



Complete CHP Packaged Solutions

Inventive Engineering



Welcome to Arbe Integrated Engineering CHP Systems

Arbe CHP (combined heat and power) systems offer a complete solution for self-electrical generation. According to the Carbon Trust, when compared to using a conventional boiler system and mains electricity, CHP has the potential to reduce carbon dioxide emissions for power and heat generation by around 30%. In utilising the waste heat from the power generation process, our CHP systems deliver energy utilisation of circa 92%, of which 33% is in the form of higher value electrical energy.

Arbe work in partnership with Bosch, offering CHP systems from 19 kW_e up to 400 kW_e, with full packaged systems for each size of CHP.

We also offer supply and installation of CHP units in existing plantrooms, connecting to existing systems with full integration of services and controls, in applications such as leisure centres and factories

Our CHP unit selection is based on calculations made by looking at the system and existing fuel costs, ensuring the correct size unit is utilised



Our housings are supplied manufactured from GRP as standard but we are able offer modular and sectional buildings where required.

The GRP housings are supplied as a whole and are mounted on a rebated concrete plinth. The housings are fully weatherproof and are supplied with a 20 year manufacturers guarantee as standard. We also supply electrical lighting, small power sockets and anti-frost heaters as standard within the housing, along with options such as fire protection, leak detection and security alarms

CHP Ref	Electrical Output kW _e	Thermal Output kW _{th}	System Flow Temp DegC	System Return Temp DegC	LTHW Flow Rate L/Sec	System Connection Sizes (DN)	Buffer Vessel Capacity Litres	Gas Flowrate Required m ³ /Hour	System Working Pressure (BarG)
ACS19-TS-IND	19	31	70	50	0.37	DN20 PN16	1250	5.13	2.0
ACS50-TS-IND	50	80	80	60	0.96	DN32 PN16	3000	14.06	2.0
ACS70-TS-IND	70	109	80	60	1.3	DN40 PN16	4000	19.38	2.0
ACS140-TS-IND	140	212	80	60	2.53	DN50 PN16	7000	36.48	2.0
ACS240-TS-IND	240	374	80	60	4.46	DN65 PN16	10000	63.55	2.0
ACS365-TS-IND	365	478	80	60	5.7	DN80 PN16	12500	90.73	2.0
ACS400-TS-IND	400	500	80	60	5.96	DN100 PN16	12500	98.61	2.0

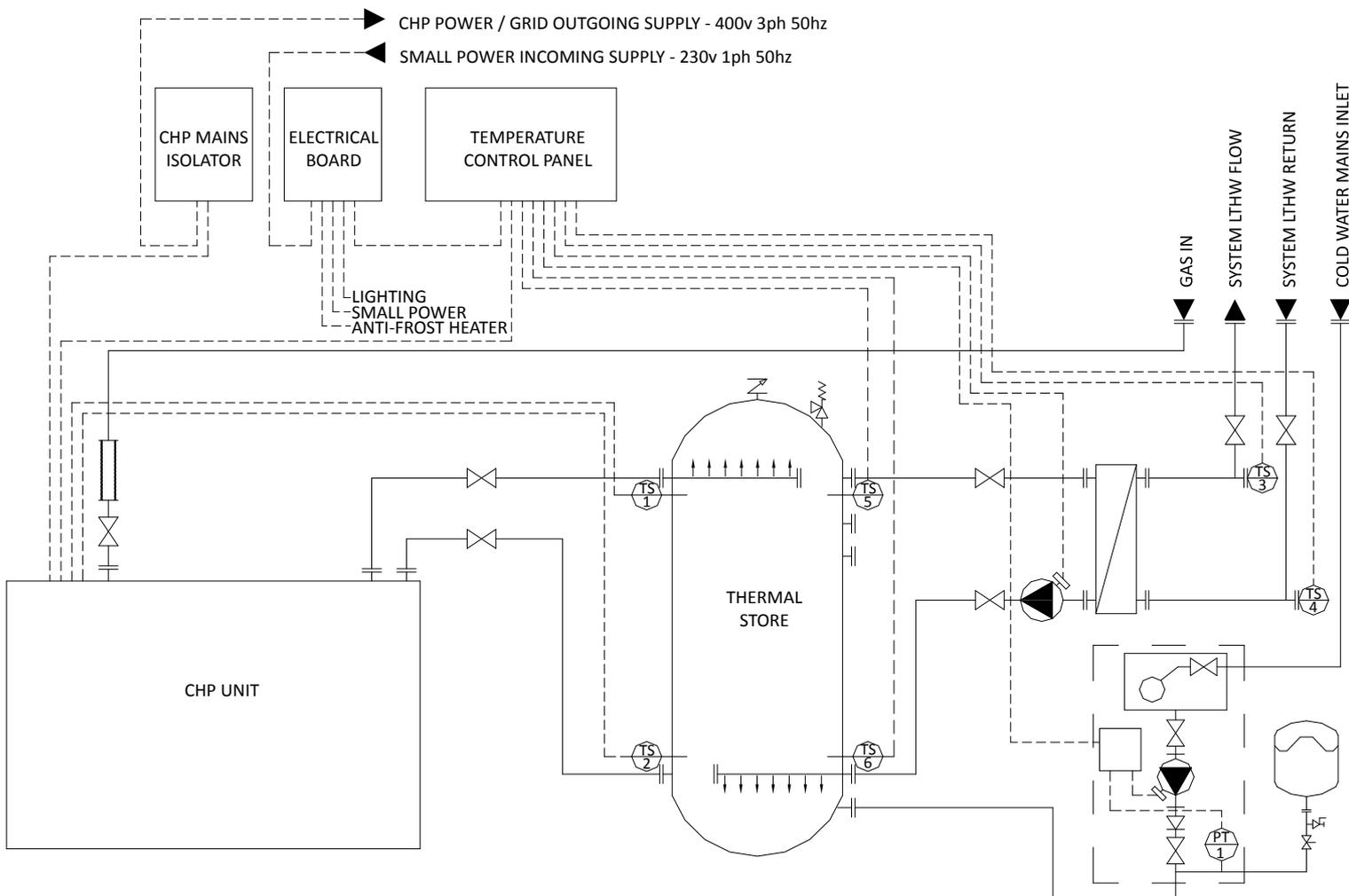
Our CHP Packages offer a solution for most types of applications. Our standard offering is an indirect system that can be integrated into existing heating systems with the protection of the CHP not being brought into contact with issues faced with older heating systems such as water quality and differential operating pressures. Our system can integrate into systems up to 16 BarG with a working pressure of the CHP as low as 1.5 BarG

Our ACS systems are supplied with the following standard equipment, as shown on the schematic below

- CHP unit - from 19 kWe to 400 kWe
- Thermal store - Sized to suit the CHP and system output
- Pressurisation unit and expansion vessel
- Gasketed plate heat exchanger
- Temperature controls package to ensure optimised heat usage and correct operation
- Housing including lighting, small power sockets and anti-frost heaters

Options include:

- Heat dump radiator for inconsistent system heat loads
- Secondary system circulating pumps and controls
- Directly integrated CHP systems without the need of the plate heat exchanger or thermal store (subject to design confirmation by Arbe)



The ACS system is a complete turnkey solution, offering a plug and play solution where required. Our systems are completed on site with electrical and hydraulic connections ready for connection and integration by Arbe or by others. Once connected and tested, we provide a G59 connection and test for grid synchronisation.

Our system can also be connected to most site BMS providing a complete integration. This includes our temperature control package on the LTHW which provides connections for fault analysis and remote enable, even BMS adjustable temperature set points for the system



We can also install CHP systems in existing plantrooms, designed to suit any application and layout where there are restrictions such as access and space. Contact our sales team for further details

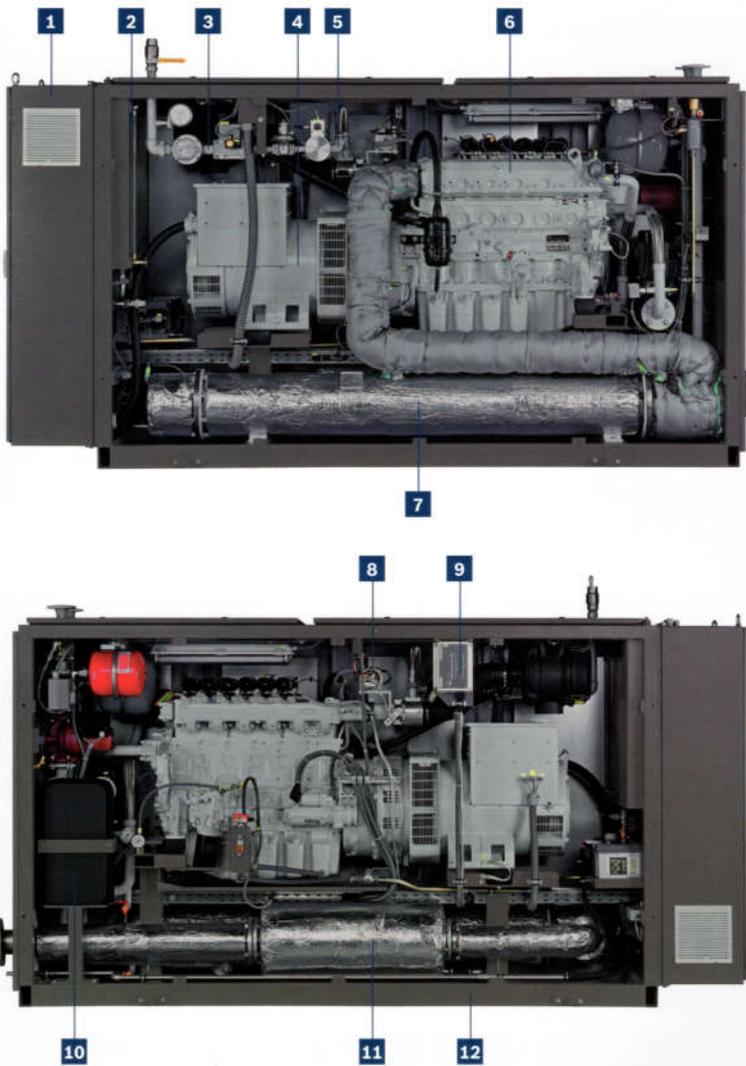


BOSCH CHP

Bosch CE CHP units are highly efficient generators of both electricity and heat energy, with overall net efficiencies of up to 92.4%

A Bosch CHP module consists of a gas engine, a generator and a heat exchange system. The gas engine drives the generator to produce three-phase electrical power, which feeds into the main low voltage distribution system, where it can be used locally or exported to the national grid.

Heat is produced as a by-product of the power generated, which in a conventional power station would be wasted. However, the heat generated by the Bosch CHP module is used to generate hot water via the integral heat exchangers. This hot water may be used for space heating, process heating, heating of domestic hot water or chilled water



Key:

1. Module control cabinet with controls
2. Module oil tank
3. Safety gas train (natural gas)
4. Synchronous generator
5. Lambda control (natural gas)
6. Gas fuelled reciprocating piston engine
7. Exhaust gas heat exchanger
8. Speed/output control
9. Ignition unit
10. Heat exchanger for engine coolant
11. Exhaust gas silencer
12. Base

Images used courtesy of Bosch

Bosch's highly effective CHP modules are compact power units which, through the clever combination of the reciprocating engine and generator, optimised hydraulics and an intelligent control system, makes them an energy efficient technology for today and tomorrow.

For further details on the Bosch CHP modules, refer to their brochure available from Arbe Integrated Engineering

Welcome to Arbe Integrated Engineering

Arbe Integrated Engineering offer a range of products and services for the HVAC building services industry, ranging from bare heat exchangers and storage cylinders to fully packaged plantrooms and associated equipment. With over 20 years of design experience, our design and technical team can offer a complete solution for a wide range of project requirements.

Seamless Integration:

With our next generation range of equipment, our products offer complete integration with renewable and future energies, ensuring all available energy is utilised, reducing fossil fuel usage. In addition, our HevaSys products offers a unique next generation range of equipment with integral BMS style controls that can be adapted to any installation and can provide a standalone management system for buildings where the heating and hot water generation is relatively small, such as a leisure centre or a school.

Inventive Engineering:

In addition to our standard equipment, including heat exchangers, storage calorifiers and packaged solutions, we also design and manufacture bespoke equipment to end user or consultant specifications and we carry out extensive research and development to invent new products and enhance current designs.

Application Solutions:

With our complete range of products, we have solutions to cover most applications. With our ability to carry out complete bespoke design, we have a solution for each and every project requirement. Our end users include:

- Hotels
- Schools
- Universities
- Leisure Centres & Gyms
- Hospitals



Products Include:

Calorifiers
Indirect Cylinders
Direct Cylinders
Thermal Stores
Pressure Vessels
Plate Heat Exchangers
Braze Heat Exchangers
Shell & Tube Exchangers
Heat Exchanger Packages

TwinHeat DHW/LTHW Systems
Gas Fired Calorifiers
Boilers & Associated Equipment
Packaged Boiler Houses
Packaged Plant Rooms
Solar Energy Packages
Heat Pumps
Booster Sets & Pressurisation
Bespoke Engineering Packages



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