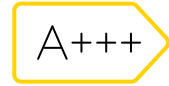
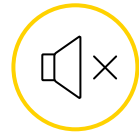


PHP™ 22 63

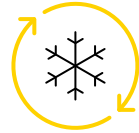
POWER HEAT PUMP
XRGI® CHP AND PMH™ HEAT PUMP



HIGHLY EFFICIENT



VERY QUIET



REFRIGERANT R32



REMOTE MONITORING

POWER HEAT PUMP

The XRGI® CHP produces the electricity to run the PMH™ heat pump highly efficiently with combined heat and power. Combined operation eliminates the systemic disadvantages of operating the heat pump alone and increases overall efficiency with the full use of the waste heat generated from electricity production for heating.

The XRGI® control system ensures the smooth interaction of the heat generators in a heating system

XRGI®

- High-performance engine from Toyota further developed for EC POWER
- Space-saving installation in the boiler room thanks to modular design
- Optimised configuration enables the highest efficiency tested on the market, consistently high efficiency even in the partial load range and whisper-quiet operation
- The iQ 20S is the heart of the power heat pump and takes care of the fully automatic operation of XRGI® and PMH™



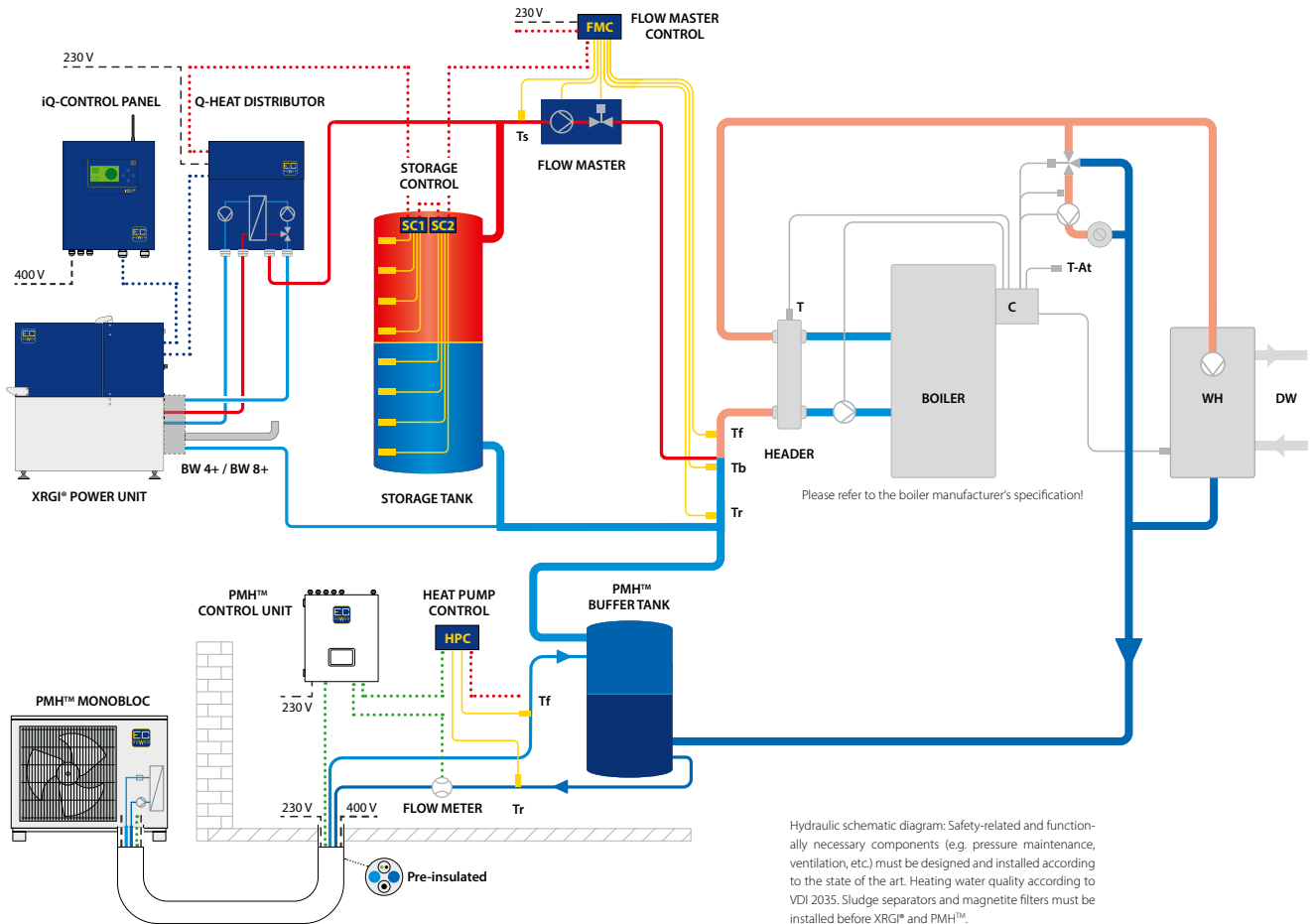
PMH™

- Monobloc Outdoor Unit with closed R32 refrigerant circuit
- Space-saving outdoor installation, quiet operation, high efficiency
- Operating unit PMH™ CU with user-friendly touch display and consumer-side control of heating and hot water system



HYDRAULICS

The XRGI® CHP and PMH™ heat pump are connected in series, whereby the PMH™ raises the temperature of the main return flow from the customer's system. The PMH™ heat pump operates with a low temperature increase and thus the highest possible efficiency. The XRGI® CHP unit efficiently ensures the required flow temperature all year round.



PLANNING, INSTALLATION, COMMISSIONING AND INSTRUCTION

Detailed planning information enables easy and problem-free installation. Commissioning is carried out by an EC POWER or EC POWER-certified service technician. After commissioning, a briefing is given to the operators of the PMH™ power heat pump.

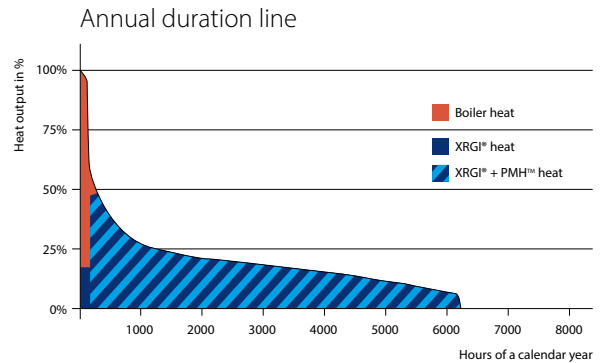
OPERATING MODES

REGULAR OPERATION - BASE LOAD

The XRGI® CHP unit and the PMH™ heat pump run in parallel. The heat pump receives the start-up release when the start-up phase of the XRGI® CHP is completed. If heat consumption drops, surplus heat generated is stored in the XRGI® Storage Tank and PMH™ Buffer Tank. Once the tanks are full, XRGI® and PMH™ are switched off.

Sequence of operations:

1. XRGI® runs together with PMH™ in the base load
2. Lastly, the boiler - if present - in the peak load

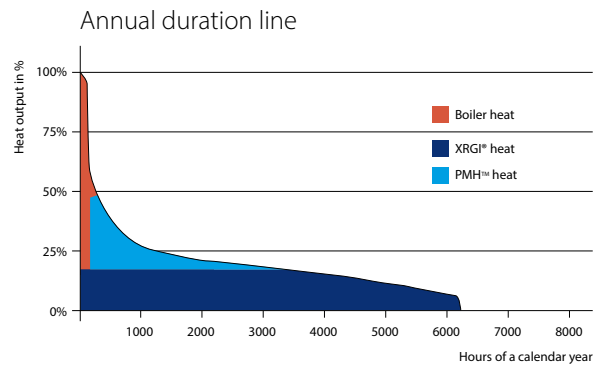


CONTROLLED MODE - MEDIUM LOAD

The PMH™ heat pump is given the start release when the XRGI® CHP can no longer ensure the heat supply on its own. If heat consumption drops, surplus heat generated is stored in the XRGI® Storage Tank and PMH™ Buffer Tank. Once the tanks are full, XRGI® and PMH™ are switched off.

Sequence of operations:

1. XRGI® first in the base load
2. PMH™ after this in the medium load
3. Lastly, the boiler - if present - in the peak load



SURPLUS MODE

If there is a surplus of renewably generated electricity, the operation of the XRGI® CHP is stopped. The heat pump (and possibly an additional boiler or electric heater) then provides the heat supply alone. The XRGI® control receives a signal via the VPP gateway (potential-free contact) or the Modbus gateway (Modbus RTU protocol).

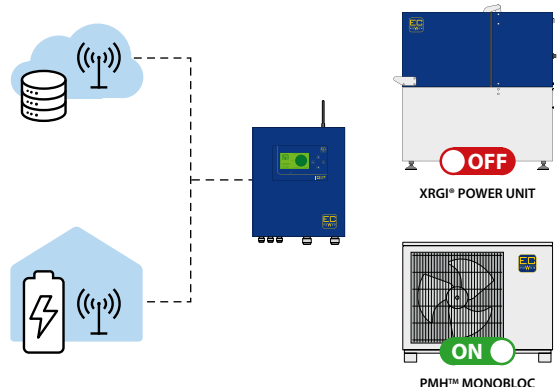
Operation when there is a surplus in the public electricity grid:

The electricity grid operator, a flexibility marketer or a trading department provides the signal via the smart meter gateway.

Operation in case of surplus in the property/quarter

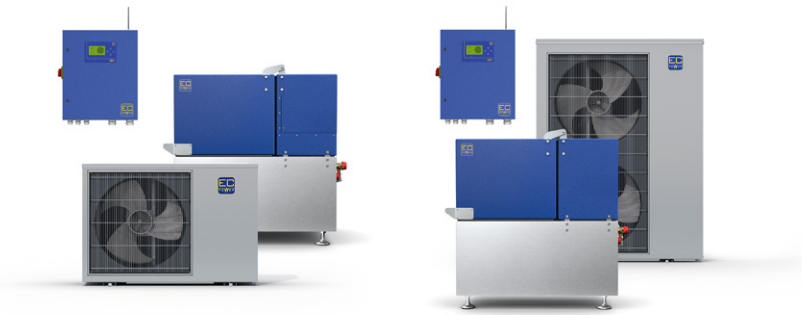
(customer installation):

The energy management system of the property/quarter supply, which for example initially stores the surplus renewable energy generation in a battery system, provides a signal when the battery storage is fully charged.



TECHNICAL DATA PHP™ 22 / PHP™ 63

Different configurations and cascades of several XRGi® CHP units and PMH™ heat pumps are also available.



ORDER INFORMATION

Name or trademark of the supplier	EC POWER	
	PHP™ 22	PHP™ 63
Supplier model identifier	PHP2201	PHP6301
Item number PHP™ package	K000199	
Item number Surplus mode option (VPP)	K000200	
Item number Surplus mode option (Modbus)	VPP Gateway, Electric Heater Control	
Content of surplus mode option (VPP)	Modbus Gateway, Electric Heater Control	
Content of surplus mode option (Modbus)		
Contents of PHP™ package	XRGi® 6, PMH™ 6, PMH™ Control Unit, Power factor corrector 5.0 kVar, BW 4+ exhaust heat exchanger, Storage Tank 800 l, FM 50, PMH™ Buffer Tank	XRGi® 20, PMH™ 19, PMH™ Control Unit, Power factor corrector 10 kVar, BW 8+ exhaust heat exchanger, Storage Tank 1,000 l, FM 150, PMH™ Buffer Tank

CAPACITY OF POWER HEAT PUMP (PHP™)

A12/W75: Thermal output	21.7 kWth	63.1 kWth
A2/W75: Thermal output	20.5 kWth	60.9 kWth
A12/W75: Electrical output net	4.6 kWel	16.5 kWel
A2/W75: Electrical output net	4.4 kWel	15.9 kWel
Power consumption gas, Hi	20.0 kWhi	61.1 kWhi
A12/W75: Overall efficiency	131.4 %	130.3 %
A2/W75: Overall efficiency	124.6 %	125.8 %

SHARE OF PMH™

	air-to-water heat pump	air-to-water heat pump
Heat pump type	Monobloc (Refrigerant circuit hermetically sealed)	Monobloc (Refrigerant circuit hermetically sealed)
Model		
Energy efficiency class (W 35 °C)	A+++	A+++
SCOP (W 35 °C)	4.72	4.83
Annual space heating energy efficiency (W 35 °C) η_s	185.8 %	190.2 %
A12/W35: Thermal output / max. COP	4.00 kWth / 5.52	10.10 kWth / 5.77
A12/W35: Max. thermal output / COP	7.27 kWth / 5.23	18.40 kWth / 5.30
A2/W35: Max. thermal output / COP	6.13 kWth / 3.80	16.22 kWth / 3.99
Refrigerant / quantity	R32 / 0.90 kg	R32 / 2.60 kg
Other technical details	See data sheet for PMH™ 6	See data sheet for PMH™ 19

SHARE OF XRGi®

Energy efficiency class	A+++	A+++
Annual space heating energy efficiency η_s	198 %	247 %
Electrical output, net	6 kWel	20 kWel
Thermal output, calorific value	14.4 kWth	44.7 kWth
Power consumption gas, Hi	20.0 kWhi	61.1 kWhi
Electrical own demand	0.035 kWel	0.081 kWel
Total efficiency, net	102.40 %	105.90 %
Other technical details	See data sheet for XRGi® 6	See data sheet for XRGi® 20

Deviating values depending on ambient and operating conditions, tolerance +/- 5 %.
Technical modifications, design differences and mistakes reserved.



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PHPTM **22** **63**

POWER HEAT PUMP
XRGI[®] CHP AND PMHTM HEAT PUMP