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.

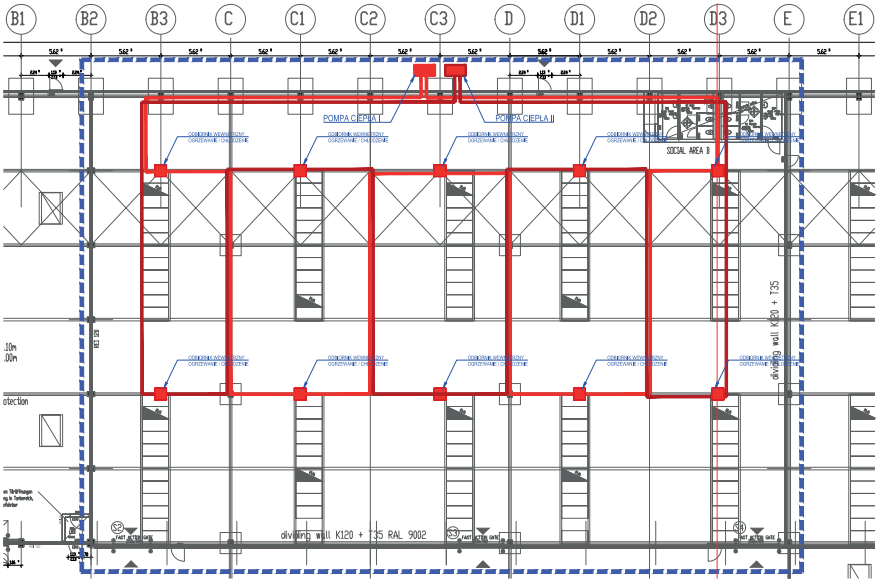
## Proportion of the electricity supply for a Modern Power Plant

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: | Temperature control of storage facility; 18°C...25°C |
| Size: | 2.000 m² |
| Installed GHP: | 2 Gas heats pumps, outside |
| Method of distribution : | 10 Indoor systems i VRV-System |
| Heating load: | 160 kW |
| Cooling load: | 142 kW |

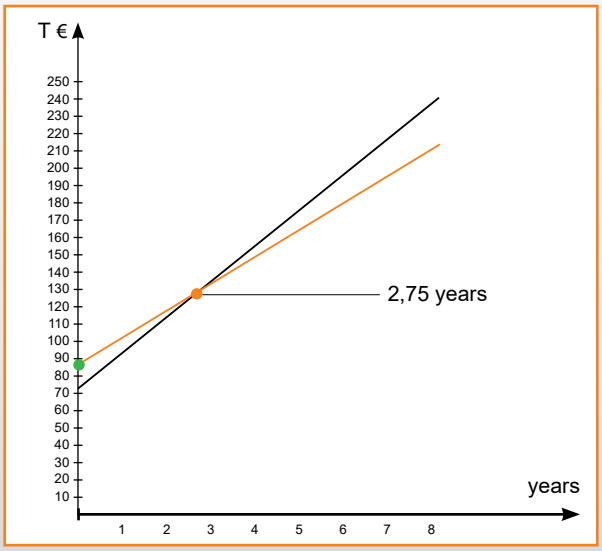



**Building drawing with distribution** of inner units and outdoor installation of gas heat pump

## Comparison of Gas Heat Pump and Electric Heat Pump

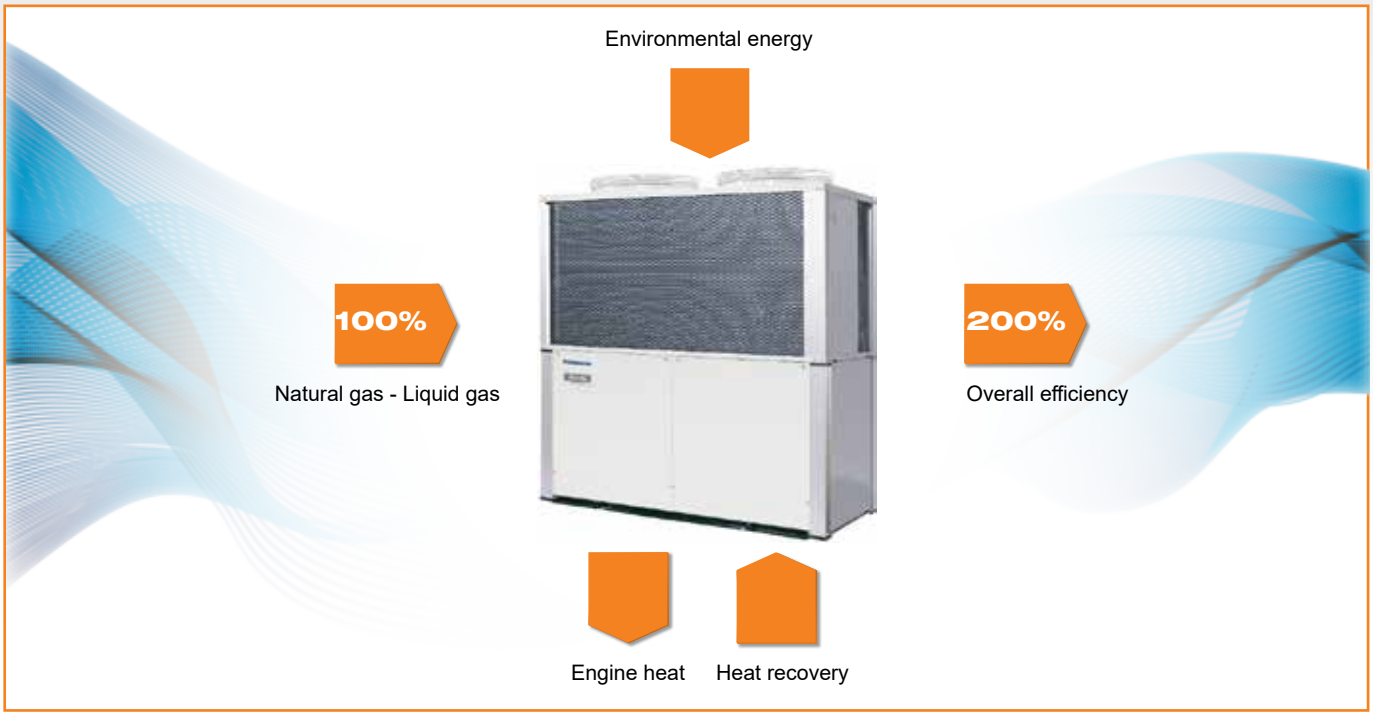
Electricity: 0,170 € pro kWh
Gas: 0,045 € pro kWh

| 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 |
| **Total:** | | **15.203** | **20.803** |

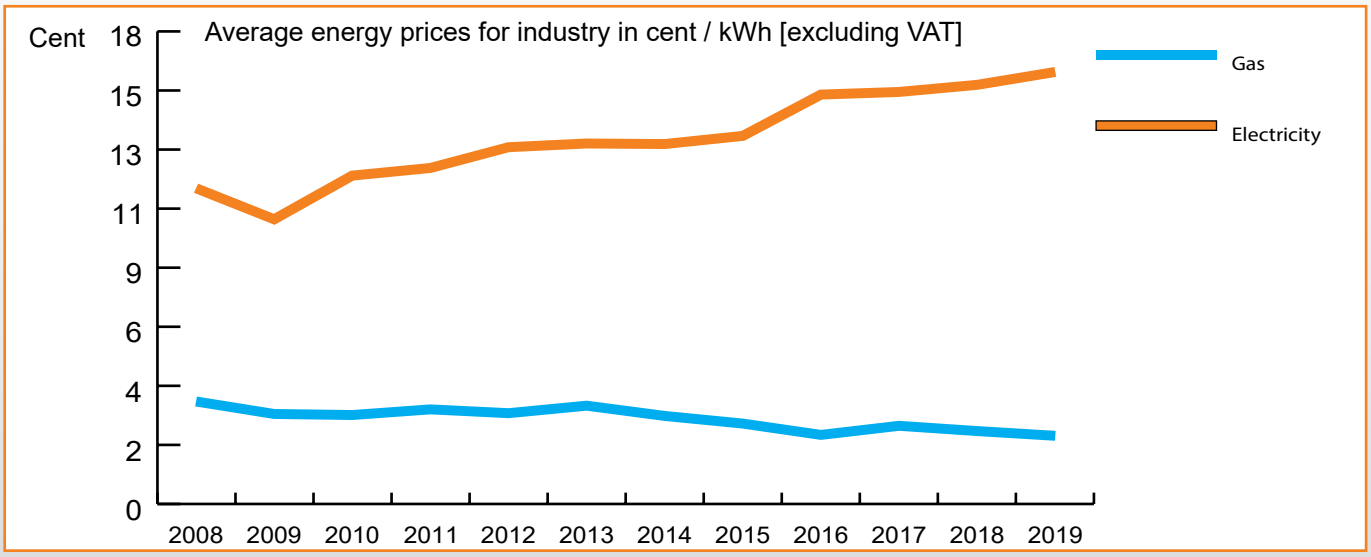


## Your benefits at a glance:

## 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]




Source: BDEW

# 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 ex-change


| 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 |
| Operarting 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 comsumption [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 | | mm² | 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
INNOVATIVE HEATING SOLUTIONS

## Schwank & Panasonic

German engineering meets Japanese quality.

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

Beeing 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 unsed building. As a German manufacturer we stand by our promise to deliver products and services which meet highest quality demands. An efficient and $CO_2$-minimised operation is garantueed 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 enphazised efficiency, durability and quietness of its products. Thanks to intense quality control efforts the Panasonic heating and cooling solutions meet the highest standards



**Germany [HQ]**

**Schwank GmbH**
Bremerhavener Str. 43 · 50735 Cologne
Tel.: +49-[0]221-7176 0
Fax: +49-[0]221-7176 288
E-mail: info@schwank.de
Internet: www.schwank.de

**United Kingdom**

**Schwank Ltd**
Suite 21, 50 Churchill Square
Kings Hill, West Malling,
Kent ME19 4YU
Tel.: +44 [0] 208 641 3900
Fax: +44 [0] 208 641 2594
E-mail: sales@schwank.co.uk
Internet: www.schwank.co.uk