

# SANHUA

## Solutions for Heat Pump Manufacturer

presented by Jens Petersen





**Jens Petersen** KAM  
DACH Region

- Based in Germany
- In charge of OEM business in Germany, Austria and Switzerland



1. Sanhua Company

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2. Heat Pump Market

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3. Sanhua Products Solutions for Heat Pump Manufacturer

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4. Sanhua Product Lines R32 & R290

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5. MCHE for Domestic Hot Water Tanks

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6. Certifications

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7. Sanhua Supporting Tools

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# SANHUA HOLDING GROUP OVERVIEW

**SANHUA**



*Headquarter location*  
**Hangzhou, Zhejiang, China**

*Established in*  
**1984**

*Employees Year 2019*  
**23.000 employees**

*Total turnover Year 2019*  
**3.93 Billion USD**

# SANHUA EUROPE OVERVIEW

**SANHUA**

Established in 2008, HQ in Madrid

## Local Commercial Teams:

Iberia	Poland
Nordic	Russia
France & Benelux	Eastern Europe
Italy	Turkey
DACH	Middle East

## Global Portfolio Management

Technical Portfolio Managers all over Europe



45 employees, incl. | Sales Managers & KAM | Technical Sales Managers | Portfolio Managers | Customer Service Assistants | Logistic, Finance, Marketing, etc.



# DISTRIBUTION NETWORK

**SANHUA**



**GLOBAL FOOTPRINT &  
LOCAL  
SUPPORT**

**SANHUA**

*Global producer of high-quality  
refrigeration components and  
leading supplier in HVAC/R  
industries since 1984*

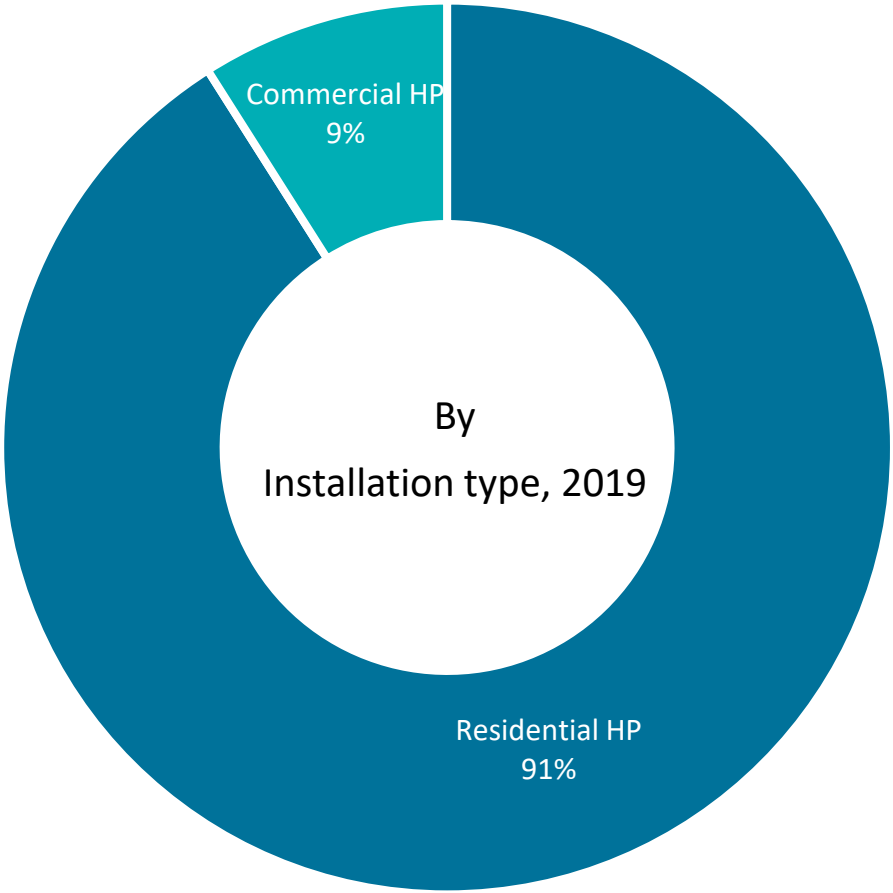
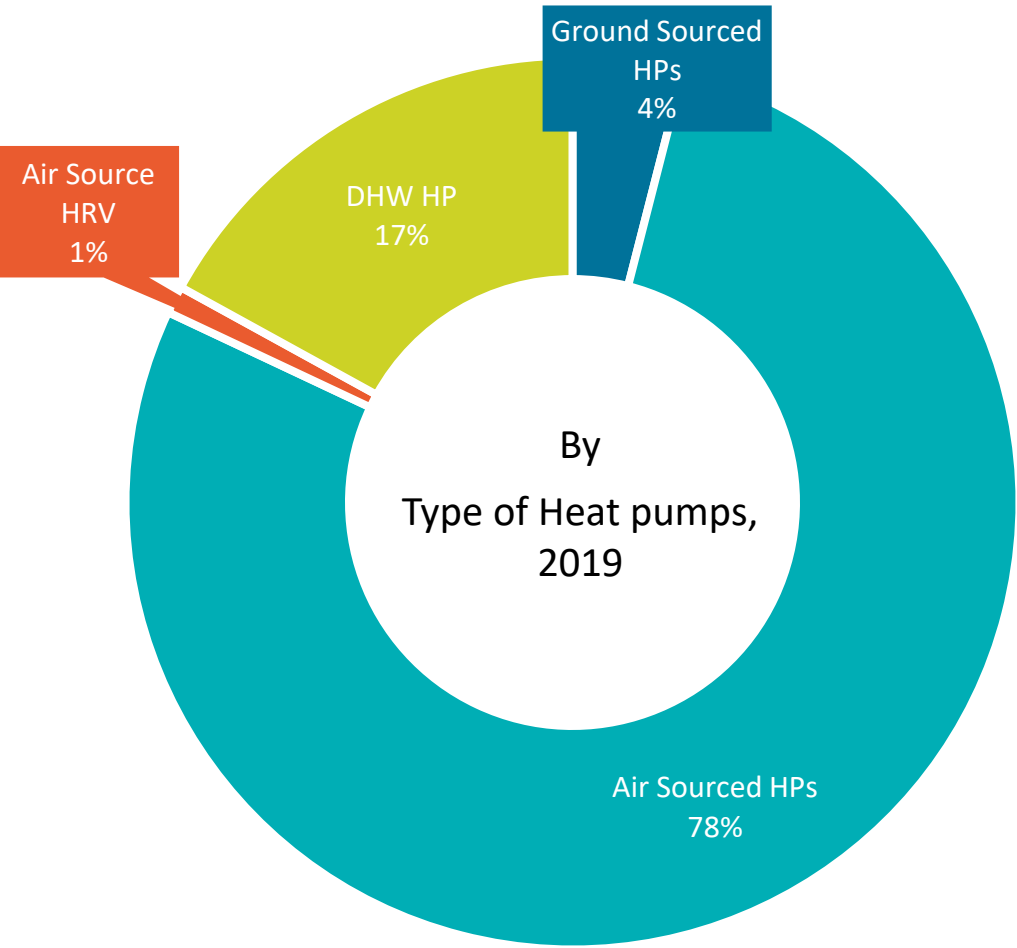
**EMEA CENTRAL  
WAREHOUSE**

- **LOCATION:** TYCHY (POLAND)

# General HP Market Overview EU

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Total Installed HP's in EU  
~ 14 Mio



# Market Drivers

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## No. 1

2030 targets as set by Clean energy 4 all Europeans package

Heat pumps use renewable energy from air / water / soil, waste energy treated similarly

renewable

32%

energy efficiency

32.5%

CO<sub>2</sub>

40%

New impact assessment 50/55%?



## No. 2

Due to F-Gas Regulation HP Market moving towards

R290

R1234yf

R1234ze

R454C

## No. 3

In many countries attractive financial support from the Government



# Full Package Supplier for Manufacturers

**SANHUA**



Solenoid Valves



EEV's



Sight Glasses



YCQ Pressure  
Transmitter



TXV's



MCHE's



4 Way Valves



Compressors



Receivers



Accumulators



Controller



Filter Driers



Check Valves

# Sanhua Solutions

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## CHILLER & HEAT PUMPS operating with HCFC and HFC:

Sanhua CLASSIC standard catalogue (part 1/2)

### Application



HP



Chiller



# Sanhua Solutions

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## CHILLER & HEAT PUMPS operating with R290 & R32:

Sanhua NEW Green Tech catalogue



Application



HP



Chiller



# Product Lines R32 & R290

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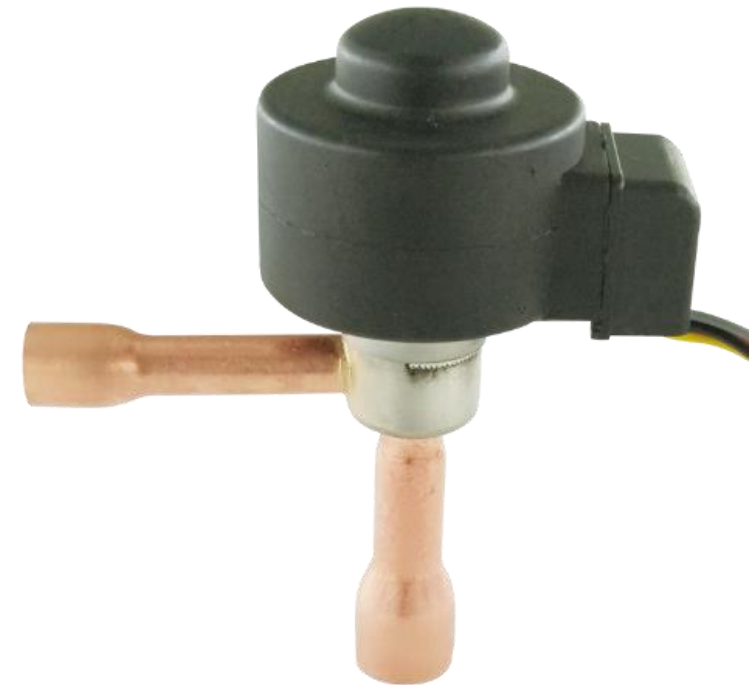
## Features

- ⚙️ Applicable for reversible systems like heat pumps: bidirectional flow
- ⚙️ Smaller installation space: low height, small volume, light weight
- 🔊× Optimized flow path design for noise reduction

## General Specification

- ⚙️ Applicable for all common HCFC, HFC, HFO, HC
- ❄️ Cooling capacity: from 0.5 to 110 kW (R290)  
Cooling capacity: 1 to 164 kW (for R32) – PS=49bar
- ⚙️ 500 steps (full stroke);  $32 \pm 20$  opening steps
- 🌡️ Medium temperature TS min./max.: -40°C / +85°C  
(duty cycle rate below 50%)
- 🏆 Certifications: UL/CSA and declaration according to LVD or PED
- 🔧 Suitable with the EN 60335-2-24 / 2-40 / 2-89







## DPF Serie







# Product Lines R32 & R290

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## Features

-  Energy saving thanks to very precise capacity control: Up to 3800 steps
-  Internal Tightness like a solenoid valve
-  Optimized flow path design for noise reduction
-  Applicable for reversible systems like heat pumps: bidirectional flow
-  Corrosion resistant design, long lifetime, high reliability
-  Models with integrated sight glass are available

## General Specification

-  Applicable for all common HCFC, HFC, HFO, HC
-  Cooling capacity: from 20 to 500 kW
-  Medium temperature TS min./max.: -40°C/+90°C
-  Certifications: EAC, PED Declaration for fluids group 2 full range, and fluid group 1 for VPF12.5 to 100 (PS=50bar).

## VPF Serie















# Product Lines R32 & R290

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## Features

-  Extremely high internal tightness which is as good as with solenoid valves (<1ml/min)
-  Equal percentage flow design for better flow regulation
-  Snap-on coil for easier installation
-  Coil with IP67 works safely in extremely environment
-  Applicable for oil-free system; Built-in strainer at inlet
-  Flow direction: Bi-flow

## General Specification

-  Applicable for all common HFCF, HFC, HFO, HC and R744
-  500 steps (full stroke);  $32 \pm 20$  opening steps
-  Medium temperature TS min./max.:  $-40^{\circ}\text{C}$  /  $+70^{\circ}\text{C}$   
(duty cycle rate below 40%)
-  Design Pressure: 42 bar, MOPD: 35 bar







## LPF Serie







# Product Lines R32 & R290

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## Features

-  Compact design with build-in orifice
-  Warm thermo head construction
-  All connections pipes are completely in copper
-  Valves with MOP function can be provided to assure reliable compressor operation
-  Applicable in a wide evaporation temperature range
-  Reliable and consistent performance of superheat control

## General Specification

-  Special series designed for application with R290
-  Ambient temperature min./max.: -35/+55°C  
Medium temperature TS min./max.: -40°C / +70°C
-  Factory setting for static super heat: 3.5 K (4.0K for few models)
-  Max. operating pressure PS: 3,5 MPa (35 bar)



## RFGB06 Serie









# Product Lines R32 & R290

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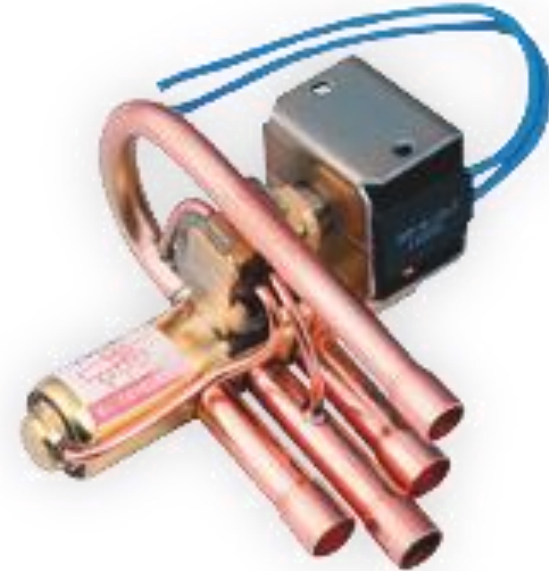
## Features

-  Suitable for cooling capacities from 3.5 to 409kW (R290, Condition 2,  $\Delta P=0.1\text{bar}$ )
-  Certified according PED cat.II by TUV Rheinland

## General Specification

-  Applicable for all common HCFC, HFC, HFO, HC
-  Medium temperature TS min./max.:  $-30^{\circ}\text{C}$  /  $+135^{\circ}\text{C}$
-  Ambient temperature min./max.:  $-30^{\circ}\text{C}$  /  $+50^{\circ}\text{C}$
-  Relative humidity: 0 to 95% RH
-  Max. operating pressure  $PS \geq 4.5\text{ MPa}$  (45 bar)
-  Certifications: UL/CSA3) and declaration according to LVD and PED

## SHF/SHF-R Serie



# Product Lines R32 & R290

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## Features

- ⚙️ XHP Connector for SEC61x Controller
- 🔌 Available with lead wire direct connector or with Packard, Molex and Quick On socket connections
- ⊗ Different pressure ranges and different level of accuracy

## General Specification

- ⚙️ Applicable for HCFC, HFC, HC, HFO, R32 refrigerants
- ⚙️ YCQB Ratiometric models with output signal: 0,5V to 3,5V or 0,5V to 4,5V  
YCQC models with 4-20mA output signal
- ✅ Compliance with EN 60335-2-24/40/89 (VDE)






## YCQ Series






# Product Lines R32 & R290

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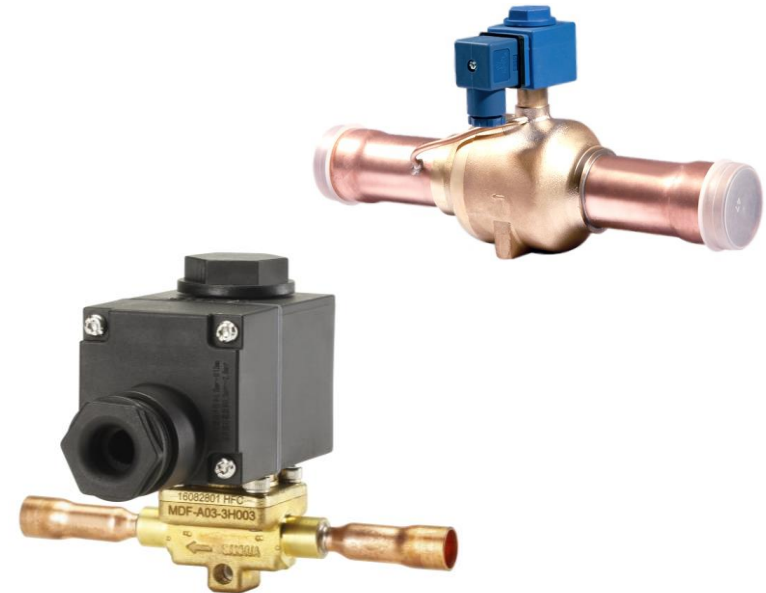
## Features

-  Coils: low energy consumption, reliable
-  Great valve opening performance, high MOPD
-  Direct or Piston Type actuation: connection size from 6 to 28mm
-  Coils are double sealed, watertight and safe
-  Certified according PED cat.II by TUV Rheinland

## General Specification

-  Applicable for all common HCFC, HFC, HFO, HC
-  Medium temperature TS min./max.: -30°C/105°C
-  Max. operating pressure PS: 4,9 MPa (49 bar)

### MDF Serie













# Product Lines R32 & R290

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## Features

-  Coils: low energy consumption, reliable
-  Low internal leakage
-  Direct or Piston Type actuation: Kv size from 0,12 to 1,1 m<sup>3</sup>/h
-  Compact design, easy to install.
-  Certified according PED cat.II by TUV Rheinland

## General Specification

-  Applicable for all common HCFC, HFC, HFO, HC
-  Medium temperature TS min./max.: -30°C/+120°C
-  Max. operating pressure PS: 4.5Mpa





LDF Serie






# Product Lines R32 & R290

SANHUA

## Features

-  Coils: low energy consumption, reliable
-  Great valve opening performance, high MOPD
-  Direct or Piston Type actuation: Kv size from 0,08 to 3,5 m<sup>3</sup>/h
-  Certified according PED cat.II by TUV Rheinland

## General Specification

-  Applicable for all common HCFC, HFC, HFO, HC
-  Medium temperature TS min./max.: -30°C/+120°C
-  Max. operating pressure PS: 4.5Mpa







## FDF Serie






# Product Lines R32 & R290

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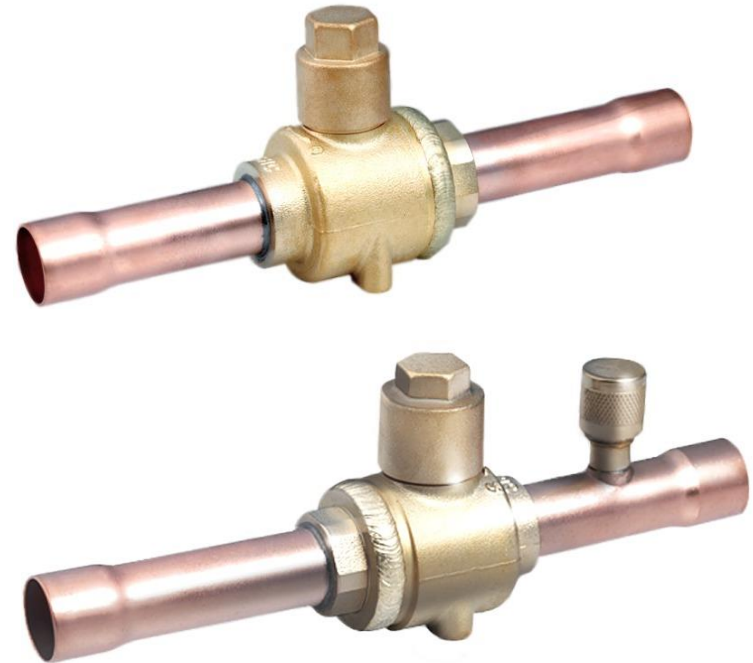
## Features

-  Straightway type, full port, low pressure drops, cost-effective
-  Valve body and valve seat with welded structure, with high product reliability
-  Connection size from 1/4" to 2" 5/8 (6mm to 67mm)
-  Bidirectional flow
-  Special sealing materials to prevent internal leakage
-  Certified according PED cat.II by TUV Rheinland

## General Specification

-  Applicable for all common HCFC, HFC, HFO, HC
-  Medium temperature TS min./max.: -40°C / +120°C
-  Max. operating pressure PS: 4,9 MPa (49 bar)







## SBV/SBV-R Serie






# Product Lines R32 & R290

SANHUA

## Features

-  Straightway type, full port, low pressure drops, cost-effective
-  Valve body and valve seat with welded structure, with high product reliability
-  Connection size from 1/4" to 2" 1/8 (6mm to 54mm)
-  Bidirectional flow
-  Special sealing materials to prevent internal leakage
-  Certified according PED cat.II by TUV Rheinland

## General Specification

-  Applicable for R32; also compatible with all common HCFC, HFC, HFO, HC refrigerants
-  Huge refrigerant temperature TS min./max.: -60°C/+160°C
-  Max. operating pressure PS: 4,9 MPa (49 bar)





## RBV Serie






# Product Lines R32 & R290

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## Features

-  High precision color indicator
-  Indicator pasted closely to the glass to prevent surface contamination
-  Solid and corrosion resistant brass material
-  New Annular humidity color indicator.  
Full port passage with low pressure drop

## General Specification

-  Applicable for HCFC, HFC, HFO, HC
-  Medium temperature TS min./max.: -50°C / +80°C
-  Max. operating pressure PS: 4,6 MPa (46 bar)

SYJ/SYJ-R Serie













# Product Lines R32 & R290

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## Features

-  Equipped with damping spring to freely install the valve at positions with pressure pulse
-  Available in two types of model:
  - straightway valve – connection size from 6mm to 22mm
  - L-shape valve – connection size from 22mm to 42mm
-  Special version of check valve equipped with reinforced spring, applicable to compressor discharge pipes in single or multi compressor systems (YCVSH & YCVSH-R series)
-  Low pressure drops during operation
-  Certified according PED cat.II by TUV Rheinland

## General Specification

-  Applicable for R32; also compatible with all common HCFC, HFC, HFO, HC refrigerants
-  Medium temperature TS min./max.: -50°C / +150°C
-  Max. operating pressure PS: 4,6 (46bar) or 4,9 MPa (49 bar) depending by the model

## YCVS/YCVS-R Serie



# Product Lines R32 & R290

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## Features

- ↔ This valve can ensure the only correct flow direction
- U Magnetic closure element for high reliability standards
- ⬡ Compact and sealed design with no risk of external leakage: highly suggested for applications with flammable refrigerants
- 📊 Low pressure drops during operation
- 🏆 Certified according PED cat.II by TUV Rheinland

## General Specification

- ⬡ Applicable for R32; also compatible with all common HCFC, HFC, HFO, HC refrigerants
- 🌡 Medium temperature TS min./max.: -40°C / +160°C
- 📊 Max. operating pressure PS: 4,9 MPa (49 bar)

## CCV Serie



# Product Lines R32 & R290

SANHUA

## Features

- Uni Directional - Highly efficient in moisture absorption, filtering impurity, acid, paint remains and mud removal
- ✓ 100% 3Å desiccant; Durable and solid filter cores
- ⚡ Filtering fineness: 20µm
- ⚡ Connection type: solder

## General Specification

- ⚡ Applicable for all common HCFC, HFC, HFO, HC
- ❄ Cooling capacity from 0.5 to 20 kW
- 🌡 Medium temperature TS min./max.: -30°C / +120°C
- 🕒 Max. operating pressure PS max.:  
4,90 MPa (49 bar) - 711 PSI (R32)  
4,83 MPa (48,3 bar) - 700 PSI (R290)
- 🛡 Certifications: EAC, PED Declaration for fluids group 2 full range, and fluid group 1 for VPF12.5 to 100 (PS=50bar).

## DTG/DTG-932 Serie



# Product Lines R32 & R290

SANHUA

## Features

- Bi-Flow - Highly efficient in moisture absorption, filtering impurity, acid, paint remains and mud removal
- ✓ 100% 3Å desiccant; Durable and solid filter cores
- ⌵ Filtering fineness: 20µm
- ⬡ Connection type: solder

## General Specification





- ⬡ Applicable for all common HCFC, HFC, HFO, HC
- 🌡 Medium temperature TS min./max.: -30°C / +120°C
- 🕒 Max. operating pressure PS max.:  
4,90 MPa (49 bar) - 711 PSI (R32)  
4,83 MPa (48,3 bar) - 700 PSI (R290)
- ⚙ Certifications: EAC, PED Declaration for fluids group 2 full range, and fluid group 1 for VPF12.5 to 100 (PS=50bar).

## STG/STG-932 Serie







# Product Lines R32 & R290

## Features

-  Stainless steel housing with high-strength – 1,5 inch<sup>3</sup> core volume
-  Housing surface adopts adsorption principle to form a nano-solid film to anti-rust, survives more than 1500 hours of neutral salt spray test.
-  Solid filter cores, highly efficient in moisture absorption, filtering impurity.
-  Compact design, meeting the strict 150g system limits for flammable refrigerants such as R290.

## General Specification

-  Applicable refrigerants: HCFC, HFC, HC, HFO
-  Medium temperature: -30°~+120°
-  Max. Operation pressure PS max: 4.83MPa (48,3bar) - 700PSI
-  Certification: UL/CSA and PED declaration

## DTG M02 Serie













# Product Lines R32 & R290

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## Features

-  Advanced PID algorithm to ensure accurate automatic adjustment of superheat
-  Quick-Safe prevention of low and high superheat to ensure the system operating well at any conditions
-  Small size, rail mounting design, easy to install
-  Energy efficient, achieving the most efficient use of the evaporator

## General Specification

-  Applicable for various refrigerants
-  Certification: UL, CE Declaration according to EMC
-  Installation method: DIN railsnap-in or wall mounting with screws
-  Compatible with Sanhua DPF and LPF valves

## SEC 61X Serie



# MCHE for ATW Heat Pump

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Type 1:  
Monoblock (All-in-one)



Type 2:  
Split (indoor + outdoor unit)

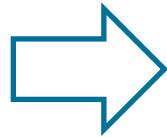
# MCHE for ATW Heat Pump

**SANHUA**

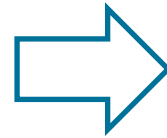
Coming Soon



**Round Tube**  
Traditional solution

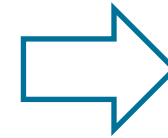


**1<sup>st</sup> Gen MCHE**  
MPE=25mm



**2<sup>nd</sup> Gen MCHE**  
MPE=16mm

Sanhua Patent



**3<sup>rd</sup> Gen MCHE**  
MPE=16mm / no gaps

Sanhua Patent

# MCHE for ATW Heat Pump

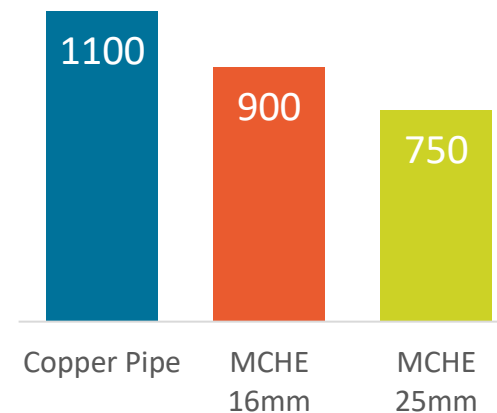
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## Comparison of performance for different condenser solutions

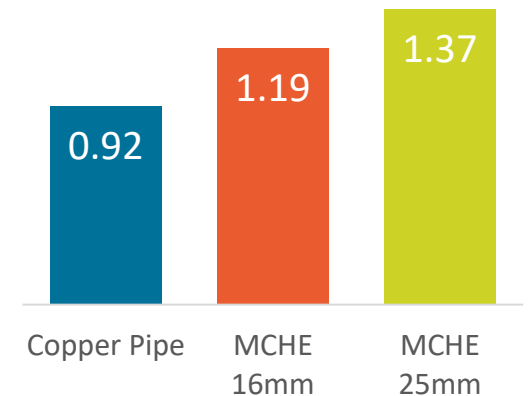
Case study: MCHE vs Copper pipe (200L)

Parameter	Coper pipe	MCHE 25mm	MCHE 16mm
Capacity(W)	4302	3529	3524
Power(W)	836	879	858
COP	4.07	4.02	4.11
Refrigerant charge(g)	1100	900	750
Weight	3.69	2.96	2.57
Thermogravimetric rate(kw/kg)	0.92	1.19	1.37

Refrigerant Charge



Thermogravimetric rate



# Sanhua Certifications

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Product certifications for line components suitable for applications with A2L and A3 refrigerants

## Certification according to PED Directive for products in cat.II

All the line components present in the Green Tech Catalogue with Nominal Diameter (DN) > 25mm are categorized in cat.II according to PED Directive (2014/68/EN).

All of them have been certified by a recognize international notify body as strictly requested by the PED directive.



## Certification according to LVD Directive & IEC EN 60335-2-xx

All the electro-mechanical components listed in the Green Tech Catalogue have been certified by a recognize international notify body according to LVD Directive (2014/35/EU), where applicable, and to IEC EN 60335-2-24/40/89: it has been tested that all the components cannot be considered as ignition source, so they can be used safely with flammable refrigerants (A2L and A3).

**VDE Prüf- und Zertifizierungsinstitut**

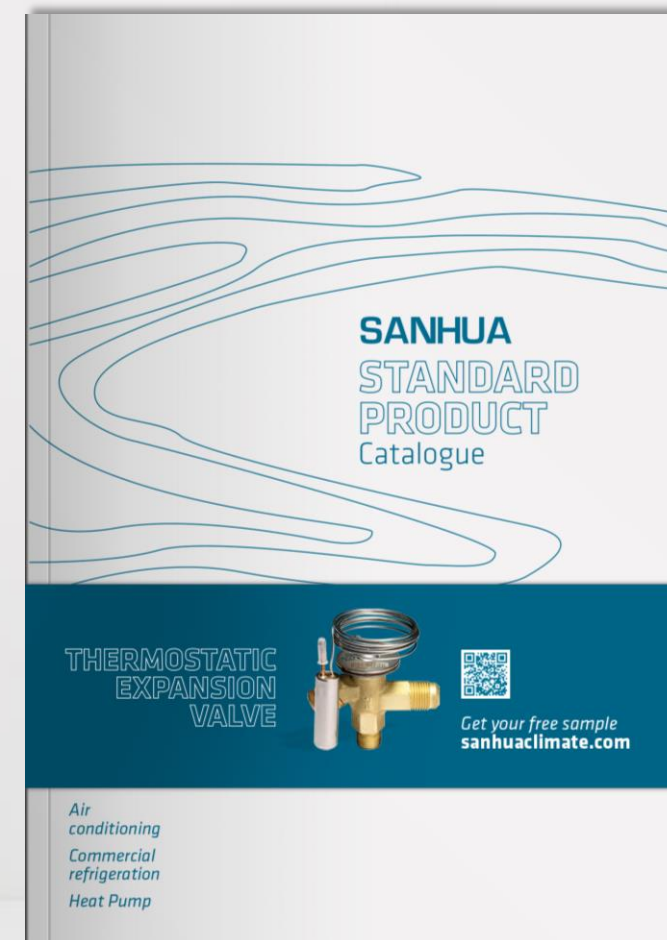


# SANHUA supporting tools

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