Byworth
BOILERS

Steam

MADE IN BRITAIN

Dennis Baldwin, Founder of Byworth Boilers. Dennis used steam to heat his commercial greenhouses where he grew Chrysanthemums.

Our Story

Dennis Baldwin – the customer turned entrepreneur - the essence of our brand and our heritage.

Our founder, Dennis Baldwin, was a well-established chrysanthemum and tomato grower who successfully ran his own business from the young age of 17.

Based on three sites around Yorkshire, Dennis used steam boilers to heat his three acres of glasshouses, but he wasn't happy with the standard of steam boilers available. He wanted higher-quality boilers with greater efficiency. With an inherent talent for engineering, Dennis decided to design and install his own boiler system.

Soon after, other horticultural businesses recognised his flair for producing high-quality steam boilers, and demand for Dennis' innovative products began to rise.

With two sons more interested in engineering than growing, Dennis took the brave decision at age 42 to make a career change. He sold his successful horticultural company to finance a land investment and set up a factory.

This was when Dennis Baldwin & Sons Boiler Manufacturers, later to be known as Byworth Boilers, was established. They began building and developing steam boilers for not only growers, but other industries as well. Over the years, the Byworth brand grew and with it, so did the site, the facilities, and the dedicated workforce.

Dennis was able to build a product that better suited the needs of his industry. These values remain today as we seek to produce solutions that fit our customers' requirements. We understand the challenges organisations often face, and our team of experts will work in partnership with you to deliver solutions that better support your individual needs.

Our Customers

Today we serve a diverse range of customers, big and small, in a multitude of industries including:

- Food
- Beverage
- Healthcare
- Paper and Packaging
- Pharmaceutical
- Architecture/M&E/Civil Engineering
- Petrochemical
- Animal Feeds & Farming
- Laundries
- Textiles

Your Guide

Conventional Steam Boilers

The M-Series Range
These compact boilers are perfect for smaller applications. The range includes our space-saving, skid-mounted, all-in-one solution with everything you will need for a quick and easy installation.
Pages 5 - 8

The Peaksman Range
In spaces where our market-leading M-Series horizontal steam boiler would be impractical, the compact Peaksman, ultra-low Nox, vertical steam boiler is the perfect fit.
Offering modulating controls as standard alongside automatic TDS and bottom blowdown systems.
Pages 9 - 12

The Yorkshireman Range
With a high degree of reliability, low emissions and high efficiency, the Yorkshireman three-pass, wet-back boilers offer unparalleled performance.

The multi-award-winning Yorkshireman2, with its patented X-ID tube technology, is the preferred choice for the truly energy-conscious.
Pages 13 - 18

Heat Recovery Range

Our waste heat boilers offer enhanced efficiency by producing steam using heat recovered from other processes that would otherwise be wasted, making these a fantastic option for those looking to reduce wastage and improve fuel efficiency.
Pages 19 - 20

Economisers
Your steam boiler's efficiency will undoubtedly benefit from installing an economiser. A steam economiser recovers heat from the boiler's own waste gases to heat the feedwater, which will result in reduced fuel consumption.
Pages 21 - 22

Other Products

Boiler Houses
We offer a range of boiler-housing options from compact skid packages to full prefabricated boiler houses.
Pages 23 - 30

Unity Boiler House Controls
Unity is our advanced industrial boiler control system offering you unprecedented management, efficiency, visibility, and complete control of your entire boiler house.
Pages 31 - 34

Accumulators
Steam accumulators are custom made steam vessels that are designed to help remove the peaks and troughs in steam demand. This allows your boiler to achieve its preferred operating pressure and maximum efficiency.
Pages 35 - 36

Hotwell, Deaerators and Blowdown Vessels
Hotwell tanks and deaerators are essential to capture returning condensate and provide a strategic store of hot, treated water for the boiler.
Blowdown vessels provide a safe means of cooling wastewater from the boiler before discharging it to drain.
Pages 37 - 40

M-SERIES

Compact horizontal boiler for light to medium steam load.

Sizes: From 250 – 5,000 kg/hr
Working Pressure: Up to 13.8 bar g

The Byworth M-Series steam boiler range is the perfect solution for those needing drier high-quality steam for their small to medium applications. With a host of benefits, this compact horizontal boiler is designed for ease of use and ease of maintenance, reducing your site downtime significantly.

The M-series is all about getting the basics right so you can focus on delivering your customers' needs.

- The ideal balance between efficiency and size
- Suitable for a wide range of liquid or gaseous fuels, including natural gas, LPG, LNG, biogas and heating oils.
- Less than 100mg/m^3 NOx when firing on natural gas*
- Less than 200mg/m^3 Nox when burning class A2/D fuel oil to BS 2869*
- Lightweight, hinged front door
- Removable rear doors
- Spiral wound turbulators significantly improve efficiency without increasing the boiler footprint
- A wide range of upgrades are available, including enhancements and controls for unattended operation

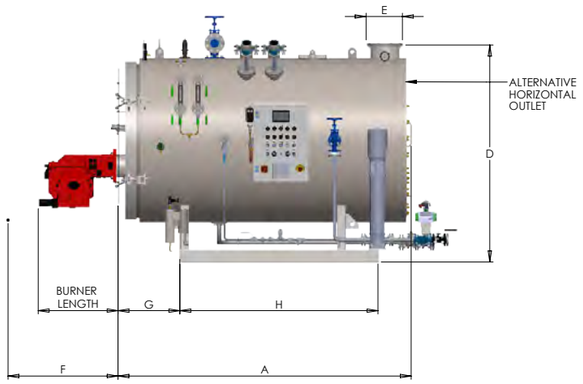
*Applies to boiler output of 1500 kg/hr and above.

Reduced Downtime

The M-Series has design advantages such as a lightweight, hinged front door, weld inspection panels and removable doors, creating ease of maintenance for any engineer or inspector. This reduces downtime significantly during cleaning, maintenance and inspection.

Skid mounted version of the M-Series boiler – see pages 25 – 26

The M-Series Dimensions



MX-SERIES - Boiler Dimensions

Model MX		250	500	750	1000	1360	1500LN	2000LN	2500LN	3000LN	3500LN	4000LN	5000LN
Duty F & A 100°C	lb/hr	550	1100	1650	2200	3000	3300	4400	5500	6600	7700	8800	11000
	hp	16	32	48	64	87	96	128	160	192	224	256	320
	kg/hr	250	500	750	1000	1362	1500	2000	2500	3000	3500	4000	5000
	kW	160	322	483	644	876	966	1287	1610	1931	2254	2576	3220
Boiler Length	A	1435	1985	2105	2105	2630	2630	3110	3275	3580	4105	4330	4440
Overall Width	B	1250	1295	1525	1625	1652	1885	2030	2130	2180	2310	2360	2720
Height to top of safety Valve	C	1485	1750	2025	2125	2240	2350	2535	2735	2850	2925	3005	3280
Minimum height /chimney height	D	1340	1510	1770	1870	1930	1990	2140	2340	2390	2515	2455	2870
Chimney Diameter ID	E	125	200	200	225	250	300	350	350	400	450	450	500
Tube Withdrawal Space	F	800	1220	1250	1320	1800	2025	2425	2550	2835	2900	2900	3010
Base Frame Inset	G	280	450	450	450	500	500	580	650	650	825	825	825
Base Frame Length	H	1210	1400	1450	1450	1800	1800	1620	1720	1930	2420	2420	2530
Base Frame Width	J	450	510	580	630	650	700	730	780	750	905	1010	1045
Base Frame Width	K	570	610	770	820	850	950	1020	1070	1100	1105	1140	1325
Steam Outlet	100psig	25NB	40NB	50NB	50NB	65NB	65NB	80NB	80NB	100NB	100NB	100NB	100NB
Steam Outlet	150psig	25NB	40NB	50NB	50NB	65NB	65NB	80NB	80NB	100NB	100NB	100NB	100NB
Safety Valve Outlet	100psig	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/2" BSP	11/2" BSP	2" BSP	2" BSP	21/2" BSP	21/2" BSP	21/2" BSP	3" BSP
Safety Valve Outlet	150psig	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/2" BSP	11/2" BSP	2" BSP	2" BSP	21/2" BSP	21/2" BSP	21/2" BSP	3" BSP
Water Inlet		1" BSP	1" BSP	1" BSP	1" BSP	1" BSP	1" BSP	1" BSP	1" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP
Blowdown Outlet		1" BSP	1" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP
* Burner Length	mm	536	732	790	790	790	790	965	965	965	965	1155	1155
Weight Empty	Kg	1100	1465	2900	3220	3900	5100	6420	7220	7860	7990	8470	9430
Weight Full to NWL	Kg	1300	2030	3900	4100	5265	6950	9660	10340	11575	11184	11990	13690
Total Heating Surface	m^2	3.92	8.34	12.37	16.89	24.4	26.1	34.4	45.3				
Steam Release Area	m^2	0.57	0.98	1.32	1.59	2.03	1.99	2.8	3				
Steam Space Volume	m^3	0.05	0.1	0.17	0.28	0.35	0.26	0.47	0.52				

** Variable depending upon burner manufacturer*

** For illustration purposes only design drawings available upon request*

MADE IN BRITAIN

PEAKSMAN

A quality Byworth product, made in Britain

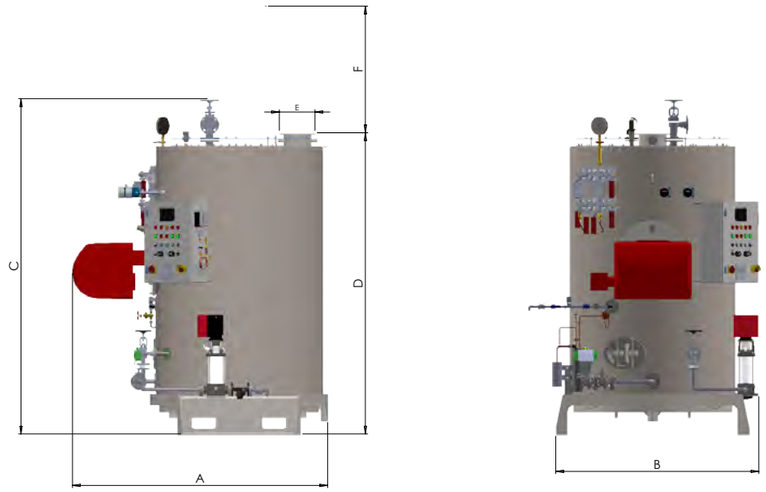
Sizes: 125 – 1000 kg/hr
Working Pressure: 10.34 bar g (maximum)

With one of the smallest footprints in the industry, the Byworth Peaksman boiler is the ideal steam solution for small to medium applications. Designed and manufactured in Britain, this ultra-low NO_x steam boiler is built to provide energy efficiency and long-term ease of maintenance.

- Designed and manufactured in Britain
- Ultra-low NO_x (less than 40mg /m^3 NO_x when firing on natural gas)
- Modulating controls
- 5-year guarantee (against manufacturing defects for the vessel)
- Suitable to fire on natural gas or LPG
- Horizontally mounted burner for ease of maintenance and to reduce overall boiler height

The Peaksman is all about providing the very best, British-made steam solution within a small footprint.

The Peaksman Dimensions



PEAKSMAN VERTICAL SERIES - BOILER DIMENSIONS

Model PSX		125	250	500	750	1000
Duty F & A 100°C	lb/hr	275	550	1100	1650	2200
	hp	8	16	32	48	64
	kg/hr	125	250	500	750	1000
	kW	78	157	313	470	627
Boiler Depth	A	1495		1775	2190	
Overall Width	B	1200		1450	1740	
Height to top of Crown Valve	C	2220		2600	2865	
Minimum height /chimney height	D	1980		2350	2575	
Chimney Diameter ID	E	125		150	225	
Tube Withdrawal Space	F	1150		1520	1750	
Transport Length*	G	2220*		2600*	2865*	
Transport Width*	H	1090*		1350*	1650*	
Transport Height*	J	980*		1250*	1550*	
Steam Outlet	DN	DN25		DN40	DN50	
Safety Valve Outlet	DN	DN25		DN25	DN25	
Water Inlet	DN	DN25		DN25	DN25	
Blowdown Outlet	DN	DN25		DN25	DN32	
Transport Weight (stripped down)	Kg	1000		1600	2700	
Weight Empty	Kg	1200		1800	3000	
Weight Full to NWL	Kg	1560		2600	4370	

** Transport measurements are based on boiler being laid on its back.*

For illustration purposes only. Design drawing available upon request.

MADE IN BRITAIN

Eliminating the cracks

We only weld the heat tubes at the hottest end to allow the tubes to expand and contract with the boiler, eliminating tube-end cracks that are typical of boilers with tubes fixed at both ends.

YORKSHIREMAN

Three-pass wetback boiler for medium to heavy steam demand.

Offering low emissions, energy efficiency and innovative control technology, the Yorkshireman three pass, wet back, steam boiler is the preferred choice for larger applications.

Sizes: From 1,000 – 18,000 kg/hr
Working Pressure: Up to 23 bar g

- Low NOx
- High-quality dry steam across a wide range of operating conditions thanks to the generous shell and furnace dimensions
- Thermal stresses are alleviated due to a central furnace and flat flanged end plates
- Heat losses are minimised with high-density external insulation
- Faster NDT inspections thanks to multiple inspection ports, removable cladding panels, and front and rear doors
- Quality assured. Our internal inspection regime exceeds BS and EN requirements. This includes 100% ultrasonic inspections of all major welds
- Manufactured in Britain. All our boilers are built to meet customer requirements
- Our standard range includes all fittings necessary for a working boiler including a sample cooler and NDT inspection panels. Larger boilers include access ladders and platforms
- By using high-performance, ceramic materials, we have eliminated problems associated with traditional refractory cement

YORKSHIREMAN2

As part of a two-year research and development programme carried out in partnership with Leeds University, Byworth created the Yorkshireman2 boiler. With steam users placing increasing focus on reducing running costs, the project set out to rigorously test and identify the optimal configuration of shell, furnace and tubes to achieve maximum efficiency and low emissions.

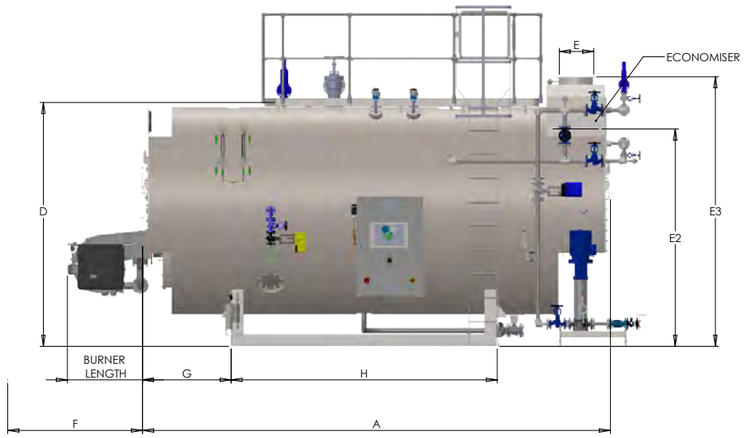
The resulting boiler range incorporates a number of advanced energy-saving features, including the innovative X-ID boiler tube, making the multi-award-winning Yorkshireman2 the most energy-efficient steam boiler currently available in the UK, delivering an efficiency of approximately 95%*.

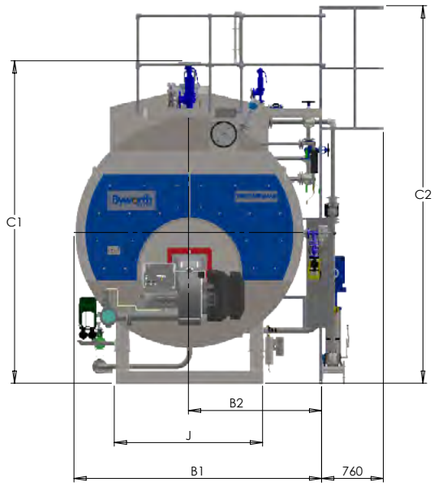
**Based on net calorific values in accordance to EN12953.*

The unique X-ID tubes are an exciting feature defining the outstanding efficiency of the Yorkshireman2. With special helical internal ribs, this tube gives a significant 80% increase in heat transfer

Check out the Unity Boiler house control system for improved fuel saving.
Page 31

The Yorkshireman Dimensions





Model YSXLN / Y2SXLN		1000	1500	2000	2500	3000	3500	4000	4500	5000	6000	7000	8000	9000	10000	11250	12500	13750	16000	18000
Duty	**lb/hr**	2200	3300	4400	5500	6600	7700	8800	9900	11000	13200	15400	17600	19800	22000	24800	27600	30300	35100	39700
F & A	**kg/hr**	1000	1500	2000	2500	3000	3500	4000	4500	5000	6000	7000	8000	9000	10000	11250	12500	13750	15900	18000
100°C	**kW**	627	940	1254	1567	1881	2194	2508	2821	3135	3762	4389	5016	5642	6269	7053	7837	8620	9968	11285
Overall Length*	**A**	3367	3777	4072	4603	4782	4967	5236	5254	5566	5883	6194	6473	6477	6903	6991	7339	7614	7891	8041
Overall Width	**B1**	1820	2120	2235	2420	2450	2555	2610	2675	2690	2820	2906	3128	3245	3315	3340	3510	3560	3800	3900
Width Dimension	**B2**	1010	1217	1267	1377	1367	1432	1445	1480	1465	1529	1558	1690	1725	1758	1730	1815	1815	1978	2000
Overall Height	**C1**	2490	2653	2901	3051	3191	3271	3355	3415	3540	3672	3786	4046	4145	4217	4455	4625	4700	4879	5035
Overall Height with Ladder	**C2**	n/a	n/a	3490	3640	3720	3796	3980	3940	4000	4132	4246	4426	4590	4664	4774	4940	5020	5194	5350
Minimum Height	**D**	2150	2263	2466	2616	2696	2776	2860	2920	2980	3112	3226	3406	3505	3577	3685	3855	3930	4109	4265
Chimney I/D Standard	**E1**	225	250	300	350	350	400	400	450	450	500	550	550	600	650	650	700	750	800	850
Chimney I/D with Economiser	**E1**	200	225	250	300	300	350	350	400	400	450	450	500	550	550	600	650	650	700	750
Chimney Height	**E2**	1865	1988	2108	2203	2248	2348	2390	2435	2485	2606	2683	2783	2860	2762	2850	2915	2985	3152	3275
Chimney Height with Economiser	**E3**	2450	2618	2688	2803	2853	2918	3100	3150	3185	3306	3493	3723	3700	3772	3910	3940	4005	4087	4340
Tube Withdrawal	**F**	2730	3030	3230	3730	3860	3960	4230	4230	4480	4732	4980	5230	5214	5510	5560	5830	6010	6330	6330
Base inset	**G**	570	610	695	840	880	950	975	996	1056	1000	1070	1100	1170	1196	1200	1240	1270	1180	1230
Max. distance over base	**H**	2140	2388	2540	2620	2840	2830	3000	3070	3210	3700	3800	3890	3920	4015	4276	4470	4720	5030	5030
Max. width base	**J**	1120	1120	1280	1470	1470	1620	1720	1720	1770	1870	2070	2070	2320	2320	2320	2420	2420	2590	2590
Feed Pump - 150psi	**DN**	25	25	25	25	25	32	32	32	32	40	40	40	40	40	40	50	50	50	50
Crown Valve Outlet - 150psi	**DN**	50	65	80	80	100	100	100	100	125	125	125	150	150	150	200	200	200	200	200
Safety Valve Outlet - 150psi	**DN**	40	40	50	50	50	65	65	65	65	80	80	80	100	100	100	100	100	125	125
Blowdown Valve	**DN**	32	32	32	32	32	32	50	50	50	50	50	50	50	50	50	50	50	50	50
Weight Empty	**kg**	4525	5750	7040	8879	10161	11260	13150	13870	15370	17890	20500	22770	25289	29500	31440	32167	33546	37493	39545
Weight to NWL	**kg**	6965	9230	11430	14737	16926	18700	21710	22775	25260	29160	33520	38560	43195	49280	52420	56372	59350	67946	73470
Flooded Weight	**kg**	7316	9700	12021	15629	17903	19840	22960	24164	26819	31131	36000	41168	46803	52265	57188	62406	65869	76083	82993
Total Heating Surface	**m2**	21.4	31.3	42.6	57.3	72.5	79.2	91.4	99.6	114.4	147	177	213	213	242	281	313	312	368.7	405.8
Steam Release Area	**m2**	3	3.1	3.9	5	5.2	5.8	3.2	6.3	6.88	7.6	8.8	9.7	11	11.1	12	14.1	15.1	17.2	18.4
Steam Space Volume	**m3**	0.35	0.47	0.59	0.89	0.98	1.14	1.25	1.39	1.56	1.87	2.48	2.60	3.60	2.99	4.77	6.03	6.52	8.14	9.52

Note - for YSX8000 and above support saddles supplied only

** Variable depending upon burner manufacturer*

For illustration purposes only design drawings available upon request

MADE IN BRITAIN

Heat Recovery Range

Our waste recovery boilers provide an economical solution for your steam and hot water needs.

Waste heat boilers can recover heat, which is produced as a by-product of another process, turning heat that would otherwise be lost into useful steam or hot water.

Byworth can design and manufacture bespoke industrial waste heat recovery boilers to suit a wide range of applications and requirements.
Composite boilers have a conventional fired section as the primary energy source, which can be supplemented by waste heat when available.

Alternatively, a site can use waste heat as their primary energy source, topping it up with the burner when required.

Heat recovery units are an ideal solution for fluid heating from gas turbine exhaust and process heat sources.

MADE IN BRITAIN

Economisers

Available as an integral, cartridge-type unit which is pre-piped and mounted to a new boiler, or as a stand-alone unit.

Economisers and air preheaters are an easy way to maximise the efficiency of your combustion plant by recovering waste heat from the flue gases into the boiler feed water or combustion air.

A typical economiser will reduce the flue gas temperature by between 70 °C and 100 °C, raising the feed water flowing temperature by 20 °C to 35 °C in the process and saving between 4% and 6% on the cost of fuel.

Economisers are constructed from extended surface steel tubes in a steel casing with water flowing through the tubes, while the hot gases pass over the outside. Cartridge-type economisers can be supplied with the M-Series and Yorkshireman boiler ranges at the time of manufacture, while external units are suitable for on-site installation and retrofit to existing boilers.

Packaged Boiler Housing and Energy Centres

Solutions To Fit Your Environment

Options range from cost-effective skid-mounted boilers and ancillaries, through pre-fabricated boiler houses, to site-erected portal frame apex roof buildings.

Totally Mobile

Larger boilers can be trailer-mounted for use where steam is required remotely.

Skid-mounted Boiler

These packages save you time and money on site installation.

All interconnecting piping and wiring are completed in our factory prior to dispatch meaning your equipment arrives ready for use.

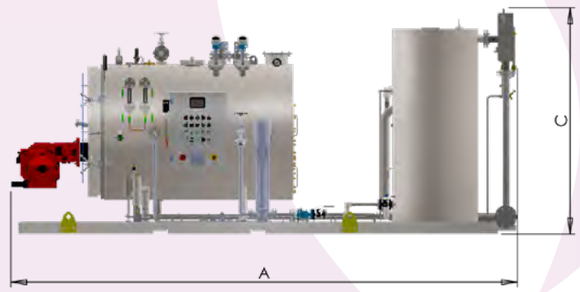
Built with the customer in mind, these ultra-compact, pre-assembled units are supplied with all the essential boiler accessories needed to make a complete system.

Skid-mounted boiler contents:

- M-Series boiler
- Hotwell tank with steam injection system
- Blowdown vessel with vent head
- Feed pump and isolation valve
- Single fuel high/low burner

Optional extras:

- Water softener
- Chemical dosing to suit site requirements



MX-SERIES - Skid Package Dimensions

Model MX		250	500	750	1000	1360
Duty F & A 100°C	lb/hr	550	1100	1650	2200	3000
	hp	16	32	48	64	87
	kg/hr	250	500	750	1000	1362
	kW	160	322	483	644	876
Skid Overall Length	A	3270	2105	2105	5250	5250
Skid Overall Width	B	1600	1600	1600	2050	2050
Approx. Overall height	C	1550	2250	2200	2300	2300
Chimney Outlet height		1340	1510	1770	1870	1930
Chimney Diameter ID		125	200	200	225	250
Steam Outlet		25NB	40NB	50NB	50NB	65NB
Safety Valve Outlet		11/4" BSP	11/4" BSP	11/4" BSP	11/4" BSP	11/2" BSP
* Weight Empty (Shipping)	Kg	1100	1465	2900	3220	3900
* Weight Full to NWL	Kg	1300	2030	3900	4100	5265

** Approx. weight*

** For illustration purposes only design drawings available upon request*

MADE IN BRITAIN

Containerised Boiler House

All the benefits of a fully engineered boiler system in a robust, relocatable package.

For compact sites or smaller-output steam requirements, our containerised boiler houses offer a highly efficient, ready-to-deploy solution. Built within either a 20ft or 40ft shipping container, depending on steam load and equipment size.

Benefits of a containerised package include:

- A complete, self-contained system delivered in a standard shipping container for rapid installation
- Ideal for sites with limited space or restricted access, offering a neat, all-in-one footprint
- 20ft containers are suitable for a single small boiler, up to 1,360 kg/hr, providing a compact and efficient boiler house solution
- 40ft containers offer additional capacity, accommodating a second 1,360 kg/hr boiler within one unit to provide additional steam load or a standby/duty cycle.
- Containers can be easily relocated or redeployed as operational needs evolve
- Fully constructed, pre-piped, and pre-wired off-site
- Factory-tested to the customer's specification before dispatch, ensuring fast, trouble-free commissioning
- External container surfaces can be sprayed to match any customer-specified colour

Containerised Boiler House Contents

- Steam boiler(s)
- Blowdown tank
- Hotwell tank
- Fire and gas detection
- Internal lighting
- Water treatment
- Pre-piped and pre-wired throughout

Our Containerised Boiler Houses provide a practical, compact alternative to our larger prefabricated buildings, delivering Byworth quality and performance in a format suited to smaller boiler installations.

Our prefabricated boiler house is easily transportable and ensures minimal disruption during installation.

Prefabricated Boiler House

A modern, self-contained energy centre can offer major advantages, and our pre-fabricated boiler houses are designed to deliver exactly that. They provide a range of benefits, including:

Innovation

A straightforward, ready-to-connect solution that significantly reduces on-site disruption.

Sustainable approach

Lower environmental impact – fewer resources on site, fewer site deliveries, less noise, less waste.

Programme certainty

Constructed, pre-wired, and tested to each customer's exact specifications before dispatch, saving valuable time on site.

Flexibility

The housing can be relocated and installed elsewhere, either on the same site or a different location, offering long-term operational adaptability.

Boiler house Contents

- Steam boiler
- Blowdown tank
- Dumplex water softener
- Chemical dosing
- Hotwell tank
- Fire and gas detection
- Internal lighting
- Pre-piped and wired
- Water treatment

Unity

Smart Boiler Control That Cuts Energy Use and Boosts Performance

Energy costs continue to rise, and fuel prices remain unpredictable. For plants expected to operate over many years, improving energy efficiency isn't just sensible, it's essential for long-term viability. Unity, our intelligent boiler control system, is designed to help you get more from every unit of energy while reducing the stresses placed on your equipment.option offers customers the greatest flexibility of our packaged options.

Advanced Control, Made Simple

Unity brings together every part of your boiler house into one smart, easy-to-use system. It gives you clear visibility of plant performance, learns how your system behaves, and automatically makes adjustments to improve efficiency and reduce running costs. By tracking and comparing data from across the boiler house, Unity delivers fast, effective responses that support both performance and savings.

Built for Any Boiler House

Capable of managing dozens of inputs and outputs at once, Unity works with any size or configuration of plant, from a single boiler to complex multi-boiler installations, hybrid systems, waste-heat units and composite boilers.

Using real-time measurements, Unity makes intelligent decisions to ensure smooth operation, minimise wear and tear, and extend the working life of your boiler equipment.

Big Data, Real Savings

Unity uses advanced digital technology to transform the way your boiler house operates. Through IoT connectivity, it can remotely monitor plant performance, identify developing faults and support more targeted servicing.

By drawing on a secure cloud platform, Unity analyses a wider range of operational data than ever before, revealing insights that help you:

- Reduce fuel consumption
- Increase operational efficiency
- Prevent unplanned downtime
- Improve the speed and accuracy of service responses

This shift to data-driven plant management enables a step-change in reliability, resilience and cost control

Smart technology that reduces your energy consumption

Unity

Unity

Designed Around the User

Unity includes a built-in touchscreen interface that gives operators straightforward access to live data, alarm logs and performance trends. A simple green-amber-red status system highlights changes that need attention, helping teams act quickly and confidently.

Operators can easily set, monitor and adjust a wide range of functions, including:

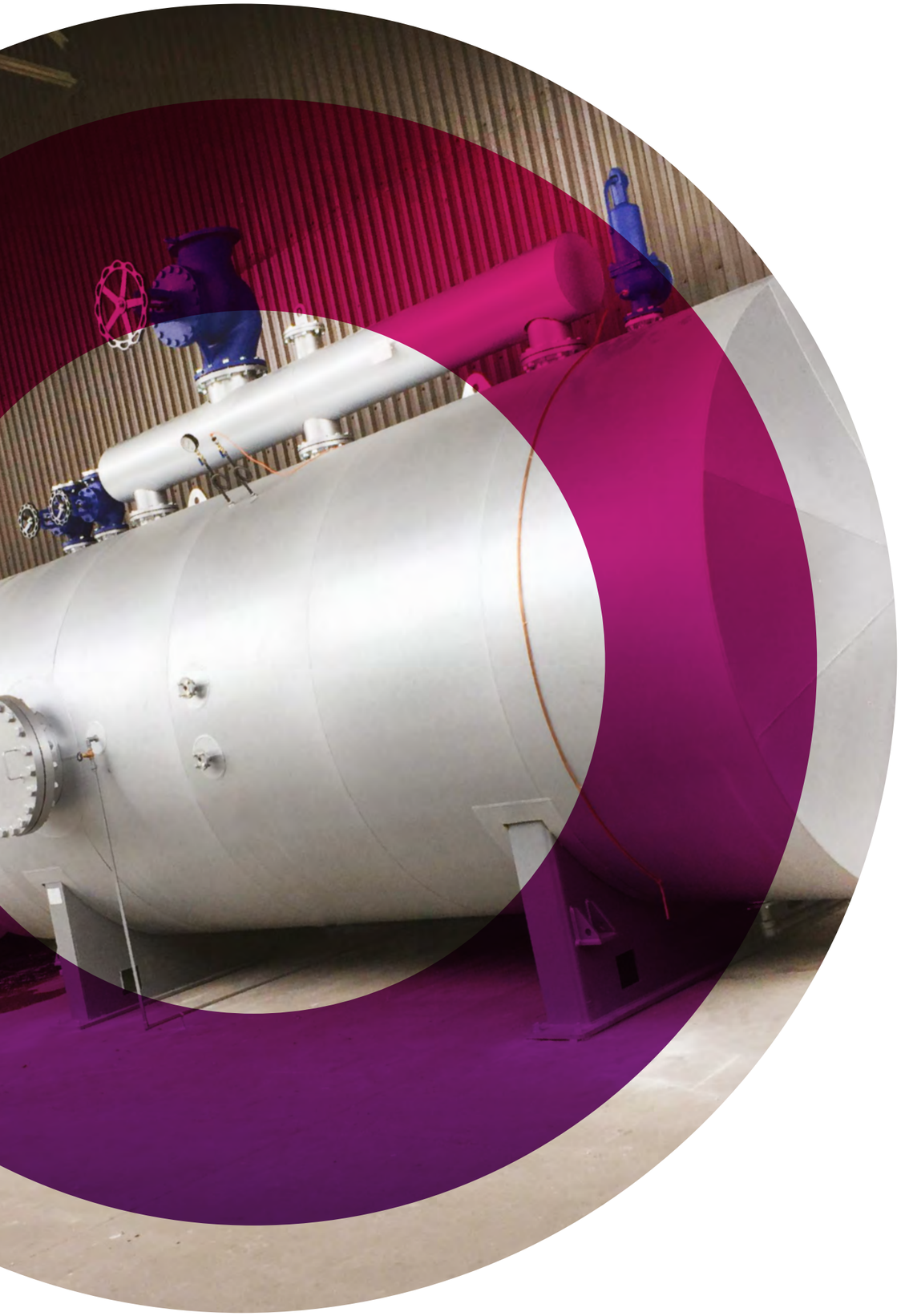
- Time sequencing and scheduling
- Fuel selection and set-point control
- Pressure setback modes, including night operation
- Automated cold-start routines
- Trend monitoring and alarm logging
- Automated water tests and pump rotation
- Hotwell level and temperature control
- Bottom blowdown automation
- Chemical dosing
- Fuel metering (real-time and totalised)
- Multi-boiler sequencing
- Feed-forward burner control
- Step-by-step guidance for routine checks and maintenance

Big Data = Less Downtime, Lower Opex

Unity continuously collects and interprets detailed data from across your boiler house, enabling it to identify issues before they lead to failure. This predictive approach greatly reduces the risk of downtime and lowers operating costs.

By managing the boiler house as a single, unified system, rather than relying on multiple separate control units, Unity creates a more efficient, flexible and responsive plant.

With cloud-connected insights, plant managers can see exactly when demand peaks occur, how the system responds and where further efficiencies can be made. This reduces start–stop cycles and cuts both fuel and water usage.



Steam Accumulators

A smart way to manage variable steam demand

Many industrial sites experience steam demand that rises and falls throughout the day. While modern combustion equipment can achieve good turn-down ratios, running a boiler close to its minimum output for long periods is not ideal and can lead to efficiency losses. Boilers operate at their best around 70% of their rated capacity, so plants with fluctuating demand often benefit from sizing boilers for the average load, and using a steam accumulator to handle the peaks.

How a Steam Accumulator Works

A steam accumulator stores energy in the form of hot, pressurised water. When the pressure around that water drops, a proportion instantly “flashes” into steam, providing a rapid burst of output.
Here’s how it works in practice:

- During low steam demand, the boiler may generate more steam than the plant requires. This surplus steam is directed into the accumulator, heating the stored water until it reaches saturation temperature at the operating pressure.

- During high steam demand, when the required output exceeds the boiler’s maximum capacity, the pressure in the accumulator falls. This triggers a portion of the stored water to flash into steam, supplementing the boiler and meeting the temporary demand spike, all without disrupting normal boiler operation.

Discharge and Recharge Cycles

When the plant calls for more steam than the boiler can supply alone, the accumulator steps in, releasing flash steam to stabilise the load. As soon as demand drops back to normal levels, the boiler returns to its preferred pressure and efficiency, and any excess steam is again used to recharge the accumulator.
This cycle helps:

- Reduce boiler cycling
- Maintain stable operating conditions
- Improve fuel efficiency
- Extend equipment life

By smoothing out the peaks and troughs of steam demand, a steam accumulator provides a reliable, energy-efficient solution for sites with variable load requirements.

Hotwell Tanks and Deaerators

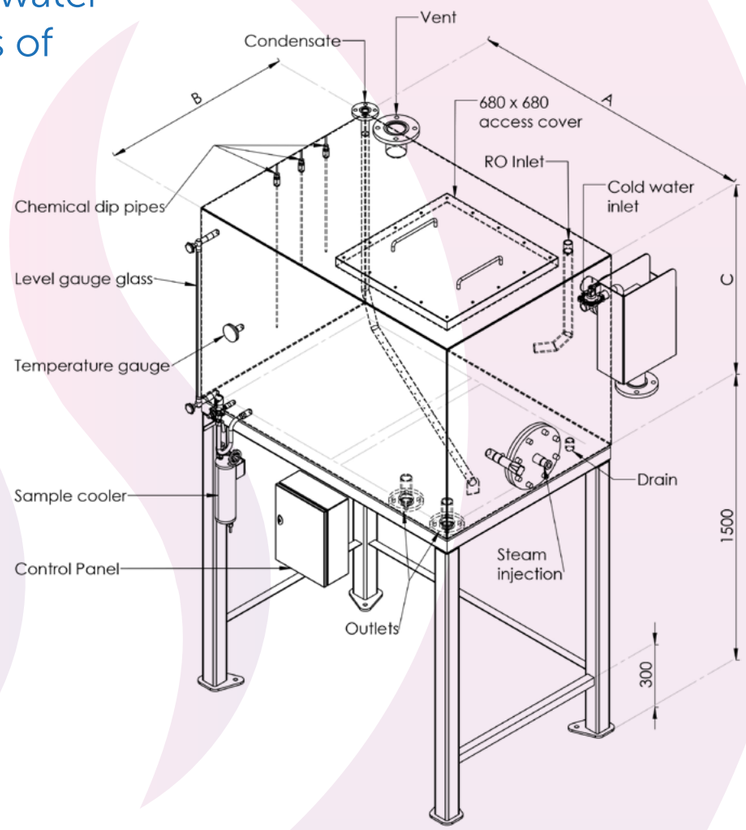
The temperature of the water being fed to the boiler is of paramount importance.

Condensate contains approximately 25% of the energy of steam; so recovering as much condensate as possible is key to maximising operational efficiency.

Hotwell tanks and deaerators are used to store recovered condensate whilst mixing it with fresh make-up water, helping to drive off dissolved oxygen, reducing the need for chemical oxygen scavengers and improving system efficiency.

All hotwell tanks are manufactured from stainless steel, insulated with high-density mineral wool to minimise heat losses, and externally clad with self-coloured Aluzinc.

Steam injection systems are highly recommended to ensure feed water is stored at the correct temperature. Semi or full deaerator heads are available on request.



Capacity (ltrs)	0.56m³	0.75m³	1m³	1.5m³	2m³	2.5m³	3m³	3.75m³	4.5m³	6.75m³	7.5m³	8m³	9m³	12m³
A	1m	1m	1m	1.5m	2m	2.5m	2m	2.5m	3m	3m	3m	4m	4m	4m
B	0.75m	0.75m	1m	1m	1m	1m	1m	1m	1m	1.5m	2.5m	2m	1.5m	2m
C	0.75m	1m	1m	1m	1m	1m	1.5m	1.5m	1.5m	1.5m	1m	1m	1.5m	1.5m
Outlets	DN32	DN32	DN32	DN40	DN40	DN40	DN50	DN50	DN50	DN50	DN65	DN65	DN65	DN80
Overflow	DN65	DN65	DN65	DN65	DN65	DN65	DN65	DN100	DN100	DN100	DN100	DN100	DN100	DN100
Vent	DN50	DN50	DN50	DN80	DN80	DN80	DN100	DN100	DN100	DN100	DN100	DN100	DN100	DN100
Drain	1"	1"	1"	1"	1"	1"	1½"	1½"	1½"	1½"	1½"	2"	2"	2"
Inlets	1"	1"	1"	1"	1"	1"	1"	1½"	1½"	1½"	1½"	1½"	2"	2"
Condensate*	DN20	DN20	DN20	DN25	DN25	DN32	DN32	DN32	DN40	DN40	DN50	DN50	DN50	DN50

**Condensate subject to change (data based on 80% return).*

For illustration purposes only. Design drawing available upon request

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Blowdown Vessels

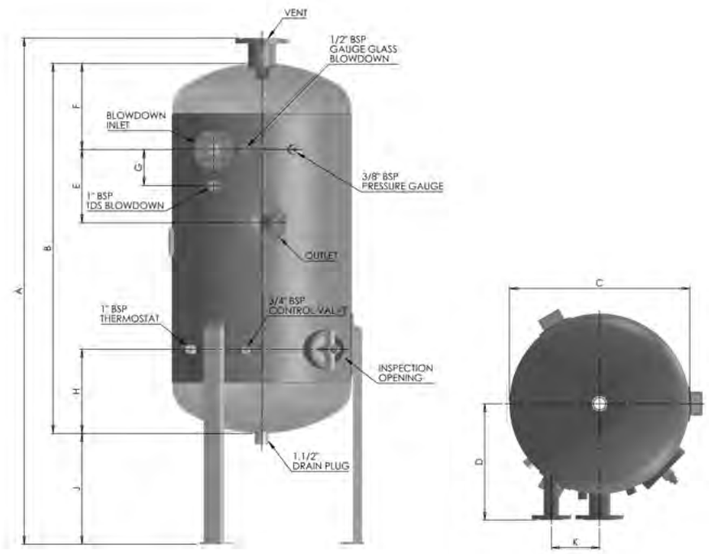
All steam boilers must be regularly blown down to reduce the concentration of suspended and dissolved solids in the boiler water.

As this waste is under pressure and at extreme temperature there must be a safe means of storage and cooling (to below 43°C) before discharging to general drainage.

Byworth manufacture a range of blowdown vessels to suit a wide range of boilers.

Our tanks are designed and built to PD5500 and meet the requirements of the Combustion Engineering Association's guidance document BG03.

Optional extras include vent heads, cooling water injection systems and multi-boiler manifolds.



Model No.	A	B	C	D	E	F	G	H	J	K	Vent Size	Blowdown Inlet Size	Outlet Size	Inspection Opening Size	Approx. Weight (kg)
BT0	1365	808	393	290	160	201	120	218	458	120	DN80 3"	DN40 1.1/2"	DN50 2"	2" BSP Sight Hole	109
BT1	1760	1200	610	406	188	288	150	305	455	200	DN100 4"	DN50 2"	DN80 3"	180 x 120mm	210
BT2	2103	1538	749	483	305	358	150	350	460	200	DN100 4"	DN50 2"	DN80 3"	180 x 120mm	273
BT3	2312	1756	895	560	305	455	0	475	454	200	DN150 6"	DN50 2"	DN100 4"	320 x 220mm	402
BT4	2535	1981	1054	635	355	418	0	438	452	200	DN200 8"	DN50 2"	DN150 6"	320 x 220mm	635
BT5	2700	2143	1369	770	400	494	0	514	450	300	DN200 8"	DN50 2"	DN150 6"	320 x 220mm	850

All flange connections to BS EN1092:2003 PN16

** For illustration purposes only design drawings available upon request*

MADE IN BRITAIN

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Notes

Notes

Byworth BOILERS

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