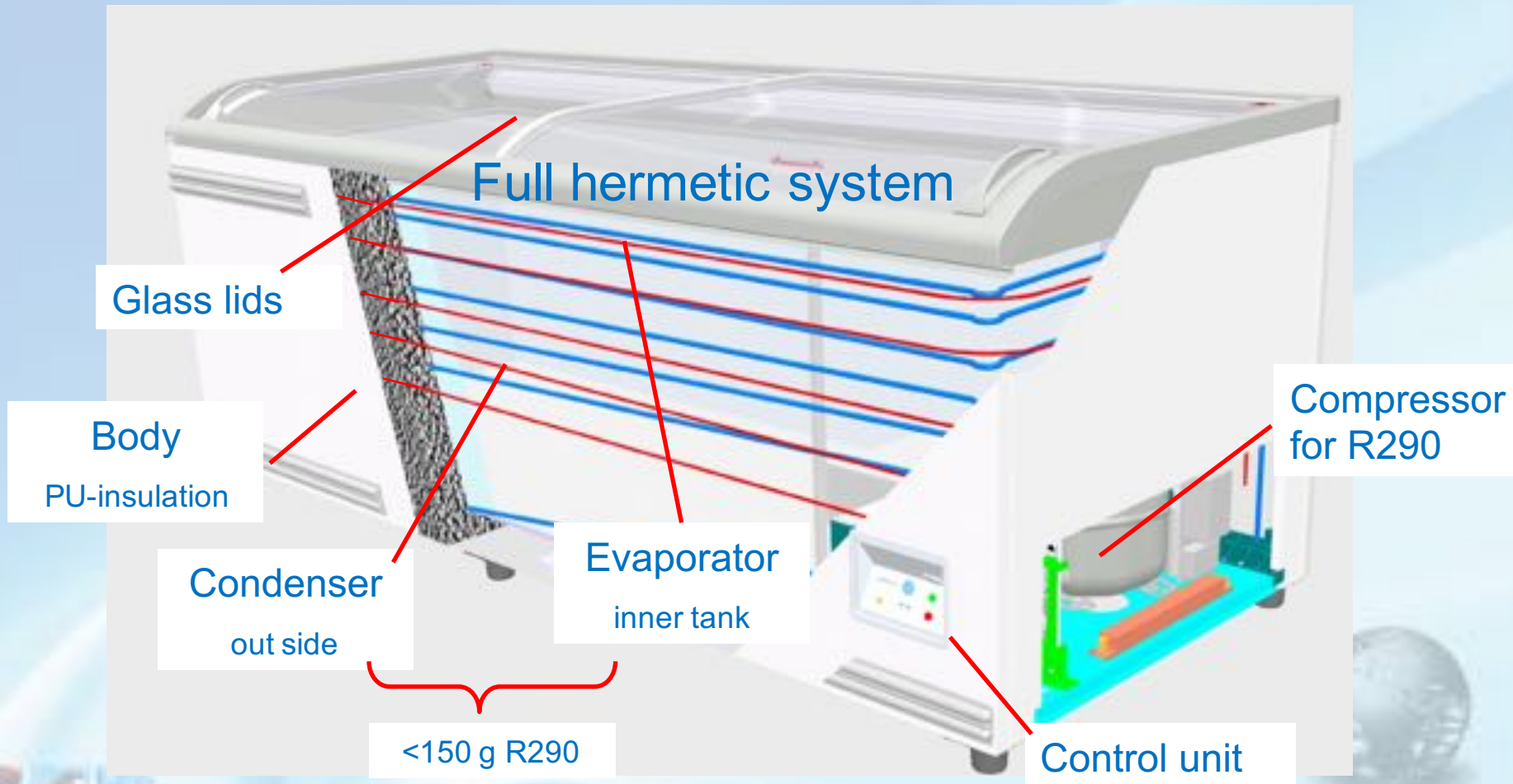
- Geographically spread service network
- Competent partners with big know how
- Well-trained technicians, Up-to-date on all
- Advisers in all areas
- Direct contact to technical dept. at our factories
- Warehousing = supply of spare parts
- Quick response due to the use of state-of-the-art EDP technologies



worldwide



AHT's refrigeration system





AHT's way to hydrocarbons (R290)

Development

- 1994/95 first cooperation with compressor manufacturer
- 1995 first supermarket with propane cabinets
- 1997 Pentane as blowing agent for the insulation
- 2000 delivery of propane ice cream cabinets for the Olympic Summer Games, Australia
- 2002/03 first serial production of 1.000 ice cream cabinets
- 2003/04 already more than 10.000 cabinets in the field





Safety Aspects

- **General**
 - legal standards
- **Cabinet design**
 - components
 - construction of the cabinet
- **Factory**
 - safety requirements
- **Maintenance**
 - training (internal and external workers)
 - labelling (pictograms)





RESULT

Key features

- full hermetic system with less than 150g R290
- environmentally friendly
- industrial serial production
- fully tested at the factory (safety and leakage)
- silent operation
- robust construction
- maintenance free refrigeration system
- approved quality: VDE, UL, NSF, KTL, CCC, MEPS, NOM, ...
- speed controlled compressor and electronic fan motor available.

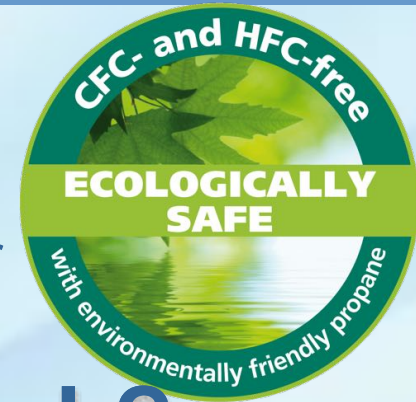




Customer Feedback - Best practice

Feedback

- best results (product temperature)
- high customer satisfaction
- no problems or troubles (production, application or maintenance)



Should you make the switch?

We already did it!

Practice

- 2014 more than 1million cabinets delivered
 - all over the world (incl. USA)





Key figures of AHT's installations

Store information

- “Hydrocarbon installations” started in 2006 in Europe
 - semi automatic defrost system
 - ECO and LED version since 2011
- numbers of cabinets increasing by 50.000 units each year
- in average 28 units per store

Costumers feed back

- significant savings due to reduced energy consumption
- product temperature -18° (@ 25°C ; 60%)
- no regular maintenance and very low failure-rate
- used in many stores without AC
- **future proof** due to natural refrigerants (R290)





Supermarket equipment

Athen XL

Manhattan

Supermarket

NEW

Miami **ECO**

SYDNEY XL **ECO**

Salzburg

R 290

Paris



Supermarket installations worldwide I



Germany



Korea



Thailand





Supermarket installations worldwide I



Supervalu, USA



Fresh & Easy, USA





VENTO „Double plug in“

VENTO 250 & 375

NEW





VENTO „Double plug in“



Brain



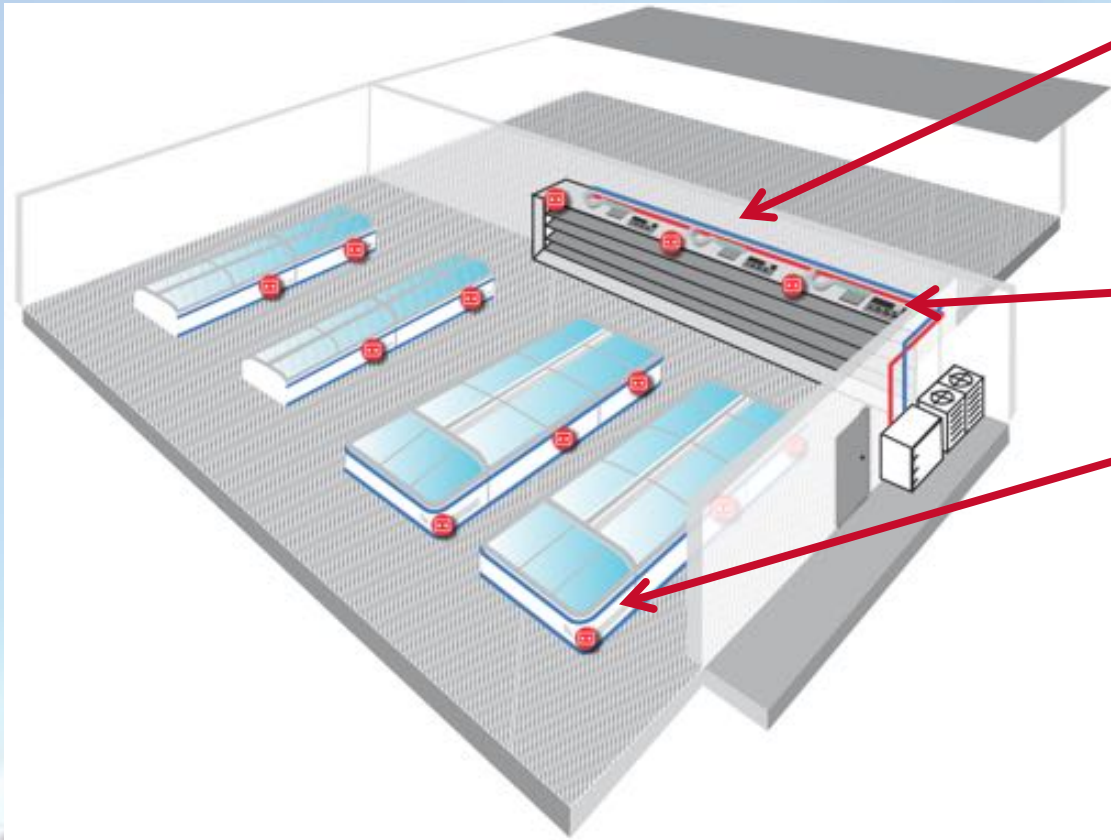
Electricity





AHT „Plug-in-Solution“

„Plug & Chill“



Plug-in multidecks with integrated cooling circuit
(only 2 interfaces: power supply and defrost water drain)

Heat removal via water pipes on the multidecks

Plug-in deep freezers
(require only power supply)





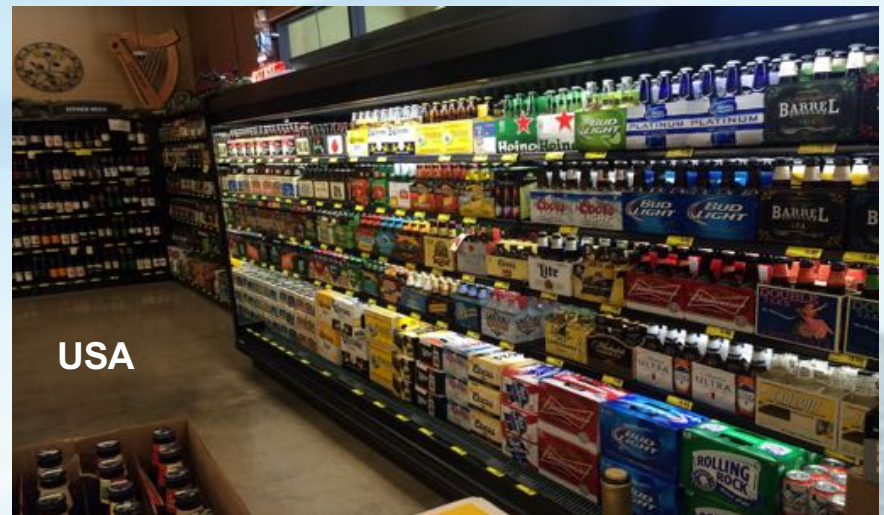
Supermarket installations worldwide II



Denmark



South Africa



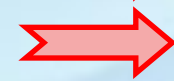
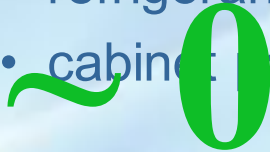
USA



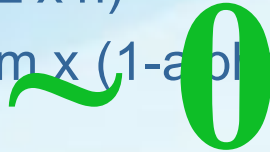
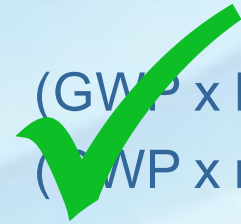
TEWI = total equivalent of warming impact

• **TEWI – influences**

- direct influences
 - refrigerant losses
 - cabinet parameter
- indirect influences
 - energy consumption



TEWI =

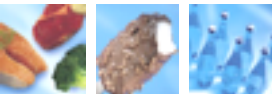


$$\begin{aligned}
 & (GWP \times L \times n) + \\
 & (GWP \times m \times (1-\alpha)) + \\
 & (n \times E \times \beta)
 \end{aligned}$$

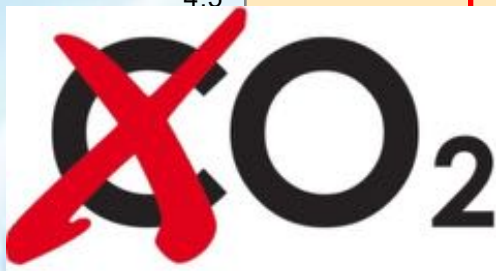
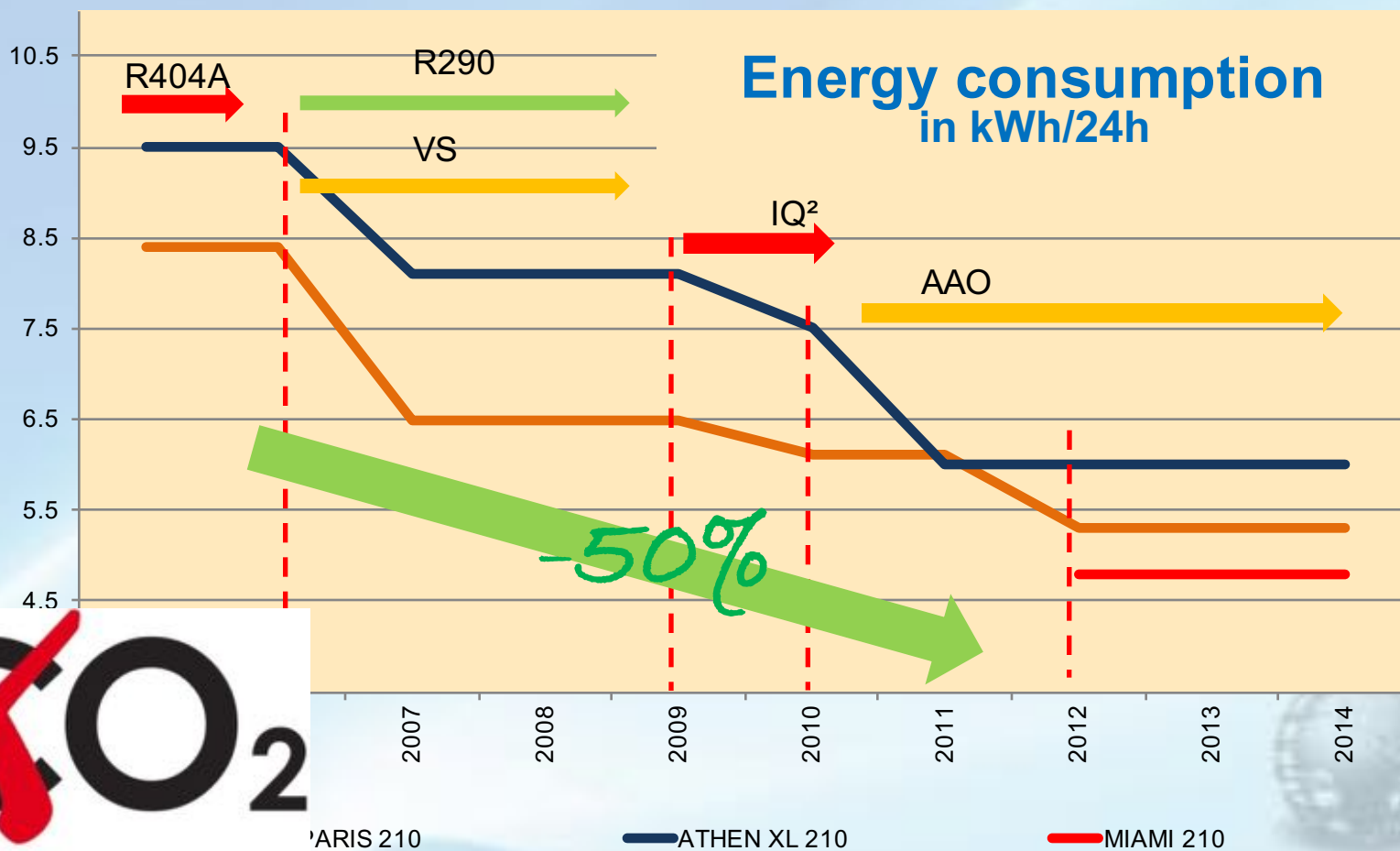


Reduction of the energy consumption





Supermarket equipment





A world of possibilities





Bottle Cooler



Bottle cooler



Conclusion

- **Environment**

- optimized triple solution
 - no ODP
 - no GWP
 - minimal TEWI

- **Cabinet**

- accurate design
- fulfilling the safety requirements
- approved by independent institutes

AHT plus **HC's** → **experience and innovation!**





Awards

National Retailer of the Year 2013

for Lidl UK together with AHT equipment



German Refrigeration Award 2009 → 3rd place

Refrigeration and Air-Conditioning Technology in the context of the National and International Climate Protection Policy

- energy-saving
- environmentally friendly
- ready-to-use refrigeration equipment



Minister of the Environment, Dr. Norbert Röttgen



ProCool – an European project for

- commercial refrigeration equipment
- cost- and energy saving
- environmentally friendly

Awarded with



Innovation Award 2006



www.aht.at



Thank you

**AHT – your “freshness partner”
worldwide**

