IT'S AN EXTREME THERMAL WORLD, AND WE MANAGE IT.
Welcome to our brochure. I hope that you find it informative. It is a gateway to SANHUA’s spirit of striving for perfection in our pursuit of excellent customer service while executing our commitment to quick response and immediate action.

As a global leader of high efficiency thermal management components, SANHUA Automotive continues to develop new technologies and products that offer enhanced fuel economy savings for conventional vehicles and opportunities for increased mileage range in EV and hybrid vehicles. We are devoted to products that offer energy savings and environmental protection and that make a contribution to people in the creation of a better living environment. We are committed to technologies that protect the earth from global warming and harmful climate change.

The well-known operating strategy of SANHUA Automotive in producing high quality, precision air conditioning components has been expanded to include powertrain and battery cooling products. All of our new products are designed by using “Design for Six Sigma” principles. They feature technologies that optimize performance and Energy efficiencies with reduced component weight, packaging size and NVH characteristics.

With the development of new products, SANHUA Automotive has taken a further step into the role of an Integrated Thermal Management products supplier. We are very happy to offer this service to several new energy vehicle OEMs. We are now ready to expand our global sales network, establish strategic relationships with global first-class customers, integrated our industrial resources and global manufacturing footprint internationally.

SANHUA Automotive will also focus on our internal management professional development and building a brand-centric organizational culture.

SANHUA Automotive is committed to providing our customers with the highest quality energy saving and environmental friendly products. We are excited about the future and the opportunity to serve our customers with excellence.
SANHUA Automotive Brief History

SANHUA Automotive started as a branch of the SANHUA Holding Group (SHG) decades ago. Established in 1984, SHG is now a global company providing products and services for Automotive, Residential & Commercial HVAC&R and Home Appliance markets with a revenue of $3.5 billion in 2017.

1987 | SHG started developing automotive TXV
1991 | Developed Receiver Drier & Pressure Switch for Beijing Jeep
1994 | Started a joint venture with a Japanese company for TXVs
2003 | Set up a business unit specialized for automotive business
2004 | Established Zhejiang SANHUA Automotive Components Co., LTD
2009 | Established an automotive R&D Center for thermal developments
2011 | TXV sales reached 10 million pieces
2015 | TXV achieved a second global market share
2017 | Became the first China based global company that won PACE Award
2017 | Established a new R&D Center in North America
2018 | Established a new R&D Center in Europe
2019 | Opening of new production building in Poland
SANHUA Automotive started as a supplier of key components for automotive air-conditioning system. Based on our engineering experience of product portfolio and system level researches in residential system level research has been developing many new products to meet the need of new energy automotive industry. We are on the way to be a quality provider with full range of components, sub-system solution integrator and new technology innovator.
BRAND PROMISE

Expert in thermal management systems.
We are committed to:
Energy Savings
Environmental Protection
Driving Comfort

FIGURES

Over 7% annual sales growth over 10 years
Over 500 patents with 237 inventions globally
Over 4% of sales invested in R&D
52 DFSS Green Belt certified engineers
2 full testing capabilities labs with an investment in excess of $15 million
Components for R744 System

- Electronic Expansion Valve (EXV)
- Chiller & EXV
- Electronic Coolant Pump
- Accumulator with/without IHX
- Motor Oil Cooler
R1234yf Components for Heat Pump System

- EXV & Check Valve
- Multi-way Valve
- Electronic Expansion Valve (EXV)
- Accumulator
INNOVATIVE PRODUCTS THAT REFLECTS
THE DEMANDS OF A GLOBAL MARKET PLACE

SANHUA Automotive offers a wide array of products, with an emphasis on thermal management systems and new-energy vehicle HVAC systems. Anticipating our customers’ needs ensures we are continually working to improve our process, products and services.
Receiver Drier

SANHUA Automotive receiver driers are available in integrated, attached and separated designs. They are customized to unique OEM packaging & performance requirements, including long service life usage in R134a/R1234yf refrigerant systems.

Highlights:

- Customized designs with various packaging sizes
- Dedicated designs for refrigerant storage, moisture absorption and particle filtration, etc.
Accumulator

SANHUA Automotive accumulator designs are customized to OEM packaging & performance requirements. They are designed for usage in R134a/R1234yf systems and R744 applications with or without an Internal Heat exchanger (IHX).

**Highlights:**

- Effective internal heat exchanger design (R744 Accumulator with IHX)
- High pressure applicable for R744 refrigerant system, etc.
Thermal Expansion Valve With/ Without Solenoid Valve

A Thermal Expansion Valve (TXV) controls the refrigerant flow rate entering the evaporator by sensing the gaseous refrigerant superheat at the evaporator outlet. Thermal Expansion Valve with Solenoid Valve (ETXV) is an integration of Thermal Expansion Valve and Solenoid Valve, and includes functions of Thermal Expansion Valve and Solenoid Valve.

Highlights:

- Precision control refrigerant superheat
- Available for any types of compressor, etc..
Electronic Expansion Valve

SANHUA Automotive EXV (Electronic Expansion Valve) is designed for accurate refrigerant flow control applicable for new energy vehicle thermal systems and traditional vehicle AC systems. The new EXV which can be controlled via a LIN or PWM signal is available for R134a, R1234yf and R744 refrigerant systems.

Highlights:

• 2017 PACE Award Winner
• Capable of total refrigerant shut off
• LIN integrated control board with OBD function, etc.
Thermal Bypass Valve

Thermal bypass valve is used in transmission cooling & heating systems. It regulates oil flow and flow direction in order to self-control the operating temperature of the transmission.

SANHUA Automotive has developed types of TBVs.
Thermal Bypass Valve

Highlights:

- Light weight design
- Flexible plumbing connection interfaces available
- Capable of withstanding harsh under-hood environments, etc.
R134a/R1234yf SOV

SANHUA Automotive shut-off valves offer excellent control of OEM refrigerant flow and our optimized flow and pressure drop.

Highlights:

- Flow diameters from 2 to 16 mm
- Total refrigerant shut off capable, etc.
Electronic Coolant Valve

The electronic coolant valve is used to change the coolant flowing direction, adjust the coolant flow rates or distribute the coolant flow volume proportionally. SANHUA Automotive has developed 2/3-Way Proportional Coolant Valve and 4-Way Ball Type Coolant Valve.

Highlights:

- Accurate flow distribution control
- LIN communication design with On-Board Diagnostic (OBD), etc.
Three-Way Refrigerant Control Valve

**Highlights:**

- Motor operated refrigerant valve
- Total refrigerant shut off capable, etc.
Check Valve

SANHUA Automotive check valves offer excellent control of OEM refrigerant flow with optimized flow and pressure drop performance.

Highlights:

- Fast and safe switching
- Optimized leakage vs flow resistance
- High reliability, etc.
Highlights:

- Wide range of power from 17 to 110 Watts
- Patented technology guarantees superior hydraulic efficiency
- Capable of self-protection functions & diagnostic feedback, etc.

Electronic Coolant Pump

17-110 Watt Electronic Coolant Pump Driven by BLDC Motor
Cooling Plate

SANHUA Automotive shares internal in-house design selection tool with customers to customize the cold plate in the OEM early design phases.

**Highlights:**

- Effective channel design to optimize heat transfer
- Most innovative line of fully customized solutions
- Applicable for battery cooling and control unit cooling, etc.
Control Panel

Highlights:

- CAN / LIN communication interfaces available
- Dual zone temperature control functions, etc.

Automatic Temperature Controller

SANHUA Automotive offers manual, semi-automatic and fully automatic front and rear control heads that operate the OEM HVAC system.
ETXV & Chiller Assembly

Highlights:

- Simplifies plumbing
- Full range of stack plate refrigerant chiller from 2kW to 11kW, etc.

EXV & Chiller Assembly

Highlights:

- Minimizes required packaging space
- Matched performance between EXV and Chiller, etc.
TBV & Oil Cooler Assembly

The TBV regulates oil flow and flow direction in order to self-control the operating temperature of the transmission. The integrated assembly eliminates several separate pipes and oil plumbing connections.

Highlights:

- Full range of stack plate oil coolers from 5 kW to 11 kW
- Capable of withstanding harsh under-hood environments, etc.
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