ORYX
HEAT PUMP

WATER TO WATER

ORYX HEATING TECHNOLOGY

ORYX heating technologies are considered as a leading supplier of heat pumps systems and solutions for different and various types of commercial and residential projects. **ORYX** is the heat pump brand being manufactured under the umbrella of the leading heat energy technologies group **APAYDIN ISITMA VE ENERJİ SİSTEMLERİ SAN. TİC.LTD.ŞTİ.** Turkey. The group and its subsidiaries has gained the trust of its clients for more than 35 years in which all the products are strictly manufactured and supplied following the most recent European standards.

Demand for heat energy especially domestic water heating/ cooling is increasing significantly, which makes it very difficult for classic heating systems to cover the sector needs efficiently as they propose major issues and concerns about energy sustainability, cost-effectiveness and environment pollution.

THANKS to **ORYX** Heating Technology which omit all those concerns by introducing the most recent heat pump systems that are considered environment friendly, operational cost effective with higher efficiency!

ORYX HEAT PUMP

SAVING ENVIRONMENT IS SAVING THE WORLD!

The massive increase of environment pollution and Global Warming phenomenon has put a huge responsibility on heat energy developers. At **ORYX**, we take this into account by producing a very low that can reach up to zero. CO_2 emissions heat pumps. In addition, ORYX heat pump hybrid systems can be accompanied with other energy sources such as solar collectors to better enhance the system.

SUSTAINABILITY, A MAJOR CONCERN!

The world is moving towards sustainable energy sources and equipment that lower the dependence on fossil fuels and achieve highly energy-efficient systems. At **ORYX** heating technologies, we supply you with renewable energy resources that help you to cover your heating/ cooling requirements using free sources of energy and save your money!

STAY EFFICIENT

ORYX heat pumps provide you with 100% efficient heat recovery with up to 80% free of charge. This is because we use natural resources such as air and water to drag your heat needs. Thanks to our nice nature that keeps heat for us. **ORYX** heat pumps can heat up to more than five times efficiently as traditional heating system can heat. Alongside their classic application as heat generators on cold days, they can also create a pleasant interior in summer by bringing refreshing cool air into the house.

ECONOMICAL BEST SOLUTION

ORYX heat pumps require a low installation cost with less system complexities and accessories. In addition, **ORYX** heat pumps require minimal maintenance cost as well with compared to other heating methodologies such as electric heaters. The EVI compressor technology adapted by **ORYX** heat pumps and the implementation of new inverter technology will optimize your energy consumption and lower your utility running cost. As a result, your ROI will be sooner than you ever expect!

ORYX HEAT PUMP

WIDE RANGE APPLICATION

ORYX offers reliable solutions for hotel applications. The system generates efficiently hot water in both heating and cooling modes.

Highly efficient production of large hot water volume in which it makes the system a perfect solution for Hospitals. The system follows British Health Standards equipped with anti-Legionella solutions.

Highly efficient production of domestic hot water volume which makes the system a perfect solution for Restaurants as **ORYX** Heat pumps are compatible with sanitary water use.

ORYX HEAT PUMP

ORYX WATER TO WATER HEAT PUMP

A heat pump is a device that transfers heat from a lower temperature medium to a higher temperature medium with the assistance of a power source. Basically, a heat pump operates in a similar manner as the air conditioner does, but in reverse

Heat pump thermal Cycle

A Heat pump comprises a refrigerant circuit, filled with a special fluid (refrigerant). Depending on the temperature and pressure operating conditions in which it is working, will be in either a gaseous or liquid state. The refrigerant circuit consists mainly:

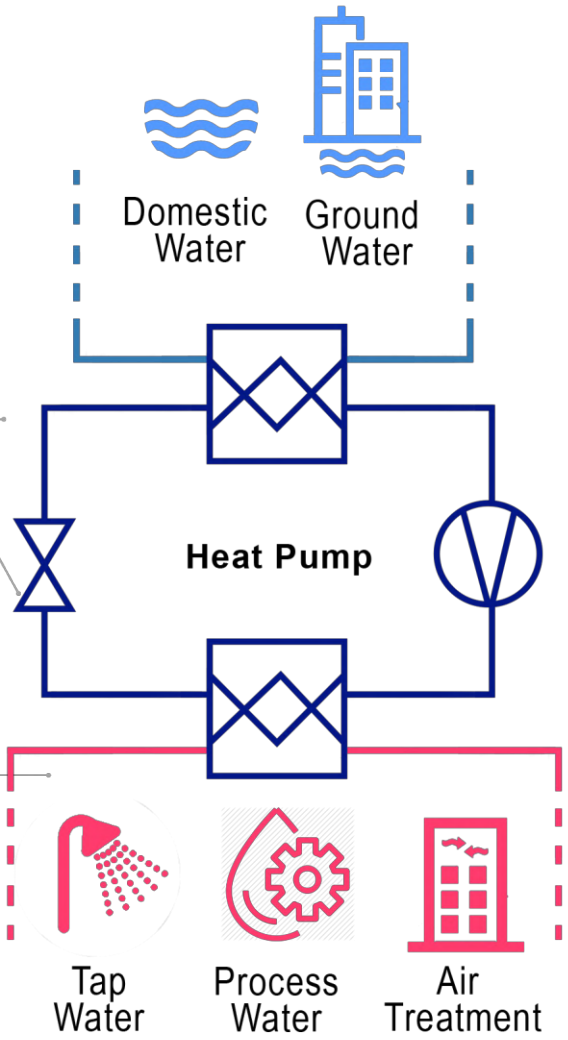
No.	Equipment	Task	Energy	Pressure	Temp.	Physical Phase
1	Compressor	Compress Refrigerant/ Heat Exchanger	Thermal Energy	High	High	Super Heated
2	Condenser	Phase Transfer/ Heat Exchanger	Thermal Energy	High	Med.	Saturated Liquid
3	Expansion Valve	Lower Pressure	-	Low	Low	Mixed Vapor
4	Evaporator	Phase transfer / Heat Exchanger	Thermal Energy	Low	Med.	Saturated Vapor

The heat pump thermal cycle is best described through the flow of the refrigerant through the prescribed heat pump components. Starting at the discharge side of the compressor, the refrigerant is in a gaseous state, has been compressed and is therefore hot and at high pressure. It passes into the condenser (a brazed plate Heat exchanger) where it releases most of its heat. As it cools it changes state (condenses) to a liquid which is warm and at high pressure. This warm liquid refrigerant passes through a pressure reducing device (the expansion valve) as temperature and pressure are directly linked; pressure drop causes the sudden temperature of the refrigerant to plummet. In addition, some of the refrigerant evaporates and the result is a low temperature mix of liquid and gaseous refrigerant that is known as “Flash Gas”. This mixture then passes to another brazed plate heat exchanger, the evaporator, where the refrigerant, in this gaseous state, passes to the compressor where it is pressurized, heated and circulated back around the system.

THE SOURCE, THE SINK

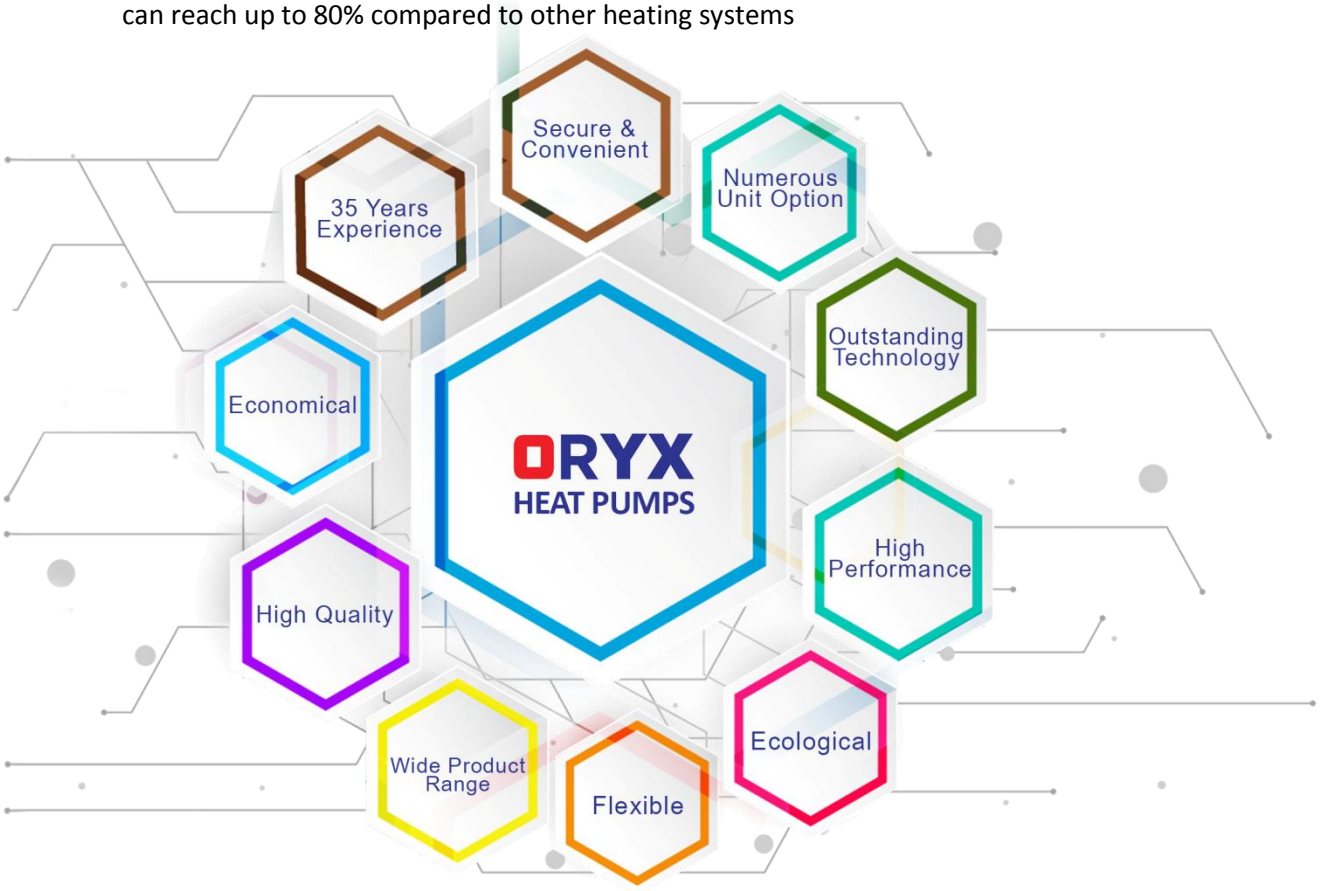
The SOURCE: the external medium from which the energy is absorbed is called the source. It is generally a low temperature source. The refrigerant absorbs heat from the source in the evaporator. The water to water Heat pumps use water to water as the source and they are therefore identified as Water-to-Water Heat pumps.

The USER "SINK": for all **ORYX** heat pumps, water is the Medium that is to be heated and this is called the user. The user (sink) is the condenser in which the refrigerant transfers (releases) the thermal energy that was absorbed from the source plus that which was input to the compressors. The warm water transfers the heat to the building with a heating system.



NEXT REVOTIONARY HEAT PUMP

- **Ecological :** Environmentally friendly refrigerant R410a, CFC free, low Co_2 emission .
- **High Quality:** Partnership with leaders in heating industry.
- **Wide product range:** more than 50 product & system for different fields either residential, commercial or industrial.
- **High Performance:** products are compatible with most recent high standards of European regulations
- **Quality:** starts with **ORYX** optimized design.
- **Flexible:** applicable to different application when ever heating, cooling of domestic hot water generate.
- **Safe & Reliable:** **ORYX** heat pump is provided with electrical protections safe failures, water proof enclosure & smart control system comfort and reliability.
- **Different cases different solutions: ORYX** presents customized solutions to satisfy our client's requirements.
- **Expert:** Production over 35 years of heat technology experience.
- **Economical: ORYX** heat pump best coast saving energy solutions with savings that can reach up to 80% compared to other heating systems

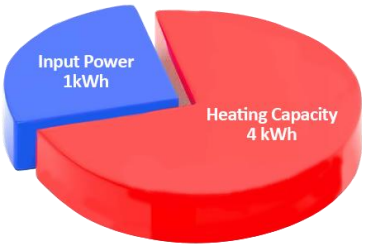


ORYX HEAT PUMP

HOW EFFICIENT A HEAT PUMP IS?

Coefficient of performance (COP), is an expression of the efficiency of heat pump. When calculating the COP for a heat pump, the heat rate output from the condenser Q_h is compared to the power supplied to the compressor (W).

$$\mathrm{COP} = \frac{\mathrm{IQI}}{W}$$



The main advantage of the heat pump is the capacity to supply more Energy (thermal) than that required for its operation (electrical). Hence HP classified as renewable energy.

The COP is variable depending on the type of the heat pump and the working conditions but is generally in the region of 3 to 5.5 this means that for 1 kWh of electrical input energy, the unit will supply between 3 and 5.5 kWh of thermal energy to the user.

NEW ENERGY EFFICIENCY METRIC

Calculations of the energy efficiency of buildings require accurate indicators of the efficiency of their equipment. These indicators must be representative of actual operational conditions throughout the year, measuring the performance of equipment on a seasonal basis.

SEPR is the new metric for **chillers in industrial process cooling applications**

SEER is the new metric for **chillers in comfort cooling application**

SCOP is the new metric for space heating applications.

HEATING EFFICIENCY ETA$_s$(η_s)

In order to compare the energy efficiency of products using different sources of energy, the Eco design regulation introduces a new measurement expressed in primary energy: η_s cool is the equivalent of SEER for cooling applications and η_s heat is the equivalent of SCOP for space heating.

EER and COP belong to the past. Now, and in the future, the focus is on seasonal efficiency. With a broad new products range, **ORYX** is fully engaged to take up the challenge of energy efficiency

Compliance with the new Eco design regulations therefore involves the use of new, more meaningful seasonal efficiency metrics. The Seasonal Energy Efficiency Ratio **(SEER)**, Seasonal Energy Performance Ratio **(SEPR)** and Seasonal Coefficient of Performance **(SCOP)** all ensure precise evaluation of the energy actually consumed by chillers and heat pumps, being calculated according to technical standard EN 14825.

SCOP – Seasonal Coefficient of Performance Ratio between the annual heating demand and the annual electrical input energy over the entire heating season. SCOP is calculated using standard
EN14825, which takes the following into account:

- Seasonal efficiency while the compressor is running (SCOPon)
- Electrical consumption when the compressor is notrunning: crankcase heater, standby or OFF mode
- Backup heater required to achieve the defined heating design load

$$\eta_{s,h} = {}^{1}/_{CC} \times SCOP - \sum F_i$$

CC – Conversion Coefficient
European average coefficient that represents the amount of primary energy required to obtain electricity.
CC is defined by the regulation with a constant value of 2,5.
ΣFi – Correction Factors

Air source heat pumps

$$\eta_{s,h}$$

Water source heat pumps

$$\eta_{s,c}$$

ORYX LABELS ARE COMING

In addition, European Energy Labeling regulation 811/2013 classifies heat pumps up to 70 kW from G to A++, according to their energy efficiency. This enhanced consumer information that drives the market towards more energy-efficient products. From September 2019, the E, F and G classes will no longer exist. A new A+++ class will identify the most energy efficient products. **ORYX** heat pump Classification is A- A+++ !

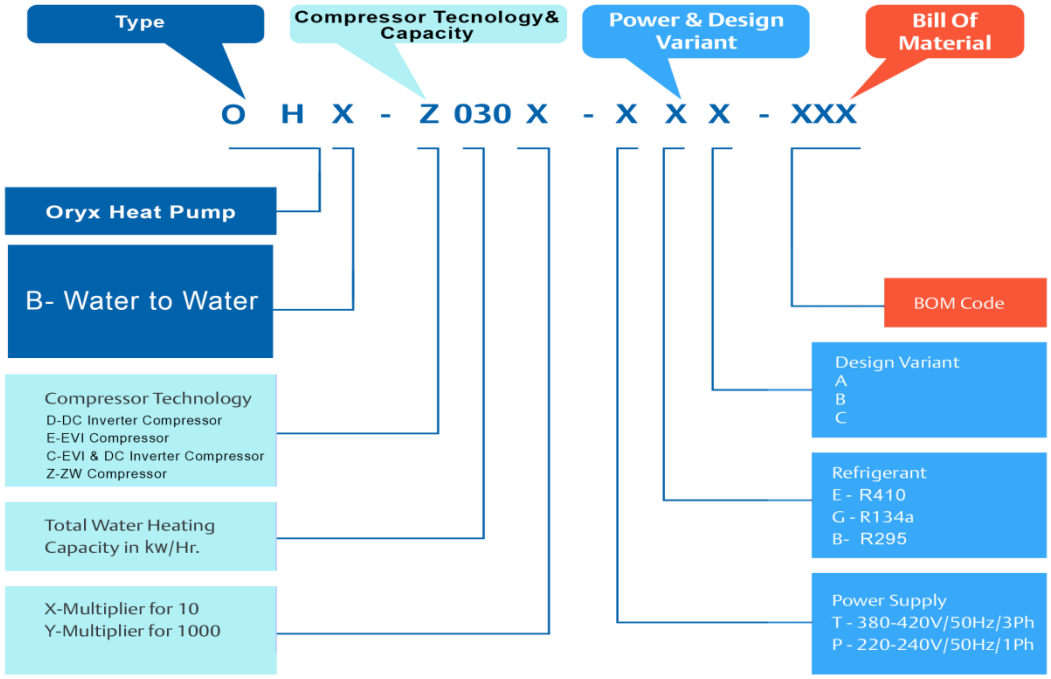
Energy Efficiency Class	Boilers and mid-temperature heat pumps 47/55°	Low temperature heat pumps 30/35°
*A***	$\eta_s \geq 150$	$\eta_s \geq 175$
A**	$125 \leq \eta_s < 150$	$150 \leq \eta_s < 175$
A*	$98 \leq \eta_s < 125$ 100 110	$123 \leq \eta_s < 150$ 125
A	$90 \leq \eta_s < 98$	$115 \leq \eta_s < 123$ 115
B	$82 \leq \eta_s < 90$	$107 \leq \eta_s < 115$
C	$75 \leq \eta_s < 82$	$100 \leq \eta_s < 107$
D	$36 \leq \eta_s < 75$	$61 \leq \eta_s < 100$
E	$34 \leq \eta_s < 36$	$59 \leq \eta_s < 61$
F	$30 \leq \eta_s < 34$	$55 \leq \eta_s < 59$
G	$\eta_s < 30$	$\eta_s < 55$

*A*** energy class will be implemented from September 2019.

Minimum energy efficiency level from September 2017
Minimum energy efficiency level from September 2015

ORYX HEAT PUMP

ORYX NOMENCLATURE

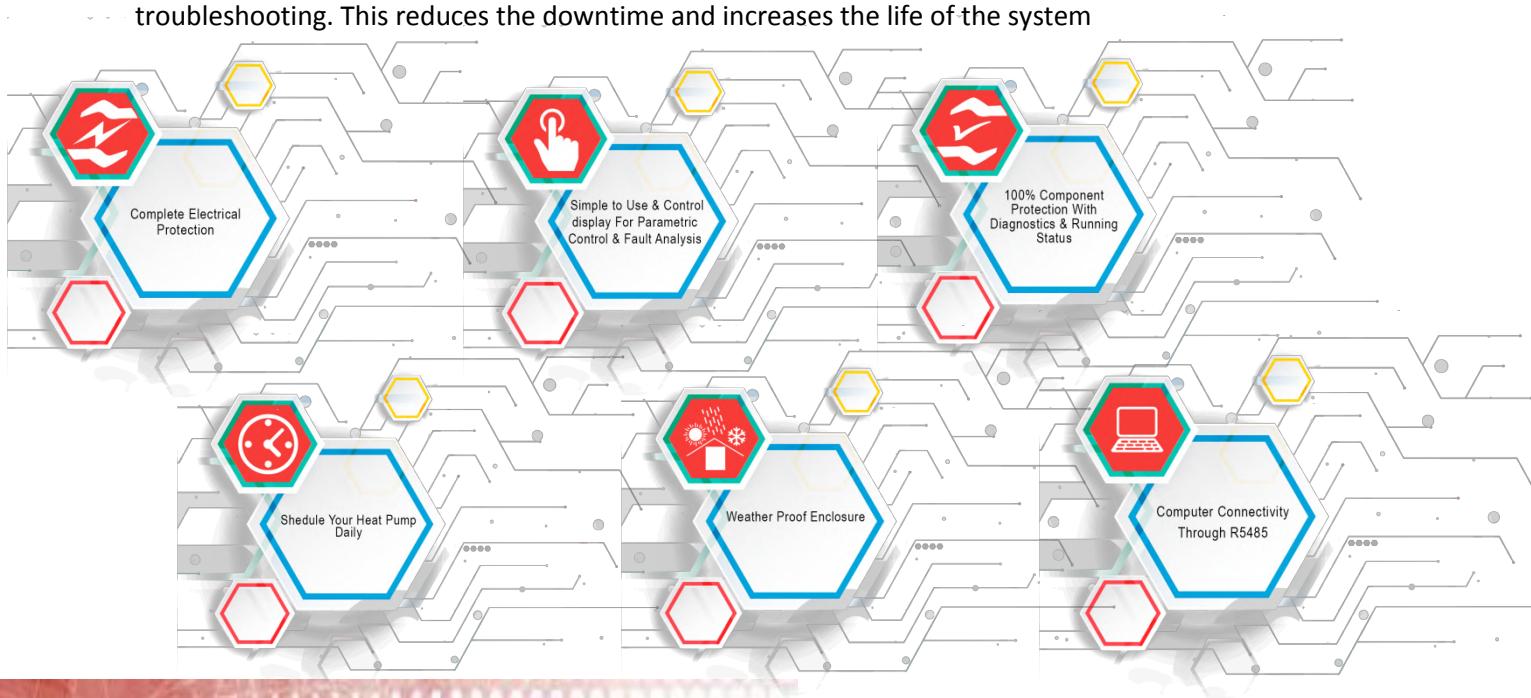


Nomenclature example

OHA- CO35X-TEB-100 (ORYX heat pump air to water, 350kw/hr with R410A, 3phase)

SIMPLE TO USE DIAGNOSTICS FEATURES

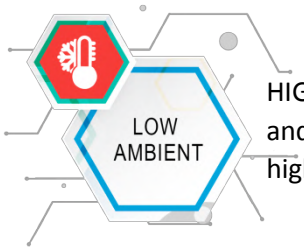
ORYX are design for simple & easy operation in the field for end users like hotels, Hostels & Restaurants etc. these units comes with “Simple User Interface” which allows service teams to get advance warnings about field failures, simple error codes for easy diagnosis & troubleshooting. This reduces the downtime and increases the life of the system



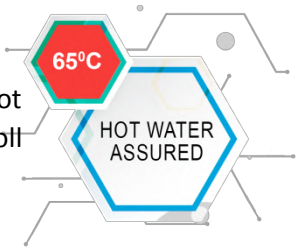
ORYX HEAT PUMP

ORYX EVI DC INVENTOR SCROLL COMPRESSORS TECHNOLOGY

Compressors are the main power consumers among other heat pump components. As a results, any improvement in the compressor performance will diffidently results in a better heat pump performance. This is why **ORYX** has implemented two new technologies the improve the compressor efficiency up to 27% more than a normal compressor can do.

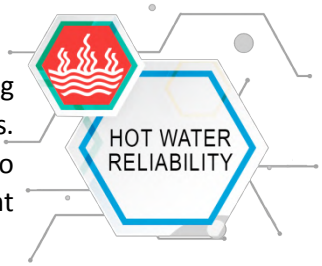


HIGHER COP: Since both the total heating capacity is increase and the refrigerant enthalpy is increase as well this will lead to higher COP with the same input

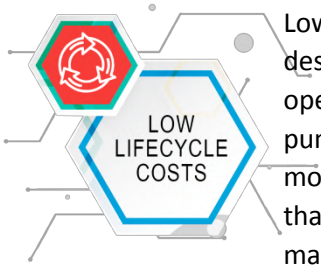


Hot water Temperature: Normal Heat Pumps can produce hot water up to 55°C. with the implementation of **ORYX EVI** Scroll compressors, the hot water temperature can reach up to 65°C

High Efficiency: the High efficient Brushless DC Motor that is accompanied with a special design axial compliance has made our scroll compressors highly efficient and suitable for different kinds of heat pumps.



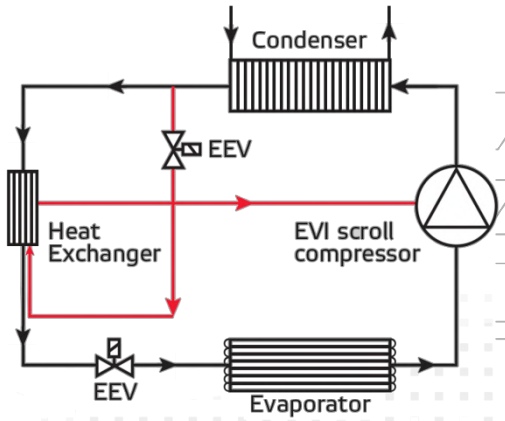
Hot water Reliability: Hot Water production requires long operational hours at high capacities and high compression ratios. **ORYX** compressors are designed and tested in such a way to comply with such hard task especially at low ambient temperatures.



Low Life Cycle cost: the simplicity of the **ORYX** heat pump design makes it an easy mission to maintain the system and operate it for longer life cycle than other conventional heat pumps. **ORYX** compressors simple design has lowered the moving parts contained in our compressors to less than 70% than other conventional compressors which lower the maintenance and operational cost.

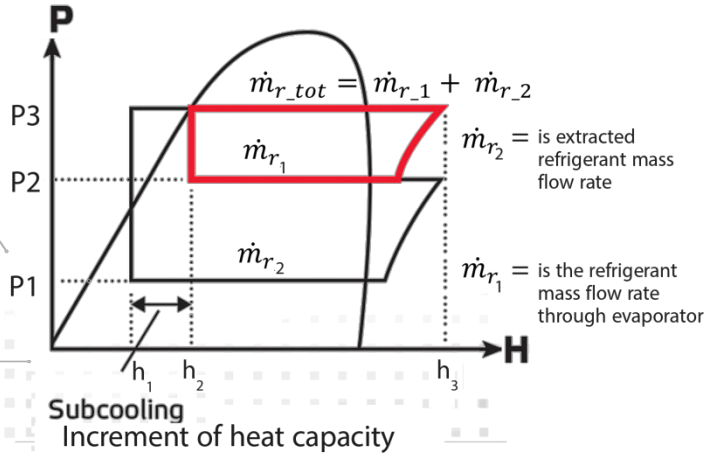
Silent Mode: The Implementation of shock absorbers and special bearing mounting make **ORYX** compressors not only to operate on Low vibrations but on silent mode

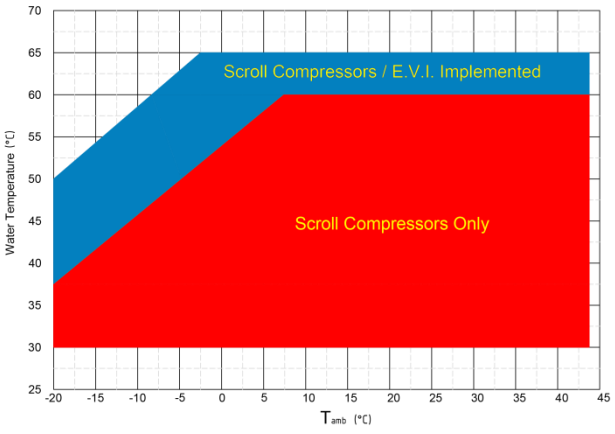
ORYX EVI SCROLL COMPRESSOR TECHNOLOGY



The **EVI** Compressor cycle represents a multi-stage compression that is done with a single compressor leading to less system complexity, better life cycle, low maintenance cost and higher efficiency!

This is done extracting portion of the refrigerant directly after leaving the condenser, expanding it through electronic expansion valve, sub heating it through a brazed- plate heat exchanger and then injecting it back into the compressor.



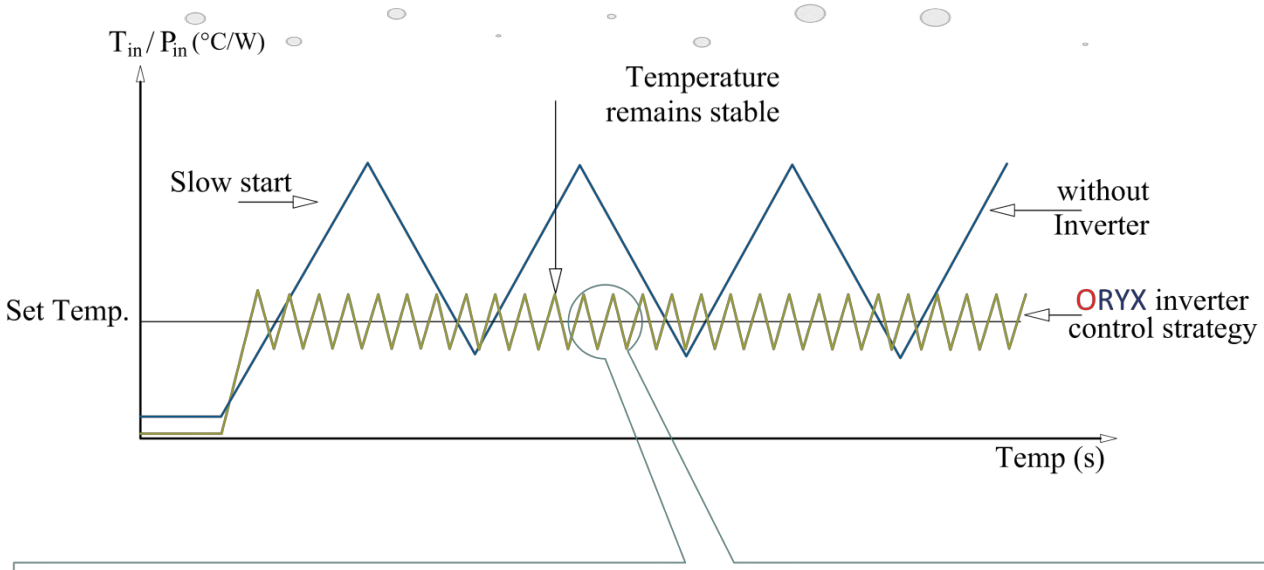


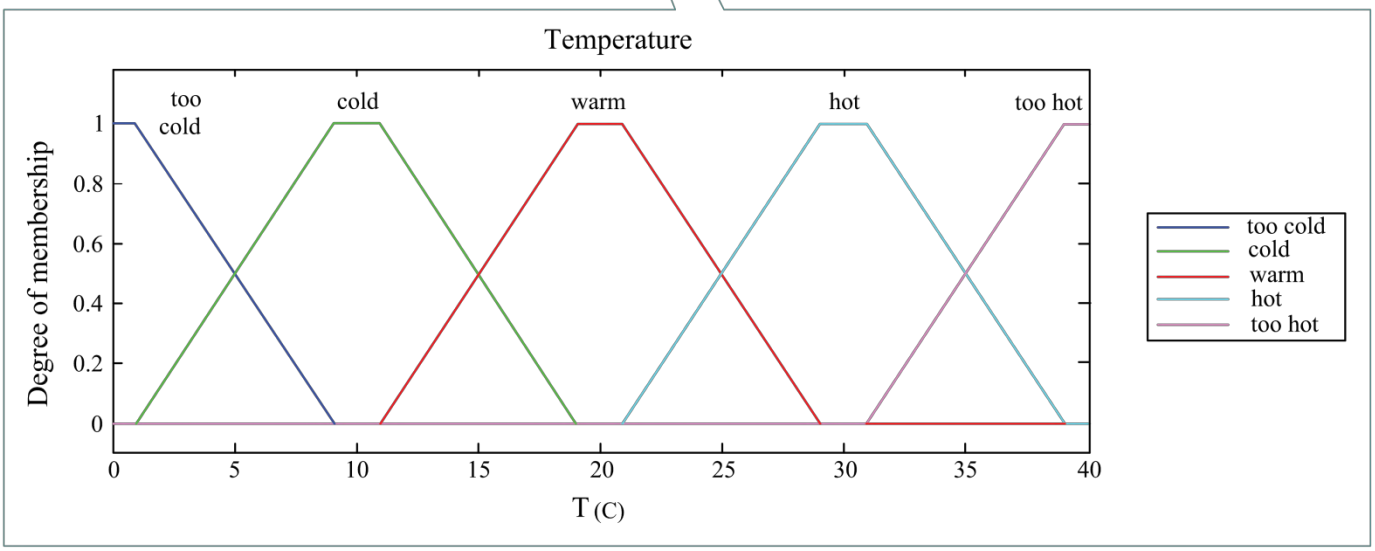
Improvement of scroll compressors performance characteristics with the implementation of **ORYX EVI** Technology especially for hot water production.

WHEN IT COMES TO CONTROL, ITS OUR ELEMENT!

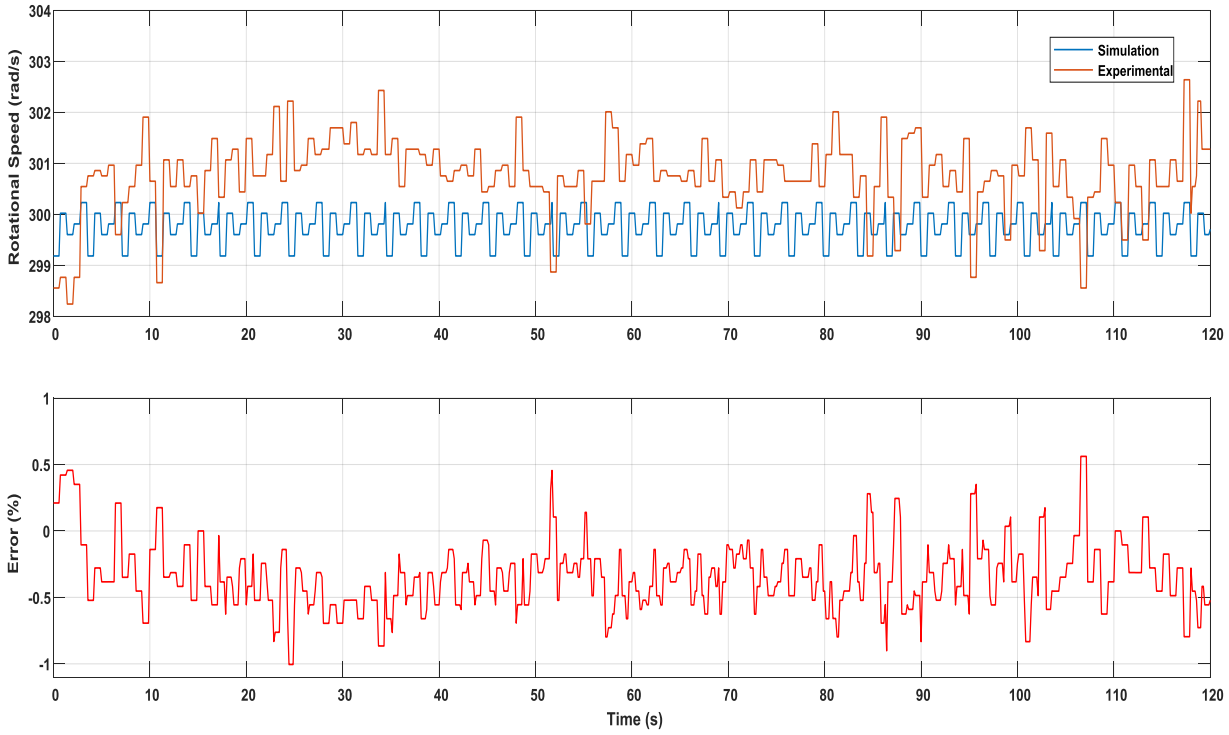
A very significant element that affects the heat pump performance is the way it is being managed! You might install two identical heat pumps under the same conditions in which one of them will satisfy your needs with lower running cost and other one will not. Well this is because of the invertor control technology being used by each of them.

At **ORYX**, our invertor control system is derived based on the Neuro-Fuzzy logic stategy that optimizes power input without sacrificing our clients requirements. This energy mangement system(EMS) is considered as one of the most recent high efficient control technologies beacuse it merges Artifical Neural Network EMS and Fuzzy Logic Strategy EMS. The control system is trained considering the data of more than 108,000 heat pumps located at different areas of our universe to get the optimumperformance results based on the client requirements without the effect of the other conditons such as the out side tempreature and humidity.

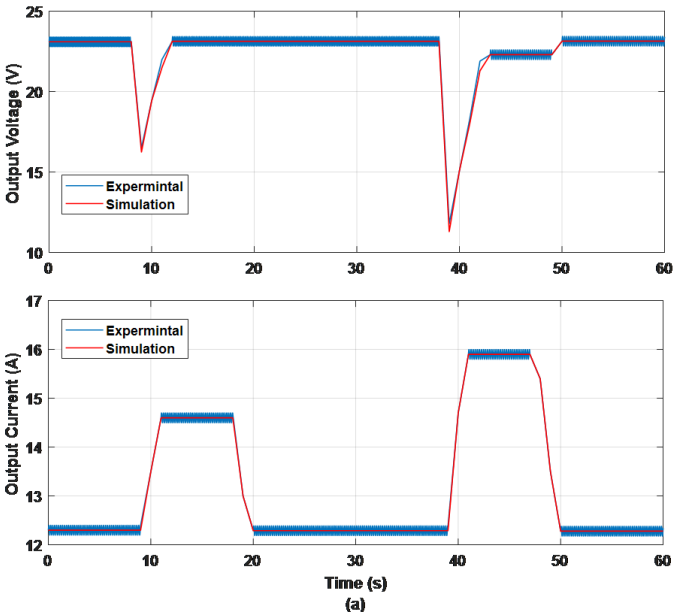


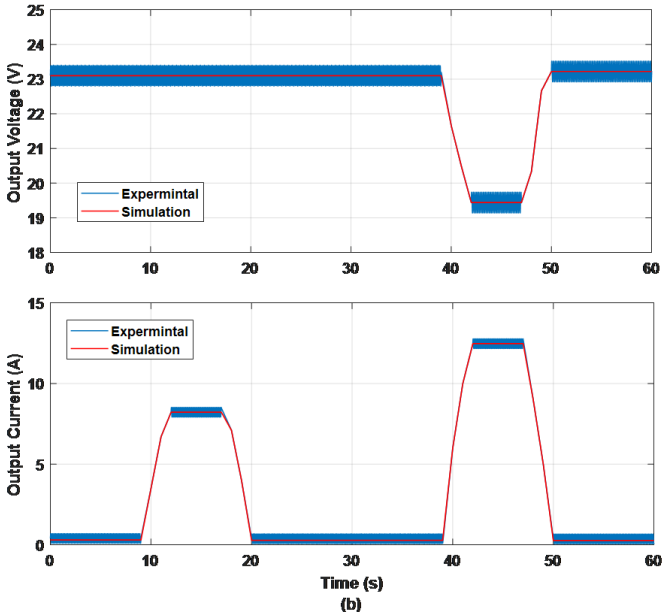


To implement this strategy, the Pulse With Modulation (PWM) signal technology is used as the connection between the inverter board and programmed optimization routine to futher increase the system reponse and efficiency.

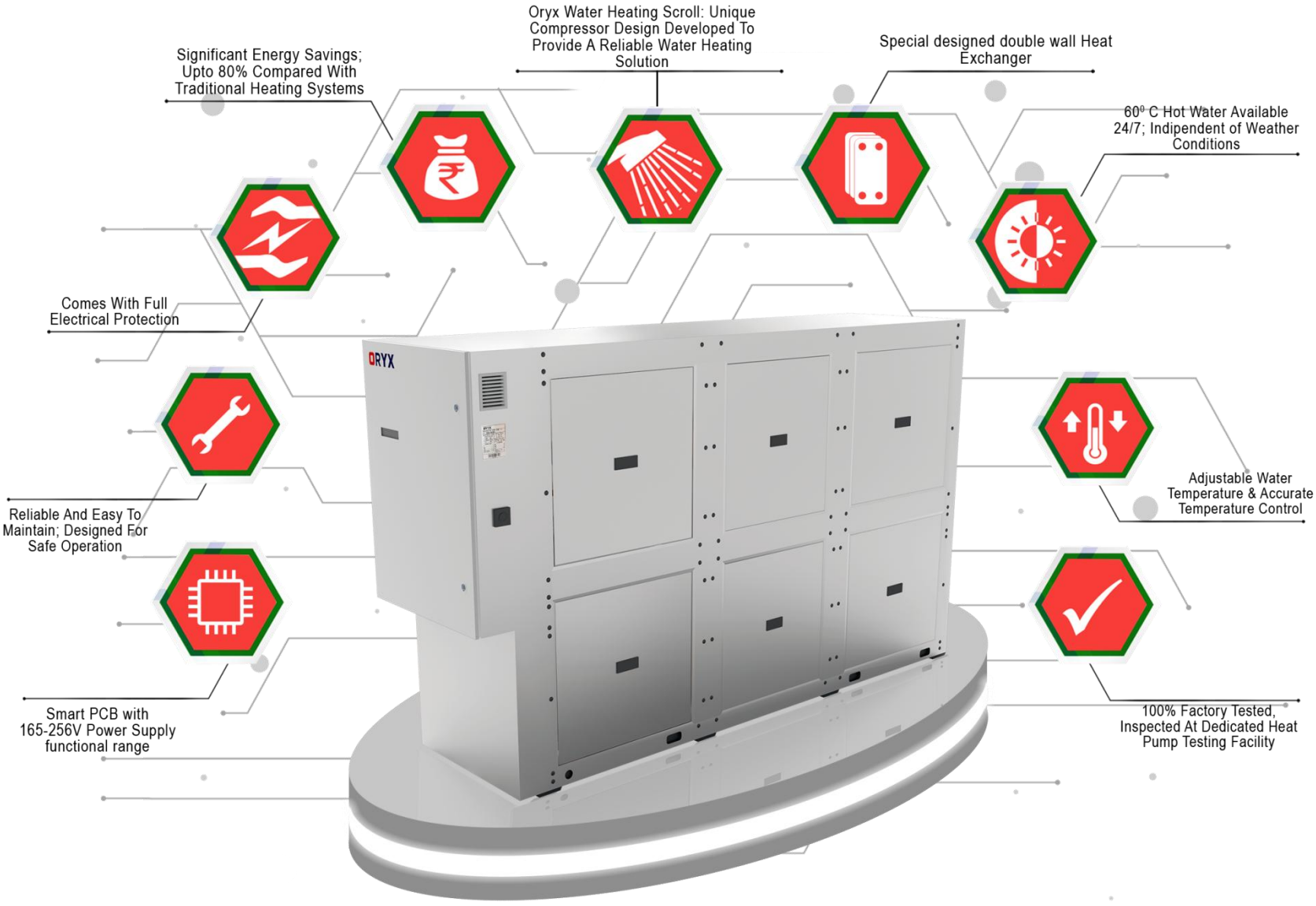


PMW inverter-driver controls the compressorss rotational speed by adjusting the frequency accurately and effectively.





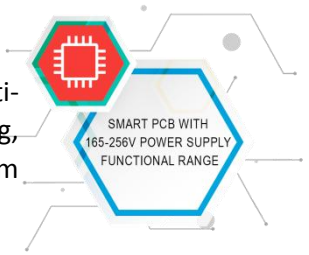
WATER TO WATER



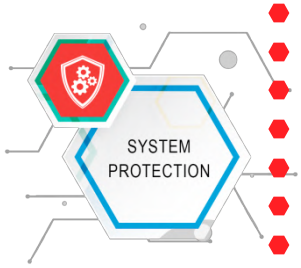
ORYX HEAT PUMP

SAFETY IS OUR CONCERN! HEALTHY EQUIPMENT, BEST RELIABILITY

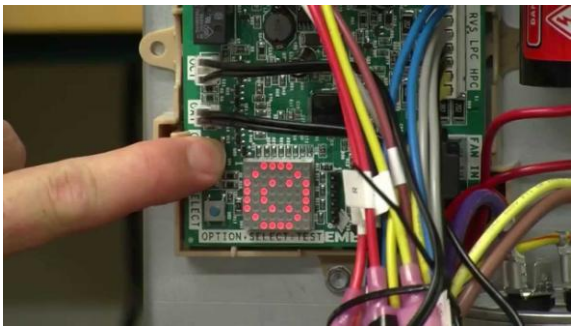
Safety is a top priority at ORYX. From early design stage till final operaton and maintenance stages, ORYX takes care of any small detail to assure that both the equipment and user are safe!



Controls the water tempreature, anti-freeze protection, compressor timing, automatic starting sequnce alarm reset.

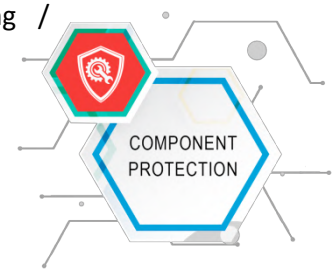


- Controller communication error
- Fuse failure display
- Daily usage programing capability
- Water tank temperature sensor
- Low pressure cut off
- No incoming water flow
- High discharge pressure cut off
- Memory for the last 30 errors occurred



Compresssor

- Under / over voltage & current
- Single phase, Phase missing / reversal
- High discharge tempreature

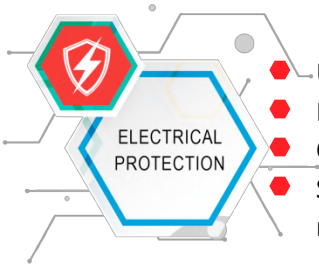


Fan Motors

- Healthy Status
- High current

Heat Exchangers

- Leakage detection
- Premium Protection
- Design with drain zone



- Under/ Low voltage Protection
- MBC/Fuse as standard
- Compressor overload protector
- Single Phasing / Phase missing & reversal protection

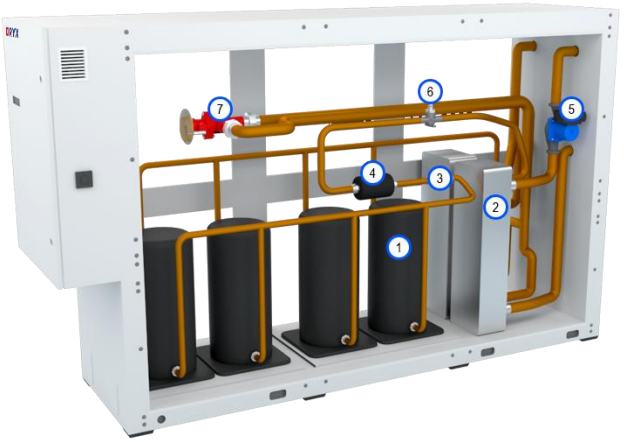
ORYX HEAT PUMP

WATER TO WATER HEAT PUMP TECHNICAL DATA

Model		OHW-025X-TEA-110
Cooling Capacity	kW	27.7
Cooling Power Input	kW	6.39
EER	-	4.34
Heating Capacity	kW	37.3
Heating Power Input	kW	8.10
COP	-	4.60
Load Water Flow	m^3/h	4.7
Load Water Pressure Drop	kPa	39.3
Source Water Flow	m^3/h	5.5
Source Water Pressure drop	kPa	48.8
Power Supply	V/Ph/Hz	**380/3/50**
Refrigerant	-	**R410A**
Refrigerant charge	Kg	3.6
Compressor Type	-	**Scroll Compressor**
Compressor (Qty.)	Unit	1
Compressor RLA	-	20
Compressor LRA	-	110
Load Water Pipe	Ømm	DN32
Source Water Pipe	Ømm	DN32
Noise Level	dB(A)	53
Net Weight	kg	252
Dimensions	(L) mm	711
	(W) mm	1168
	(H) mm	953

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

ORYX reserves the right to change the specifications of the product and/or their accessories without prior notice.

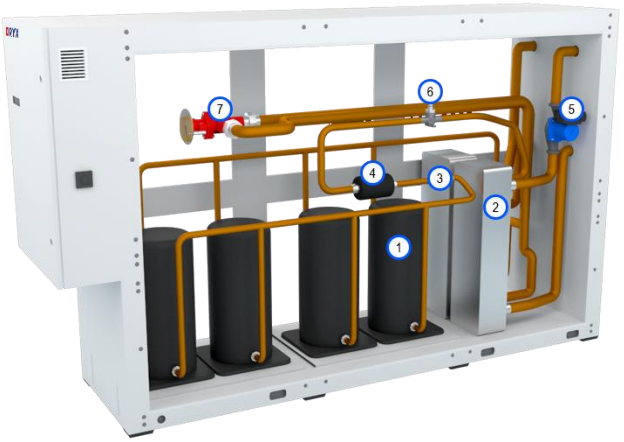
ORYX HEAT PUMP

WATER TO WATER HEAT PUMP TECHNICAL DATA

Model		OHW-030X-TEA-110
Cooling Capacity	kW	33.2
Cooling Power Input	kW	7.55
EER	-	4.40
Heating Capacity	kW	44.0
Heating Power Input	kW	9.60
COP	-	4.58
Load Water Flow	m^3/h	5.4
Load Water Pressure Drop	kPa	30.4
Source Water Flow	m^3/h	6.4
Source Water Pressure drop	kPa	27.6
Power Supply	V/Ph/Hz	**380/3/50**
Refrigerant	-	**R410A**
Refrigerant charge	Kg	6.0
Compressor Type	-	**Scroll Compressor**
Compressor (Qty.)	Unit	1
Compressor RLA	-	20.7
Compressor LRA	-	110
Load Water Pipe	Ømm	DN40
Source Water Pipe	Ømm	DN40
Noise Level	dB(A)	54
Net Weight	kg	285
Dimensions	(L) mm	711
	(W) mm	1168
	(H) mm	953

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

ORYX reserves the right to change the specifications of the product and/or their accessories without prior notice.

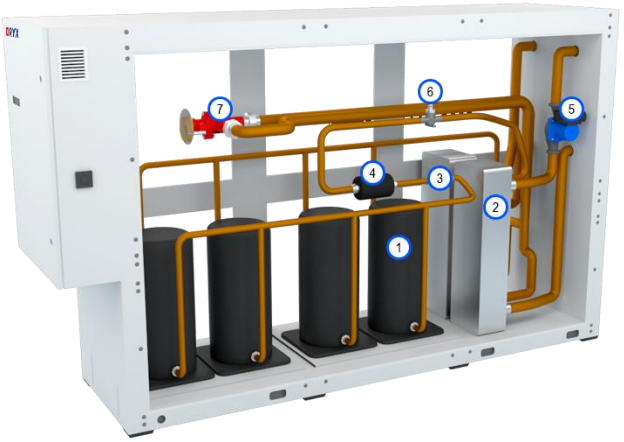
ORYX HEAT PUMP

WATER TO WATER HEAT PUMP TECHNICAL DATA

Model		OHW-040X-TEA-110
Cooling Capacity	kW	41.3
Cooling Power Input	kW	10.04
EER	-	4.11
Heating Capacity	kW	55.9
Heating Power Input	kW	12.37
COP	-	4.52
Load Water Flow	m^3/h	7.2
Load Water Pressure Drop	kPa	33.3
Source Water Flow	m^3/h	8
Source Water Pressure drop	kPa	28.1
Power Supply	V/Ph/Hz	**380/3/50**
Refrigerant	-	**R410A**
Refrigerant charge	Kg	5.9
Compressor Type	-	**Scroll Compressor**
Compressor (Qty.)	Unit	1
Compressor RLA	-	29.3
Compressor LRA	-	174
Load Water Pipe	Ømm	DN40
Source Water Pipe	Ømm	DN40
Noise Level	dB(A)	54
Net Weight	kg	315
Dimensions	(L) mm	711
	(W) mm	1168
	(H) mm	953

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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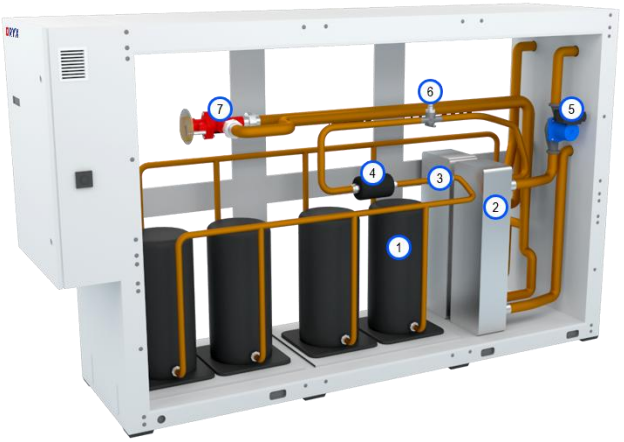
ORYX HEAT PUMP

WATER TO WATER HEAT PUMP TECHNICAL DATA

Model		OHW-050X-TEA-110
Cooling Capacity	kW	53.8
Cooling Power Input	kW	12.52
EER	-	4.30
Heating Capacity	kW	72.4
Heating Power Input	kW	15.87
COP	-	4.56
Load Water Flow	m^3/h	9.2
Load Water Pressure Drop	kPa	39.5
Source Water Flow	m^3/h	10.7
Source Water Pressure drop	kPa	57.7
Power Supply	V/Ph/Hz	**380/3/50**
Refrigerant	-	**R410A**
Refrigerant charge	Kg	70
Compressor Type	-	**Scroll Compressor**
Compressor (Qty.)	Unit	2
Compressor RLA	-	40
Compressor LRA	-	220
Load Water Pipe	Ømm	DN50
Source Water Pipe	Ømm	DN50
Noise Level	dB(A)	55
Net Weight	kg	484
Dimensions	(L) mm	711
	(W) mm	1168
	(H) mm	1778

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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ORYX HEAT PUMP

WATER TO WATER HEAT PUMP TECHNICAL DATA

Model		OHW-065X-TEA-110
Cooling Capacity	kW	64.4
Cooling Power Input	kW	14.79
EER	-	4.35
Heating Capacity	kW	85.4
Heating Power Input	kW	18.81
COP	-	4.54
Load Water Flow	m^3/h	11.1
Load Water Pressure Drop	kPa	39.2
Source Water Flow	m^3/h	12.4
Source Water Pressure drop	kPa	60.1
Power Supply	V/Ph/Hz	**380/3/50**
Refrigerant	-	**R410A**
Refrigerant charge	Kg	95
Compressor Type	-	**Scroll Compressor**
Compressor (Qty.)	Unit	2
Compressor RLA	-	41.4
Compressor LRA	-	220
Load Water Pipe	Ømm	DN50
Source Water Pipe	Ømm	DN50
Noise Level	dB(A)	56
Net Weight	kg	560
Dimensions	(L) mm	711
	(W) mm	1168
	(H) mm	1778

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
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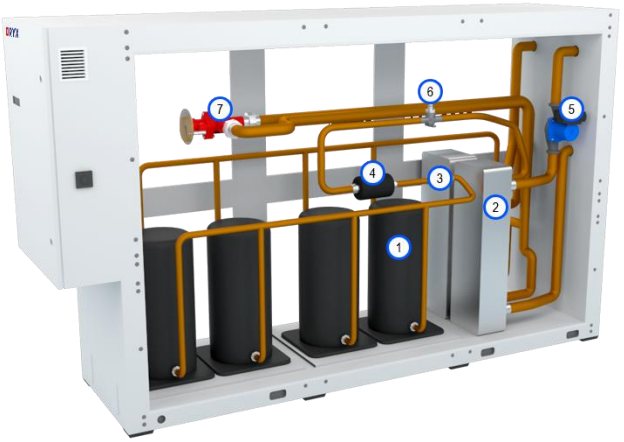

1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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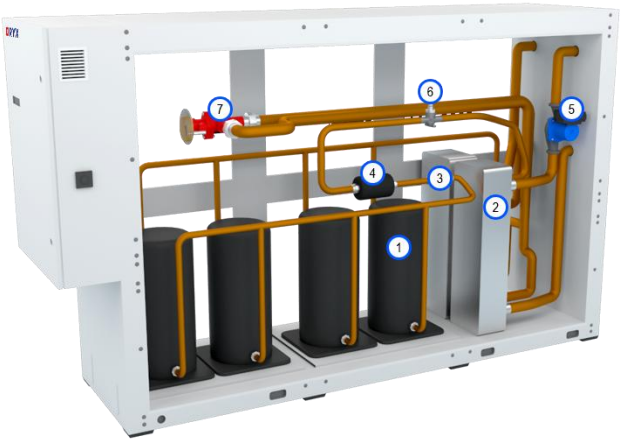
ORYX HEAT PUMP

WATER TO WATER HEAT PUMP TECHNICAL DATA

Model		OHW-080X-TEA-110
Cooling Capacity	kW	80.1
Cooling Power Input	kW	19.67
EER	-	4.07
Heating Capacity	kW	108.4
Heating Power Input	kW	24.24
COP	-	4.47
Load Water Flow	m^3/h	13.8
Load Water Pressure Drop	kPa	39.6
Source Water Flow	m^3/h	15.5
Source Water Pressure drop	kPa	71.2
Power Supply	V/Ph/Hz	**380/3/50**
Refrigerant	-	**R410A**
Refrigerant charge	Kg	13.0
Compressor Type	-	**Scroll Compressor**
Compressor (Qty.)	Unit	2
Compressor RLA	-	58.6
Compressor LRA	-	348
Load Water Pipe	Ømm	DN50
Source Water Pipe	Ømm	DN50
Noise Level	dB(A)	61
Net Weight	kg	620
Dimensions	(L) mm	711
	(W) mm	1168
	(H) mm	1778

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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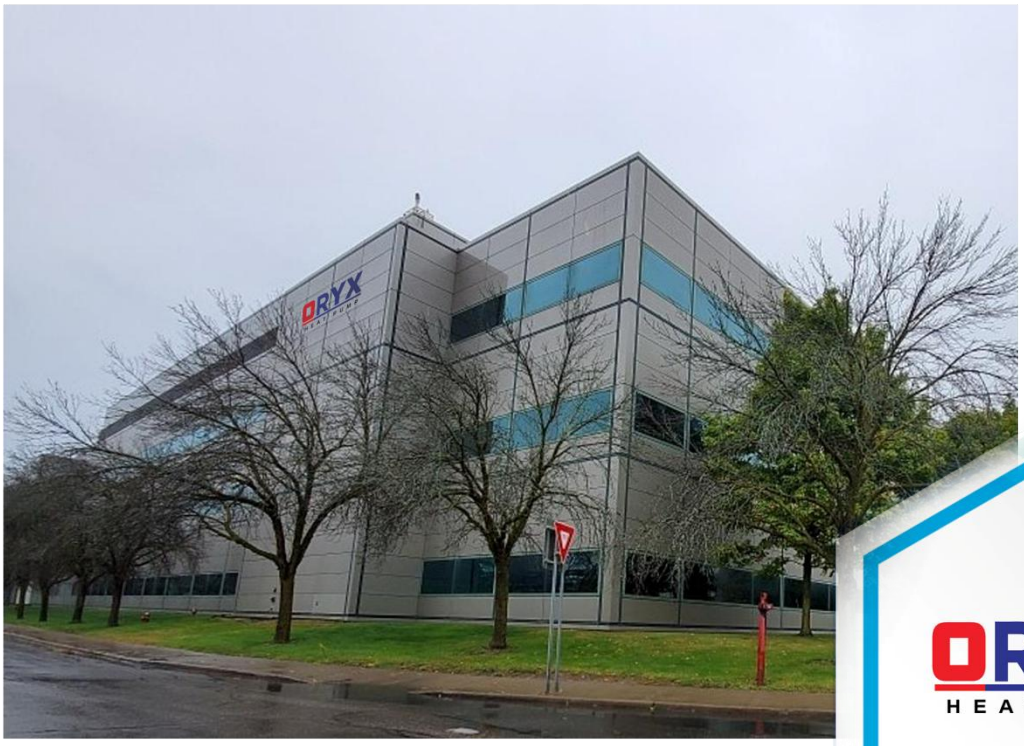
ORYX HEAT PUMP

WATER TO WATER HEAT NEW SERIES



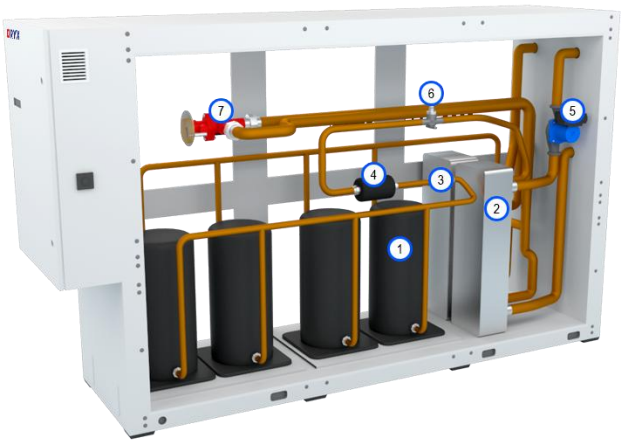
ORYX
HEAT PUMP

WATER TO WATER HEAT NEW SERIES TECH.DATA

Model			WOA25
Nominal refrigeration Capacity		kW	26
Power of input of Cooling		kW	4.3
Nominal Heat Production		kW	27
Power of Heating		kW	6.3
Compressor Type		Hermetic Scroll	
Compressor Quantity		1	
Power Supply		3N 380V / 50Hz	
Starting Mode		Direct starting	
Refrigerant		R407C/R22	
Refrigerant filling quantity		Kg	5
Refrigerant control unit		Thermal Expansion Valve	
Evaporator	Type	Tube in Tube	
	Water resistance	kpa	80
	Pipe Size	DN	50
	Freezing Water Volume	m^3/h	4.43
	Water Wells	m^3/h	2.7
Condenser	Type	Tube in Tube	
	Water resistance	kpa	80
	Pipe Size	DN	50
	Water Wells	m^3/h	2.7
	Hot Water Flow	m^3/h	4.43
Unit Dimension	Length	mm	1400
	Width	mm	655
	Height	mm	1100
Unit Weight		Kg	265
Operating Weight		Kg	320
Noise		DB(A)	51

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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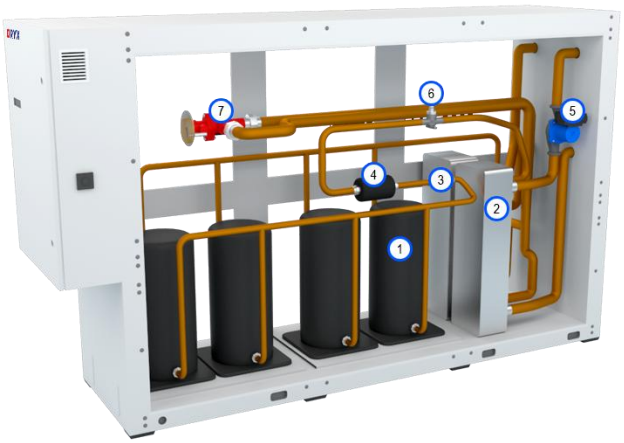
ORYX HEAT PUMP

WATER TO WATER HEAT NEW SERIES TECH.DATA

Model			WOA30
Nominal refrigeration Capacity		kW	31.0
Power of input of Cooling		kW	5.2
Nominal Heat Production		kW	32.0
Power of Heating		kW	7.3
Compressor Type		Hermetic Scroll	
Compressor Quantity		1	
Power Supply		3N 380V / 50Hz	
Starting Mode		Direct starting	
Refrigerant		R407C/R22	
Refrigerant filling quantity		Kg	6
Refrigerant control unit		Thermal Expansion Valve	
Evaporator	Tube in Tube		
	kpa	80	80
	DN	50.0	50
	m^3/h	5.3	4.43
	m^3/h	2.8	2.7
Condenser	Tube in Tube		
	kpa	80	80
	DN	50.0	50
	m^3/h	2.8	2.7
	m^3/h	5.3	4.43
Unit Dimension	mm	1400	1400
	mm	655	655
	mm	1100	1100
Unit Weight		Kg	270
Operating Weight		Kg	325
Noise		DB(A)	52

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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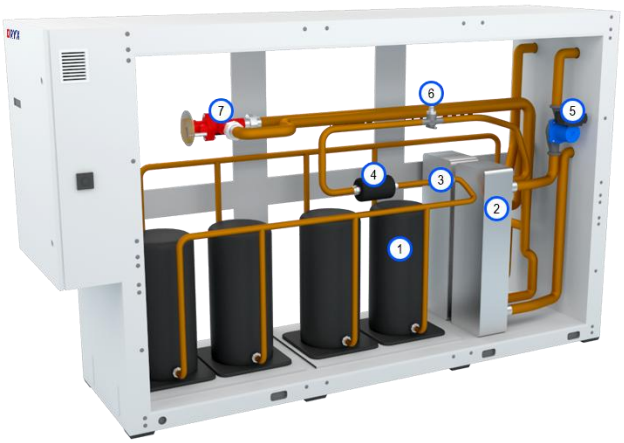
ORYX HEAT PUMP

WATER TO WATER HEAT NEW SERIES TECH.DATA

Model			WOA40
Nominal refrigeration Capacity		kW	41.0
Power of input of Cooling		kW	6.9
Nominal Heat Production		kW	44.0
Power of Heating		kW	9.9
Compressor Type		Hermetic Scroll	
Compressor Quantity		1	
Power Supply		3N 380V / 50Hz	
Starting Mode		Direct starting	
Refrigerant		R407C/R22	
Refrigerant filling quantity		Kg	8
Refrigerant control unit		Thermal Expansion Valve	
Evaporator	Tube in Tube		
	kpa	80	80
	DN	50.0	50
	m^3/h	7.1	4.43
	m^3/h	3.7	2.7
Condenser	Tube in Tube		
	kpa	80	80
	DN	50.0	50
	m^3/h	3.7	2.7
	m^3/h	7.1	4.43
Unit Dimension	mm	1400	1400
	mm	655	655
	mm	1100	1100
Unit Weight		Kg	285
Operating Weight		Kg	340
Noise		DB(A)	53

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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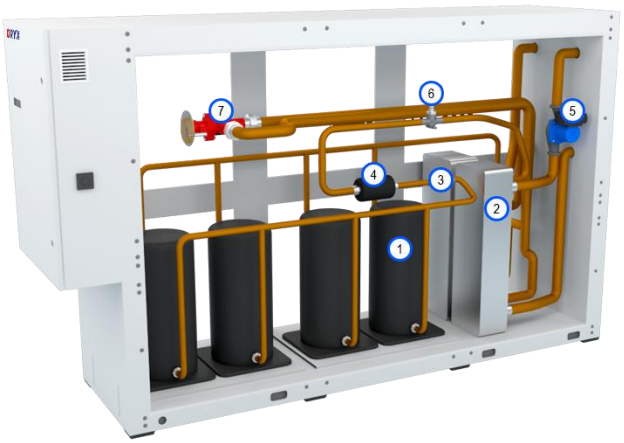
ORYX HEAT PUMP

WATER TO WATER HEAT NEW SERIES TECH.DATA

Model			WOA80
Nominal refrigeration Capacity		kW	82.0
Power of input of Cooling		kW	13.8
Nominal Heat Production		kW	87.0
Power of Heating		kW	19.8
Compressor Type		Hermetic Scroll	
Compressor Quantity		2	
Power Supply		3N 380V / 50Hz	
Starting Mode		Direct starting	
Refrigerant		R407C/R22	
Refrigerant filling quantity		Kg	15
Refrigerant control unit		Thermal Expansion Valve	
Evaporator	Shell in Tube		
	kpa	70	80
	DN	65.0	50
	m^3/h	14.1	4.43
	m^3/h	7.5	2.7
Condenser	Shell in Tube		
	kpa	70	80
	DN	65.0	50
	m^3/h	7.5	2.7
	m^3/h	14.1	4.43
Unit Dimension	mm	2100	1400
	mm	800	655
	mm	1650	1100
Unit Weight		Kg	630
Operating Weight		Kg	760
Noise		DB(A)	56

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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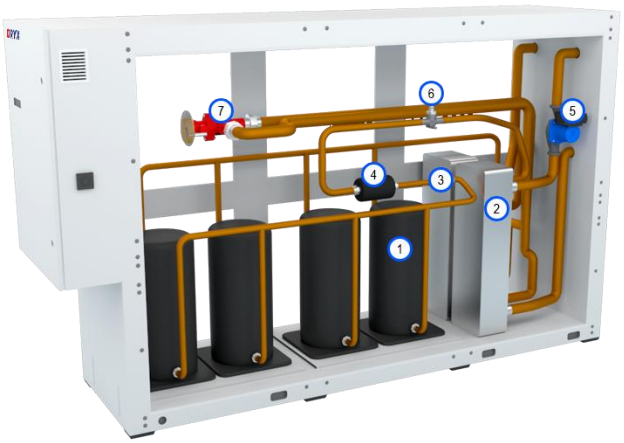
ORYX HEAT PUMP

WATER TO WATER HEAT NEW SERIES TECH.DATA

Model			WOA120
Nominal refrigeration Capacity		kW	123.0
Power of input of Cooling		kW	20.7
Nominal Heat Production		kW	131.0
Power of Heating		kW	29.7
Compressor Type		Hermetic Scroll	
Compressor Quantity		3	
Power Supply		3N 380V / 50Hz	
Starting Mode		Direct starting	
Refrigerant		R407C/R22	
Refrigerant filling quantity		Kg	23
Refrigerant control unit		Thermal Expansion Valve	
Evaporator	Shell in Tube		
	kpa	70	80
	DN	80	50
	m^3/h	21.2	4.43
	m^3/h	11.2	2.7
Condenser	Shell in Tube		
	kpa	70	80
	DN	80.0	50
	m^3/h	11.2	2.7
	m^3/h	21.2	4.43
Unit Dimension	mm	2400	1400
	mm	800	655
	mm	1700	1100
Unit Weight		Kg	830
Operating Weight		Kg	920
Noise		DB(A)	58

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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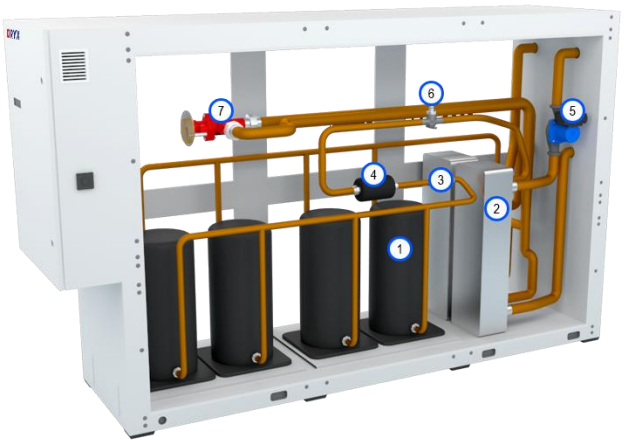
ORYX HEAT PUMP

WATER TO WATER HEAT NEW SERIES TECH.DATA

Model			WOA160
Nominal refrigeration Capacity		kW	164.0
Power of input of Cooling		kW	27.6
Nominal Heat Production		kW	174.0
Power of Heating		kW	39.6
Compressor Type		Hermetic Scroll	
Compressor Quantity		4	
Power Supply		3N 380V / 50Hz	
Starting Mode		Direct starting	
Refrigerant		R407C/R22	
Refrigerant filling quantity		Kg	30
Refrigerant control unit		Thermal Expansion Valve	
Evaporator	Shell in Tube		
	kpa	70	80
	DN	80.0	50
	m^3/h	28.2	4.43
	m^3/h	15	2.7
Condenser	Shell in Tube		
	kpa	70	80
	DN	80.0	50
	m^3/h	15	2.7
	m^3/h	28.2	4.43
Unit Dimension	mm	2400	1400
	mm	850	655
	mm	1700	1100
Unit Weight		Kg	920
Operating Weight		Kg	1050
Noise		DB(A)	61

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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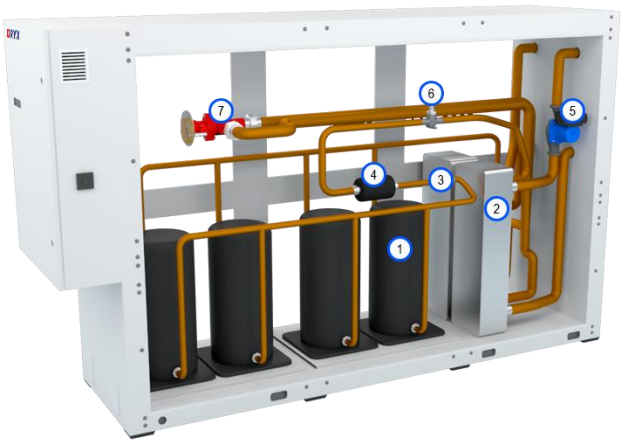
ORYX HEAT PUMP

WATER TO WATER HEAT NEW SERIES TECH.DATA

Model			WOA240
Nominal refrigeration Capacity		kW	240
Power of input of Cooling		kW	41.4
Nominal Heat Production		kW	261.00
Power of Heating		kW	59.40
Compressor Type		Hermetic Scroll	
Compressor Quantity		6	
Power Supply		3N 380V / 50Hz	
Starting Mode		Direct starting	
Refrigerant		R407C/R22	
Refrigerant filling quantity		Kg	45
Refrigerant control unit		Thermal Expansion Valve	
Evaporator	Shell in Tube		
	kpa	70	80
	DN	100.0	50
	m^3/h	22.5	4.43
	m^3/h	42.3	2.7
Condenser	Shell in Tube		
	kpa	70	80
	DN	100.0	50
	m^3/h	22.5	2.7
	m^3/h	42.3	4.43
Unit Dimension	mm	3166	1400
	mm	850	655
	mm	1700	1100
Unit Weight		Kg	1350
Operating Weight		Kg	1480
Noise		DB(A)	64

NOTE:

- **Cooling**: load water inlet/outlet 12°C/7°C: Source water inlet/outlet: 30°/35°C (water loop. 18°C/29°C (ground water)
- **Heating:** load water inlet/outlet:40°C/45°C: Source water inlet: 20°C/(water loop). 15°C (ground water), 10°C groundloop same source water flow as in cooling mode
- **RLA:** Rated load current**, LRA:** Lock Rotor current



1-Compressor
2- Evaporator
3-Condenser
4-Filter
5-Circulation Pump
6-Shut Off Valve
7-Expansion Valve

Drawings not a scale.

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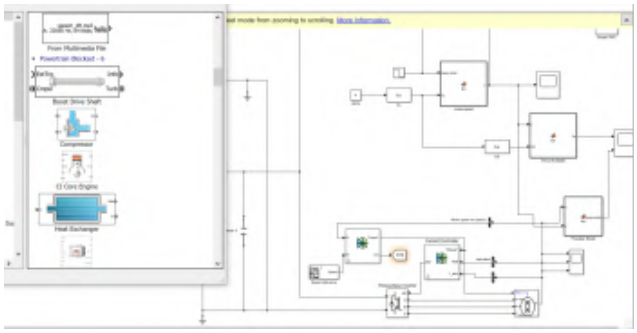
ORYX HEAT PUMP

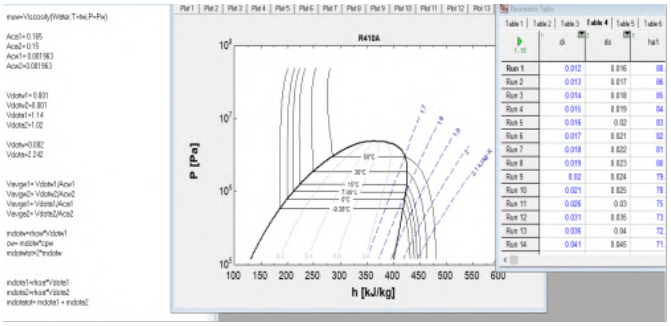
ORYX OPTIMIZATION SOFTWARE

The involvement of big number of design parameters and operating conditions for heat pump systems require the use of optimization techniques in order to get the optimum solution depending on the area of application. **ORYX** has developed its special optimization schemes using the most recent optimization techniques such as Genetic Algorithm and Artificial Neural Network to find the optimum operating conditions that satisfy the different needs of our clients.



The designer has to input all design requirements in term of heating and cooling loads, location, building type and application. The software will select the best choice of heat pump system components including heat pump, storage tank, heat exchanger, solar connections….etc.

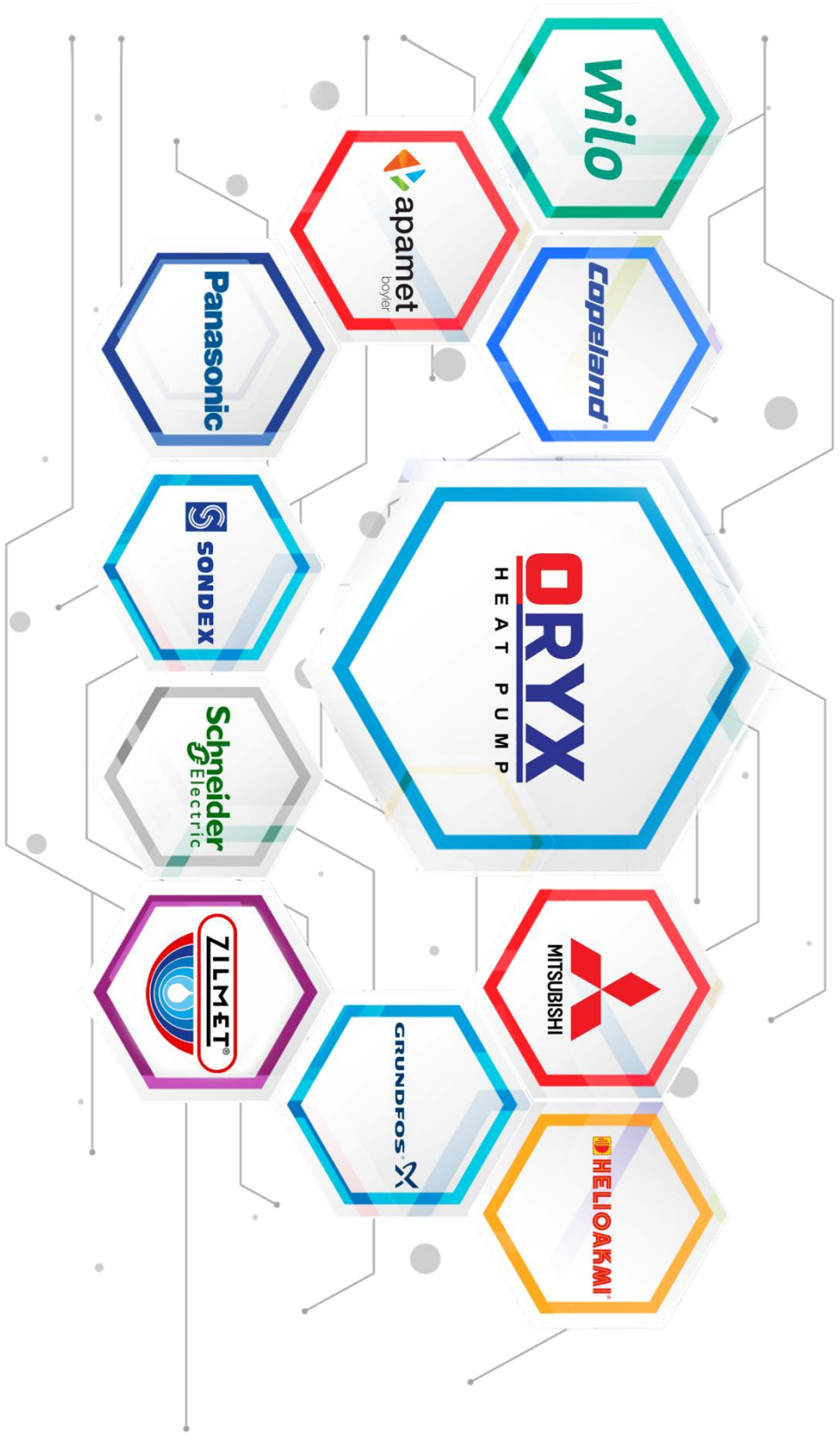
A new feature has implemented in which the software will simulate the system operation under different conditions and partial loads. Results will include all temperatures, efficiencies and cost analysis and much more other features



ORYX HEAT PUMP

PARTNERS

At **ORYX** we are proud of our cooporative Partner that are considered leaders in theri different fields. Our high efficient systems solutions & technologies are a result of such a perfect collaboration.



ORYX
HEAT PUMP

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