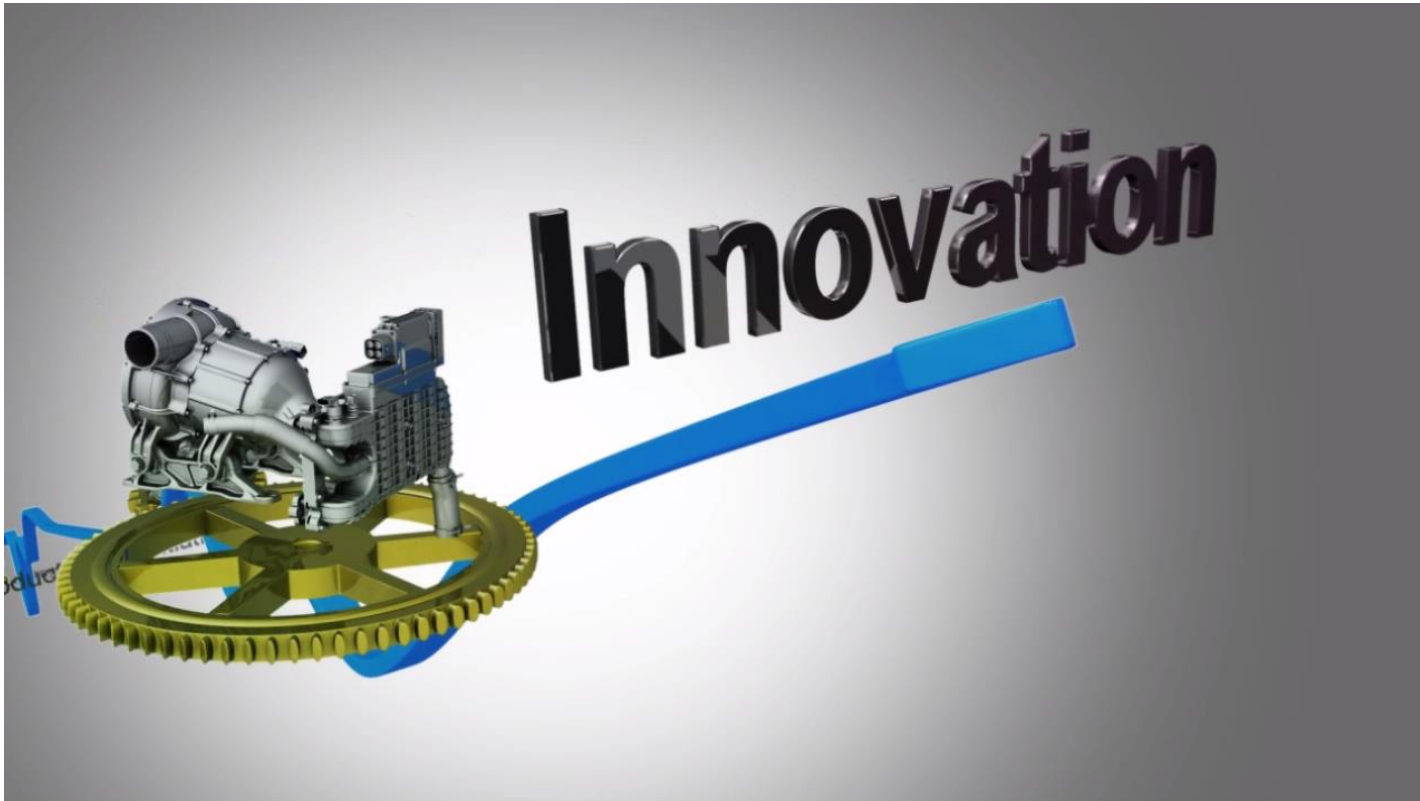


HVCC PRODUCT / TECHNOLOGY STRATEGY



YH Park
Feb. 25, 2014

<http://hvccglobal.com/En/Media/VideoDetails/6>



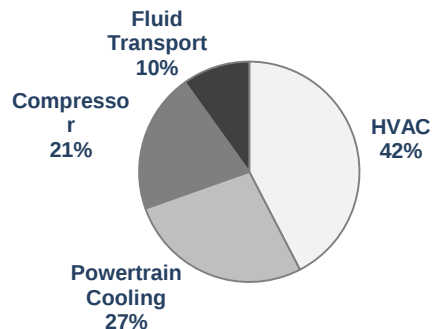
Financial Highlights

- Strong growth profile with \$680 million backlog
 - 7% sales CAGR between 2014 and 2017
 - China sales now exceed \$900 million annually
- Strong balance sheet, with net cash position
- Stock price up 64% in 2013

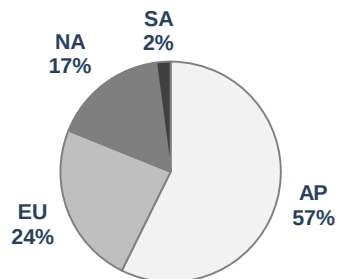
(Dollars in Millions)	2013	B/(W) '12
Sales	\$4,871	+14%
Adjusted EBITDA ⁽¹⁾	\$514	+21%
% Margin ⁽¹⁾	10.6%	

2013 Sales Breakdown

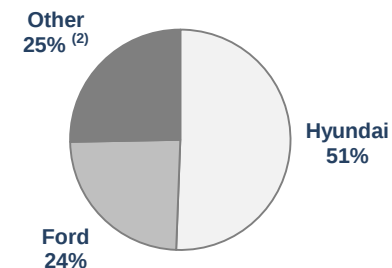
By Product



By Region



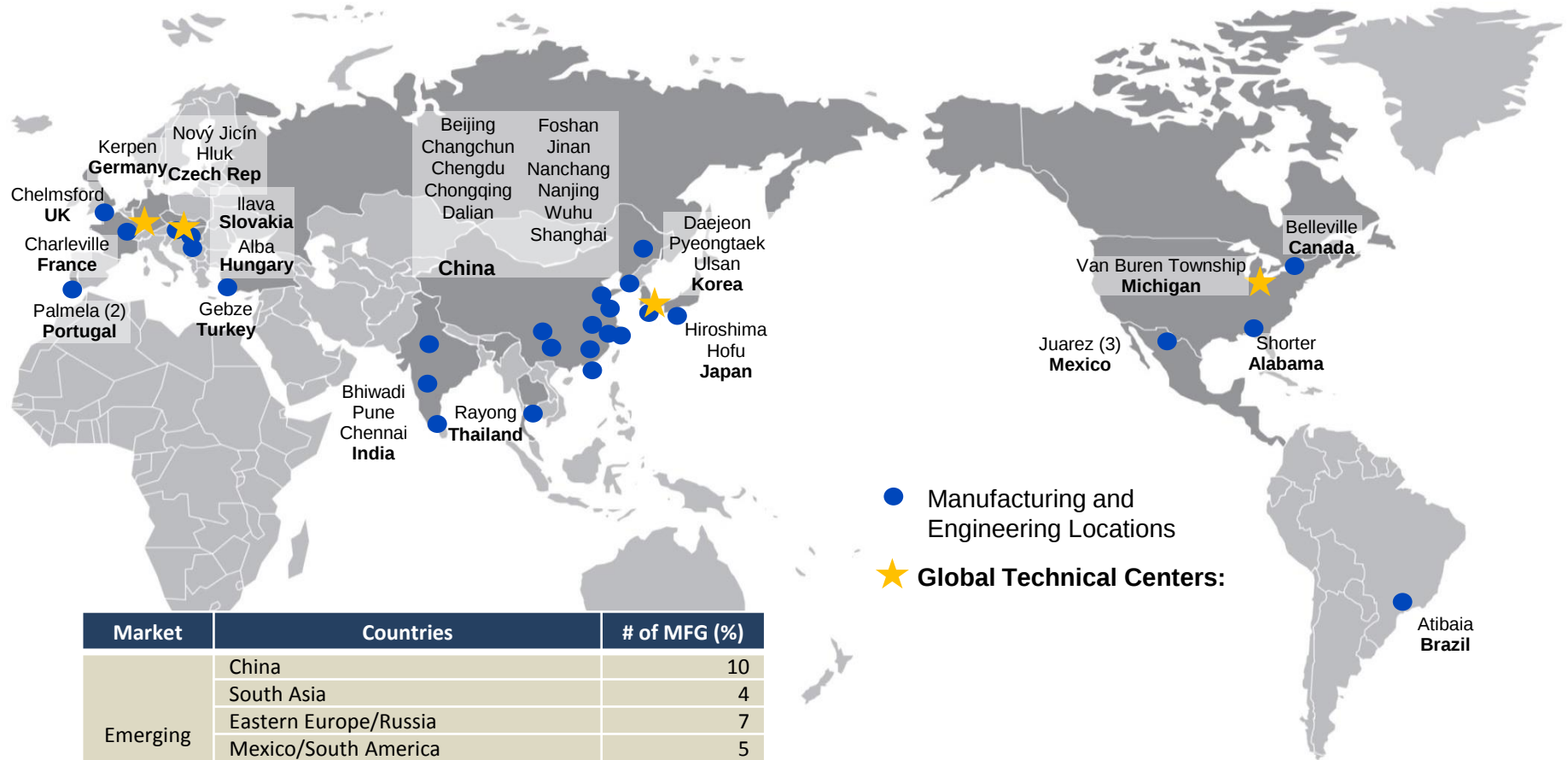
By Customer



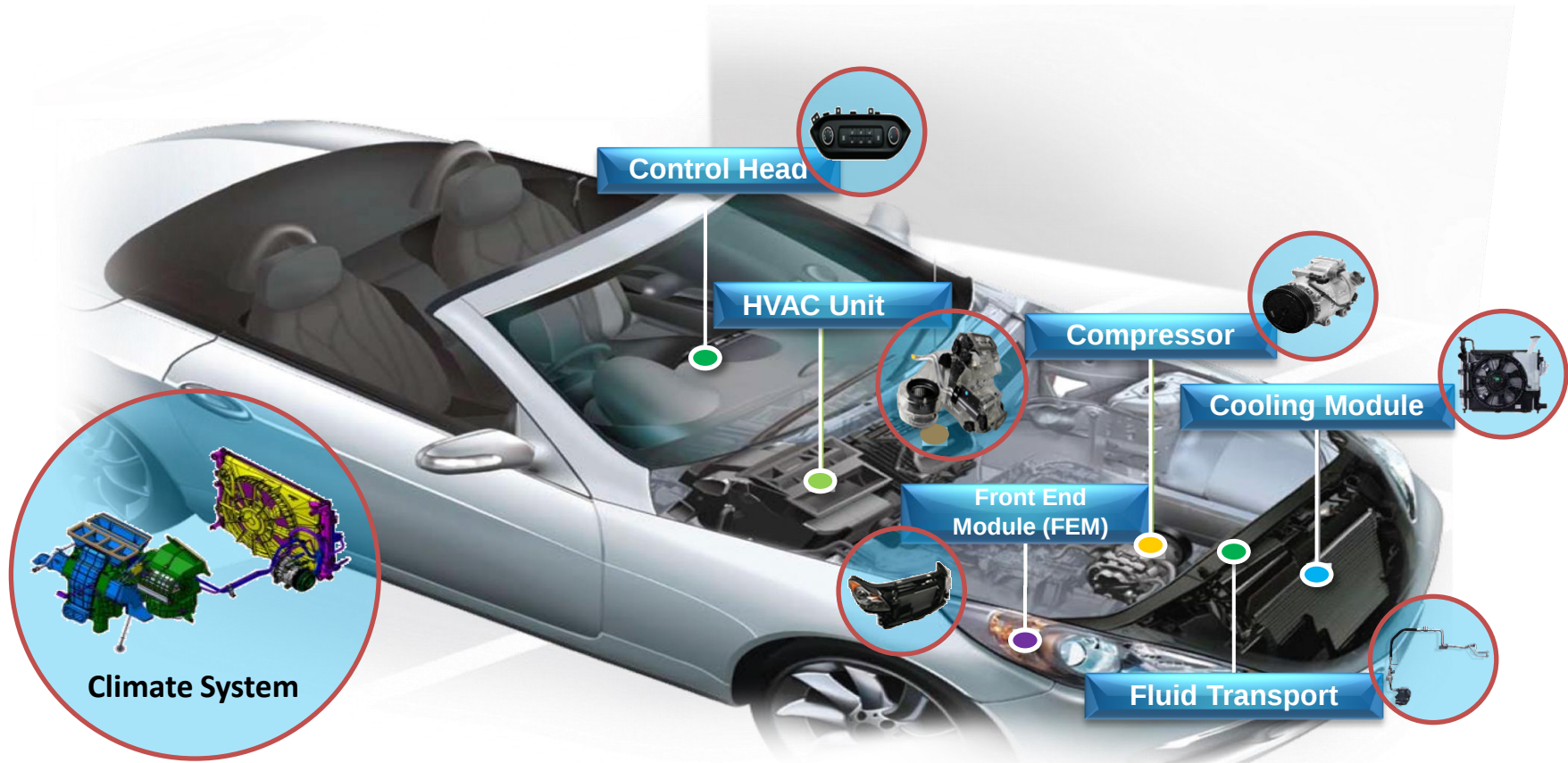
(1) Excludes equity income and non-controlling interests. (2) Multiple customers all under 2% share

- ✓ Clear #2 global climate player, with 13% market share
- ✓ Leading product and technology portfolio
- ✓ One of only two “full-line” suppliers
- ✓ Customer-focused solutions provider with a worldwide presence
- ✓ Global manufacturing footprint supporting OEMs
- ✓ Gaining share in growing markets

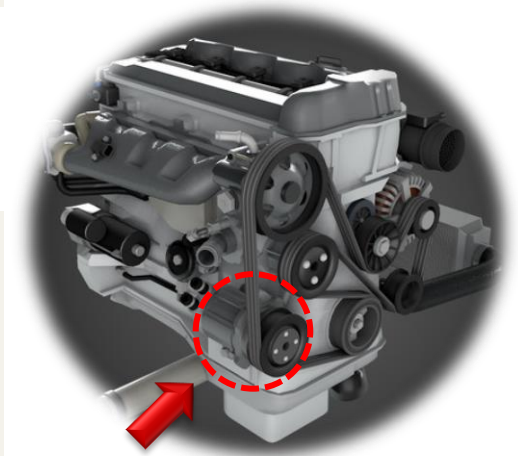
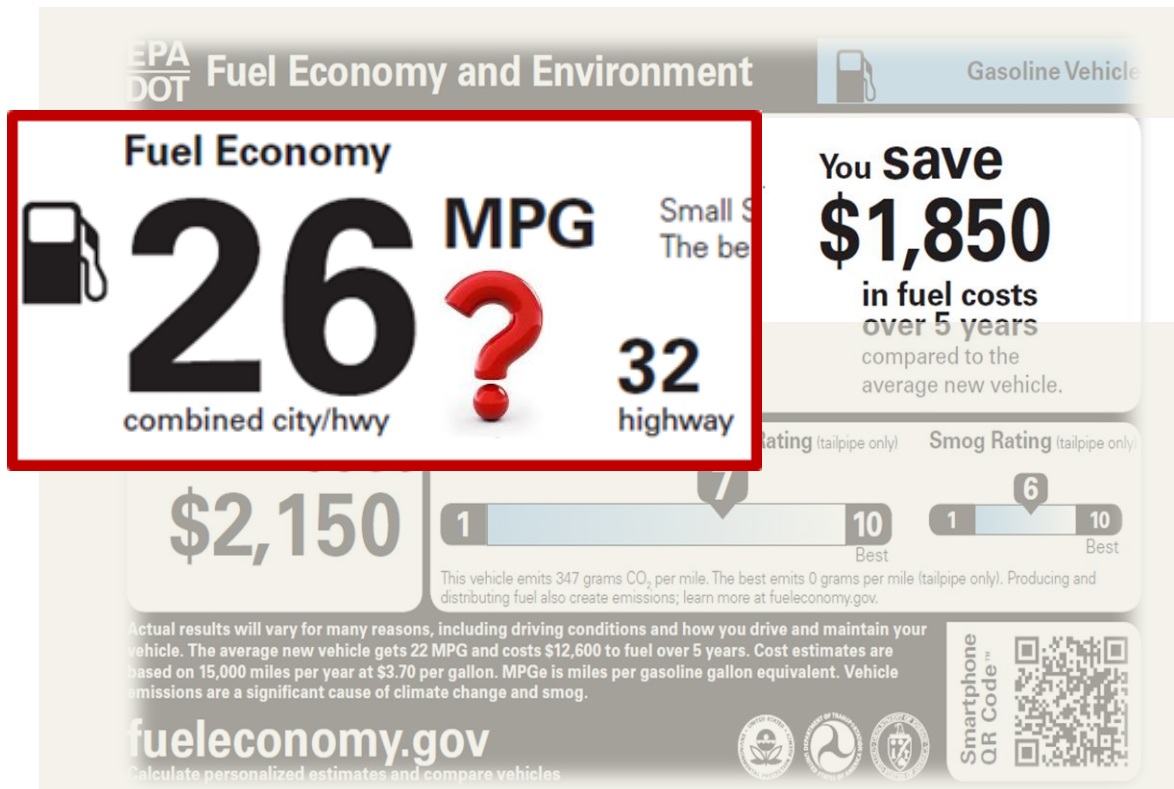
A World-Class Climate Organization



35 Manufacturing Facilities and Four Technical Centers
Headquarters: Daejeon, Korea

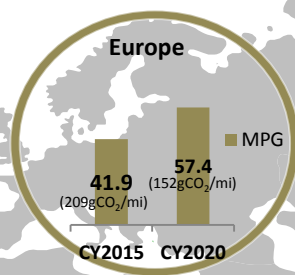


One of Two Full-Line Systems Providers



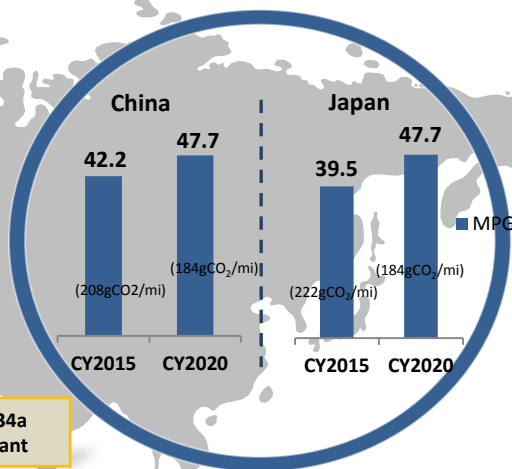
Compressor

A/C System Operation Impacts Fuel Economy

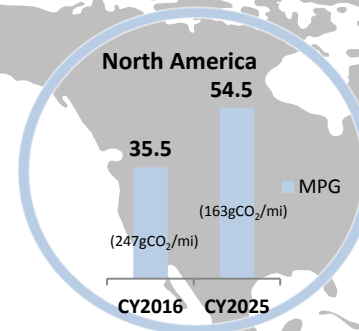


A/C Regulation	EU	From 2017	Ban R134a refrigerant
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* Legislated by EU Committee



* Legislated by Chinese and Japanese governments



A/C Regulation	EPA	2009-2025	A/C emission credit available	CO2
	NHTSA	2017-2025	CAFÉ credits available	MPG

* EPA : Environmental Protection Agency

* NHTSA : National Highway Traffic Safety Administration

* CAFÉ: Corporate Average Fuel Economy

* Legislated by EPA and NHTSA

Strict Fuel Economy Standards and Emissions-Related Regulations



- Demand increase for HEV / EV / FC
- Alternative refrigerant systems
 - R744 and R1234yf

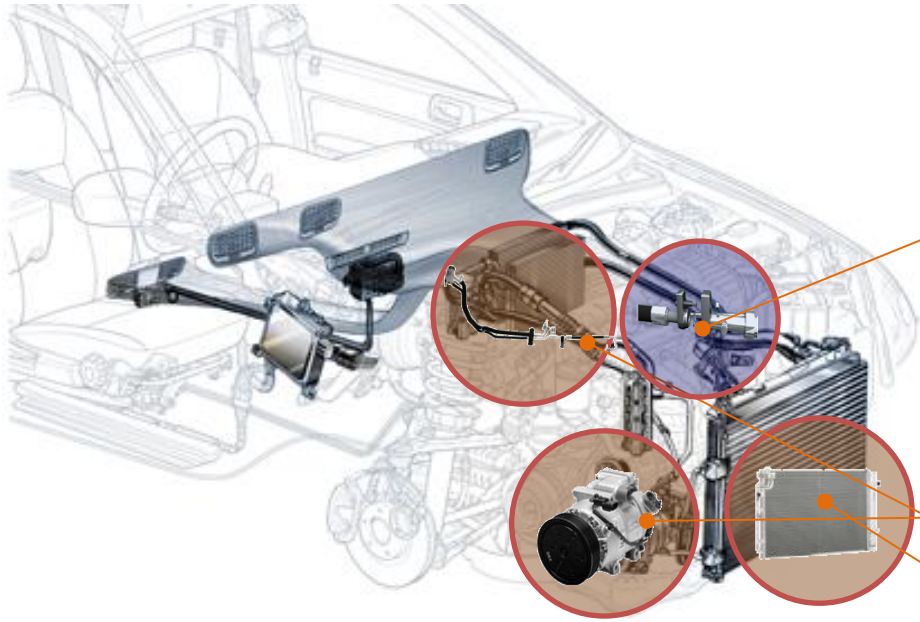


- Cabin air quality
- Comfort control
- Reduced noise, vibration and harshness (NVH)



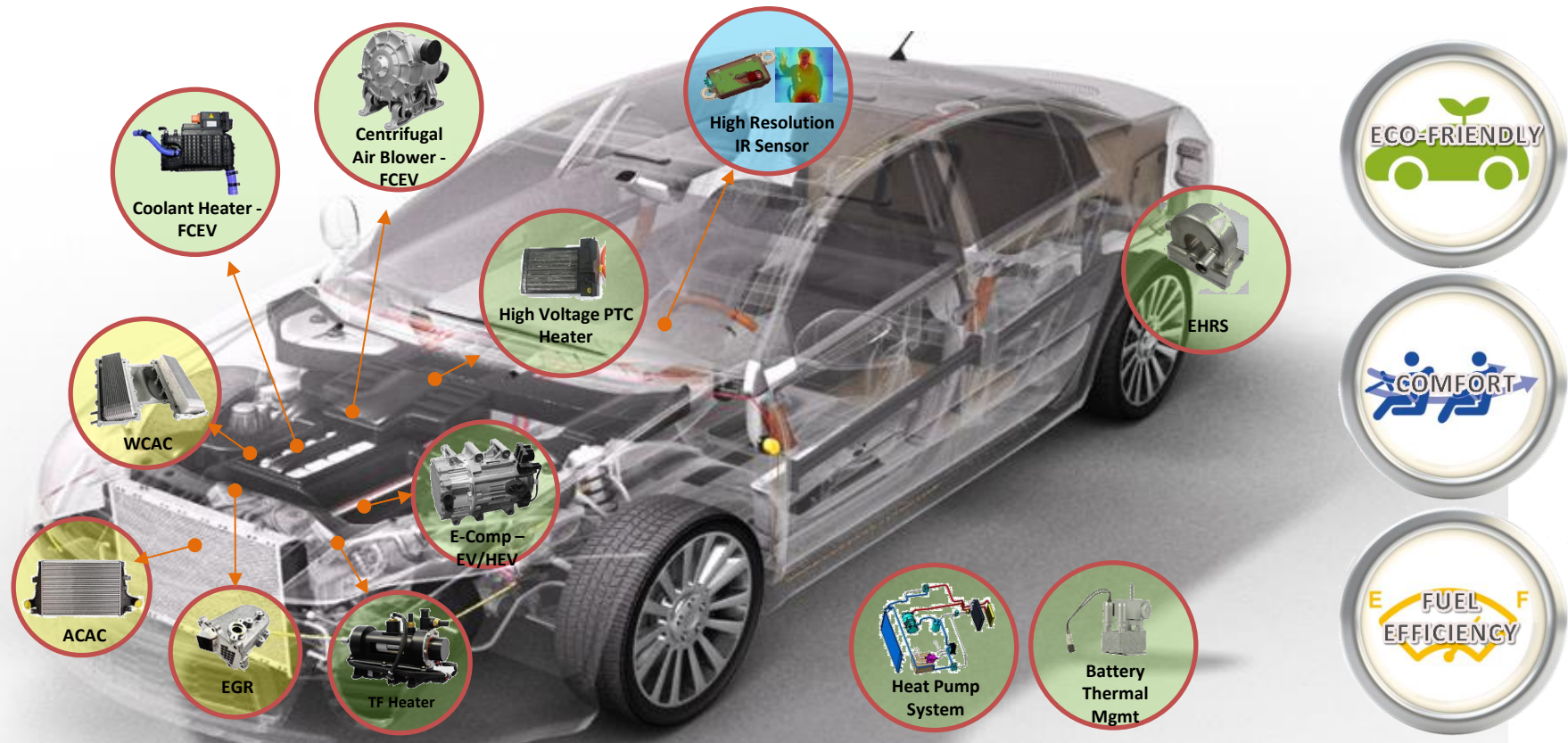
- High efficiency system for fuel economy
 - Engine downsizing with turbo charger
 - Weight reduction
 - Heat recovery

Solutions That Address Market and Industry Demands



- **Conventional products to meet regulations:**
 - **Direct contribution**
 - Metal Seal Fitting
 - R744 System
 - 1234yf System
 - **Indirect contribution**
 - VS Compressor
 - Internal Heat Exchanger (HEX)
 - Improved Condenser and Evaporator

Conventional Market Appreciated Products

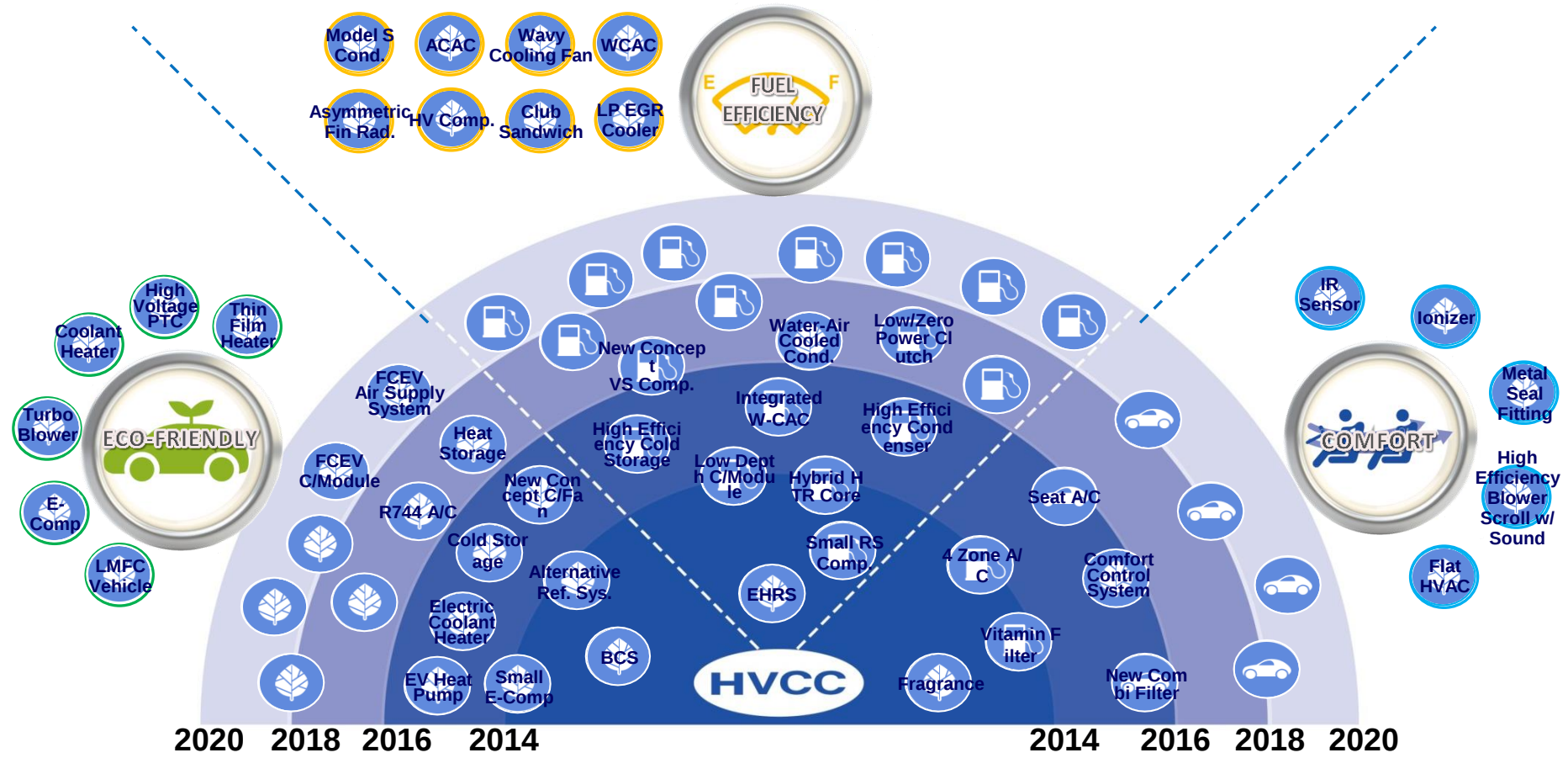


* EGR : Exhaust Gas Recirculation
 * ACAC : Air Charge Air Cooler
 * WCAC : Water Charge Air Cooler

* FCEV : Fuel Cell Electric Vehicle
 * PTC Heater : Positive Temperature Coefficient Heater
 * E-Comp : Electric-Compressor

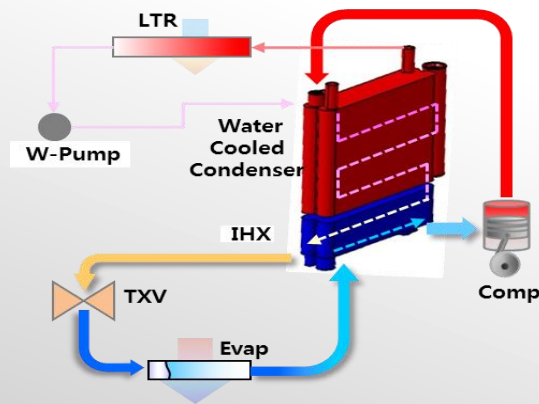
* TF Heater : Thin Fin Heater
 * EHRS : Exhaust Heat Recovery System
 * IR Sensor : Infrared Ray Sensor

HVCC Technology Roadmap



IHX Sub-Cooled Water Cooled Condenser

IHX Sub-Cooled Water Cooled Condenser



Mechanism

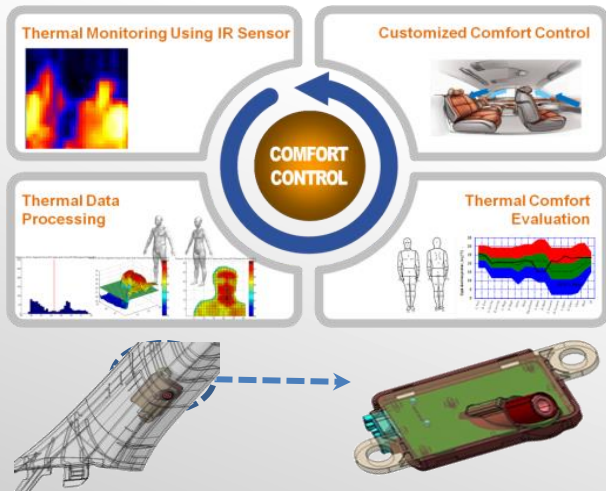
- Water cooled condenser provides better cooling performance, compared to conventional air cooled condensers.
- IHX cools down again refrigerant that is already cooled by water cooled condenser.

Customer Benefit

- Compressor power consumption reduced by 20%
→ Provides 1.1 additional A/C credits to customers
- Integration of IHX with water cooled condenser
→ World's first

Adaptive Temperature Control Using High Resolution IR Sensor

High Resolution IR Sensor



Mechanism

The infrared red sensor

- Detects a human body separate from cabin with increased accuracy.
- Analyzes vehicle occupants (e.g., number of passengers, seating area, height, weight, clothes, body heat, etc.) to optimize and fully automate the climate control.

Customer Benefit

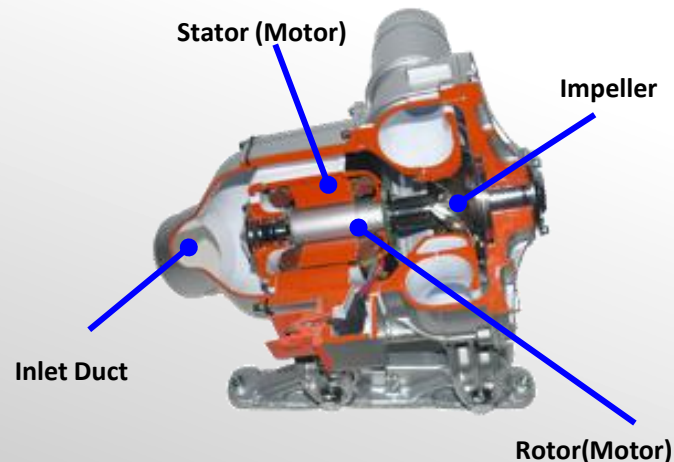
- Offers customized passenger thermal comfort
- Improves fuel efficiency 3%

** 2013 award for excellence in new technology by HMG*

* IR Sensor : Infrared Sensor

Centrifugal Air Compressor

Centrifugal Air Comp.



Mechanism

- Provides compressed and pressurized air as needed to the fuel cell stack to create a hydrogen chemical reaction.

** fuel cell: engine in fuel cell vehicle*

Customer Benefit

- 17% improvement of performance, compared to screw type – Fuel Efficiency 2% improvement
- Compact size and weight
- Operates at high rotating speed with low noise

**Wave Blade
Fan**



2007
Pace Award Winner

Metal Seal Fitting



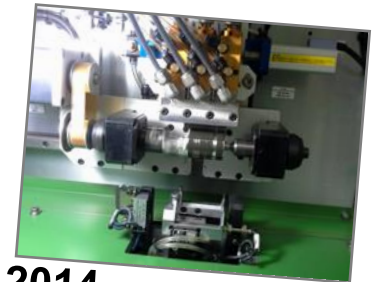
2013
PACE Award Winner

**Centrifugal Air
Compressor**



2014
PACE Award Finalist

**Zero Waste
Dispense Coating**



2014
PACE Award Finalist

Industry Recognition for Innovative Technology Development

- ✓ Market-leading and differentiated solutions
- ✓ Ready to earn maximum A/C credit regarding U.S. regulation
- ✓ Focused on delivering innovative solutions that are eco-friendly, efficient and deliver comfort
- ✓ Above market growth through customer diversification and continuous stream of new products
- ✓ Margin performance based on operation efficiency and technical innovation

Automotive Thermal Energy Management Solution Provider

Thank You!



한라비스테온공조(주)
Halla Visteon Climate Control Corp.

www.hvccglobal.com