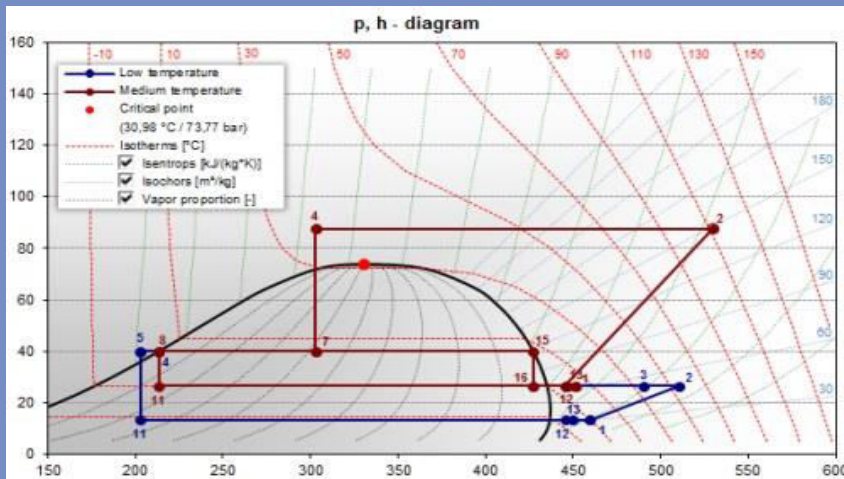


The Ahold steps to Proven Sustainability



How to Develop at the Right Moment and What We Stand For

Framework System Development

- **Installed Base operating within EU- and Local Legislation**
- **Fulfillment Promises & Targets Albert Heijn**
 - **Improve : Life Cycle Climate Performance (LCCP)**
 - **Reduce : Total Cost of Ownership (TCO)**
 - **Respect : Next Week Open**

Control- and Prediction Models

Preview A10: WWH installed base refrigerants 2013 - 2010, Preliminary decisions after EU F-Gas Council Vote 16.12.2013										
Refrigerant type	AH WWH kgp, 15.01.2014	Formula	GWP, a/c, F-Gas 11	Composition			End of life in yr	Drop-in	Labels	GWP (AER, PCC)
				% substance	% substance	% substance				
R717 (natural refrigerant)	0	NH ₃	0	100.00%	R717				R717	0
R244 (natural refrigerant)	10.367	CO ₂	1	100.00%	R244				R244	1
R290 (natural refrigerant)	n.a.	CH ₃ CH ₂ CH ₃	3	100.00%	R290				R290	3
R134a	91.431	CH ₂ FCF ₃	1,430	100.00%	R134a				R134a	1,430
XP10 (drop-in R134a, 2015/16)	0	Blend (detail)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	XP10	1,430
XP10 (drop-in R404A/R507A)	0	Blend (detail)	1,393	n.a.	n.a.	n.a.	n.a.	n.a.	XP10	1,393
R407C	68	Blend	1,774	23.00%	R32	25.00%	R125	52.00%	R407C	1,774
R407F	12	Blend	1,825	40.00%	R134a	30.00%	R32	30.00%	R407F	1,825
R410A	n.a.	Blend	2,088	50.00%	R32	50.00%	R125		R410A	2,088
R422A	0	Blend	2,138	15.00%	R32	25.00%	R125	15.00%	R422A	2,138
R438A	0	Blend	2,265	5.50%	R32	25.00%	R125	44.00%	R438A	2,265
R417A	553	Blend	2,346	46.40%	R125	30.00%	R134a	3.40%	R417A	2,346
R422D	0	Blend	2,779	15.10%	R125	15.20%	R134a	3.40%	R422D	2,779
R422A	0	Blend	1,143	85.10%	R125	11.20%	R134a	3.40%	R422A	1,143
R508A	1,231	Blend	1,922	44.00%	R125	32.00%	R134a	4.00%	R508A	1,922
R509A	183,128	Blend	1,563	50.00%	R125	50.00%	R134a		R509A	1,563
R22 (c. 01.01.2015)	8,893	CH ₂ FCF ₂	1,799	100.00%	R22				R22	1,799
R404A (Energy) (c. 01.01.2015)	0	Blend	2,242	10.00%	R125	2.00%	R290	30.00%	R404A	2,242

Example, calculating with the CO ₂ equivalent reduction according to the F-Gas EP Council Vote 16.12.2013			
a.	Based on charging from R507A to R407C	1,825 vs. 1,395	= 45.00%
b.	Based on charging from R507A to R290	1,393 vs. 1,395	= 34.00%
c.	Based on charging from R507A to R134a/CO ₂	1,430 vs. 1,395	= 35.00%
d.	Based on charging from R507A to R290/CO ₂	900 vs. 1,395	= 35.00%

Summary of EU F-Gas II refrigeration systems (Info status per 16.12.2013)	
•	HFC phase down of bulk supply from 2015 to 2016 to 2020 in 10% (10%)
•	DiffH with virgin refrigerant GWP > 2,500 prohibited for HFC installations (> 40 Tm CO ₂ e) per 01.01.2020
•	DiffH with recycled refrigerant GWP > 2,500 (the new rule) prohibited for HFC installations per 01.01.2020
•	Flaring on the market of new HFC installations GWP > 2,500 prohibited per 01.01.2020
•	The ban on perfluorinated alkanes and CO ₂ as vapours
•	The ban on perfluorinated alkanes and CO ₂ as vapours
•	Flaring on the market of domestic refrigeration and freezers containing HFC GWP > 150 prohibited per 01.01.2015
•	Flaring on the market of commercial refrigeration and freezers containing HFC GWP > 150 prohibited per 01.01.2020
•	Flaring on the market of industrial refrigeration containing virgin HFC GWP > 150 prohibited per 01.01.2020
•	Flaring on the market of commercial refrigeration systems containing HFC GWP > 150 prohibited per 01.01.2020
•	Flaring on the market of residential air conditioning systems containing HFC GWP > 150 prohibited per 01.01.2020
•	Flaring on the market of mobile air conditioning systems containing HFC GWP > 150 prohibited per 01.01.2020
•	Flaring on the market of mobile air conditioning systems (c. 3.0k) HFC containing HFC GWP > 250 prohibited per 01.01.2020

Life Cycle Climate Performance Model

Methode 1. (Meerinvestering gedeeld door besparing TCO per jaar)						
Analyse Philips LED Excel matrix 20 aug. 2013 .xlsx						
0-winkel 1.450 m2 WWO: Verlichtingsplan periode = 10 jaar.						
	Investering	Verbruikskosten (energie + lamp)	Totaal	Besparing t.o.v. conv. TCO	Meerinvestering	TVT incl gar.
a. Conventioneel	€ 42.302	€ 144.151	€ 10.000	€ 196.453	-	679 Ton
b. LED (100 -> 70%)	€ 61.136	€ 71.730	€ 17.000	€ 149.866	€ 46.587	4,0 406 Ton
c. LED (100 -> 70% + controls)	€ 68.636	€ 60.980	€ 17.000	€ 146.616	€ 49.837	5,3 345 Ton
d. LED (130 -> 100% + controls)	€ 75.816	€ 77.030	€ 17.000	€ 169.846	€ 26.607	12,6 436 Ton
Voorbeeld:						
a. TCO in 10 jaar	€ 196.453					
b. TCO in 10 jaar	€ 149.866					
Besparing in 10 jaar	€ 46.587					
a. Investering	€ 42.302					
b. Investering	€ 61.136					
Meerinvestering b. is	€ 18.834					
TVT is (meer)investering	€ 18.834	gedekt door TCO besparing/jr.	€ 4.659	=	4,04 jaar	

Ahold Europe				Energy consumption		Energy consumption / m2	
Temperature	Hourly Type	Hours measured	Consumption/Year	Consumption/Year	Consumption/Year	Consumption/Year	Consumption/Year
13.0	0.1	0	0	0	0	0	0
13.0	0.2	0	0	0	0	0	0
13.0	0.3	0	0	0	0	0	0
13.0	0.4	0	0	0	0	0	0
13.0	0.5	0	0	0	0	0	0
13.0	0.6	0	0	0	0	0	0
13.0	0.7	0	0	0	0	0	0
13.0	0.8	0	0	0	0	0	0
13.0	0.9	0	0	0	0	0	0
13.0	1.0	0	0	0	0	0	0
13.0	1.1	0	0	0	0	0	0
13.0	1.2	0	0	0	0	0	0
13.0	1.3	0	0	0	0	0	0
13.0	1.4	0	0	0	0	0	0
13.0	1.5	0	0	0	0	0	0
13.0	1.6	0	0	0	0	0	0
13.0	1.7	0	0	0	0	0	0
13.0	1.8	0	0	0	0	0	0
13.0	1.9	0	0	0	0	0	0
13.0	2.0	0	0	0	0	0	0
13.0	2.1	0	0	0	0	0	0
13.0	2.2	0	0	0	0	0	0
13.0	2.3	0	0	0	0	0	0
13.0	2.4	0	0	0	0	0	0
13.0	2.5	0	0	0	0	0	0
13.0	2.6	0	0	0	0	0	0
13.0	2.7	0	0	0	0	0	0
13.0	2.8	0	0	0	0	0	0
13.0	2.9	0	0	0	0	0	0
13.0	3.0	0	0	0	0	0	0
13.0	3.1	0	0	0	0	0	0
13.0	3.2	0	0	0	0	0	0
13.0	3.3	0	0	0	0	0	0
13.0	3.4	0	0	0	0	0	0
13.0	3.5	0	0	0	0	0	0
13.0	3.6	0	0	0	0	0	0
13.0	3.7	0	0	0	0	0	0
13.0	3.8	0	0	0	0	0	0
13.0	3.9	0	0	0	0	0	0
13.0	4.0	0	0	0	0	0	0
13.0	4.1	0	0	0	0	0	0
13.0	4.2	0	0	0	0	0	0
13.0	4.3	0	0	0	0	0	0
13.0	4.4	0	0	0	0	0	0
13.0	4.5	0	0	0	0	0	0
13.0	4.6	0	0	0	0	0	0
13.0	4.7	0	0	0	0	0	0
13.0	4.8	0	0	0	0	0	0
13.0	4.9	0	0	0	0	0	0
13.0	5.0	0	0	0	0	0	0
13.0	5.1	0	0	0	0	0	0
13.0	5.2	0	0	0	0	0	0
13.0	5.3	0	0	0	0	0	0
13.0	5.4	0	0	0	0	0	0
13.0	5.5	0	0	0	0	0	0
13.0	5.6	0	0	0	0	0	0
13.0	5.7	0	0	0	0	0	0
13.0	5.8	0	0	0	0	0	0
13.0	5.9	0	0	0	0	0	0
13.0	6.0	0	0	0	0	0	0
13.0	6.1	0	0	0	0	0	0
13.0	6.2	0	0	0	0	0	0
13.0	6.3	0	0	0	0	0	0
13.0	6.4	0	0	0	0	0	0
13.0	6.5	0	0	0	0	0	0
13.0	6.6	0	0	0	0	0	0
13.0	6.7	0	0	0	0	0	0
13.0	6.8	0	0	0	0	0	0
13.0	6.9	0	0	0	0	0	0
13.0	7.0	0	0	0	0	0	0
13.0	7.1	0	0	0	0	0	0
13.0	7.2	0	0	0	0	0	0
13.0	7.3	0	0	0	0	0	0
13.0	7.4	0	0	0	0	0	0
13.0	7.5	0	0	0	0	0	0
13.0	7.6	0	0	0	0	0	0
13.0	7.7	0	0	0	0	0	0
13.0	7.8	0	0	0	0	0	0
13.0	7.9	0	0	0	0	0	0
13.0	8.0	0	0	0	0	0	0
13.0	8.1	0	0	0	0	0	0
13.0	8.2	0	0	0	0	0	0
13.0	8.3	0	0	0	0	0	0
13.0	8.4	0	0	0	0	0	0
13.0	8.5	0	0	0	0	0	0
13.0	8.6	0	0	0	0	0	0
13.0	8.7	0	0	0	0	0	0
13.0	8.8	0	0	0	0	0	0
13.0	8.9	0	0	0	0	0	0
13.0	9.0	0	0	0	0	0	0
13.0	9.1	0	0	0	0	0	0
13.0	9.2	0	0	0	0	0	0
13.0	9.3	0	0	0	0	0	0
13.0	9.4	0	0	0	0	0	0
13.0	9.5	0	0	0	0	0	0
13.0	9.6	0	0	0	0	0	0
13.0	9.7	0	0	0	0	0	0
13.0	9.8	0	0	0	0	0	0
13.0	9.9	0	0	0	0	0	0
13.0	10.0	0	0	0	0	0	0
13.0	10.1	0	0	0	0	0	0
13.0	10.2	0	0	0	0	0	0
13.0	10.3	0	0	0	0	0	0
13.0	10.4	0	0	0	0	0	0
13.0	10.5	0	0	0	0	0	0
13.0	10.6	0	0	0	0	0	0
13.0	10.7	0	0	0	0	0	0
13.0	10.8	0	0	0	0	0	0
13.0	10.9	0	0	0	0	0	0
13.0							

Development under competition (No Cure / No Pay)

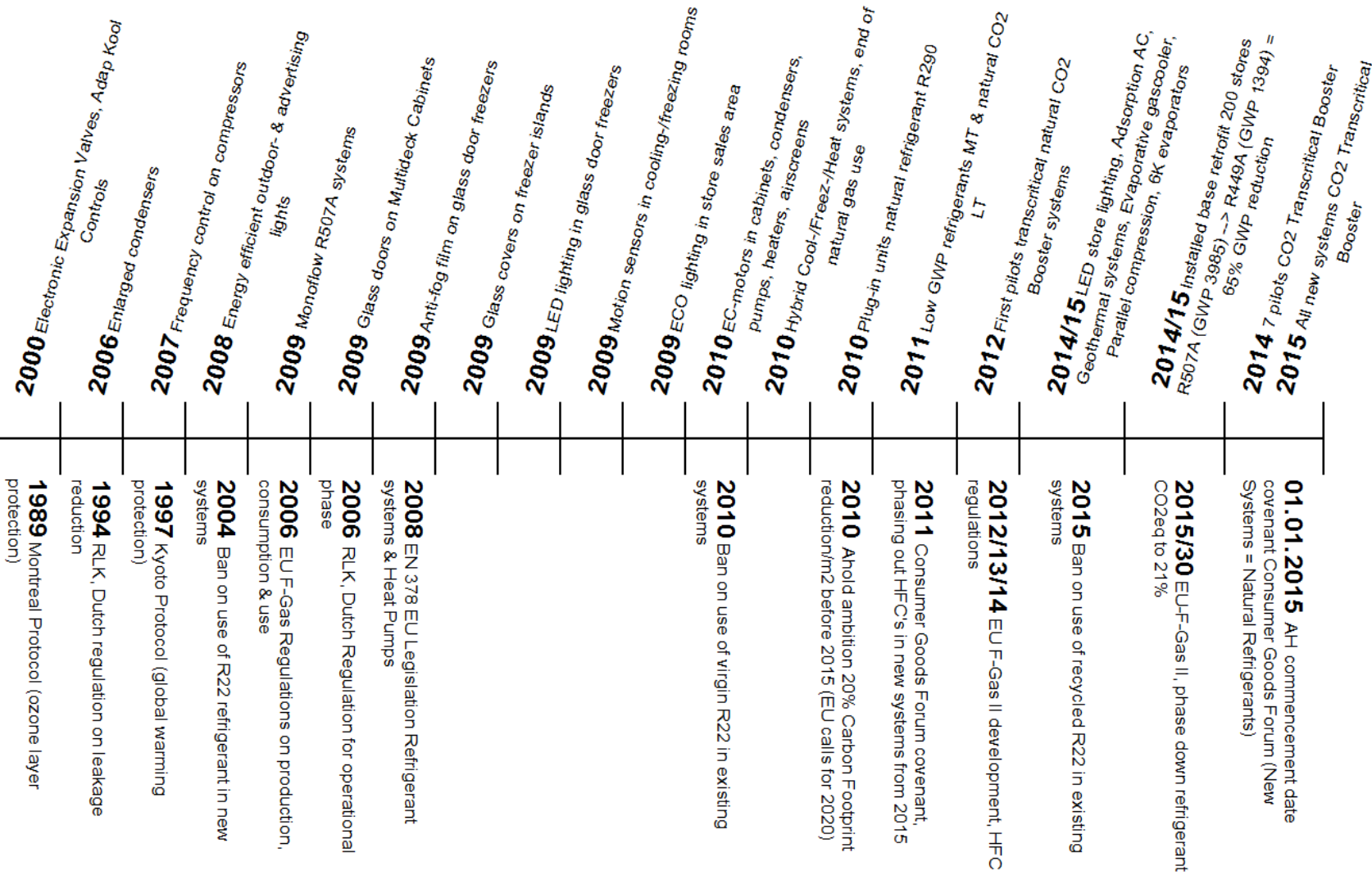
- **Program of Demand Discussion with Contractors & Partners**
- **Benchmark Contractors and Installations**
- **Update Control Models and Program of Demand (PoD)**
- **Collect Proposals from the Contractors**
- **Building State of the Art Pilot Installations**

Follow up and Improvement

Keeping Control during Lifecycle

Timeline Developments and Legislations

AH Actions



Laws & Regulations

Future Development

- **Co2 emission will decrease in the same speed**
- **Adsorption cooling (Eindhoven / Data analysis phase)**
- **Evaporative gas cooler (Eindhoven / Data analysis phase)**
- **Parallel compression**
- **6K Evaporators**
- **Following market development**

Thanks for your attention

