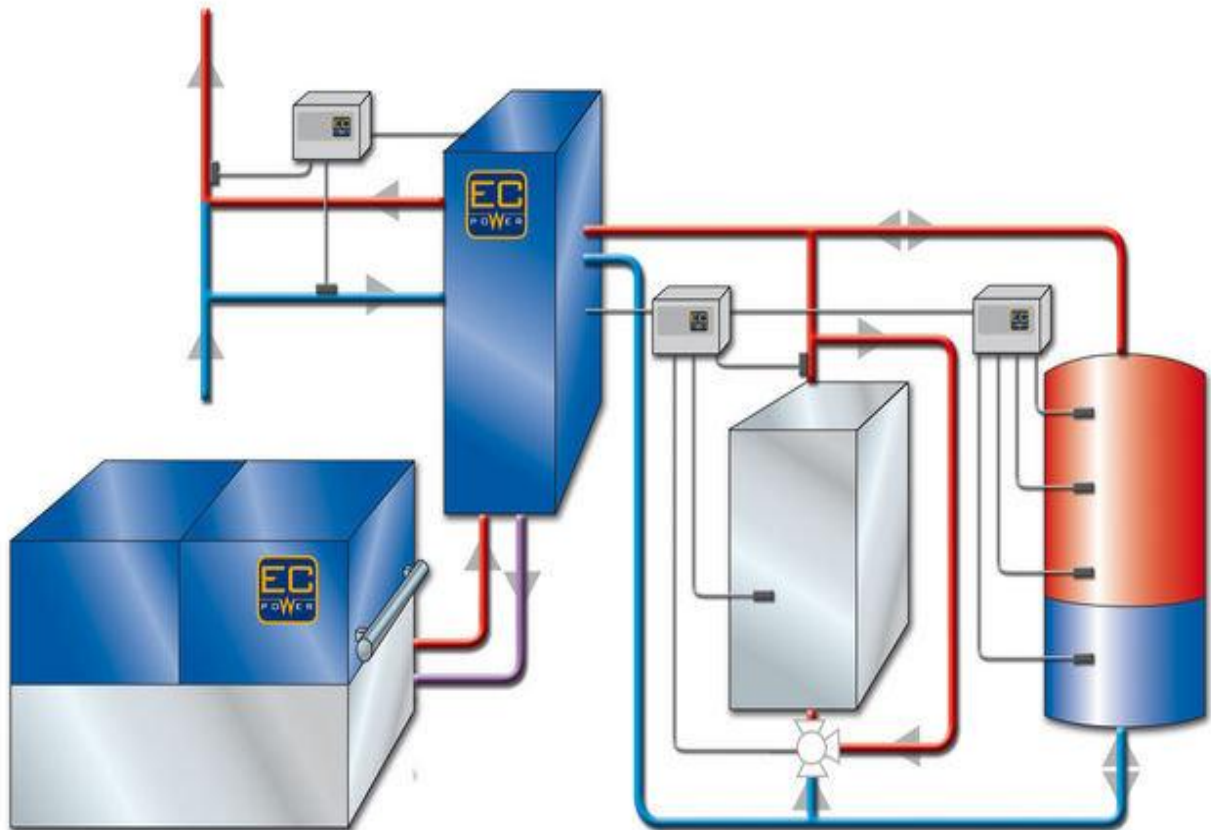




# INSTALLATION-GUIDE FOR





# EC Power Installation Guide

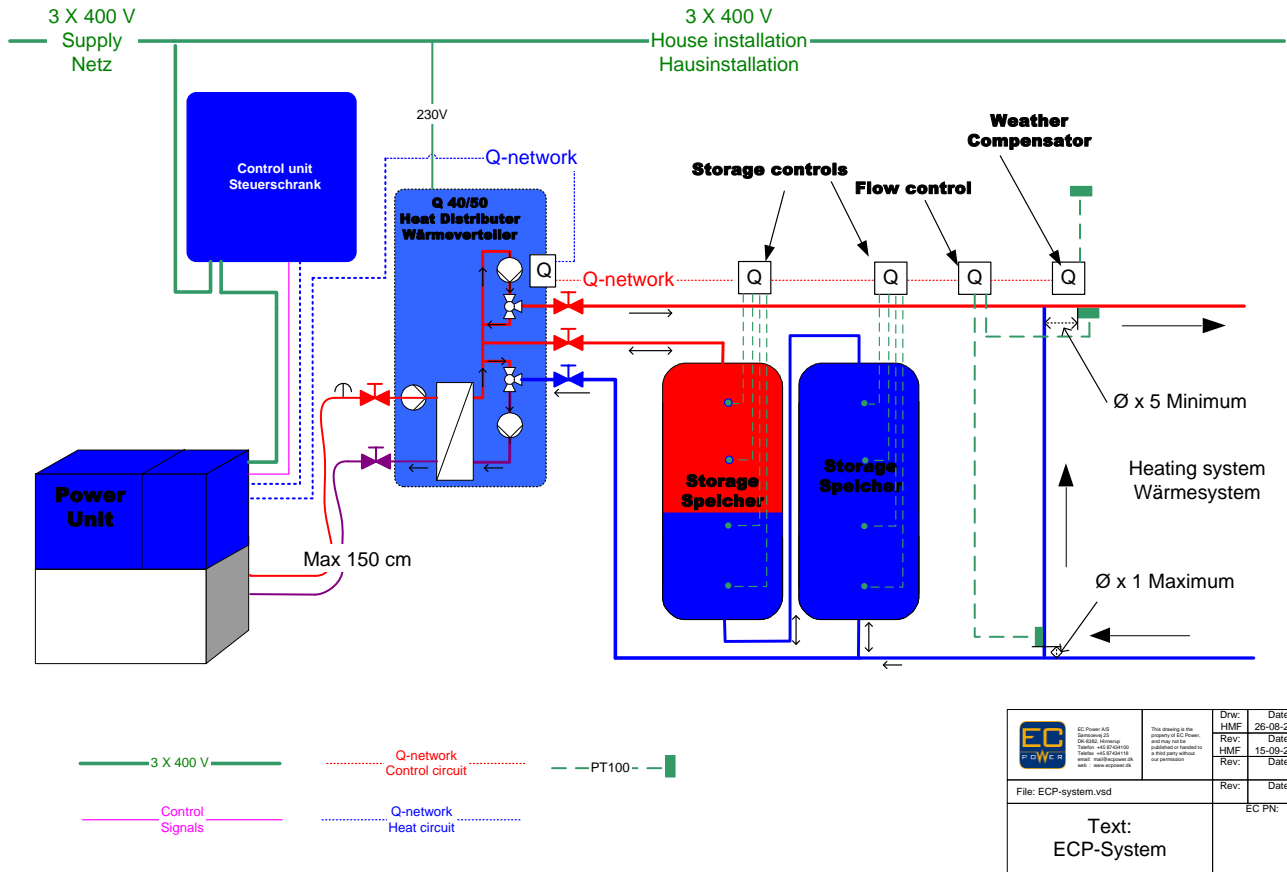
## XRGI 15G TO

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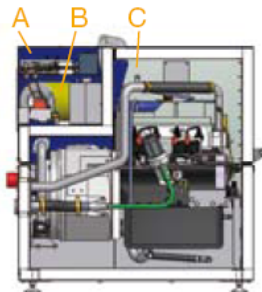


### EC Power system



### EC Power – System Components

#### Power Unit

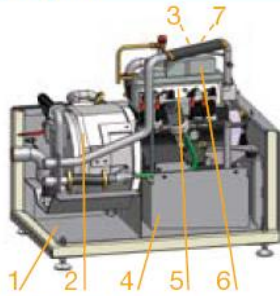


- A Electrics and safety circuit enclosure
- B Ventilated enclosure for gas safety tray
- C Heat and noise shield for engine

# EC Power Installation Guide

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### Engine



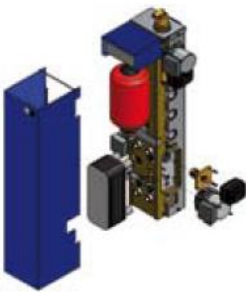
- 1 Silencer
- 2 Water cooled generator
- 3 Exhaust gas heat exchanger (not visible)
- 4 Oil sump
- 5 Toyota gas engine
- 6 Oil separator
- 7 Oxydation catalyst (not visible)

### Control Panel



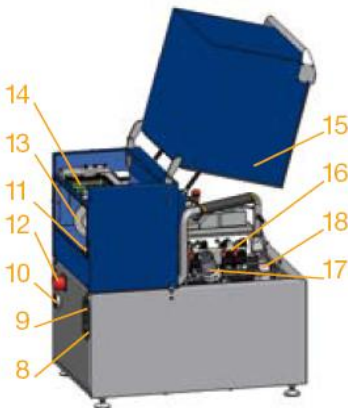
- Regulates out-put and operation
- Control operations
- Provides data capture, analysis and reporting to service database
- Grid monitoring

### Heat Distributor



- Connection for Power Unit (separate cooling circuit)
- Connection for central heating
- Connection for storage tank
- Engine water temperature control
- Supply temperature control
- Surveillance of storage tank
- Surveillance of component status
- Control of boiler (parallel operation)
- A. o.

### Installation and Service



- 8 Water connection (return)
- 9 Water connection (supply)
- 10 Exhaust gas connection
- 11 Gas connection
- 12 Main power connector
- 13 Air filter
- 14 Gas safety tray
- 15 Lid with gas springs
- 16 Spark plugs
- 17 Oil filter
- 18 Oil filler cap



# EC Power Installation Guide

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### Placing the EC Power System Components

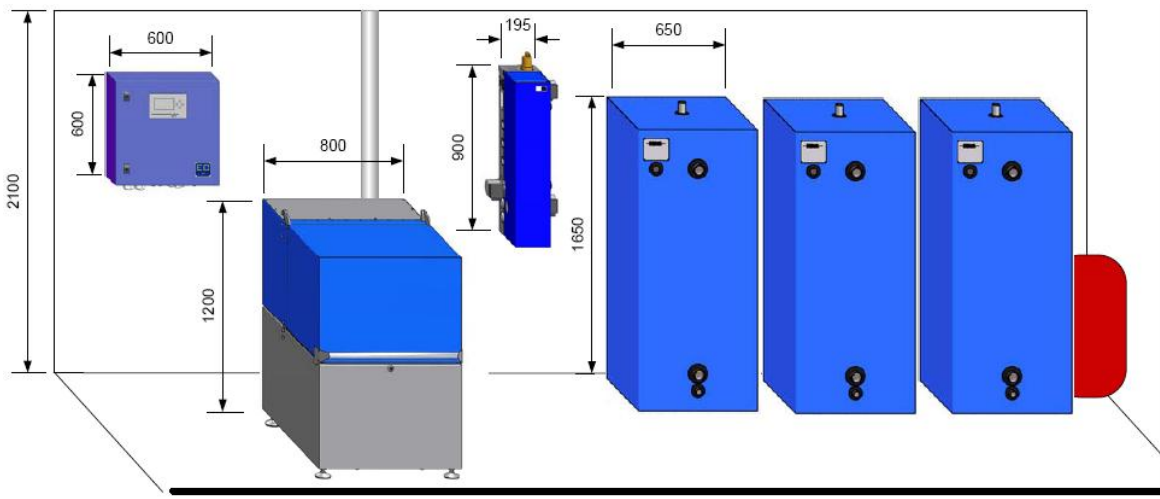
The measurements in the plan below can be used as guidance when setting up the EC Power System.

The set-up can be adjusted to the actual CP-installation room conditions, when observing a few maximum piping- and cable-lengths as well as the dimensions shown below.

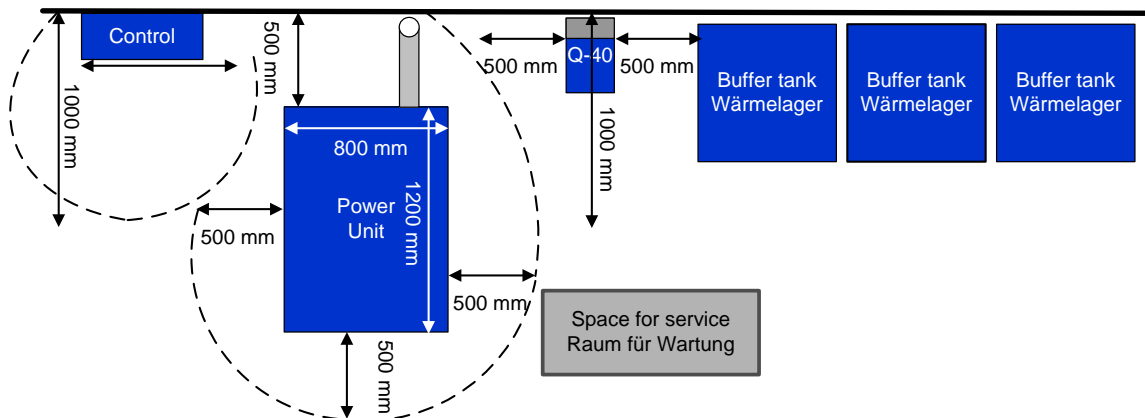
Make sure that the control cabinet and the Power Unit are easily accessible for servicing by maintaining a free work space as shown.

Also make sure that there is sufficient room for discharge, pipes, expansion vessels and other system components included in the existing system. See the instructions for applicable components. Dimensions shown are inclusive of rebounds, connector boxes, etc. The height measurement is to the top of the units.

#### Side view



#### Floor plan



## Installation Requirements

### Installation Site (Boiler/Utility room)

When choosing the installation site, the following considerations must be made.

Accessibility space must be allowed for both installation and future maintenance or servicing of the system.

For example, the entrance to the plant room must be a minimum of 780 mm wide.

It is also preferable for the surface of adjacent areas to allow for access of pallet loaders or fork lifts.

There must be sufficient lighting as well as access to 230 V outlets.

### Flooring

The *Power Unit* must stand on a level, water proof, stable surface, which in general means a concrete floor.

The floor must have sufficient carrying capacity for static and vibratory loads from the *Power Unit* weighing around 700 kg.

### Room temperature / Dust

Room temperature should be kept below **35°C**, and must never exceed **40°C**, in order to ensure maximum lifetime of the electric components.

In case higher temperatures can be expected to arise, the room must have temperature controlled mechanical ventilation.

The installation room must be kept dust free, so that the Power Units air filter does not block up.

### Flue gas

Expelled hot gases are vented by means of an insulated flue.

Precautions should be taken to ensure that the flue is adequately supported by wall mounted or cable tied fixing brackets. If the flue runs through the ceiling and roof make use of proper gaskets for tightening.

Use of an insulated flue both ensures that excessive condensation does not build up in the exhaust system as well as protects against accidental exposure to hot surfaces.

Although the system is not condensing, a condensation trap should be installed to allow drainage of possible condensate.

### Noise / Vibrations

In spite of the system's low level of noise (below 50dB (A), at 1 meter with closed cabinet), noise sensitive environments should not be adjacent to the plant room.



### Corrosive Environment



**The system must not be exposed to corrosive environment.**

### Heat Distributor

The *heat distributor* consists of two heating circuits – the engine circuit and the client's heating circuit.

The two circuits are connected through a plate heat exchanger.

The engine circuit side is equipped with a built-in pressure relief valve placed in the engine as well as an expansion vessel placed in the heat distributor.

The client's heating circuit must also be equipped with a pressure relief valve, as well as one or more correctly dimensioned expansion vessels.

Preferably a water tap should be located close the *heat distributor* - or at another filling point in the heating system, in order to simplify filling of the heating system.

Mains water is not allowed to be directly connected to the heating system. The connection must be through a detachable hose connection, which is left unconnected when not in use.

### Return Water Temperature

The return water temperature in the heating system should **not exceed 70-75°C**.

To optimize the functionality of the CHP system, a temperature difference of at least 20-30 degrees between the hot water and the return water in the heating system should be maintained.

### Electric Installation

The electrical output from the Power Unit can modulated following the on-site electrical consumption.

To obtain this function, the electrical connection has to be made in a *supply point* in the main distribution board - directly after the existing meter.

Furthermore, an *additional reference meter* for the CHP must be installed after this supply point, and before all other consumers.

In installations where the required electrical- and heat consumption is always larger than the output from the CHP unit, or where the price for selling power is at the same level as the price for buying power, the CHP unit can be connected at any adequate connection point in the installation, without installing a *reference meter*.





# EC Power Installation Guide

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The connection cable to the EC Power *control panel* must be fused with min. 50 A and max. 63 A gl/gG melting fuses. The EC Power system has a built in G59/VDE-0126 protection relay.

### Gas connection

The gas connection must be made with a ball valve with thermally released shut-off valve e.g. DUNGS order nr. 238 504 and an easily accessible gas filter, e.g. DUNGS order nr. 066 209.

The ball valve must be mounted before the gas filter, to be able to close off the gas when replacing the filter.

The supplied flexible gas hose is for connecting the gas filter and the *power unit*.

The gas supply pressure must be between 5 and 65 mbar.

The XRGI15G-TO is prepared for category I<sub>2R</sub> gas, which means natural gas from the 2 gas family.

During commissioning, the *Power Unit* must be adjusted to the gas specific to the site by EC Power trained personnel.

### Modem

In order to be able to monitor the system remotely, a mobile modem is built into the *Control Panel*.

Should the telephone signal in the plant room be poor, it may be necessary to fit a remote antenna to obtain a sufficient signal. If required, a directional antenna is also available as an accessory.

Please note: A functioning modem connection is a precondition for maintaining the warranty coverage.

### Safety

The system uses **gas** as fuel, therefore the installation must comply with all adequate regional regulations for gas installations (In the UK installers must comply with Cergi COCN 1 + Gaseous fuelled engines).

To ensure safe operation of the CHP equipment, the system must not be operated with the component covers removed or left open. During commissioning and service however, it is necessary to run the system without cabinet covers: Therefore this is only to be carried out by EC Power authorized personal wearing approved ear protection.

The key to the *Control Panel* and *Power Unit* must be stored at a location accessible to authorized personnel only.

The *Control Panel* and the *Heat Distributor* must be mounted at a maximum height to the top of **1800 mm** from the floor to reduce the risk of accidental contact.

The cables between the system components must be secured and protected from any mechanical disturbance.



### Requirements to the heating system

#### **EC Power CHP hydraulics**

The hydraulics in the EC Power CHP system are based on intensive research and many years of experience in CHP/District Heating in Denmark, and it can be described as a “Micro district heating system”.

Correct functioning of the CHP system depends on a few general requirements to the heating system.

These requirements can be compared with what is also required for a well functioning district heating system and they are described below.

#### **Heating system with storage capacity**

The EC Power CHP system must have a storage capacity for excess heat, as a CHP unit based on an engine cannot start and stop in the same frequency as a gas or oil burner.

Furthermore, the EC Power CHP system will, in the “power consumption optimized mode”, automatically try to shift the power production to times with high power consumption and high tariffs, if the heat consumption is too low for continuous running, and this is accomplished through the means of heat storage. The system must always have at least one 500 liter storage tank, whereby the heat can be stored in times of low heat consumption.

The actual site consumption is continuously registered by the EC Power CHP Unit, and it automatically reacts to this. This is accomplished through an adaptive (“self-learning”) controller that registers the actual heat consumption and by constantly calculating the daily power consumption profile.

If the power consumption is continuously higher than the production of the EC Power CHP Unit, or if the price for selling power is at the same level as the purchase price for power, the system can also (in seldom cases) be controlled purely by the heat consumption (“heat controlled mode”). In this mode, as in the “power consumption optimized mode”, the storage tank equals out the fluctuations in the heat consumption, in order to secure running periods lasting at least 20 minutes, even with very little heat consumption.

The EC Power CHP unit can be connected to a larger storage tank, or more storage tanks in series, when there is room for this at the installation site, and it is required from peak loads in the heating system. The storage must be connected as instructed in this guide.

When the heat consumption has large variations over a daily period, it is of utmost importance that the storage capacity is adequately dimensioned. In this way the EC Power CHP unit can supply even large peaks in the heat consumption, thus securing maximum running hours.

In a large number of installations, with the main source of heat consumption during the summertime being hot water production (e.g. hotels), the storage capacity is important



# EC Power Installation Guide

## XRGI 15G TO

in order for the CHP unit to be able to produce this hot water, and thereby be able to run at all in the summertime.

In any heating system with storage, a steady difference between the flow temperature and the return temperature must be secured, as the storage capacity equals storage volume times temperature difference.

According to the above, no or very little temperature difference actually means no or very little storage capacity.

In certain heaters (hot water boilers and air heaters) it can be necessary to install return temperature limiting valves, to keep the return temperature low. Preferably the low is min. 30 degrees below the flow temperature.



### EC Power Stratification Storage

The storage tank in the EC Power CHP system is storing in two stratum: Hot (top) and cold (bottom) divided through a separating layer. It is possible to connect more storage tanks in series, to obtain a larger storage capacity.

The top of the storage tank is connected to the hot water outlet from the CHP unit and the flow water to the heating system, and the bottom of the tank is connected to the return water from the heating system and the return water inlet to the CHP unit.

When the EC Power CHP unit produces more heat than is consumed, the hot water is filled in the top of the storage tank. When more heat is consumed than there is produced, the hot water is then taken out from the top of the storage tank, that means the flow direction in the tank changes around.

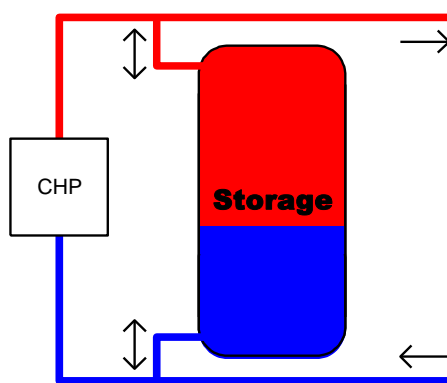
This way of storing heat results in a very high usage of the storage capacity, as the storage tank can deliver cooling water for the CHP unit until it is totally filled with hot water, as well as deliver the full capacity as hot flow water.

Storage tanks with more than two connection points will not function as storage for the EC Power system, as the hot and the cold water will be mixing, and this is not supporting the way that the EC Power system monitors the progression of the stratification layer.

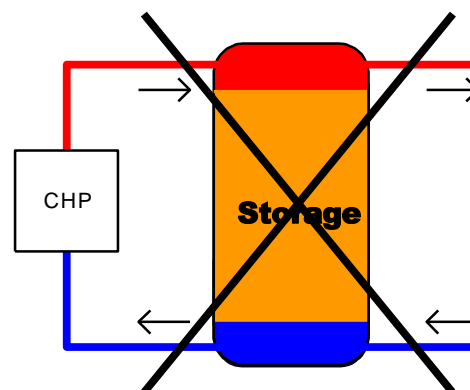
A “mixing storage” will also have a much lower usage of the capacity in the storage tank, as a lower part of a “full” tank will be really hot, as well as an “emptied” tank will not be all cold.

“Full storage” in a CHP system means that the cold return from the storage tank is not cold enough to cool the CHP, and “empty storage” means that the hot flow water from the storage tank is not adequately warm to be system flow water.

**Correct: EC Power storage tank**



**Incorrect: Mixing storage**



### Heat Distributor - Function / Malfunction

The EC Power Heat Distributor is continuously monitoring the heat storage circuit and the engine cooling circuit.

The storage is monitored using four sensors in each storage tank, as well as sensors in the heat distributor. Hereby the system knows to what extent the storage is filled, and can plan its operation according to the power consumption.

In the end, when the storage is filled up, the return water temperature in the heat distributor will rise, and the CHP will stop until the power and heat consumption requires that it is running again.

Hot return water from the heating system to the CHP will also be registered as "storage full", and will therefore stop the EC Power CHP.

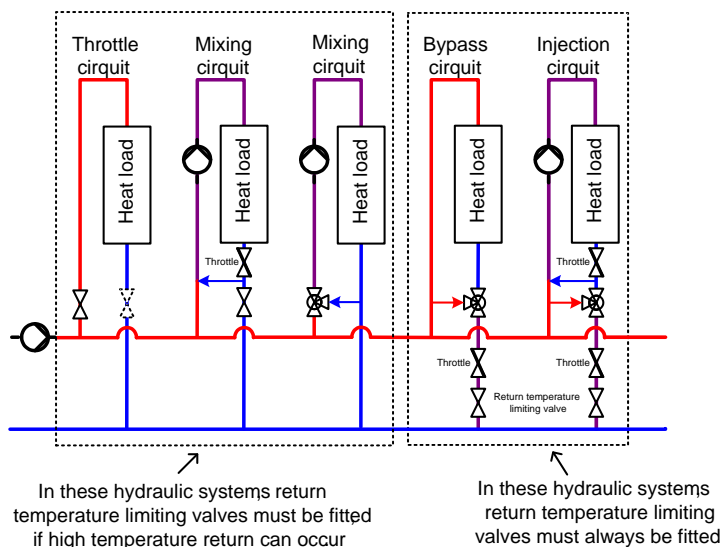
### Typical short circuits in a heating system

The hot water boiler is often responsible for high return temperature, especially at the end of charging the boiler. It is very important that the circulating pump for the hot water boiler is stopped, before the return temperature from the boiler rises up near the flow temperature.

When the hot water boiler charging cannot be stopped in due time with the existing control, a return temperature limiting valve can be build in the hot water boiler return pipe, to reduce the flow through the boiler according to the return water temperature.

The installation of heat loads can roughly be divided into the following hydraulic systems.

In order to avoid an accidental short circuit of the hydraulic system, a temperature limiting valve has to be installed in the return line, when the heat load is regulated, by leading a part of the flow water directly to the return line. (Bypass and injection connections)



Some boiler systems have a by-pass pipe connection between the flow and return header in order to maintain the boiler minimum flow. By low heat demand, this flow will



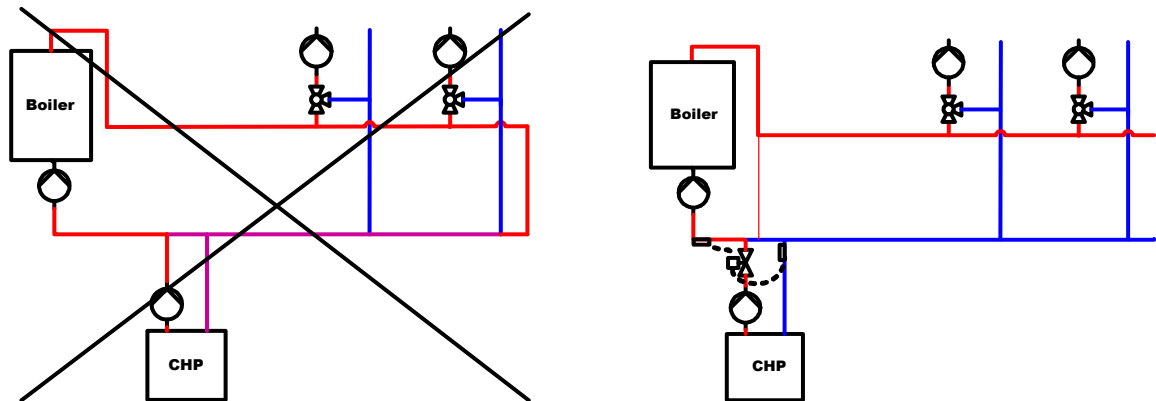
# EC Power Installation Guide

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cause the temperature in the return header to rise into a - for the CHP - inappropriate level.

If the CHP is installed in the return header, the system by-pass pipe must be disconnected or closed.

A by-pass connection close to the boiler is then to be installed, sized to maintain the minimum flow of the boiler.



### Summary

For all types of applications of the EC Power CHP system, it is very important that all connected heat loads are hydraulically balanced and thermostatically regulated, so that there can be no water flow through the loads, without the flow water being adequately cooled down.

Water flow directly to the return without, or with only very little cooling, can be described as a short circuit, and it will result in malfunction of the CHP and the storage system.

With controlled cooling through all the heat loads, a high usage of the storage capacity is achieved, and thereby also the highest possible use of the CHP system.

By some types of heat loads, e.g. hot water boilers and air heaters, it may be necessary to install return temperature limiting valves, in order to secure a low return temperature.



# EC Power Installation Guide

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### **Technical Installation XRGI15G-TO:**

The technical installation mainly consists of the following:

1. Positioning of the *Power Unit*.
2. Mounting the *Heat Distributor*.
3. Positioning of the *Storage Tank(s)*
4. Connecting the *Heat Distributor* and the *Storage Tank(s)* with piping. (Pipe dimension min. 1¼ ", DN32).
5. Connecting the *Heat Distributor* and the *Power Unit* with piping/flexible hoses. (Pipe dimension 1¼ ", DN32).
6. Building up the gas supply for the *Power Unit*.
7. Connecting the CHP with the existing heating system. (Pipe dimension min. 1¼ ", DN32).
8. Mounting correct dimensioned expansion vessel and pressure relief valve.
9. Mounting the flue gas system.
10. Building up fresh water supply for the *Heat Distributor* / heat system.
11. The installation must be made according to the instructions.
12. The heat system must be flushed to wash out dirt before commissioning.

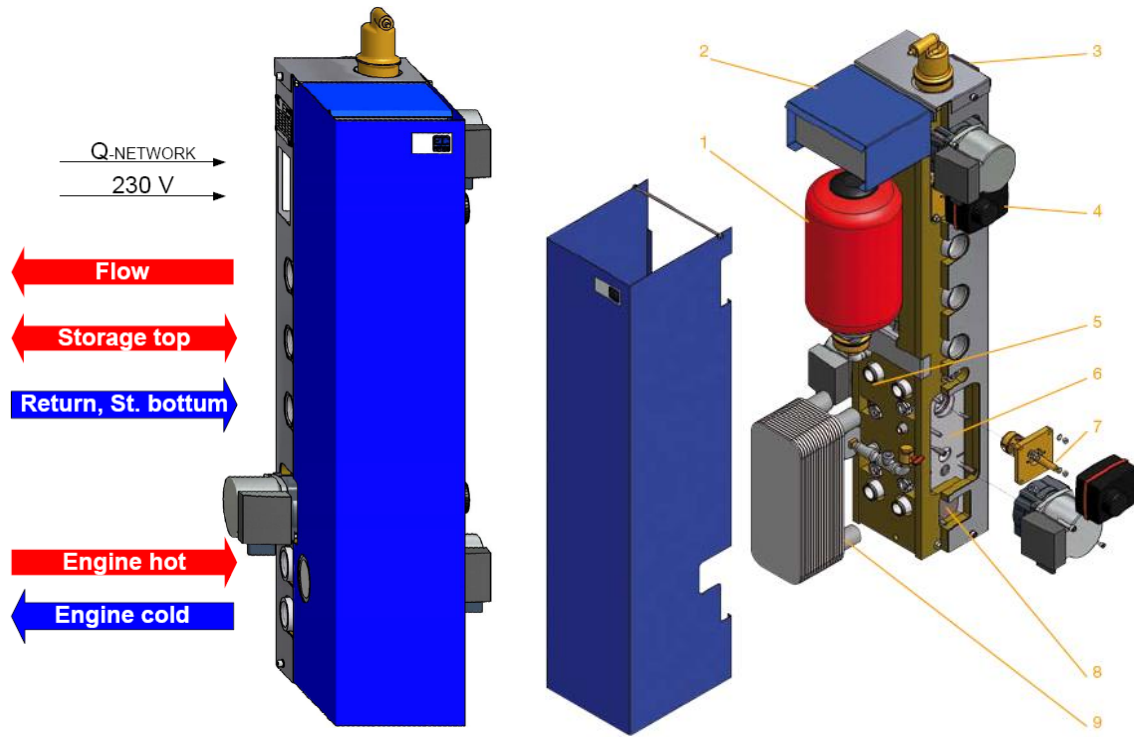
If there is a risk of dirt deposits building up in the system a filter with dirt collector should be fitted.



# EC Power Installation Guide

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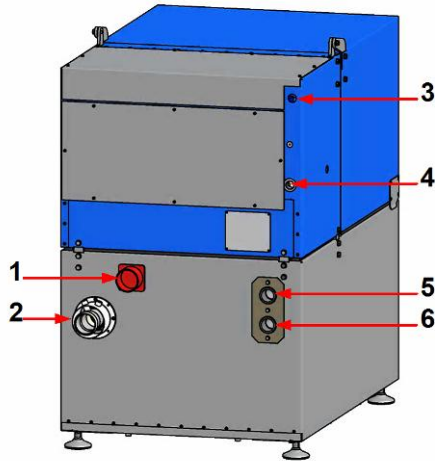
### Q40 / Q50 Heat Distributor connections



1. Expansion tank /
2. Two connections for Q-Network, two connections for heat-distributors & control panel /
3. Automatic micro bobble air separator on the primary and secondary circuit /
4. Flow temperature control /
5. Secondary circuit connection for heating circuit and storage /
6. Primary circuit – connection to power unit (separate cooling circuit) /
7. Engine temperature control /
8. Dirt filter trap with drain on the primary and secondary circuit /
9. Heat transfer – plate heat exchanger



### Power Unit connections

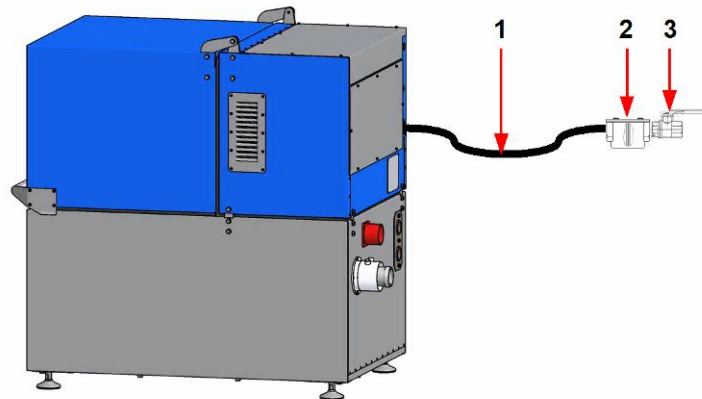


- 1: Generator cable to *Control Panel*  
(4x10 mm<sup>2</sup> cable with 32A CEE plug)
- 2: Flue gas connection (Double wall DN60/100 Alu pipe)
- 3: Control cables to *Control Panel* (one 12 x 0,75 mm<sup>2</sup> cable  
and two 4 x 0,75mm<sup>2</sup> shielded cables)
- 4: Gas connection (see below)
- 5: Water connection, flow water to *Heat Distributor*
- 6: Water connection, return water from *Heat Distributor*

# EC Power Installation Guide

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### Gas connection



1. 800mm flexible hose with  $\frac{3}{4}$ " outer thread (Included)
2. Gas filter e.g. DUNGS order nr. 066 209 (Not included)
3. Ball valve with thermally released shut-off valve e.g. DUNGS order nr. 238 504 (Not included)

### **Heat Distributor functionality / Q-Network**

The Heat Distributor receives data from external sensors through the Q-Network.

The functionality of the EC Power Heat Distributor is expandable through different Q-Network modules.

The following modules are available:

Q-Network Storage Control

Q-Network Boiler Control

Q-Network Flow Control

Q-Network Weather Compensator

Due to the fact, that the system always requires at least one storage tank, there is always a minimum of one Q-Network Storage Control module, or an EC Power storage tank with built in Storage Control connected to the Heat Distributor.

Additional Q-Network functionality is described in the following:

#### **Q-Network Storage Control**

Each storage tank connected to the EC Power system must have a Q-Network Storage Control module mounted. The Storage Control has four temperature sensors in order to detect the position of the separating layer. Therefore a storage tank connected to the EC Power system must be equipped with four sensor pockets, equally spread vertically.

The original EC Power storage tank has the Q-Network Storage Control already build in.

With several filling tanks connected in series, the controller will automatically detect the order of the tanks, when loading the storage.

#### **Q-Network Boiler Control**

In some types of heating systems, where a boiler is connected together with the CHP, the boiler should be controlled depending on storage filling (see heating system diagrams).

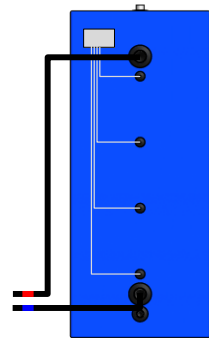
This functionality comes with the Q-Network Boiler Control.

The Q-Network Boiler Control module has a breaker, which breaks the boiler start signal, to suppress the start signal as long as heat is available from the storage tank(s).

#### **Q-Network Flow Control**

The Heat Distributor can regulate the amount of hot flow water going out to the heating system, when the Q-Network Flow Control is installed.

The Q-Network Flow Control has two temperature sensors. One sensor is attached to the pipe where the CHP flow connects, right after the CHP flow connection, so that it will measure the actual mixed flow temperature from the system (flow sensor). The second sensor is attached to the connection point, where the return water is going to the CHP system, and will thereby measure the return water temperature (return sensor).



# EC Power Installation Guide

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See heating system diagrams for placing sensors.

Set point for flow temperature can be set in the Control Panel, and the Heat Distributor will then regulate the flow valve accordingly.

If the return sensor registers hot return water, the flow valve closes, and the CHP system will be loading the storage, until return temperature decreases again, and the flow valve can open.

### **Q-Network Weather Compensator**

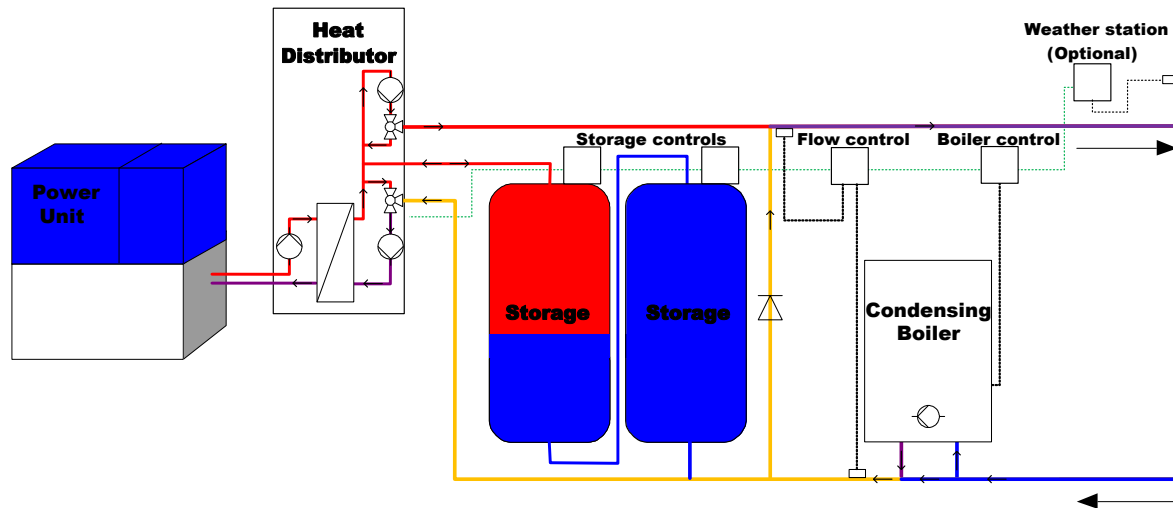
The flow temperature can be regulated according to outdoor temperature, with the Q-Network Weather Compensator. The connection between outdoor temperature and flow temperature can be set in the Control Panel.

### Heating system diagrams

#### Serial connection with a small condensing boiler

The EC Power heat distributor will control the boiler and the storage system.

Fig. 1: Serial connection with a small condensing boiler. Maximum flow is 2,5m<sup>3</sup>/h. With flow temperature control.



In smaller systems, the EC Power heat distributor should be connected directly to the heating system.

A small condensing boiler can be connected in the return line.

The Q-Network Boiler Control must be inserted to control the boiler.

This hydraulic system can handle up to approx. 30 kW boiler capacities.

The boiler will not be running when there is heat stored in the storage.

When the storage is almost empty, and the boiler starts, the boiler will preheat the water to the CHP, and/or feed flow water directly through the mixing bypass, depending on boiler flow temperature (automatically regulated by the Flow Control).

If there should be a problem with the CHP system, the boiler can feed the system by itself through the bypass (CHP flow valve closes).

The EC Power heat distributor will control the boiler and the storage system, Fig. 2.1 and Fig. 2.2 capable of a maximum flow of 2,5 m<sup>3</sup>/h + Boiler Capacity.

Fig. 2.1: Boiler parallel to Heat Distributor. With flow temperature control.

# EC Power Installation Guide

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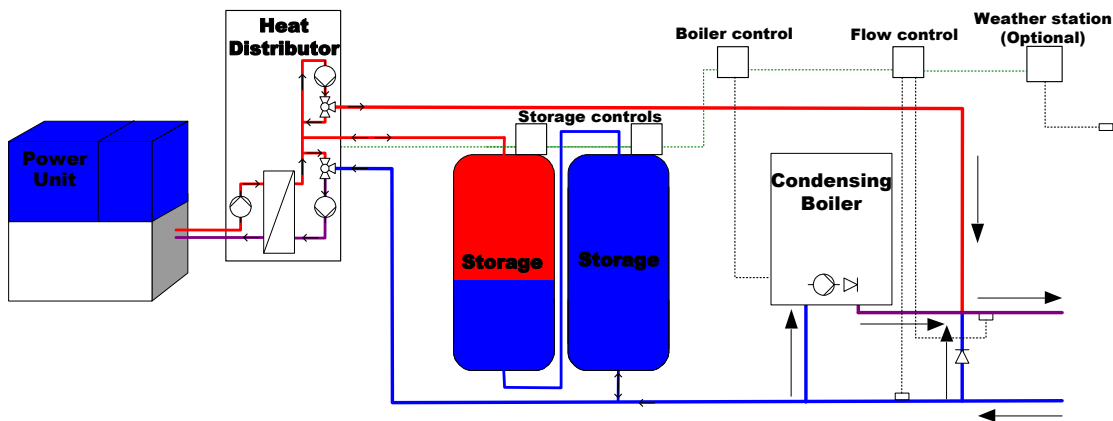


Fig. 2.2: Connection to low loss header. With flow temperature control.

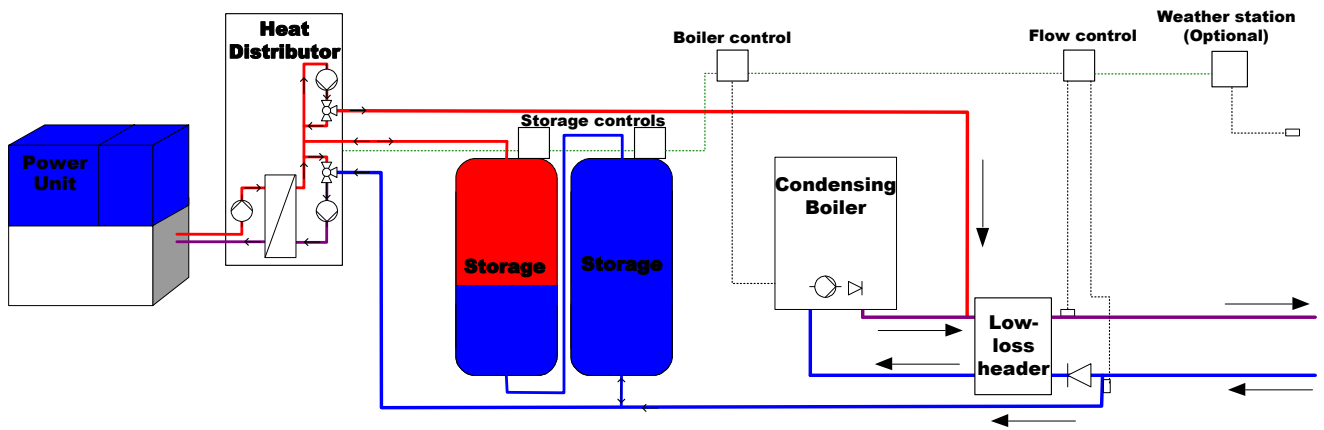
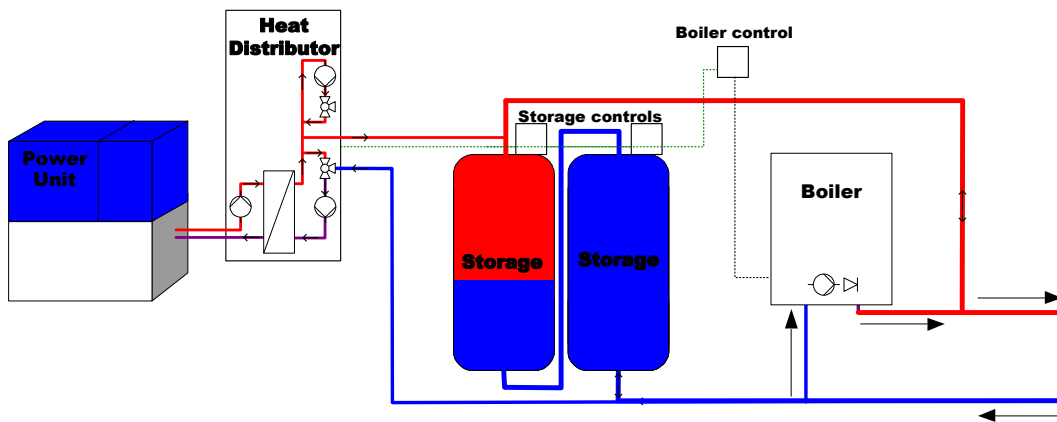


Fig. 2.3: Boiler parallel to storage. Boiler flow temperature min. 75°C. Maximum flow (Heat output) increases corresponding to pipe dimensions in the storage system. No flow temperature control. (Flow temp. min. 75°C)



# EC Power Installation Guide

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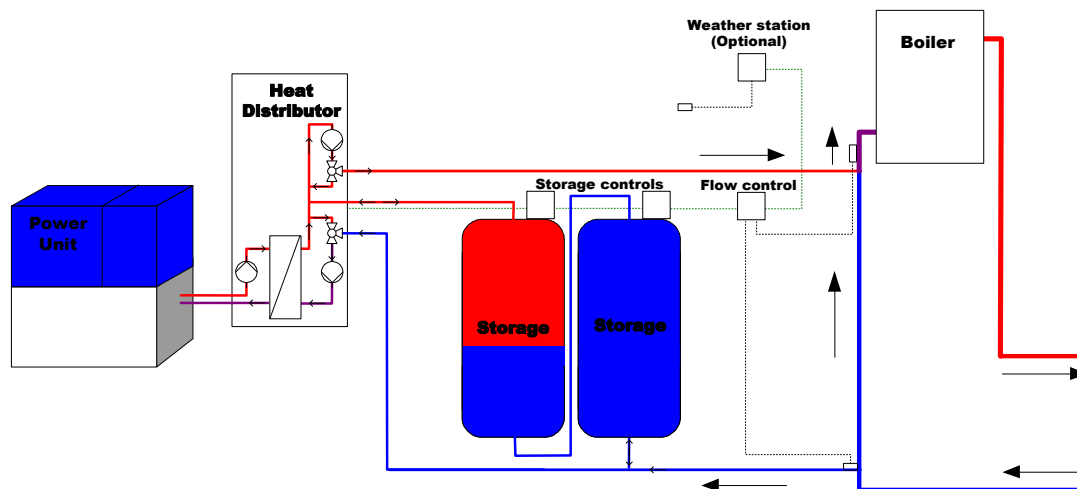
When installing together with larger condensing boiler systems, the boiler should be connected parallel to the EC Power Heat Distributor. In this way of connecting, the boiler circulating pump must switch off, when the boiler is not running, and backwards circulation through the boiler must be blocked.

### **Boiler return temperature increase**

The EC Power heat distributor controls the storage loop and increases the return water temperature to the boiler.

(Not suitable for condensing boilers)

Fig. 3: Serial connection with larger non-condensing boiler.



The system can be installed as boiler return water temperature pre-heat. In this way a portion of the boiler return water will be fed to the EC Power system.

From here the hot flow water from the EC Power system is fed back and mixed into the boiler return water.

The Q-Network Flow Control measures the temperature in the mixed boiler return water, and controls the CHP flow according to heat consumption.

The Flow control also measures the temperature in the return water to the CHP, and closes the flow valve, if hot water should return.

If the set point for the temperature in the boiler is controlled by ambient (outside) temperature, a Q-Network Weather Compensator must also be installed, to regulate the flow temperature from the CHP accordingly.



### Checklist for the technical installation

	Yes
Is the heat distributor correctly connected to the Power Unit?	<input type="checkbox"/>
Is the storage tank correctly connected to the heat distributor?	<input type="checkbox"/>
Are the expansion tank and pressure relief valve correctly connected?	<input type="checkbox"/>
Is the heat distributor correctly connected to the heating system?	<input type="checkbox"/>
Is there water on the Power Unit side of the heat distributor?	<input type="checkbox"/>
Has the heating system been flushed?	<input type="checkbox"/>
Is the room sufficiently ventilated?	<input type="checkbox"/>
Has the system been pressure tested?	<input type="checkbox"/>
Has the circulation pumps been function tested?	<input type="checkbox"/>
<b>Fuel supply and connections:</b>	
Does the fuel supply system comply with local regulations?	<input type="checkbox"/>
Has the gas supply system been approved by the authorities?	<input type="checkbox"/>
Is the gas pressure correctly adjusted?	<input type="checkbox"/>
<b>Flue gas system:</b>	
Has the flue gas system been arranged according to regulations?	<input type="checkbox"/>
Has a condensate drain been installed (or more if required)?	<input type="checkbox"/>
Has the flue system installation been approved by the authorities?	<input type="checkbox"/>





### **Operation Modes**

Two modes of operation: The EC Power CHP Unit can operate in either “electrical demand following mode” or “heat controlled mode” and can be set at time of commissioning.

#### **Electrical demand following mode**

In this mode the unit will measure the instantaneous site electrical demand and try to match this demand by modulating the electrical power produced. The unit will also “learn” the site’s electrical demand profile and optimize the operation to ensure that electricity is provided at periods of highest demand.

#### **Electrical demand following mode -> Export Mode**

It is also possible to set the unit to a fixed electrical output, thus any electric power produced that is not used on site is then “exported”<sup>\*)</sup>. The export function can be accessed from the Control Panel by the user.

<sup>\*)</sup> If the price for selling power is attractive, power sales can also be activated in this mode, whereby the CHP will not be modulating if the power consumption < CHP max. power, when there is no limitation in heat demand. Hereby the unit will still concentrate on producing as much as possible of the power consumed in the installation, but when heat demand allows, e.g. during winter time, the unit will be able to run full power all day, selling power at times where the power production is higher than the power consumption.

To obtain the “power consumption optimized function”, the electrical connection has to be made in a supply point in the main distribution board, directly after the existing meter, and an extra reference meter for the CHP must be installed after this supply point, and before all other consumers.

This means that the connection to the CHP and the reference meter must be connected in one main line, right after the main meter, securing that the full power consumption for the actual installation is monitored by the reference meter.

If the main supply fuse is until 65 A, a direct reference meter can be installed. If the main fuse is bigger a reference meter with power transformers must be installed. (See Electrical diagrams)

#### **Heat controlled mode**

In this mode the EC Power CHP Unit will operate to supply the site with heat as its priority.

It will ignore site changing electrical loads and assure a minimum demand for electricity.

In this mode of operation an electrical reference meter is not required.



# EC Power Installation Guide

## XRGI 15G TO

### Electrical installation of the XRGI 15G-TO:

#### Electrical Requirements

Each CHP system must be fused (gl/gG melting fuses) by either a 50 A or 63 A.

#### Installation

(See electrical diagram 69200T0x)

Establish a *Supply Point*. – A fused outlet, directly behind the main meter (electricity supplier's meter), in front of the *Reference Meter* and all other outlets.

Install the *Reference Meter* (supplied by EC Power A/S). – Electronic gauge with a pulse output, which is installed behind the *Supply Point* and in front of all other outlets.

*Optional:* Install transformers connected to the *Reference Meter* when main fuse > 80A.

*Optional:* Create group(s) of heat pump(s) and any cartridge heater(s).

Mount the Control Panel.

Mount and connect supply, control – and signal cables between the following units:

Power cable from *Supply Point* to the *Control Panel*.

Signal cable from *Reference Meter* to the *Control Panel*.

Signal cable from the *Heat Distributor* to the *Control Panel*.

Mount the PT100 sensors in the sensor pockets on the buffer / storage tanks.

Mount a 230V outlet for the *Heat Distributor*

Power cable between the *Power Unit* and the *Control Panel* (with 32A CEE female connector).

Control cable(s) between *Power Unit* and the *Control Panel*.

Optional: Power cable to the *Agitator Regulator*.

Optional: Signal cable between the *Agitator Regulator* and the *Agitator Sensor*.

*Optional:* Power cable to the *Circulation Pump* (may be integrated into the boiler).

*Optional:* Power cable to the *Boiler*.

*Optional:* Control cable between the *Heat Pump(s)* and the *Heat Pump Box*.

Optional: Control cable between *Heat Pump Box* and the *Control Panel*.

*Optional:* Mount a power cable from the outlet(s) to the heat pump(s) and any cartridge heater(s).

Inform the power company in time.

Be available on site during start up.



# EC Power Installation Guide

## XRGI 15G TO

### **Electrical installation checklist:**

Ref DRW. 69200T0x	Yes
Is wiring installed from the <i>Supply Point</i> to the <i>Control Panel</i> ?	<input type="checkbox"/>
Is the supply voltage correct?	<input type="checkbox"/>
Is the <i>Reference Meter</i> installed according to DRW 69200T0x?	<input type="checkbox"/>
Is the signal cable from the <i>Reference Meter</i> connected to the <i>Control Panel</i> ?	<input type="checkbox"/>
Are the supply, control and signal cables routed and connected according to instructions?	<input type="checkbox"/>

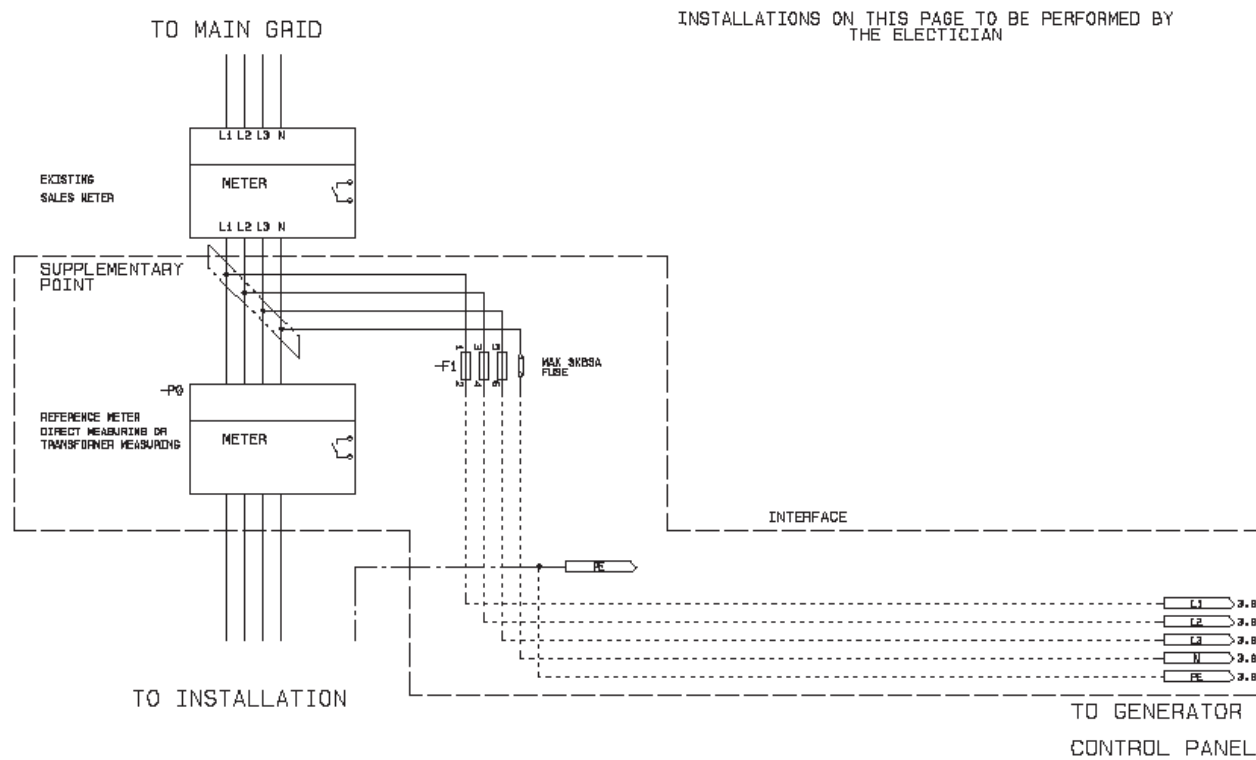
When all of these questions and the questions on the Mechanical Installation Checklist can be answered with Yes, the system is ready for operation.



# EC Power Installation Guide

## XRGI 15G TO

### Power connection, power consumption optimized



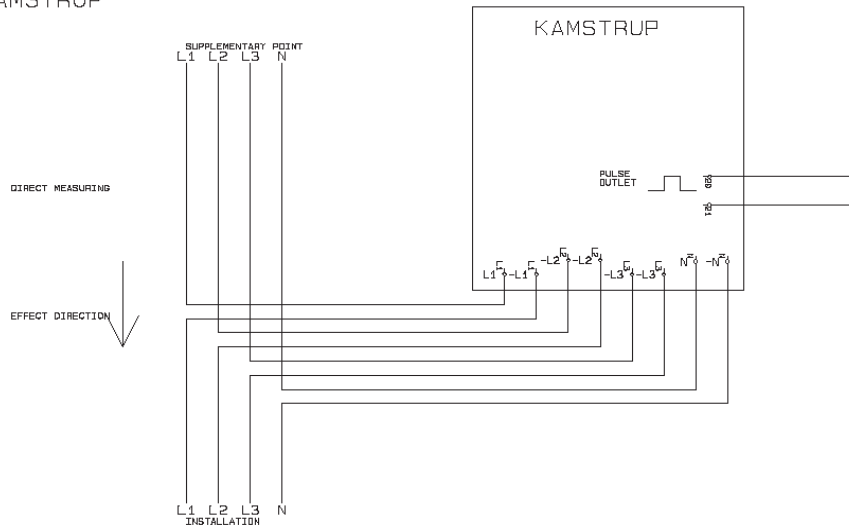
# EC Power Installation Guide

## XRGI 15G TO

### Reference meter options

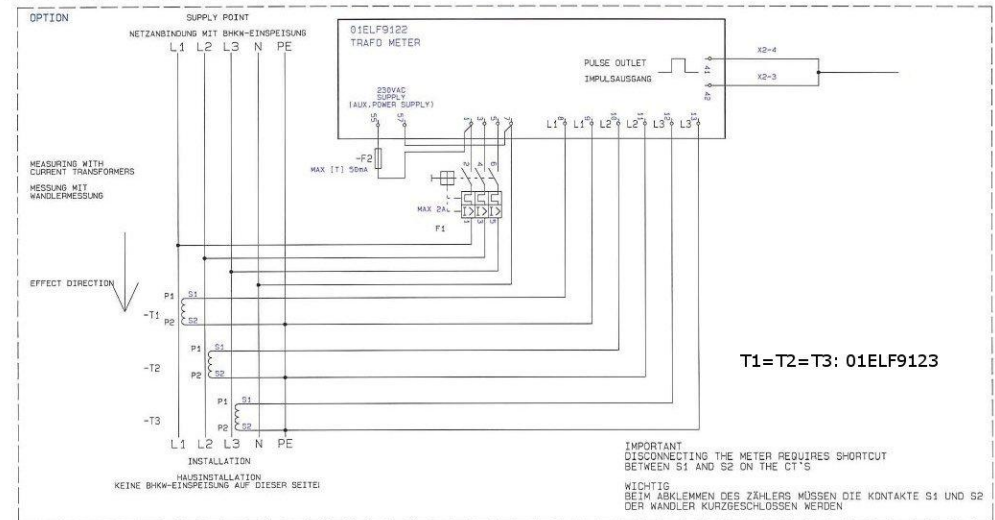
Direct meter, Main fuse < 65A

REFERENCE METER  
 KAMSTRUP



Meter with Current transformers, Main fuse > 65 A

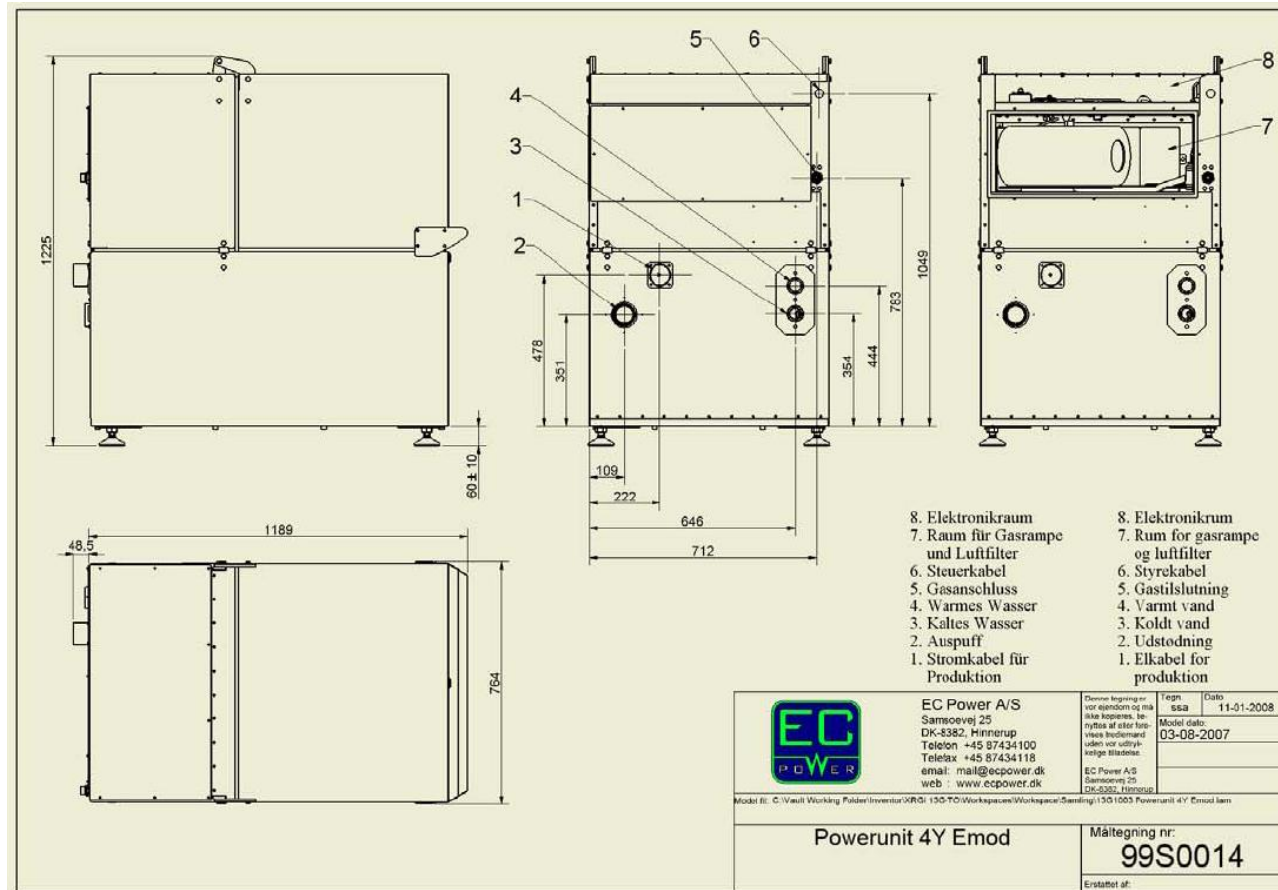
REFERENCE METER - TRANSFORMER BASED  
 REFERENZZÄHLER MIT WANDLERMESSUNG



# EC Power Installation Guide

## XRGI 15G TO

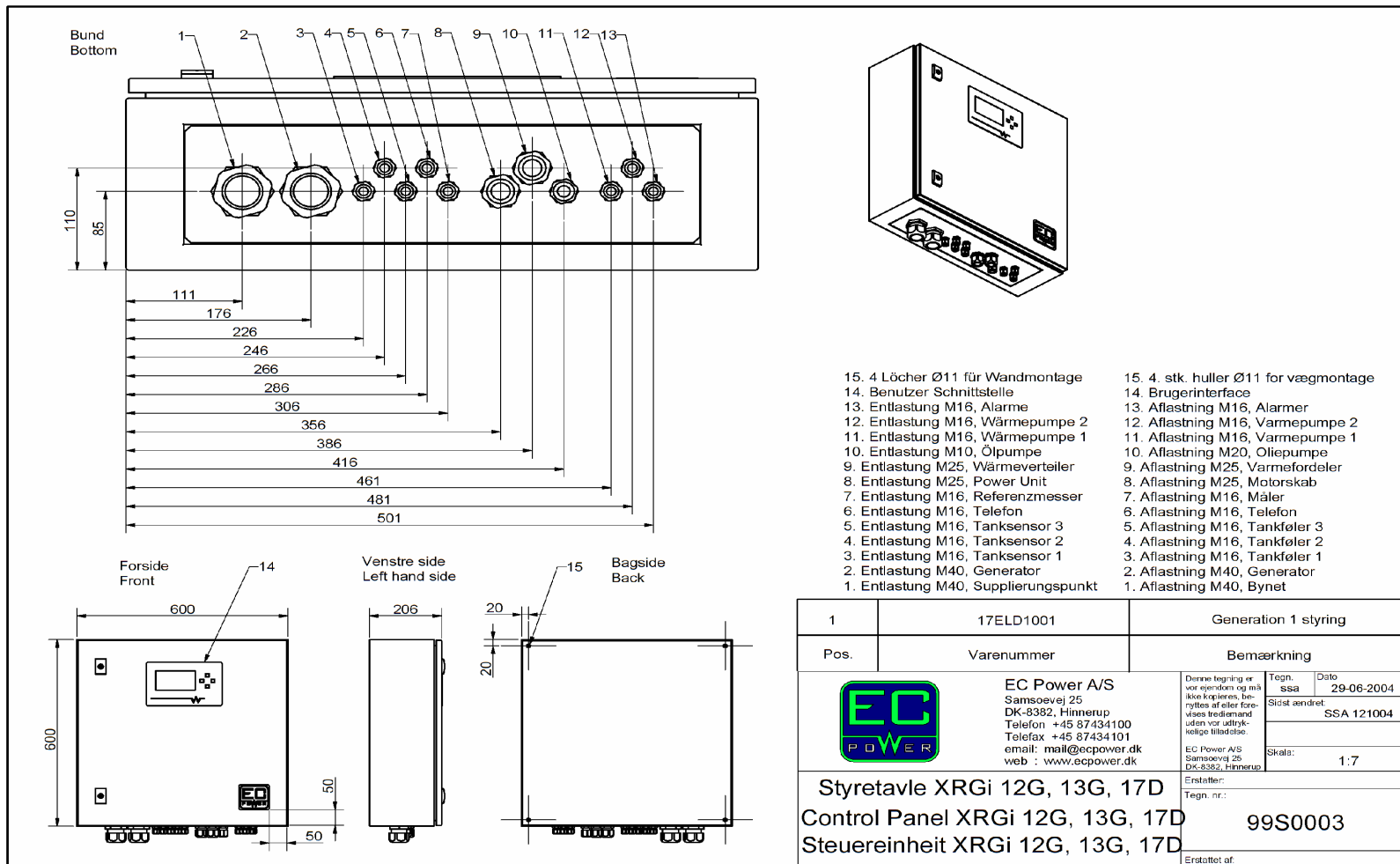
### Dimension drawing Power Unit



# EC Power Installation Guide

## XRGI 15G TO

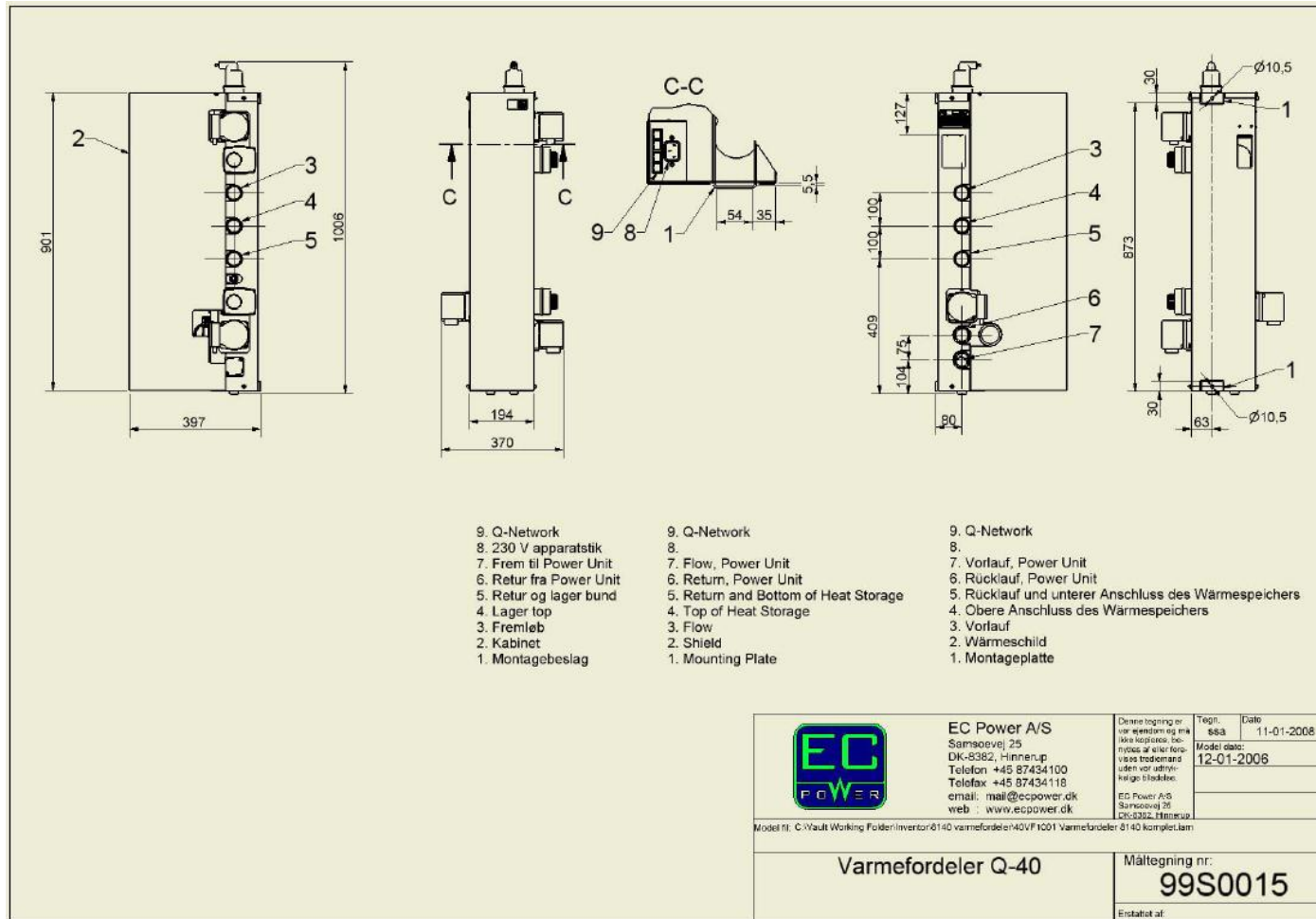
### Dimension drawing Control Panel



# EC Power Installation Guide

## XRGI 15G TO

### Dimension drawing Heat Distributor

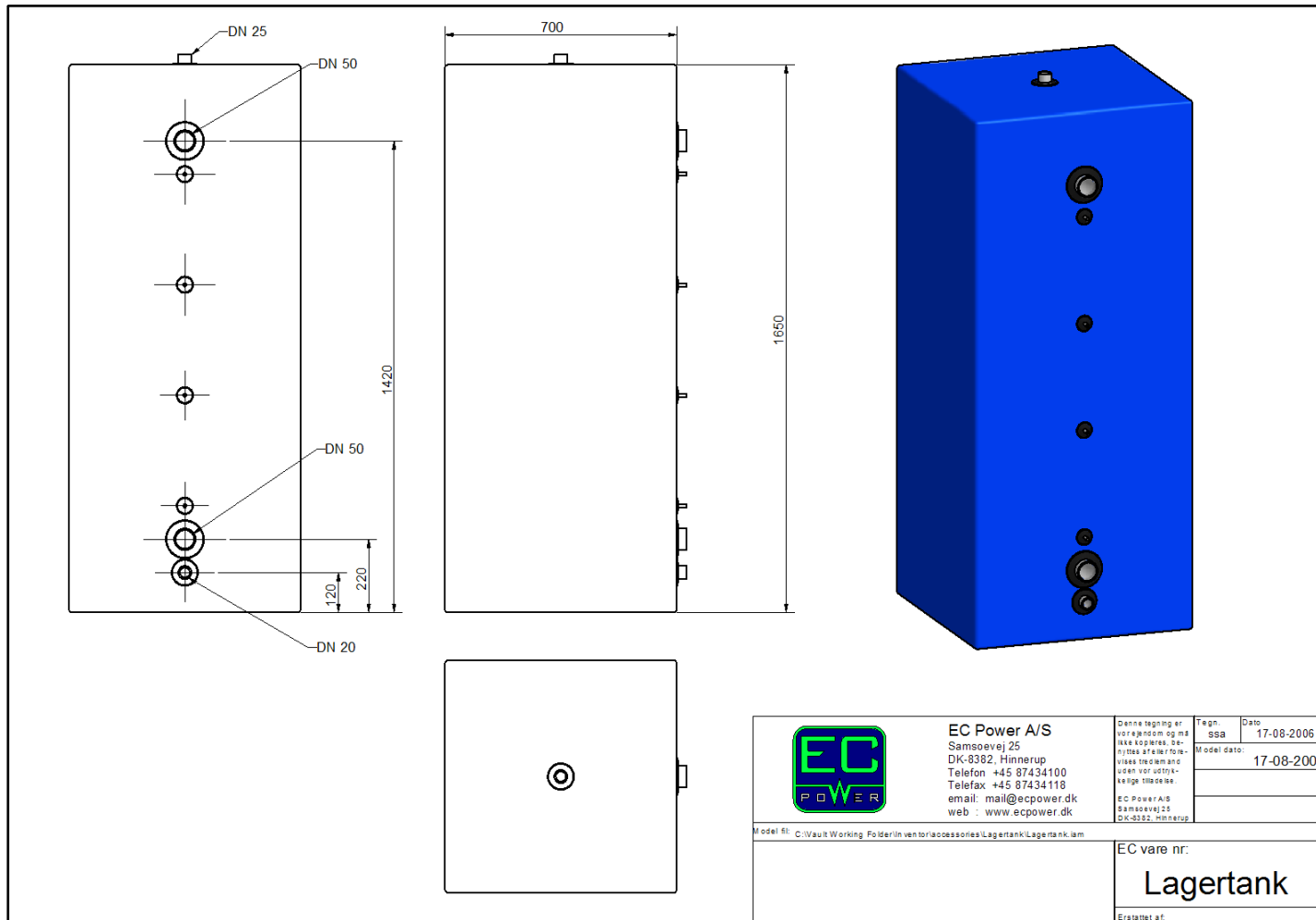




# EC Power Installation Guide

## XRGI 15G TO

### Dimension drawing Storage Tank









EC Power A/S  
Samsøvej 25  
DK 8382 Hinnerup  
Denmark

Telefon (+45) 87 434 100  
Fax: (+45) 87 434 101  
Email: [verkauf@ecpower.dk](mailto:verkauf@ecpower.dk)  
WEB: [www.ecpower.eu](http://www.ecpower.eu)