Technical Catalogue

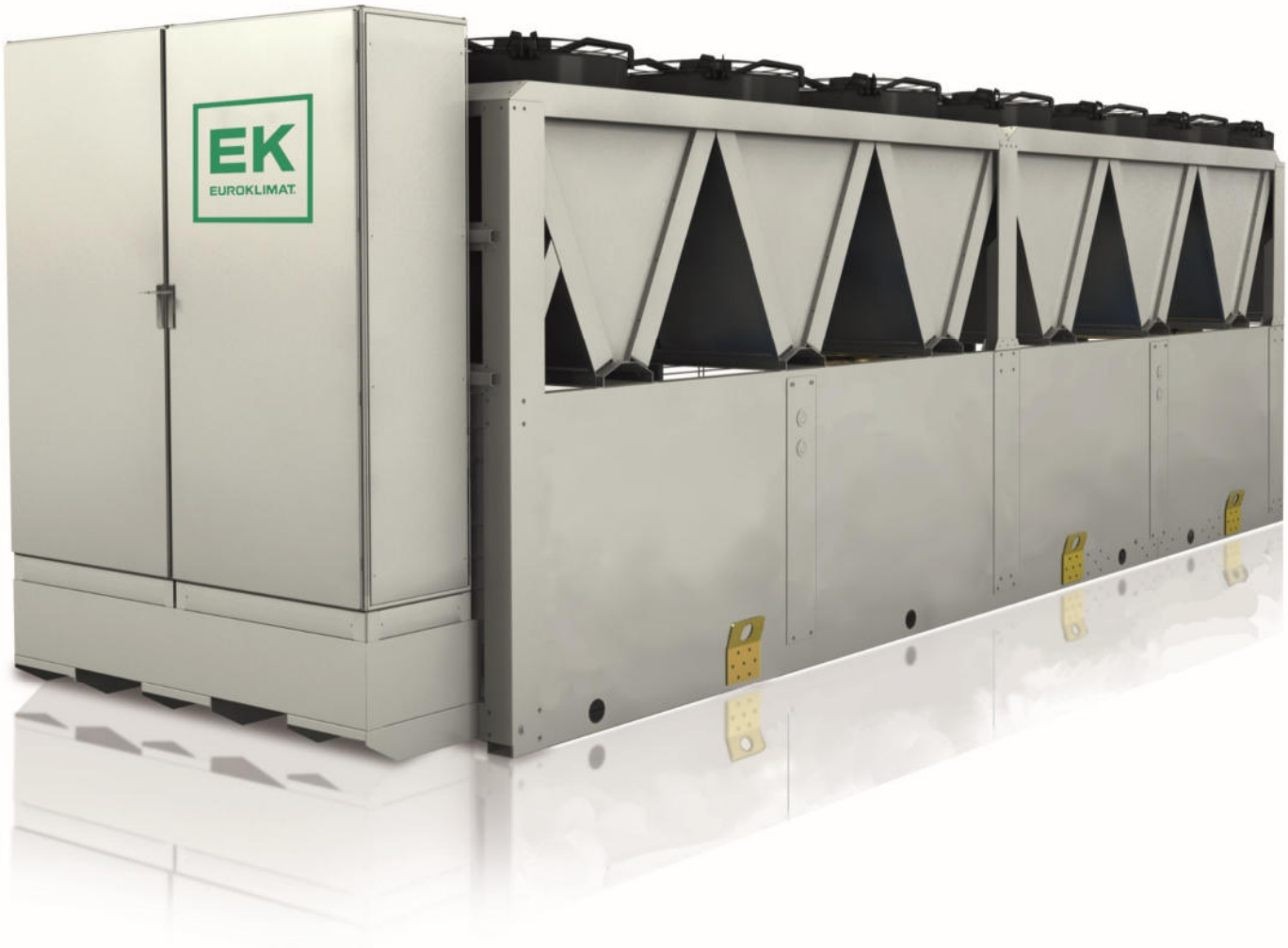
VHERA

R290

Air to water reversible Heat Pumps for outdoor installations

Nominal heating capacity: 195-710 kW

Nominal cooling capacity: 175-625 kW



EUROKLIMAT
Cooling System Solutions

VHERA

195-2-2 ⟷ 710-4-4

R290 Refrigerant R290 | GWP=3

Reversible heat pump

Semi-hermetic piston compressor

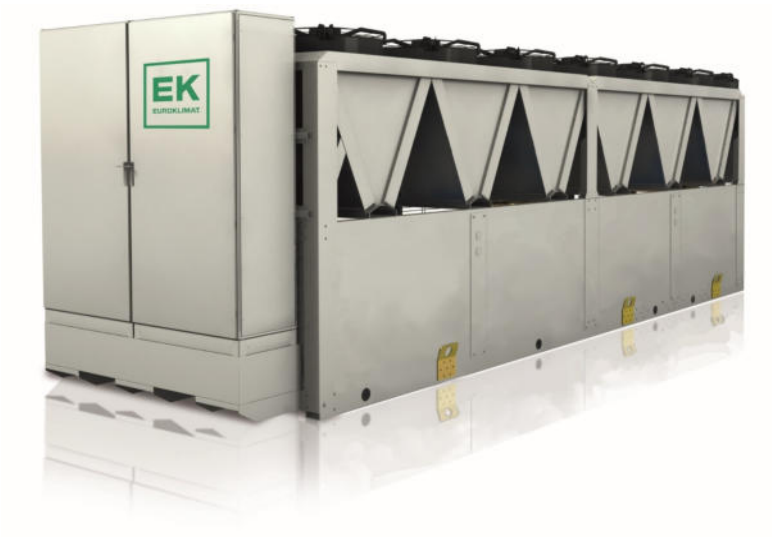
Inverter

Axial fan

Brazed plate heat exchanger

SCOP

Air to water heat pumps for comfort applications



Solution

B - Base
P - Base with Pump

Version

LN - Low Noise
SL - Super Low Noise
XL - Extra Low Noise

Equipment

AS - Standard equipment
DS - Desuperheater

Heating capacity 195 - 710 kW
Cooling capacity 175 - 625 kW

Safety system	To ensure high-safety-level the unit is equipped with an **ATEX certified gas detector and an EC centrifugal extraction fan**. The sensor, with external dedicated power supply and Modbus output signal, has an alarm threshold set at 10% of the lower flammable limit (LFL). The Propane alarm causes the immediate shutdown of the machine and the centrifugal extraction fan is switched on, which allows the ventilation of the compressor compartment and the dilution of the R290 concentration to values below the lower flammability limit.
Structure	Structure specifically designed for outdoor installation. Basement and frame in galvanised shaped sheet steel with a suitable thickness. All parts are polyester-powder painted to assure total weather resistance (RAL 7035 standard colour, others on request). LN (Low Noise) version: the panels are internally lined with sound-absorbing material. SL (Super Low Noise) version: the panels are sandwich and insulated with rock wool. XL (Extra Low Noise) version: the panels are sandwich and insulated with rock wool. Fans are ZAplus
Compressor with inverter	Reciprocating semi-hermetic type, fixed on anti-vibration system and complete with pressure lubrication system; oil crankcase heater; integral electronic protection and inlet plus outlet valves; flexible joints on suction and discharge. A VFD (Variable Frequency Drive) is provided in order to adapt the cooling capacity of the reciprocating compressor to the heating or cooling demand. The compressor is mechanically optimized for use with Hydrocarbons. Some components are ATEX certified.
EC Fan	Premium-Axial-Fans with bionic shaped blades and high-efficient EC (Electronically Commutated) external rotor motors, sealed in protection IP54 and thermal class THCL 155. The motor efficiency class complies with IE4.
Air heat exchanger	Finned coil made with copper pipes arranged on staggered rows, mechanically expanded inside a pack of aluminium fins offering a high exchange surface area.
Water heat exchanger	Brazed plate-type heat exchanger, stainless steel AISI 316 made, complete with water differential pressure switch, air vent valve and thermally insulated with closed-cell neoprene anti-condensate material. The heat exchanger design provides high thermal exchange and high performance results, furthermore it guarantees small dimensions and easy installation and maintenance.
Electrical board	Each unit is equipped with electric panel, built, wired and fully tested at the factory. Wiring numeration and optimized layout facilitate troubleshooting. The installed components are identified by nameplates to better identify the application and the type of action. Switchboard is made according to standards IEC 204-1/EN60204-1 and it is complete with the following main components: - Main isolator switch - Door interlock safety device - Contactor and protection for compressor and fans - Cabinet minimum protection rating IP54. To ensure higher level of security, the cabinet is outside the machine and positioned on one side of the unit. The propane sensor is equipped with separate power supply: this power supply must always be guaranteed in order to ensure the monitoring of any leakage.
Control	The microprocessor controls the unit capacity by timing the compressors and checks the operating alarms with the possibility to connect to BMS.
Refrigerant circuit	Filter drier, moisture-liquid sight glass, electronic expansion valve, high & low pressure gauge, high and low pressure transducers, high pressure switch, safety high pressure valve (when required by EN 378-2016 standard).

MAIN ACCESSORIES

- Anti-vibration rubber/spring mounts
- Air heat exchanger with various coatings treatment
- Low pressure switch
- Low pressure safety valve
- Double safety valve
- Overpressure valve / automatic by-pass
- Double water pump (stand-by) - Standard/ High pressure
- Inverter driven compressor
- Advanced control c.pCo

VHERA

Technical data

VHERA R290 range - H *P/**/AS/EC/II version		195-2-2	230-2-2	270-2-2	300-2-2	355-2-2
Heating capacity [1]	**[kW]**	**195**	**228**	**269**	**298**	**354**
Total power input [1]	[kW]	58,3	68	82,1	90,8	107
COP - Coefficient Of Prestation	**-**	**3,34**	**3,35**	**3,29**	**3,28**	**3,31**
Water flow	[m^3/h]	33,5	39,216	46,44	51,26	60,89
Water pressure drop [1] - Base version	[kPa]	33,8	30,5	36,2	38,5	42,6

Performance in average climatic conditions according to Regulation EU no. 813/2013 - Pdesignh ≤ 400kW (low temperature)						
SCOP	**-**	**3,82**	**3,84**	**3,74**	**3,71**	**3,74**
ɳsh	[%]	149,8	150,5	146,4	145,4	146,4

Performance in average climatic conditions according to Regulation EU no. 813/2013 - Pdesignh ≤ 400kW (medium temperature)						
SCOP	**-**	**3,09**	**3,09**	**3,08**	**3,08**	**3,08**
ɳsh	[%]	120,5	120,6	120,0	120,1	120,1

Cooling capacity [2]	**[kW]**	**175**	**204**	**245**	**269**	**312**
Total power input [2]	[kW]	63,8	79,1	88,3	99,7	115
EER - Energy Efficiency Ratio	**-**	**2,74**	**2,58**	**2,77**	**2,70**	**2,71**
Water flow	[m^3/h]	30,10	35,09	42,14	46,27	53,66
Water pressure drop [2] - Base version	[kPa]	28,2	25,4	30,0	31,2	33,4

Refrigerant Circuit						
Refrigerant	-	R290				
GWP	-	3				
Charge of refrigerant - Base unit	[kg]	>12				
Independent gas circuits	[n°]	2				
Compressors type/quantity	-	Semihermetic reciprocating with VFD (Variable Frequency Drive) / 2				
Expansion valve type	-	Electronic				
Coils type/quantity	-	Cu/Al / 4		Cu/Al / 8		
Fans type/quantity	-	Axial EC / 4		Axial EC / 8		
Fans power input [1] (total)	[kW]	3,78	3,78	7,22	7,23	7,54
Total air flow [1]	[m^3/h]	68.150	68.290	143.100	143.200	136.200

Electrical data						
Power supply	-	400/3+N/50 + terra				
Emergency power supply	-	230/1/50 + terra				
Maximum power input without pump	[kW]	87,9	97,9	138,0	141,0	151,0
Locked rotor current – LRA without pump	[A]	153,2	168,4	238,0	245,0	260,8
Maximum absorbed current - FLA without pump	[A]	153,2	168,4	238,0	245,0	260,8

Solution BASE-P - with Hydronic Kit						
Pump type	-	Centrifugal				
Standard pump (1,5 bar)						
Motor efficiency	-	IE3	IE3	IE3	IE3	IE3
Pump motor nominal power input	[kW]	3	3	4	4	5,5
Pump motor nominal absorbed current	[A]	6,4	6,4	8,7	8,7	10,6
Increased pump (3,0 bar)						
Motor Efficiency	-	IE3	IE3	IE3	IE3	IE3
Pump motor nominal power	[kW]	7,5	7,5	7,5	7,5	11
Pump motor nominal current	[A]	13,6	13,6	13,6	13,6	21,3

Water connections						
Size (nominal external diameter)	[inch]	3''	3''	3''	4''	4''

Noise levels [3]						
Total sound power (LN version)	[db(A)]	86	87	91	92	93
Total sound pressure (LN version) - at 10 m distance	[db(A)]	54	55	59	60	61
Total sound pressure (SL version)	[db(A)]	85	86	90	90	92
Total sound power (SL version) - at 10 m distance	[db(A)]	53	54	57	-	-
Total sound pressure (XL version)	[db(A)]	84	85	89	90	91
Total sound pressure (XL version) - at 10 m distance	[db(A)]	52	53	56	-	-

Dimensions and weight - base unit						
Lenght	[mm]	2895	2895	5135	5135	5135
Width	[mm]	2280	2280	2280	2280	2280
Height (LN, SL)	[mm]	2385	2385	2385	2385	2385
Height (XL)	[mm]	2560	2560	2560	2560	2560

Shipment weight - B/LN/AS version	[Kg]	2670	2690	3760	3790	3950
Shipment weight - B/SL/AS version	[Kg]	2770	2790	3860	3890	4050
Shipment weight - B/XL/AS version	[Kg]	2800	2820	3920	3950	4110

Reference conditions:

(1) Outdoor ambient air = +7°C / 87% r.h. - Condenser water temperature IN/OUT = 40/45°C - Fluid: water

(2) Condenser air intake temperature = 35°C - Evaporator water temperature IN/OUT = 12/7°C - Fluid: water

(2) The declared cooling capacity are not taking into account the pump motor power input (where provided)

(3) Sound power level in compliance with ISO 3744 - Sound pressure level (average) at 10 meter distance, unit in a free field on a reflective surface; non-binding value obtained from the sound power leve

Compliance with "Eco-Design"

The units comply with the European Directive 2009/125/EU, the Commission Regulation (EU) no. 811/2013, no. 813/2011 and with the Harmonized Standards

The relevant information related to each model (eg.: SCOP, Seasonal Space Heating Energy Efficiency, Annual electricity consumption, ….) are published on our websit

VHERA

Technical data

VHERA R290 range - H *P/**/AS/EC/II version		405-3-3	450-3-3	505-3-3	530-3-3
Heating capacity [1]	**[kW]**	**405**	**448**	**505**	**531**
Total power input [1]	[kW]	123	136	149	161
COP - Coefficient Of Prestation	-	**3,29**	**3,29**	**3,39**	**3,30**
Water flow	[m^3/h]	69,66	77,056	86,86	91,33
Water pressure drop [1] - Base version	[kPa]	36,2	38,5	42,9	46,9
Performance in average climatic conditions according to Regulation EU no. 813/2013 - Pdesignh ≤ 400kW (low temperature)					
SCOP	-	**3,71**	**3,70**	**3,77**	**3,72**
ηsh	[%]	145,3	144,8	147,7	145,6
Performance in average climatic conditions according to Regulation EU no. 813/2013 - Pdesignh ≤ 400kW (medium temperature)					
SCOP	-	**3,08**	**3,08**	**3,09**	**3,09**
ηsh	[%]	120,1	120,2	120,6	120,4
Cooling capacity [2]	**[kW]**	**368**	**403**	**456**	**469**
Total power input [2]	[kW]	132	149	157	172
EER - Energy Efficiency Ratio	-	**2,79**	**2,70**	**2,90**	**2,73**
Water flow	[m^3/h]	63,30	69,32	78,43	80,67
Water pressure drop [2] - Base version	[kPa]	30,0	31,2	34,9	33,4
Refrigerant Circuit					
Refrigerant	-	R290			
GWP	-	3			
Charge of refrigerant - Base unit	[kg]	>12			
Independent gas circuits	[n°]	3			
Compressors type/quantity	-	Semihermetic reciprocating with VFD / 3			
Expansion valve type	-	Electronic			
Coils type/quantity	-	Cu/Al / 12			
Fans type/quantity	-	Axial EC / 12			
Fans power input [1] (total)	[kW]	10,8	10,8	11,3	11,4
Total air flow [1]	[m^3/h]	214.600	214.800	204.200	204.300
Electrical data					
Power supply	-	400/3+N/50 + terra			
Emergency power supply	-	230/1/50 + terra			
Maximum power input without pump	[kW]	207,0	211,0	217,0	227,0
Locked rotor current – LRA without pump	[A]	357,0	367,5	381,3	391,2
Maximum absorbed current - FLA without pump	[A]	357,0	367,5	381,3	391,2
Solution BASE-P - with Hydronic Kit					
Pump type	-	Centrifugal			
Standard pump (1,5 bar)					
Motor efficiency	-	IE3	IE3	IE3	IE3
Pump motor nominal power input	[kW]	5,5	5,5	7,5	7,5
Pump motor nominal absorbed current	[A]	10,6	10,6	13,6	13,6
Increased pump (3,0 bar)					
Motor Efficiency	-	IE3	IE3	IE3	IE3
Pump motor nominal power	[kW]	11	11	11	15
Pump motor nominal current	[A]	21,3	21,3	21,3	27,7
Water connections					
Size (nominal external diameter)	[inch]	4''	4''	5''	5''
Noise levels [3]					
Total sound power (LN version)	[db(A)]	95	95	95	97
Total sound pressure (LN version) - at 10 m distance	[db(A)]	62	62	62	65
Total sound pressure (SL version)	[db(A)]	91	91	92	93
Total sound power (SL version) - at 10 m distance	[db(A)]	58	58	59	60
Total sound pressure (XL version)	[db(A)]	91	91	92	93
Total sound pressure (XL version) - at 10 m distance	[db(A)]	58	58	59	60
Dimensions and weight - base unit					
Lenght	[mm]	7375	7375	7375	7375
Width	[mm]	2280	2280	2280	2280
Height (LN, SL)	[mm]	2385	2385	2385	2385
Height (XL)	[mm]	2560	2560	2560	2560
Shipment weight - B/LN/AS version	[Kg]	5620	5670	5890	5900
Shipment weight - B/SL/AS version	[Kg]	5720	5770	5990	6000
Shipment weight - B/XL/AS version	[Kg]	5810	5860	6080	6090

Reference conditions:

(1) Outdoor ambient air = +7°C / 87% r.h. - Condenser water temperature IN/OUT = 40/45°C - Fluid: water

(2) Condenser air intake temperature = 35°C - Evaporator water temperature IN/OUT = 12/7°C - Fluid: water

(2) The declared cooling capacity are not taking into account the pump motor power input (where provided)

(3) Sound power level in compliance with ISO 3744 - Sound pressure level (average) at 10 meter distance, unit in a free field on a reflective surface; non-binding value obtained from the sound power leve

Compliance with "Eco-Design"

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VHERA

Technical data

VHERA R290 range - H *P/**/AS/EC/II version		600-4-4	675-4-4	710-4-4
Heating capacity [1]	**[kW]**	**597**	**673**	**708**
Total power input [1]	[kW]	181	198	214
COP - Coefficient Of Prestation	-	**3,30**	**3,40**	**3,31**
Water flow	[m^3/h]	102,684	115,756	121,776
Water pressure drop [1] - Base version	[kPa]	38,5	42,9	0,0

Performance in average climatic conditions according to Regulation EU no. 813/2013 - Pdesignh ≤ 400kW (low temperature)				
SCOP	-	**3,71**	**3,78**	**3,72**
ηsh	[%]	145,5	148,1	145,6

Performance in average climatic conditions according to Regulation EU no. 813/2013 - Pdesignh ≤ 400kW (medium temperature)				
SCOP	-	**3,08**	**3,09**	**3,09**
ηsh	[%]	120,4	120,7	120,5

Cooling capacity [2]	**[kW]**	**538**	**608**	**625**
Total power input [2]	[kW]	199	210	230
EER - Energy Efficiency Ratio	-	**2,70**	**2,90**	**2,72**
Water flow	[m^3/h]	92,54	104,58	107,50
Water pressure drop [2] - Base version	[kPa]	31,2	34,9	33,4

Refrigerant Circuit				
Refrigerant	-	R290		
GWP	-	3		
Charge of refrigerant - Base unit	[kg]	>10		
Independent gas circuits	[n°]	4		
Compressors type/quantity	-	Semihermetic reciprocating with VFD / 4		
Expansion valve type	-	Electronic		
Coils type/quantity	-	Cu/Al / 16		
Fans type/quantity	-	Axial EC / 16		
Fans power input [1] (total)	[kW]	14,5	15,1	15,1
Total air flow [1]	[m^3/h]	286.300	272.200	272.400

Electrical data				
Power supply	-	400/3+N/50 + terra		
Emergency power supply	-	230/1/50 + terra		
Maximum power input without pump	[kW]	281,0	289,0	302,0
Locked rotor current – LRA without pump	[A]	490,0	508,4	521,6
Maximum absorbed current - FLA without pump	[A]	490,0	508,4	521,6
Solution BASE-P - with Hydronic Kit				
Pump type	-	Centrifugal		
Standard pump (1,5 bar)				
Motor efficiency	-	IE3	IE3	IE3
Pump motor nominal power input	[kW]	7,5	7,5	9,2
Pump motor nominal absorbed current	[A]	13,6	13,6	17,2
Increased pump (3,0 bar)				
Motor Efficiency	-	IE3	IE3	IE3
Pump motor nominal power	[kW]	15	15	15
Pump motor nominal current	[A]	27,7	27,7	27,7

Water connections				
Size (nominal external diameter)	[inch]	5''	5''	6''

Noise levels [3]				
Total sound power (LN version)	[db(A)]	95	95	96
Total sound pressure (LN version) - at 10 m distance	[db(A)]	63	63	65
Total sound pressure (SL version)	[db(A)]	93	93	94
Total sound power (SL version) - at 10 m distance	[db(A)]	60	60	61
Total sound pressure (XL version)	[db(A)]	92	93	94
Total sound pressure (XL version) - at 10 m distance	[db(A)]	59	60	61

Dimensions and weight - base unit				
Lenght	[mm]	9615	9615	9615
Width	[mm]	2280	2280	2280
Height (LN, SL)	[mm]	2385	2385	2385
Height (XL)	[mm]	2560	2560	2560

Shipment weight - B/LN/AS version	[Kg]	7470	7770	7790
Shipment weight - B/SL/AS version	[Kg]	7570	7870	7890
Shipment weight - B/XL/AS version	[Kg]	7690	7990	8010

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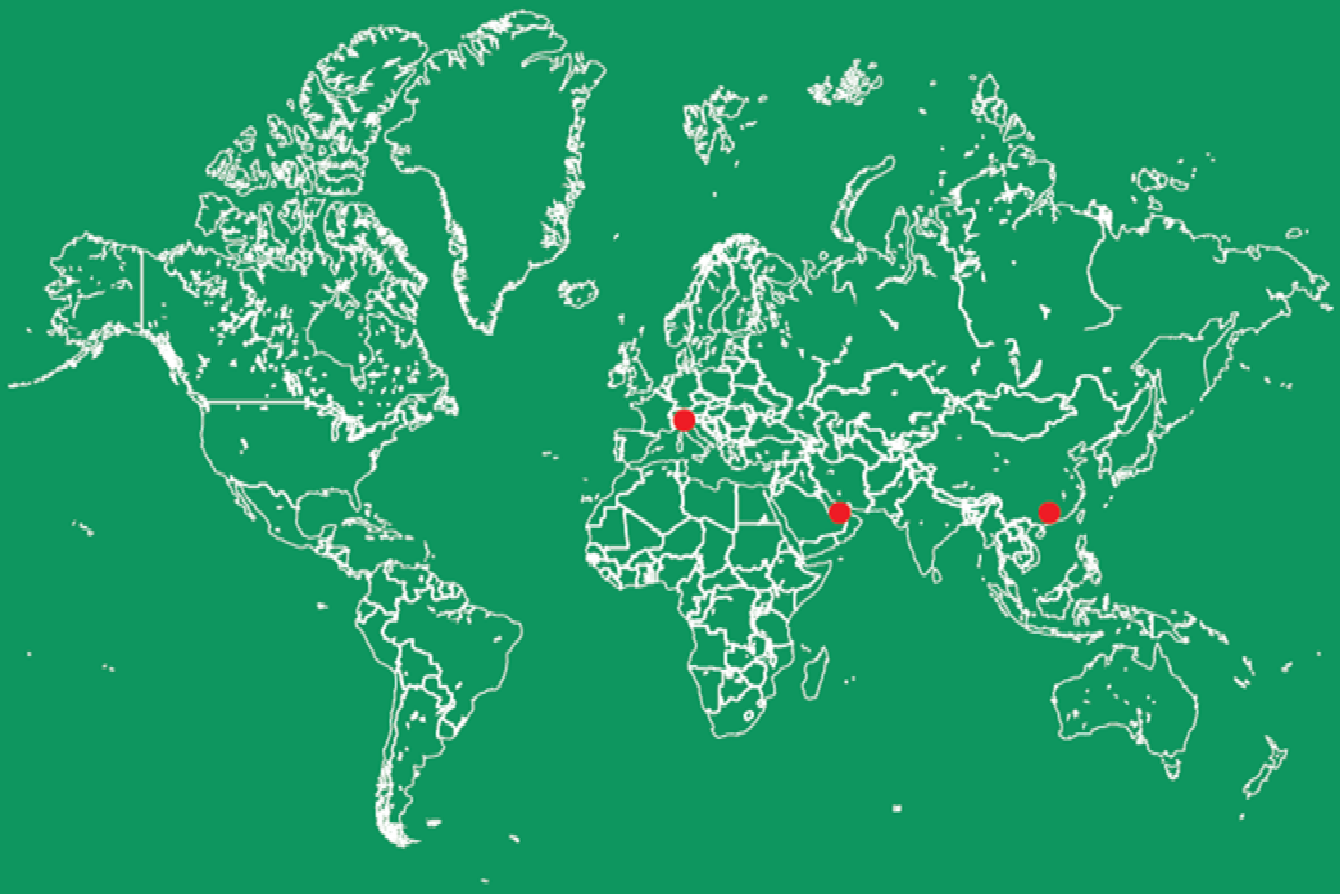

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