WORLD HEAT
CYLINDERS

Commercial Product Brochure

Calorifiers

Cylinders

Buffer Vessels

Header Systems

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Introduction

World Heat Cylinders formed after the closure of two longstanding calorifier and cylinder manufacturers in Manchester by a large PLC. Manchester Coppersmiths who specialised in domestic hot water cylinders and Manchester Calorifiers who specialised in commercial calorifiers and buffer vessels.

Now utilising hundreds of years of combined experience World Heat Cylinders manufacture a wide range of commercial water storage and heating products. Based in our purpose built 25,000^{2}ft manufacturing facility in Manchester.

Our extensive product portfolio of calorifers, cylinders, buffer vessels, manifolds and heat exchangers are manufactured from the highest quality copper, stainless steel and mild steel materials under a BSI audited ISO9001 quality management system.

All of our products are performance and heat loss tested in our in house test facility to ensure only the highest quality standard is supplied into the market.

Where necessary all of our products are fully compliant with European ERP legislation for energy efficiency and performance testing and performance.

A dedicated technical sales team is on hand to provide advice, designs, drawings, specifications and quotations to independent merchants, builders, contractors and design engineers. Utilising many years experience and knowledge in the industry they provide quality advice on both our domestic and industrial products, cylinder sizing and even the installation of the systems if required. Our on-site engineers are also available to support all of our customers in the unlikely event of a problem occurring on-site.

Made in Great Britain

bsi. ISO 9001 Quality Management

hot water association
DEVELOPING HOT WATER

Storage Calorifiers & Cylinders

Types of Vessels

The two main types of vessels are direct and indirect. Direct meaning it is without a heating coil or battery and indirect meaning with a heat exchanger which primary heated water is then passed through to heat the secondary water for domestic hot water use.

Primary Heating Systems

LTHW (Up to 100°c)

Low Temperature Hot Water is the most common type of primary heating system. Flow and return tempera-tures were conventionally 82°c -71°c (11°c delta T) however more recently with the introduction of condensing boilers the vast majority of systems now operate on a 20°c Delta T at 80°c - 60°c flow and return tem-peratures.

MTHW (100°c to 120°c)

Usually designed on a 30°c delta T (120°c - 90°c)

HTHW (Above 120°c)

Usually designed on a delta T of 40°c (150°c -110°c). These systems usually operate at a higher primary pres-sure than the secondary pressure. If the primary working pressure is greater than the secondary design pressure then a bursting disc should be designed and fitted in accordance with BS853.

Steam

Steam is a great medium for heating domestic hot water due to the vast amount of energy available. Our heat exchangers can be designed and sized to accommodate any steam pressure required.

Waste Heat

Storage calorifiers can be used as a form of battery to store energy from waste heat sources such a production processes or extracted air from a building.

Material Types

Copper

Copper has proven to be a reliable metal for use in cylinders and calorifers. It has been used extensively around the world due to it's long life and an ability to withstand most concentrations of corrosive elements. Copper is also known for it's effectiveness in killing bacteria which is why it is still widely used for calorifiers serving hospitals. Copper is now being used in hospitals for handles and push plates to stop germs from spreading. In fact data from clinical trials have shown that installing key touch surfaces manufactured from Copper can reduce a patient's risk of catching an infection whilst in hospital by 58%.

Stainless Steel

Stainless steel duplex and grade 316 is the best grade of stainless steel for use in large calorifiers, it only contains 0.003% carbon to improve corrosion resistance after welding. The general corrosion resistance of stainless steel is generally well known however they do suffer from chloride attack. This can happen in a form of crevice or pitting corrosion. Correct manufacturing techniques and correct metal treatment to restore the stainless steels original properties can reduce the risk of corrosion. Duplex is the preferred material for domestic capacity vessels due to it's flexible properties.

Galvanised Steel

These vessels are manufactured from mild steel and then coated or "dipped" in a galvanic solution to form a protective layer on top of the mild steel body. Galvanised vessels are ideal for hard water areas. The deposits of lime forms quickly on the surface which before the zinc in the galvanised solution has chance to dissolve into the water. If these vessels are installed in soft water areas lime scale does not create this protective layer, the zinc then dissolves into the water and the ves-sel could corrode and eventually leak.

Mild Steel

Mild steel can not be used for a domestic hot water vessel but is an ideal material for buffer vessels and thermal stores where only primary heating water is stored. An inhibitor must be used to prevent eventual corrosion of the vessel.

The storage calorifier is a term used to describe a range of industrial and commercial hot water heaters. World Heat Cylinders utilise high performance tube type heat exchangers from copper or stainless steel materials ensuring our products provide the most efficient, flexible and cost effective method of heating large volumes of hot water for domestic hot water usage purposes.

Insulation

At World Heat Cylinders we realise the need to insulate our products to provide our customers with the most efficient and environmentally friendly products possible. Therefore we only insulate our commercial calorifiers, cylinders and buffer vessels up to 8,000 Litres with a high density polyurethane injection foam into a outer cased finish. This solution provides a much greater thermal resistance than Rockwool and aluminium cladding.

In September 2015 the European union introduced the Energy Related Products (ERP) directive. This states that all vessels up to 500 Litres in capacity much achieve a minimum heat loss rating given from A to G initially and increasing from A+ to F in September 2017. All of our vessels are heat loss tested in our in-house test facility to ensure they meet the criteria set out in the ERP directive. All vessels up to 2,000 Litres come under the Ecodesign section of the Energy Related Products Directive 2009/125/EC.

We provide a wide range of colours for the outer finishing of our vessels from a standard white, to merlin grey, poppy red, tangerine orange, yellow, green and blue. If you require a unique colour of vessel to make your plant room project stand out please contact one of our technical design engineers who will be able to provide you with sample colours.

Insulation Material	Polyurethane (PU) Insulation with CO2 Blowing Agent
U Value of Insulation	0.022 W/mK
Global Warming Potential	Zero
Ozone Depletion Potential	Less than 5

Calorifier Manufacturing Codes and Standards

BS 853

World Heat Cylinders BS853 calorifiers strictly in accordance with the standard. The standard specifies certain criteria of the vessel such as shell thickness, inspection openings and bursting discs where necessary. The standard sets out standards which ensure calorifers meet Health and Safety legislation.

Unvented cylinders should be manufactured to BS853 as stipulated in BS6700. G3 building regulations set the safety equipment requirements for unvented systems.

World Heat Cylinders can offer a full material traceability document although this is not a requirement of the code BS853.

Commercial Standards

World Heat offer a full range of industrial and commercial calorifiers and cylinders based on commercially known standards and our own extensive in-house testing and research.

All World Heat calorifiers and cylinders carry a World Heat nameplate specifying the following.

- Hydraulic Test Date
- Maximum working pressure
- Test pressure

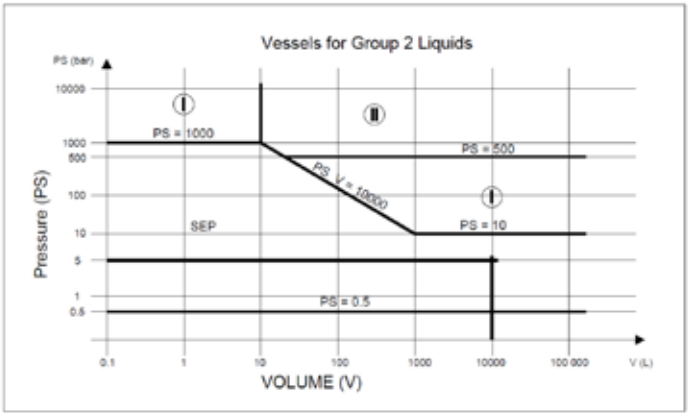
Letters of material conformity can be supplied with any commercial calorifer upon request.

Pressure Equipment Directive (97/23/EC)

As of May 2002 calorifiers have needed to meet the mandatory requirements of PED directive.

The majority of fluids often used in a calorifier including steam are classified as group 2 fluids. For group 2 fluids the following rules apply.

Where the design pressure pressure in bar gauge multiplied by the volume of the vessel in litres is less than 10,000 or the design pressure is not greater than 10 bar gauge the vessel must comply with SEP (Sound Engineering Practice). SEP vessel must not carry a CE mark.



Storage Temperatures

Below are the guidance and standards for recommended storage temperatures in a domestic hot water vessel.

CIBSE TM 13 - 60°c (Recommendation)

CIBSE Guide - 65°c (Example Quote)

NHSME C07 - 60°c (Requirement)

HSG70 - 60°c (Specified)

BS 6700 - 60°c (Recommendation)

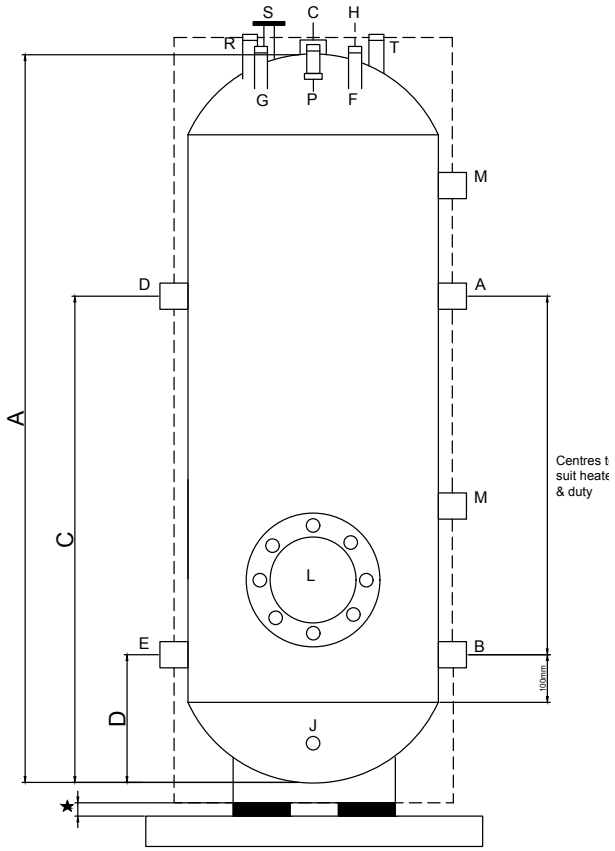
Control of Legionella

Temperature control of a hot water storage calorifier is generally considered as the preferred preventer of Legionnaires disease. Hot water storage calorifiers along with associated systems should be designed to ensure compliance with specified temperature regimes. For more information about legionella control please feel free to contact one of the design engineers.

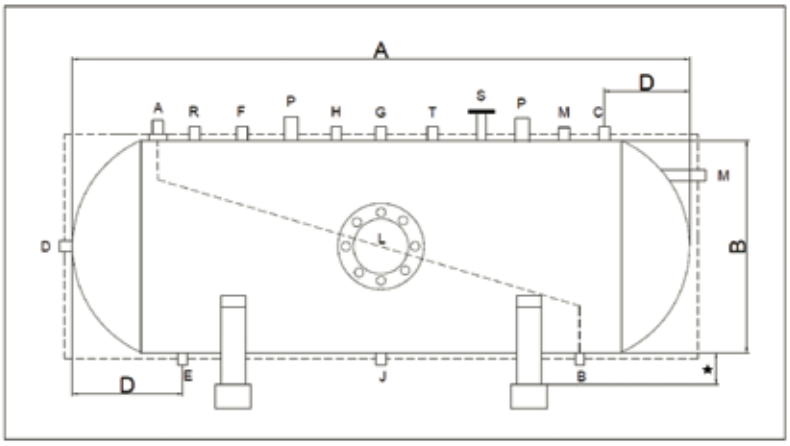
Indirect Hot Water Cylinders

World Heat indirect cylinders are fitted with multiple pass highly efficient tubular heat exchangers on headers. The heat exchangers are manufactured from either copper or stainless steel dependant on the shell material. Primary water is passed through the internal bore of the heating coils and the secondary or shell water for domestic hot water purposes is heated by natural convection. By utilising a flow and return header arrangement with multiple passes we can ensure the heat exchangers are designed to accommodate any required flow rate with acceptable pressure drops. Coil connections of up to 6" flanged connections are available. World Heat indirect cylinders can be manufactured in both vertical and horizontal orientations and recovery rates as low as 20 minutes can be achieved where required.

Capacity (Litres)	Dimensions (mm)				Weight (kg)*	
	A	B	C	D	Dry	Wet
440	1800	600	1350	250	140	580
550	1700	675	1150	300	160	710
700	1750	750	1150	300	190	890
800	1950	750	1300	300	200	1000
900	2000	800	1350	330	225	1125
1000	1950	850	1300	330	250	1250
1200	2100	900	1400	345	280	1480
1350	2350	900	1550	345	300	1650
1500	1950	1050	1300	395	365	1865
1800	2300	1050	1550	395	405	2205
2000	2500	1050	1650	395	430	2430
2300	2400	1150	1600	410	500	2800
2500	2450	1200	1650	430	510	3010
3000	2900	1200	1950	430	585	3585
3500	2700	1350	1800	475	715	4215
4000	3050	1350	2050	475	770	4770
4500	3400	1350	2250	475	845	5345



The dimensions shown should be used for general information only and are subject to change at World Heat discretion. Fully detailed drawings are produced for each order. *Weights are approximate and are based on 2.7 bar design and 4.0 bar test on copper vessels.



STANDARD CONNECTIONS

A)	Primary Flow	M)	Thermostat x2
B)	Primary Return	P)	Lifting Eyes x2
C)	Secondary Flow		
D)	Secondary Return	OPTIONAL CONNECTIONS	
E)	Cold Feed	R)	Vent
F)	Thermometer	S)	Bursting Disc
G)	Safety Valve	T)	Anti-Vac Valve
H)	Altitude Gauge		
J)	Drain		
L)	Manhole		

Storage Calorifier Dimensions

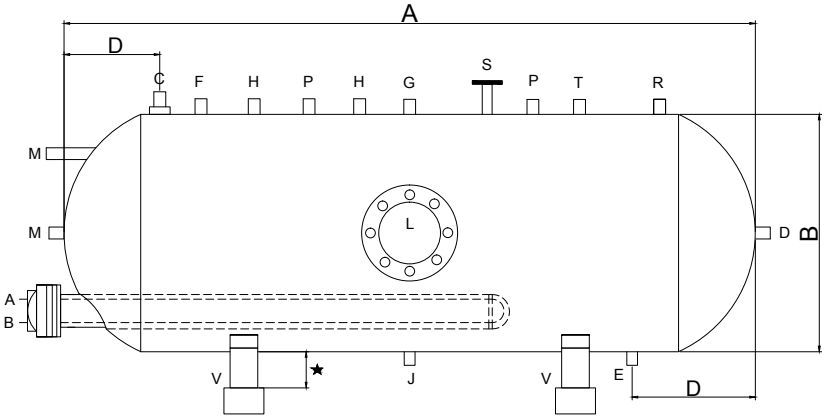
STANDARD CONNECTIONS

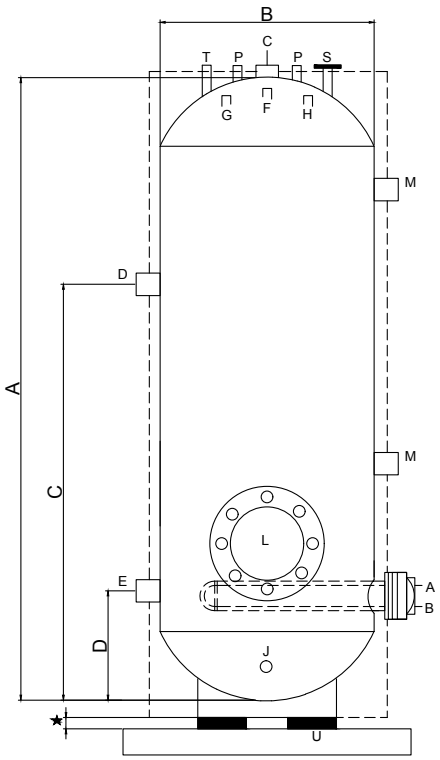
A) Primary Flow or Steam
B) Primary Return or Condensate
C) Secondary Flow
D) Secondary Return
E) Cold Feed
F) Thermometer
G) Safety Valve
H) Altitude Gauge
J) Drain
K) Manhole
M) Thermostat x2
P) Lifting Eyes x2

OPTIONAL CONNECTIONS

R) Vent
S) Bursting Disc
T) Anti-Vac Valve
U) Typical Leg for Steel Vessel
V) Cradles

Other Connections Available on request*
★ Standard Cradle/Leg height 150mm





Capacity (Litres)	Dimensions (mm)				Dry Weights (kg)*		
	A	B	C	D	Stainless Test 10.00 bar Design 6.7	Copper Test 5.55 bar Design 3.7 bar	Mild Steel Test 5.55 bar Design 3.7 bar
440	1800	600	1350	250	250	140	250
550	1700	675	1150	300	260	160	260
700	1750	750	1150	300	280	190	280
800	1950	750	1300	300	300	200	300
900	2000	800	1350	330	335	225	335
1000	1950	850	1300	330	340	250	340
1200	2100	900	1400	345	395	280	395
1350	2350	900	1550	345	420	300	420
1500	1950	1050	1300	395	500	365	500
1800	2300	1050	1550	395	565	405	565
2000	2500	1050	1650	395	600	430	600
2300	2400	1150	1600	410	640	500	640
2500	2450	1200	1650	430	685	510	685
3000	2900	1200	1950	430	985	585	985
3500	2700	1350	1800	475	1025	715	1025
4000	3050	1350	2050	475	1135	770	1135
4500	3400	1350	2250	475	1240	845	1240
5000	3200	1450	2400	500	1245	964	1245
6000	3800	1450	2850	500	1460	1130	1460
7000	3300	1680	2475	475	1830	1355	1830
8000	3700	1680	2850	475	2050	1510	2050
9000	4200	1680	3150	475	2230	1590	2230
10000	4600	1680	3600	475	2490	1820	2490

Buffer Vessels

Primary Heating Systems

Buffer vessels are required on heating systems where the primary heat source output can not be fully regulated. This means there is a requirement to store energy delivered from the source at a higher output than is required in the building at that given time so that it can be used later with running the heat source.

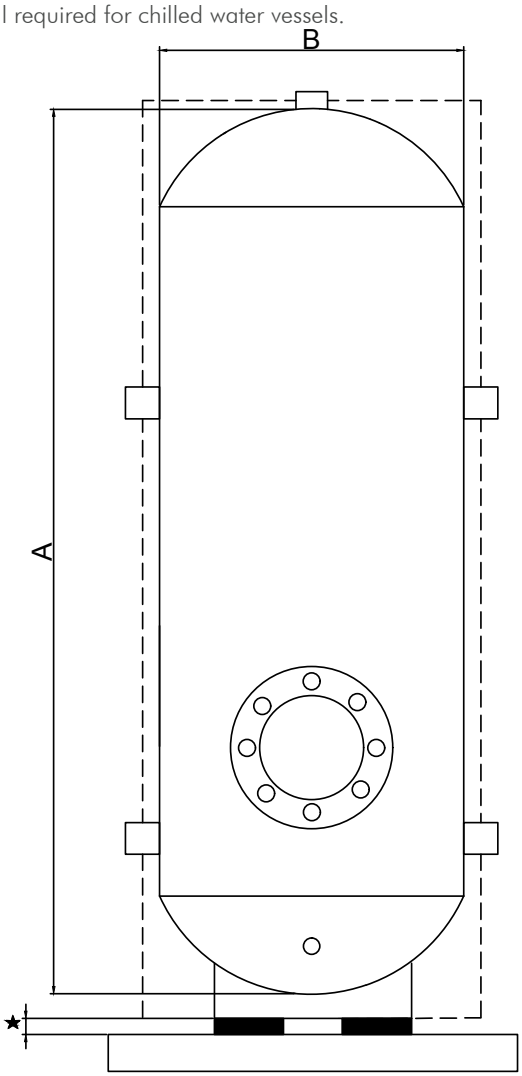
Chiller Systems

On chiller systems a buffer vessel is used to prevent cycling of the chiller compressors by storing chilled water which is distributed around the building when required.

Material and Insulation

World Heat buffer vessels are primarily manufactured from mild steel but can also be made from stainless steel and copper materials. When factory applied insulation is required all of our vessels are cased in a steel shell with a variation of coloured finishes available.

All of our cased vessels are insulated with an injection foam insulation providing unrivalled heat loss prevention and an air tight seal required for chilled water vessels.

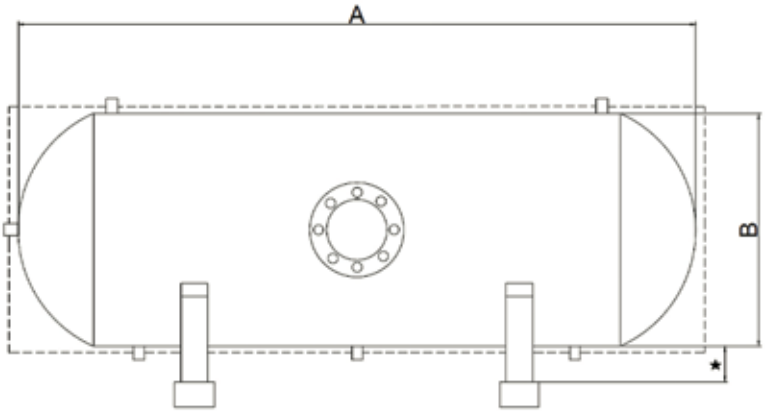


Typical vertical buffer vessel arrangement.

Capacity (Litres)	Dimensions (mm)		Weight (kg)*	
	A	B	Dry	Wet
440	1800	600	140	230
550	1700	675	160	250
700	1750	750	190	280
800	1950	750	200	300
900	2000	800	225	335
1000	1950	850	250	340
1200	2100	900	280	395
1350	2350	900	300	420
1500	1950	1050	365	500
1800	2300	1050	405	565
2000	2500	1050	430	600
2300	2400	1150	500	640
2500	2450	1200	510	685
3000	2900	1200	585	985
3500	2700	1350	715	1025
4000	3050	1350	770	1135
4500	3400	1350	845	1240
5000	3200	1450	964	1245
6000	3800	1450	1130	1460
7000	3300	1680	1355	1830
8000	3700	1680	1510	2050
9000	4200	1680	1590	2230
10000	4600	1680	1820	2490
12500	5000	1830	2335	2825
15000	6000	1830	2760	3310

The dimensions shown should be used for general information only and are subject to change at World Heat discretion. Fully detailed drawings are produced for each order.

*Weights are approximate and based on 2.7 bar design and 4.0 bar test on copper vessels.



Typical horizontal buffer vessel arrangement.

Thermal Stores

Thermal Store water heaters are an excellent solution for providing domestic hot water. World Heat Cylinders manufacture a range of thermal stores from 150 Litres up to 8,000 litres in capacity.

Thermal Store water heaters act as a heat store or battery for heat sources to dump their energy. This primary water stored in the shell can then be circulated around a heating system and used as a buffer vessel along with providing domestic hot water via a heat exchanger.

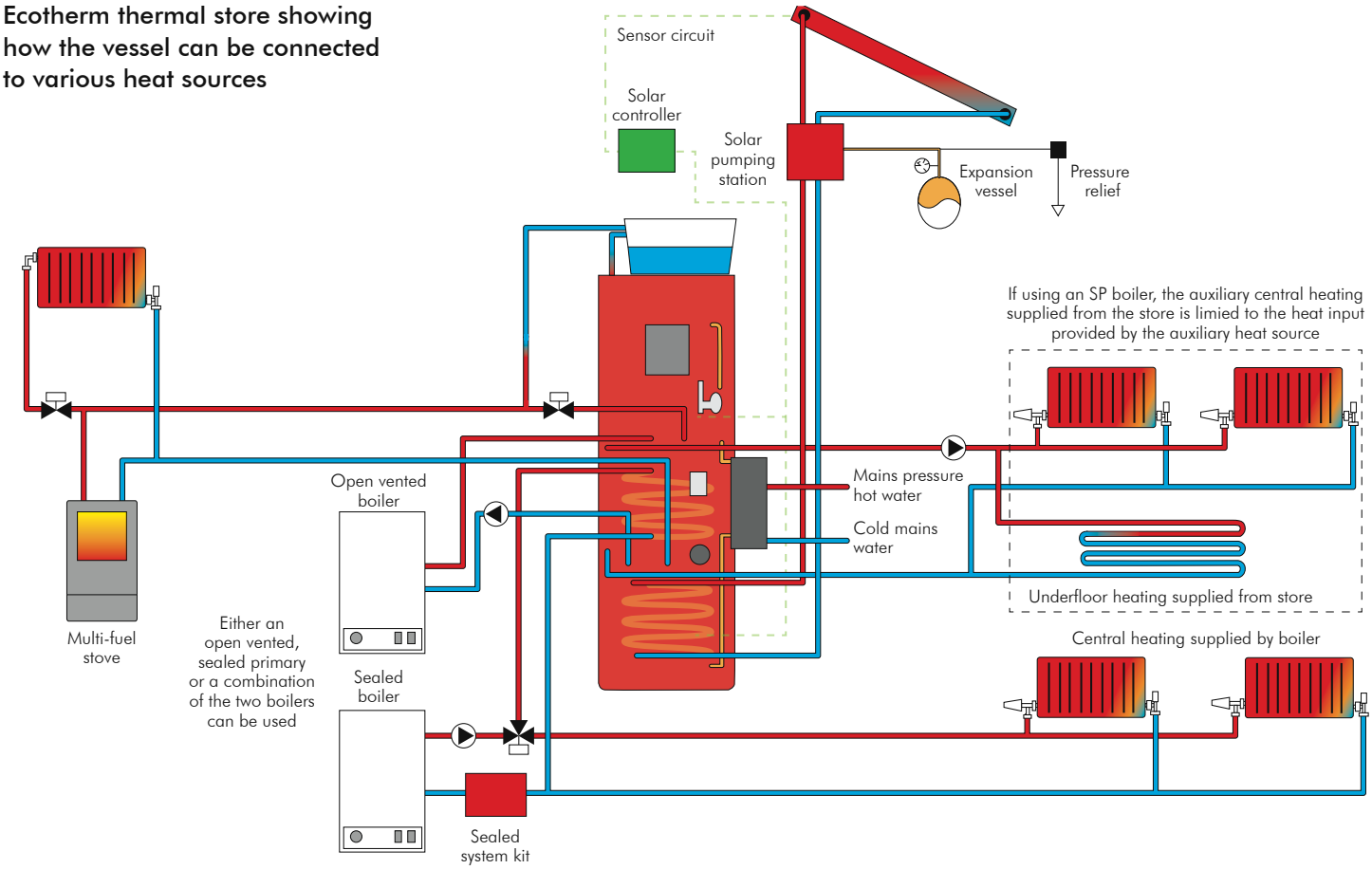
Heat Exchangers

Our thermal stores can incorporate either a multi-pass coil or plate heat exchanger for instantaneous hot water heating. Multiple heat exchangers are available for thermal stores with combinations of multiple heat sources such as solar thermal, solid fuel and fossil fuel heat sources.

Thermal Store Benefits

- No annual unvented system checks and components are required
- No risk of legionella
- Open vented reducing safety risks compared to unvented vessels

Ecotherm thermal store showing how the vessel can be connected to various heat sources



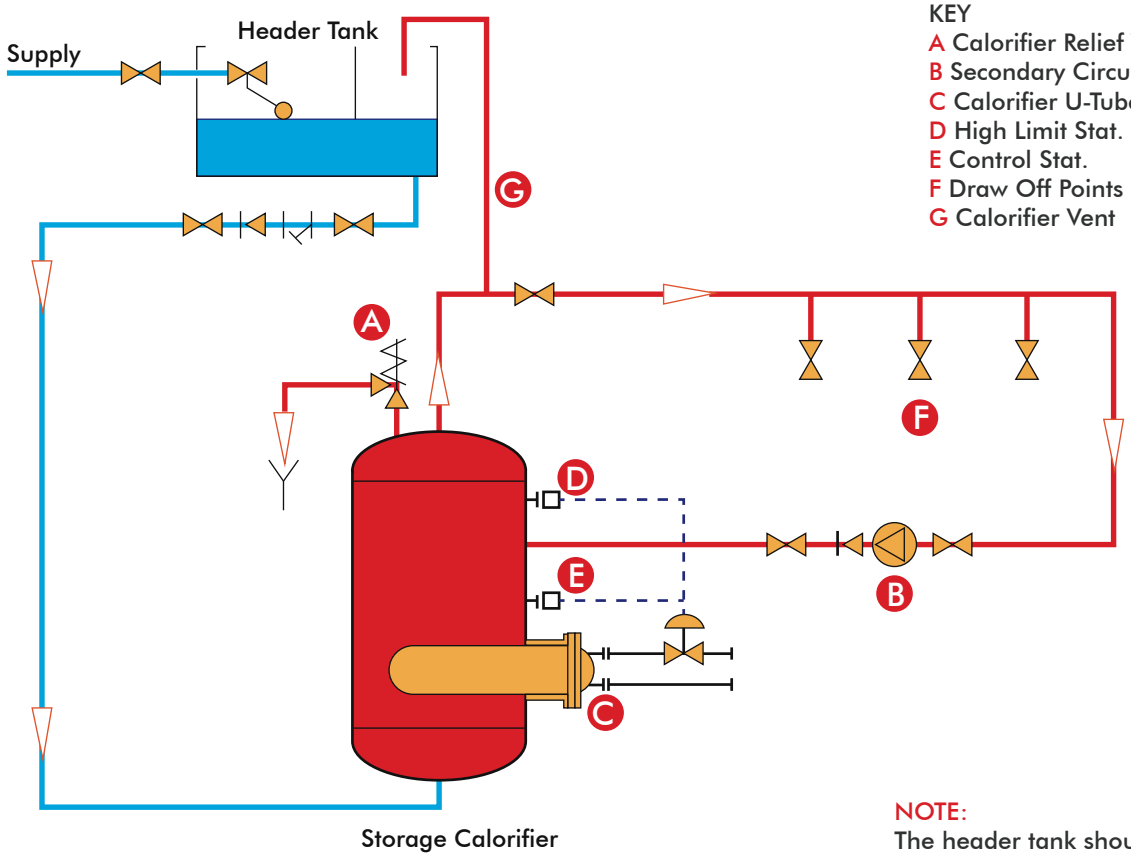
Vented Systems

Vented hot water storage calorifiers are connected to a system with a vent which is open to the atmosphere. This allows air to release up the vent when the water in the vessel is heated along with allowing expansion and contraction of water as it heats up and cools down.

The vent pipe should be installed vertically away from the vessel, if horizontal pipe runs are required it is recommended that these are kept to a minimum, there should have no isolation valves fitted in the vent pipe whatsoever.

As the system is vented to atmosphere there is no requirement for safety equipment such as relief valves and expansion vessels however these types of systems are becoming less common due to the risk of legionella bacteria in the header tanks.

Storage Calorifier fitted in a typical vented DHW system



KEY
A Calorifier Relief Valve
B Secondary Circulation Pump
C Calorifier U-Tube Battery
D High Limit Stat.
E Control Stat.
F Draw Off Points
G Calorifier Vent

NOTE:
The header tank should be dedicated to the hot water system

Unvented Systems

Unvented hot water calorifiers are possibly the most popular solution for distributing hot water around commercial buildings.

Unvented hot water cylinders are connected directly on the cold mains water or via a booster pump set to provide greater flow rates and pressures.

Unvented hot water systems are covered in Building Regulations G3 sections 3 and 4. Section 3 covers systems up to 500 litres and 45KW and section 4 covers vessels over 500KW and 45KW.

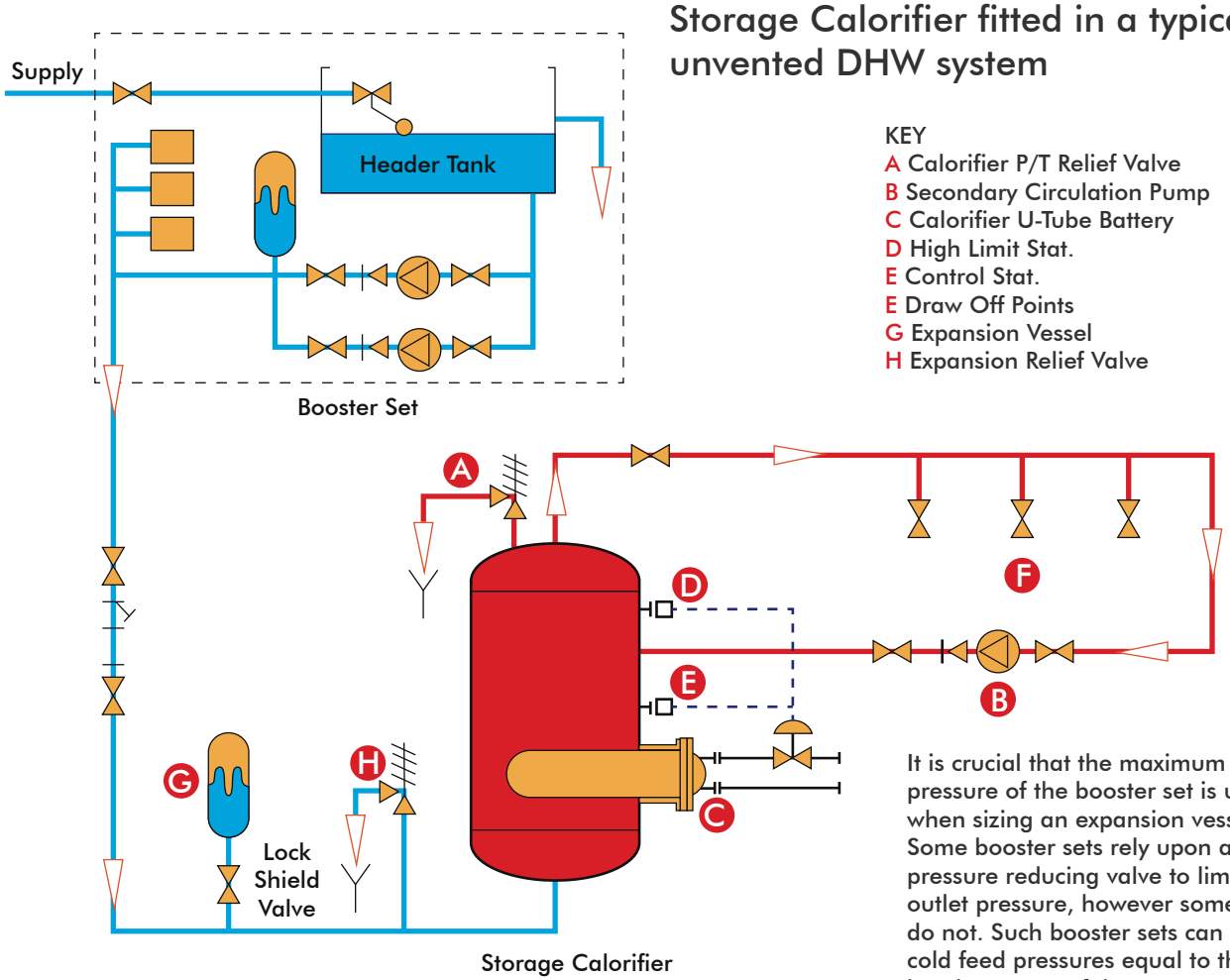
All systems categorised as section 4 should comply with BS6700:1987- Specification for the design, installation, testing and maintenance of services supplying water for domestic use within buildings.

Safety equipment requirements stated in BS6700 are critically important and must be adhered to in all applications.

Hot water storage calorifiers must be fitted with appropriately sized pressure temperature relief valves and safety cut out devices. They must also be installed with correctly sized expansion vessels, check valves and strainers.

World Heat Cylinders have many years experience in the design and manufacture of unvented pressurised hot water calorifiers. If you have any questions relating to an unvented system or any of our products please feel free to contact one of our technical sales staff who will be more than happy to assist.

Storage Calorifier fitted in a typical unvented DHW system



KEY
A Calorifier P/T Relief Valve
B Secondary Circulation Pump
C Calorifier U-Tube Battery
D High Limit Stat.
E Control Stat.
E Draw Off Points
G Expansion Vessel
H Expansion Relief Valve

It is crucial that the maximum cold fill pressure of the booster set is used when sizing an expansion vessel. Some booster sets rely upon a pressure reducing valve to limit the outlet pressure, however some units do not. Such booster sets can create cold feed pressures equal to the closed head pressure of the pumps under certain conditions.

Storage Volumes

Correctly sizing the volume of a storage calorifier or cylinder is extremely important to ensure enough hot water will be available to service the buildings requirements. A combination of volume and heating duty for a one hour delivery is considered adequate for most applications.

If there is insufficient space available to store one hours worth of volume then the primary heating output should be increased to compensate. For applications requiring less than half an hour re-heat requirement considerations should be made towards using a World Heat Semi-Storage calorifier.

Considerations should be made on providing additional storage volumes and or splitting required volumes between multiple calorifiers. This will allow sections to be closed down for service and maintenance while still providing some hot water to the building.

Some applications such as sports team changing rooms have no draw off for extended periods then a large demand for a short period of time. In these applications the volume should be sized to supply the full demand and the heating coil sized for an extended recovery period.

Considerations must be made if a large proportion of the hourly usage is for showers, an accurate estimate of the total usage and length of usage should be assessed.

Working Example

Hospital incorporating:

200 x Public Hand Basins 200 x 15 = 3000

10 x Baths 10 x 60 = 600

10 x Slop Sinks 10 x 50 = 500

50 x Showers 50 x 70 = 3500

TOTAL = 7600 L/Hr

Load Factor 0.7 x Total = 5320 L/Hr

With an hourly demand of 5320 Litres per hour a 5500L calorifier with a one hour recovery heat exchanger would be suitable. It would be recommended to install 2 x 3000L vessels for future maintenance considerations. If installation space was limited then a 3000L vessel with a 30 minute recovery heat exchanger could be used.

Maximum Demand Rates (litres/hour)

Installation	Private Handwash Basin	Public Handwash Basin	Shower*	Bath	Slop Sink	Bar Sink	Kitchen	Pantry Sink	Laboratory Sink	Load Factor
Hospital	10	15	70	60	50		80			0.7
Hotel and Residential Hall	10	15	50	50	50	100	80			0.5
Day School	5	20	180		40		80			0.8
Sports Centre	5	15	220		40	100	80			1.0
Restaurant	5	25			100	100	140	120		1.0
University	5	20	220		40		80		40	0.8
Offices	5	10			40		40		40	1.0
Factory	5	20	120		50		80		40	1.0

*Where a shower and bath are combined in a single cubicle it is only necessary to use one demand rate and the total number of cubicles

Available Pipework Connections

Shell Connections (Secondary)

Primary pipe work sizes are determined by the required flow rate of the heat source such as boiler or heat pump. Our heat exchangers are generally designed on a project by project basis dependant on the required flow rate to achieve a flow velocity between 1 and 1.5m/s while keeping the pressure drop at a reasonable level.

The majority of heat exchangers are manufactured on header arrangements with multiple passes to achieve the required surface area. U-tube batteries are also provided when large surface areas are required or when the coil may need to be serviced,repaired and cleaned during routine maintenance.

Where fast recoveries or large surface areas are required external plate heat exchangers can be used. These are supplied mounted to the outer case of the vessel along with a secondary circulator, flow setter valve and associated valves and pipe work.

World Heat Cylinders can provide any type of size or connection which may be required. To ensure adequate flow rates are achieved it is critical that the cold feed and hot draw off sizes are sized correctly. The table below provides recommended pipe sizes dependant hourly demands and peak demands. The cold feed size should usually match the hot draw off size and secondary return sizes and volume flows should be as low as possible to avoid excessive heat loss from distribution pipe work.

Other connections such as thermostat pockets, destratification connections, thermometer, pressure gauges, relief valves etc are available and are included within any quoted price. Upon receiving an order for a commercial vessel we supply a detailed drawing with recommended connection sizes and positions which can be altered where necessary.

Recommended maximum flow rates for cold feed and hot draw off connection sizes			
Connection Sizes		Hourly Demand	Peak Demand
mm	Inches	L/Hr	L/S
25	1	150	0.1
40	1½	400	0.3
50	2	850	0.6
65	2½	1400	1.0
80	3	2500	1.5
100	4	5500	2.5
125	5	11000	4.0
150	6	20000	6.0

Primary Connections (Coil or Battery)

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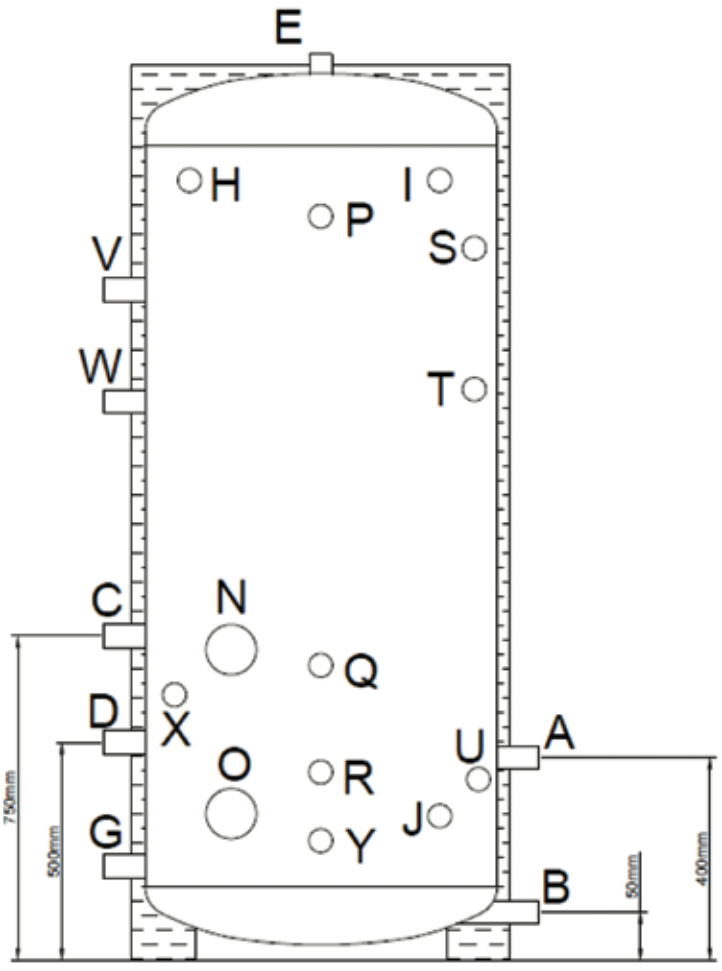


Optional Accessories

Unvented (Pressurised Cylinder Equipment)

Expansion Vessels

All unvented cylinders require an expansion vessel to accommodate the expansion and contraction of the water when it is heated. World Heat Cylinders offer a full range of expansion vessels from 2 litres up to 1000 Litres for both potable and heating circuits of the system. World Heat Cylinders expansion vessels have removable and replaceable membranes and are WRC approved.

Pressure & Temperature Relief Valves

All unvented cylinders must be fitted with a pressure and temperature relief valve. These valves protect the calorifier shell from over pressure and temperature

Expansion Relief Valves

All unvented cylinders must be fitted with an expansion relief valve without any isolation between this and the calorifier. The valve is designed to protect the system from overpressure if the expansion vessel or pressure reducing valves fail.

Pressure Reducing Valves

All unvented cylinders must be fitted with a pressure reducing valve. This valve regulates the incoming mains or boosted water pressure to the calorifier to prevent excessive pressure on the shell.

Secondary De-stratification Pump

To prevent cool Spots below the heat exchanger in a calorifier a secondary potable circulator can be supplied. This circulates the secondary water from the top of the calorifier to the bottom to ensure the entire contents of water is heated to the desired target temperature.

Inspection Opening

As a requirement in BS853 an inspection opening to the calorifier should be available for access to clean and maintain the vessel.

Optional Accessories

Insulation

All of our calorifiers are available with high density polyurethane injection insulation encapsulated in a quality finish coated steel shell.

Thermostats

Control and high limits are required to control the primary target temperatures and prevent the calorifier from overheating.

Pressure Gauges and Thermometers

Pressure and temperature gauges are available to mount on the vessels for indication purposes.

Low Loss Headers

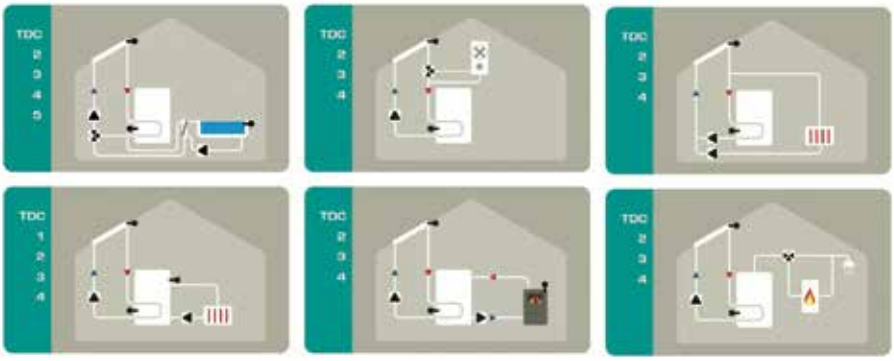
World Heat Cylinders manufacture a wide range of low loss headers and pump headers.

Header and connection sizes up to 10" diameter with flange connections are available along with pre-insulated and cased headers.

If you require a header to be sized please feel free to contact one of our technical design engineers who will be more than happy to assist.

Smart Controls

The World Heat Cylinders smart controller can be used for a wide variety of applications and scenarios such as hot water controls through to loading thermal store vessels from multiple inputs such as boilers, heat pumps, biomass and solar. Fully integrated Legionella cycles can also be programmed into the system.



World Heat Connect is the new Plug & Play concept which does not require any particular network skills.

Using a CAN-bus interface, the controllers can communicate with each other, or be connected with local networks or the Internet via Ethernet. The user can monitor and remote control their heating system by PC, tablet and smart phone - anywhere, anytime.

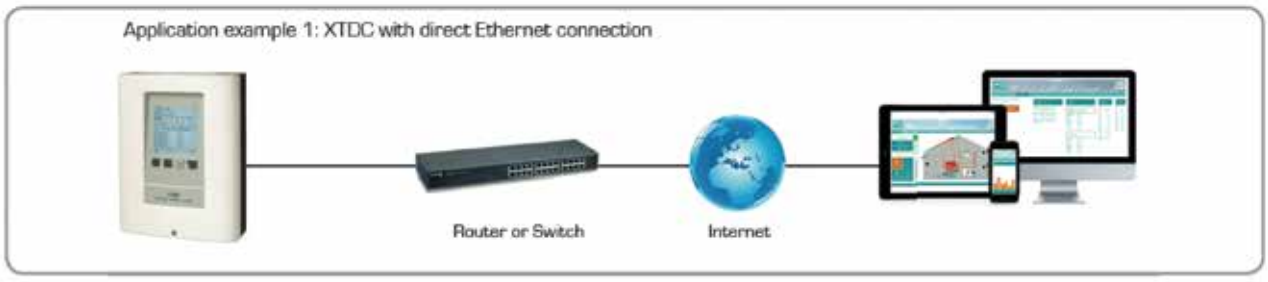
Key features:

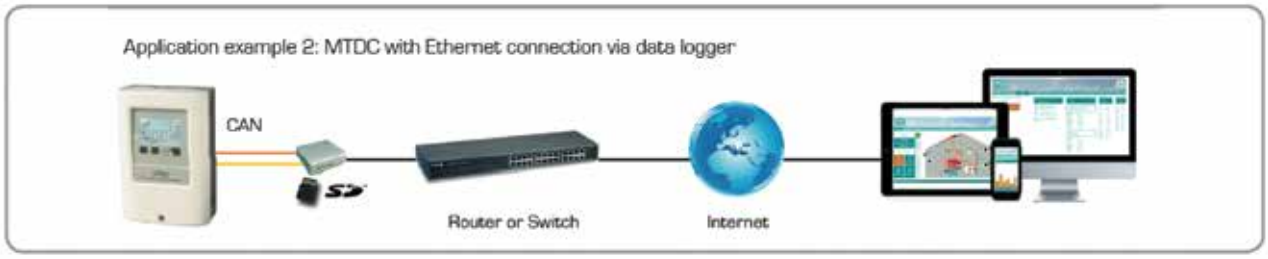
- Visualisation of the solar system with status messages, temperatures and heat yield data.
- Remote control to activate the holiday program, additional heating and assignable relay.
- Experts can get a comprehensive PC software for setting all controller parameters in real time.
- Data logging is realised by a microSD card, so that all system data can be recorded and analysed extensively.

System Overview with Remote Control

Energy Statistics

Technical Details for the Expert





Enquiry Checklist

Please find below information we require if you wish to send an enquiry for a calorifier.

- Vessel capacity
- Whether it is vertical or horizontal orientation
- Preferred calorifier material
- Secondary working pressure
- Secondary working type (Vented/Unvented)
- Any dimensional restrictions in height or diameter
- Required target secondary temperature
- Required recovery period
- Primary flow and return temperatures
- Steam pressure (If steam is the primary medium)
- Working pressure of the primary system
- Required connection sizes (If known)
- Whether inspection opening is required
- Insulated or plain finish
- Red or grey cased finish if insulated
- De-stratification pump set required


WH
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CLIMACYLSS

ECOTHERM

ECOSLIM

LOW LOSS

ECOTHERM

hot water association

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