

**Panasonic**



**Schwank**  
**Gas Heat Pumps**  
**Heating & Cooling In One System**

**Schwank**  
INNOVATIVE HEATING SOLUTIONS



# Heating and Cooling with Environmental Heat

## ■ Schwank Gas Heat Pumps made by Panasonic

Temperature regulation – i.e. cooling in summer and heating in winter - is increasingly important in commercial and industrial applications. The reason is, besides offering comfort to the employees, the necessity to ensure uniform desirable temperatures throughout the year.

### Potential applications for temperature control [Heating and Cooling] for commerce and Industry:

- Storage of temperature sensitive goods such as foods, cosmetics, dangerous materials, or pharmaceutical products
- Heating and cooling supply for offices, laboratories, research centres and showrooms
- Temperature control for thermic processes, e.g. from equipment operation inside the buildings

## ■ The Schwank solution – efficient and sustainable

With the Schwank gas heat pump one system performs both, heating and cooling. The main advantage is the efficiency: heat pumps save energy because they use free and renewable environmental energy.

As opposed to electric heat pumps, the compressor of the cooling circuit of a Panasonic gas heat pump is operated by a gas powered engine.

The gas engine heat pump uses gas and not electricity as its energy source in order to generate heat or cold. This provides a large number of advantages.

## ■ Proportion of the electricity supply for a Modern Power Plant

The production of electricity in a coal or natural gas power plant has an efficiency of approximately 40%. The remaining 60% energy [mostly heat] is lost. The consumers pay for this loss included in the electricity price. A gas heat pump uses this excess heat produced by its engine on the spot. The heat pump can use this supplementary heat in the heating process or as an additional energy source when cooling, for example for providing hot water.

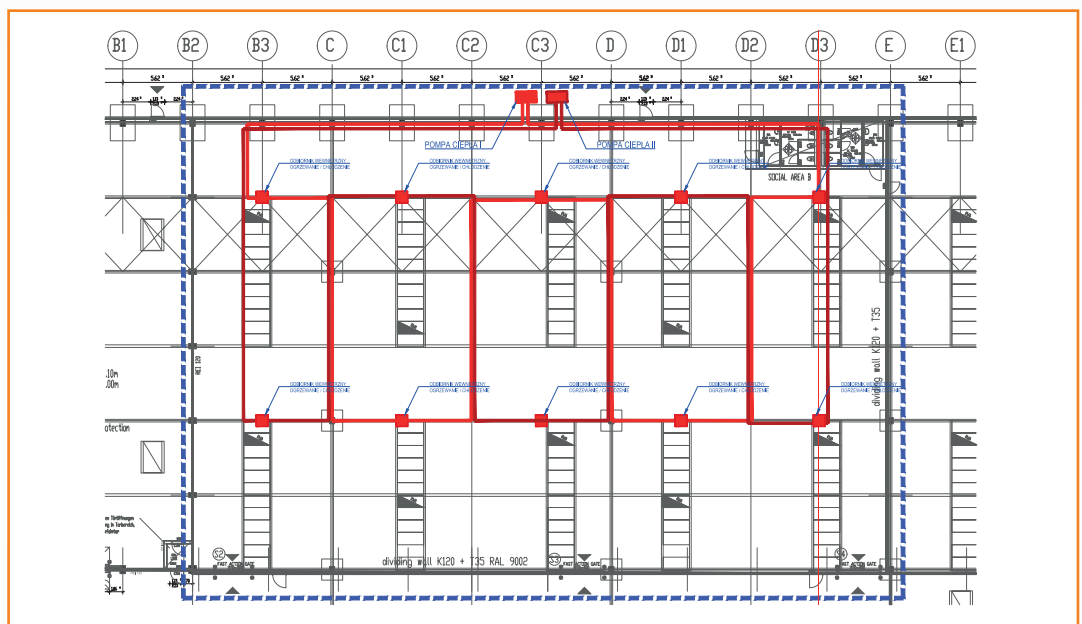


# Energy Costs and Application Example

## Building and technical facilities

Application:	Temperierung Lager- und Kommissionierhalle 18...25°C
Size:	2.000 m <sup>2</sup>
Installed GHP:	2 Gasmotorwärmepumpen außen vor Halle, ebenerdig
Method of distribution :	10 Innengeräte im VRV-System
Heating load:	160 kW
Cooling load:	142 kW

Building drawing with distribution of inner units and outdoor installation of gas heat pump

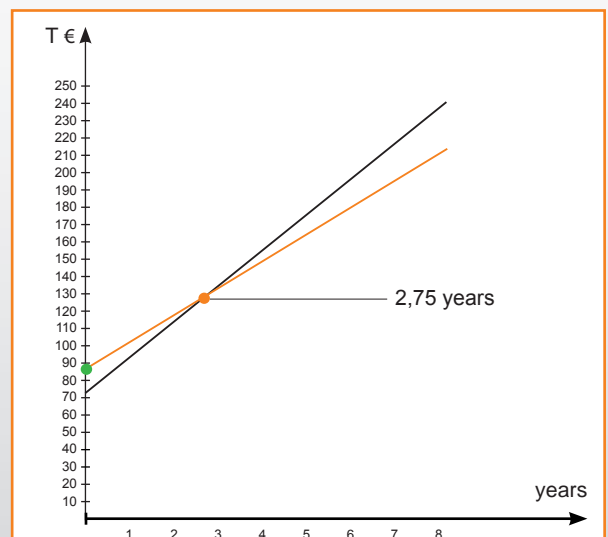


## Comparison of Gas Heat Pump and Electric Heat Pump

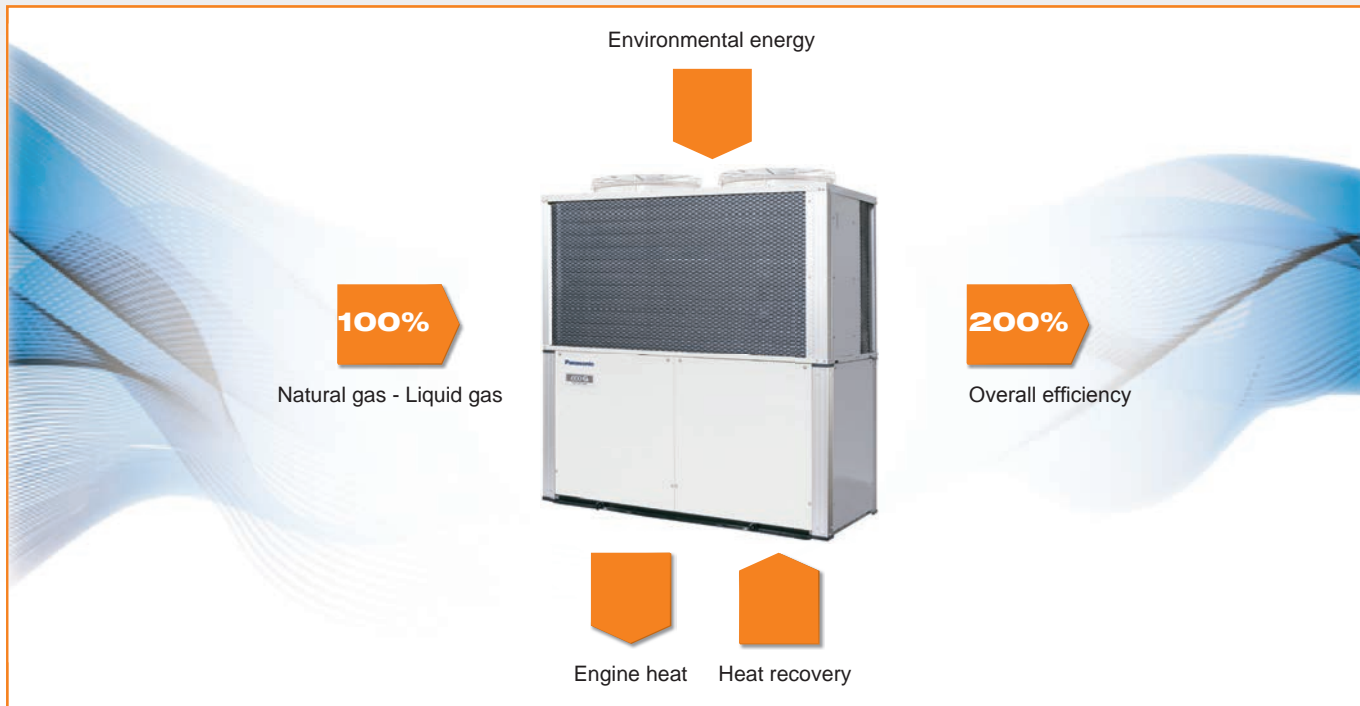
Electricity: 0,170 € pro kWh

Gas: 0,045 € pro kWh

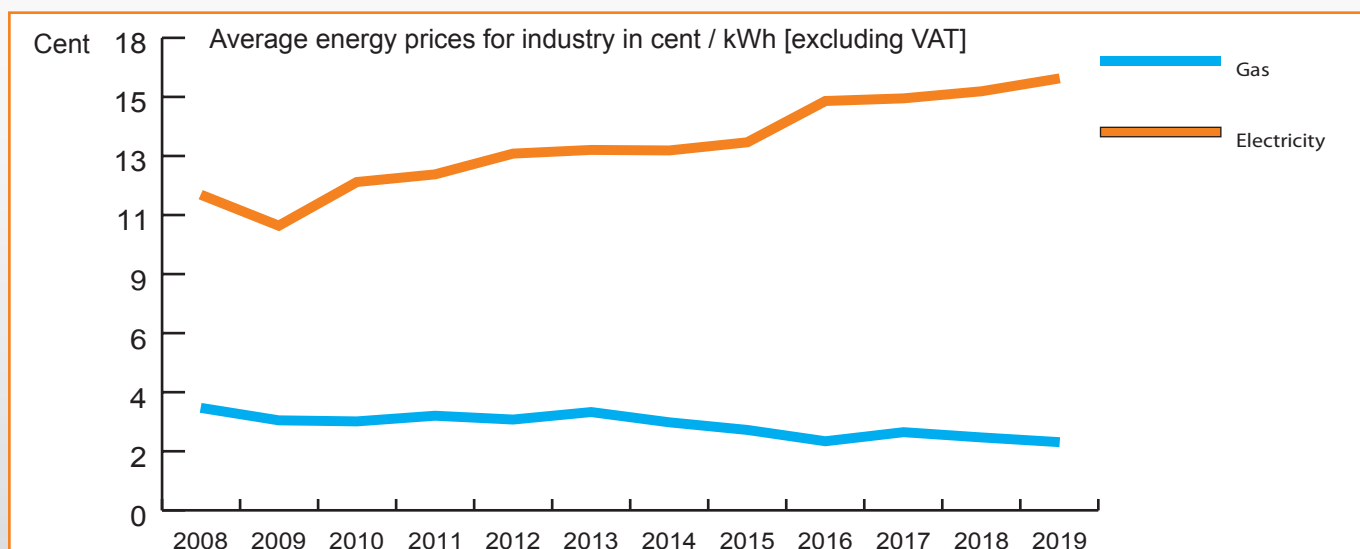
Energy consumptions / costs	Schwank	Alternative solution
Consumption [kWh]: Electricity	6.944	111.171
Nat. Gas	260.222	12.750
Operating costs [€]: Electricity	1.180	18.729
Nat. Gas	11.710	574
Maintenance	2.313	1.500
<b>Total:</b>	<b>15.203</b>	<b>20.803</b>



## Your benefits at a glance: Compared to electric heat pump



- Lower Energy Costs by approximately 30% – use of natural gas as economically convenient energy source
- Saving costs of additional investments – e.g. transformer stations, no need for peak load coverage in heating mode
- Reduced operating hours – no additional operating time for defrost mode
- One device for two applications – cooling and heating; possible even simultaneously
- Decrease of internal electricity consumption, thus avoiding expensive electricity peak loads –
- removing excess electrical load from the company's electrical grid
- Longer maintenance intervals for the complete system -- use of durable components, first service required only after 10,000 hours [equivalent to approximately 3-4 years - under normal use]



## 2-Pipe System ECO G, GE 3 Series

### Highlights

- Hot water supply in cooling and heating mode including DHW priority setting
- Multi-systems with combinations from 45 to 170 kW [16 und 60 HP]
- 20% of SEER and 10% of SCOP have been further improved
- Capacity ratio 50–200%
- 200 m maximum allowable piping length
- Possibility of incorporating a refrigerant collecting station
- 0-10V control demand by a connection with 3rd party controllers [CZ-CAPBC2 required]
- Blue-Fin-Finish on heat exchanger slats
- 10.000 run hours between engine service intervals [3.2 years]
- Option of DX or chilled water for indoor heat exchange



HP			16	20	25	30
Model			U-16GE3E5	U-20GE3E5	U-25GE3E5	U-30GE3E5
Cooling capacity		kW	45	56	71	85
Power input [Cooling]		kW	1,17	1,12	1,8	1,8
SEER			1,98	1,9	1,94	1,91
Hot water in cooling mode [65 °C outlet] kW			23,6	29,1	36,4	46
Max. COP [Hot water]			1,55		1,49	1,47
Gas consumption [Cooling]	STD / Low temperature	kW	41,1	52,1	67,2	84,1
Heating capacity	STD / Low temperature	kW	50,0 / 53,0	63,0 / 67,0	80,0 / 78,0	95,0 / 90,0
Power input [Heating]			0,56	1,05	0,91	1,75
SCOP			1,36	1,33	1,3	1,33
Gas consumption [Heating]	STD / Low temperature	kW	38,0 / 45,4	51,1 / 62,7	68,6 / 60,7	75,3 / 73,9
Power supply			230 / 1 / 50			
Starter amperes		A	30			
Externe static pressure		Pa	10			
Air volume		m³/h	22.200	25.200	27.600	27.600
Operation Sound Normal / Whisper		dB[A]	80 / 77		84 / 81	
Sound pressure level		dB[A]	60		64	65
Dimensions H x W x D		mm	2.255 x 1.650 x 1.000			
Net weight		kg	765		870	880
Pipe Connections	Liquid	Inch	1/2" / 5/8"	5/8" / 3/4"		3/4" / 7/8"
	Suction	Inch	1-1/8" / 1-1/4"			1-1/4 / 1-1/2"
	Flue gas	Inch	3/4"			
	Exhaust drain port	mm	25			
	Hot water		Rp 3/4"			
Elevation difference [IU/OU]		m	50			
Prefilled refrigerant [R410A]		kg	11,5 / 24,0			
Number of connections indoor			26	33	41	50
Outdoor temperature limits	Cooling [min./max.]	°C TK.	-10 – +43			
	Heating [min./max.]	°C FK.	-21 – +18			

# ECO G-System with water heat exchanger

## For heating and cooling applications

### Highlights

- Hot water outlet temperatures: 35 °C – 55 °C
- Chilled water outlet temperatures: –15 °C – +15 °C
- Stainless steel plate heat exchanger with frost protection
- Integrated 4-way-valve ensures counter-acting streams in cooling as well as in heating mode
- Integrated flow monitor
- Version with and without high-efficiency pumps available



			PAW-500WX4E5N	PAW-710WX4E5N
			PAW-500WX4E5N2	PAW-710WX4E5N2
Cooling capacity			50	67
Heating capacity at +7 °C [A7/W45]			60	80
Energy class [Heating] at W45			a	
Dimensions H x W x D	mm	1.010 x 570 x 960		
Net weight	kg	145	180	
Water pipe connector		Rp2 Female Thread [50 A]		
High efficiency pump		not included		
Water volume flow [A7/W45/40]	m³/h	8,6	11,6	
Pressure loss [Water]	kPa	37	29	
Internal water volume	l	9	13	
Min. water volume in hydraulic circle	l	500	750	
Max. water pressure	bar	6,86		
Capacity of integrated electric heater	kW	not existing		
Input power	W	10 + [190 to 310 for pump]	10 + [170 to 310 for pump]	
Maximum current	A	0,07 + [0,88 to 1,37 for pump]	0,07 + [0,85 to 1,37 for pump]	
Pipe connections	Liquid	mm	18	
	Gas	mm	28	35
Max. pipe length [refrigerant]	m	170		
Pipe length for nominal capacity	m	7,5		
Elevation difference [in/out]	m	50 [OU higher], 35 [OU lower] 3		
Operation range	Outdoor ambient	°C	–10 to +43 / –21 to +15,5	
	Water outlet [Cooling / Heating]	°C	–15 to +15 / +35 to +55	
Outdoor unit		U-20GE3E5	U-30GE3E5	
Sound pressure level	dB[A]	60	65	
Operating sound	dB	80	84	
Dimensions H x W x D	mm	2.255 x 1.650 x 1.000	2.255 x 2.026 x 1.000	
Net weight	kg	765	880	
Pipe connections	Liquid	mm	16	18
	Gas	mm	28	35
Refrigerant [R410A]	kg	11,5 [additional filling on site needed]		

## 3-Pipe System ECO-G, GF 2 Series

### Highlights

- Flexible control capabilities through simultaneous heating and cooling
- Reduced gas consumption by Miller-cycle engine
- Capacity ratio 50–200%
- 145 m maximum allowable piping length
- Reduced electrical power consumption by using DC Motors
- Part load efficiencies increased
- Up to 24 indoor units
- Total pipe runs up to 780 m
- Quiet mode offers a further 2 dB[A] reduction
- Option of using LPG as a power supply



HP			16	20	25
Model			U-16GF2E5	U-20GF2E5	U-25GF2E5
Cooling capacity		kW	45	56	71
Power input [Cooling]		kW	0,71	1,02	1,33
EER [Caloric value]		[ni / ho]	1,48 / 1,64	1,40 / 1,55	1,15 / 1,28
Gas consumption [Cooling]		kW	29,7	39,1	60,4
Heating capacity	STD / Low temperature	kW	50 / 53	63 / 67	80 / 78
Power input [Heating]		kW	0,6	0,64	0,83
COP		[ni / ho]	1,51 / 1,68	1,46 / 1,62	1,48 / 1,64
Gas consumption [Heating]	STD / Low temperature	kW	32,5 / 41,5	42,5 / 56,4	53,2 / 62,3
COP		Average	1,5	1,43	1,32
Power supply			230 / 1 / 50		
Starter amperes		A	30		
Max. Power intake		A	3,36	4,87	6,22
Recommended fuse		A	20		
Cable diameters, power supply		mm <sup>2</sup>	3 x 2,5		
Sound pressure level		dB[A]	57	58	62
Dimensions H x W x D		mm	2.273 x 1.650 x 1.000 [+80]		
Net weight		kg	775		805
Pipe connections	Liquid	Inch	3/4"		
	Suction	Inch	1 1/8"		
	Flue gas	Inch	Rp 3/4"		
	Exhaust drain port	mm	25		
	Hot gas	Inch	7/8"	1"	
Indoor/outdoor capacity ratio			50 – 200 %		
Number of connections indoor			24		
Prefilled refrigerant [R410A]			10,5 / 21,9	11,5 / 24,0	
Outdoor temperature limits	Cooling [min./max.]	°C	–10 / +43 °C TK		
	Heating [min./max.]	°C	–21 / +15,5 °C FK		



## Schwank & Panasonic

German engineering meets Japanese quality.

### ■ Schwank: The expert for industrial and commercial heating solutions

Being innovation and world market leader in the area of industrial and commercial heating and cooling solutions Schwank has a deep understanding when it comes to the special requirements of industrially and commercially used building. As a German manufacturer we stand by our promise to deliver products and services which meet highest quality demands. An efficient and CO<sub>2</sub>-minimised operation is guaranteed by any of our products.

### ■ Panasonic: A focus on efficiency and reliability

In terms of gas heat pumps Panasonic is the ideal Partner. In the development process the enterprise highly emphasized efficiency, durability and quietness of its products. Thanks to intense quality control efforts the Panasonic heating and cooling solutions meet the highest standards

Gas Heat Pumps/8SEN/1\_70917 [Technical changes reserved]



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