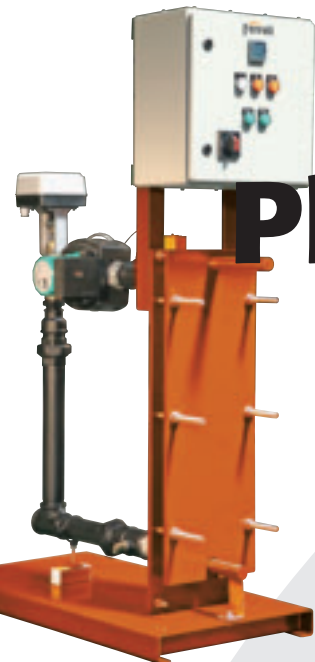


**ferroli**

# Plate heat exchangers & hot water generators





# Plate heat exchangers

of brazed units. These exchangers are manufactured from rectangular stainless steel plates, joined together in a copper brazed vacuum process. They are suitable for high operating pressures – up to 30 bar. Nickel brazed units are also available.

## Features and benefits

### Typical unvented brazed plate and buffer package arrangement

- Primary circulating pump
- Three port control valve with fail safe action
- Independent high limit cut out
- Control panel with proprietary temperature controller and lockable mains isolator
- Volt free common alarm
- BMS compatible
- Retrofit where existing cylinders cannot meet demand

All control panels use readily available electrical components. Din rail mounted relays, motor starters and contactors eradicate the need to hold special unique spares.

## Advantages of plate heat exchangers

- High heat transfer coefficients, ensuring the designed surface area is kept to a minimum
- Compact design, saving on plant-room space requirements
- Ease of maintenance
- Exchanger outputs can be increased by adding additional plates
- Exchangers can achieve high cross over temperature profiles
- Low standing losses in comparison with other exchanger types.

## Advantages of brazed heat exchangers

- Compact, low weight
- High operating pressures and temperatures
- Corrosion resistant
- Low volume
- High heat transfer coefficients
- Modern fault alarm systems

## Plate heat exchangers

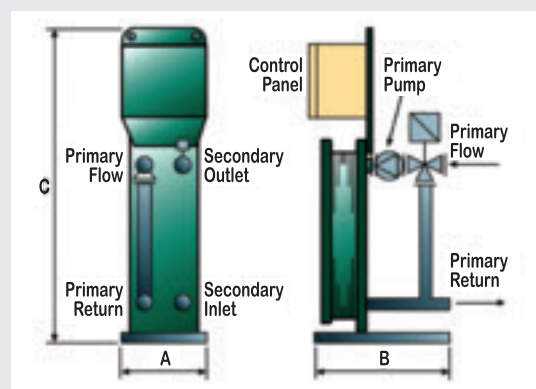
Ferrolli offers a comprehensive range of plate heat exchangers including gasketed, brazed and fully packaged units. With several of our frame designs supplied from stock components, Ferrolli is able to meet rapid delivery requirements. Our design office ensures that each exchanger is selected to optimise performance based on the rating, temperatures and pressure drop criteria.

Other models available include:

- Twin primary circulating pumps with auto-changeover
- Four port rotary control valves
- Secondary circulating pump

## Brazed heat exchangers

In addition to gasketed plate heat exchangers, Ferrolli supplies a full range



## Technical data

Unit Reference	Secondary Flow l/sec 10-60°C	Secondary Resistance (kPa)	Primary Flow l/sec 82°C	Boiler Power (kW)	Dimensions (mm)		
					A	B	C
HPP052	0.25	25	0.4	52	500	650	1500
HPP104	0.5	21	0.8	104	500	650	1500
HPP208	1.0	19	1.5	208	500	650	1500
HPP311	1.5	22	2.2	311	500	650	1500
HPP415	2.0	25	3.0	415	500	650	1500
HPP519	2.5	20	3.7	519	500	650	1500
HPP623	3.0	18	5.1	623	550	800	1800
HPP727	3.5	24	5.9	727	550	800	1800
HPP831	4.0	24	6.8	831	550	800	1800
HPP934	4.5	21	7.4	934	550	800	1800
HPP1038	5.0	25	7.9	1038	550	800	1800

Standard design based on primary flow temperature of 82°C. Other temperature profiles are available.

# Hot water demand

The following table can be used to determine the required size of a unit installed within a hot water system without a storage buffer vessel.

## Demand units per fixture in litres per hour (l/hr)

	Bath	Public Hand Basin	Private Hand Basin	Shower	Bar Sink	Cleaner Sink	Kitchen Sink	Lab Sink
Fitness Centre *	1.50	1.00	0.75	1.50	1.50	2.50	1.50	2.50
Flats	1.50	-	0.75	1.50	-	1.50	0.75	-
Industrial/Factory *	-	1.00	0.75	3.50	-	2.50	3.00	2.50
Hospital	1.50	1.00	0.75	1.50	-	2.50	3.00	2.50
Hotel	1.50	1.00	0.75	1.50	2.00	2.50	1.50	-
Office	1.50	1.00	0.75	-	-	2.50	1.50	-
School	-	1.00	0.75	1.50	-	2.50	0.75	2.50
University	-	1.00	0.75	1.50	1.50	2.50	1.00	3.00

\* For applications where the main use is showers, use a conversion factor of 0.1 l/s to obtain the design water flow rate.

## Sizing in litres per second (l/sec)

Total Demand Unit	Fitness Centre	Flats	Industrial/Factory	Hospital/Hotel	Office/School/University
25	1.30	0.80	1.40	1.10	0.50
50	1.70	1.10	1.80	1.50	0.75
75	2.10	1.45	2.10	1.80	0.80
100	2.50	1.60	2.50	2.20	1.05
125	2.80	1.80	2.70	2.40	1.20
150	3.00	2.00	2.90	2.60	1.30
175	3.20	2.10	3.05	2.75	1.40
200	3.30	2.20	3.10	2.80	1.50
225	3.50	2.30	3.30	3.00	1.60
250	3.70	2.45	3.50	3.20	1.65
275	3.80	2.50	3.60	3.30	1.70
300	3.90	2.60	3.70	3.40	1.75
325	4.10	2.75	3.90	3.60	1.80

Total Demand Unit	Fitness Centre	Flats	Industrial/Factory	Hospital/Hotel	Office/School/University
350	4.30	2.80	4.00	3.70	1.85
375	4.40	2.90	4.10	3.80	1.90
400	4.60	3.00	4.30	4.00	1.95
450	5.00	3.25	4.60	4.30	2.10
500	5.30	3.50	4.90	4.60	2.20
750	6.70	4.50	6.10	5.80	3.00
1000	7.40	5.00	6.70	6.40	3.10
1250	8.60	5.90	7.80	7.50	3.70
1500	9.80	6.30	8.80	8.50	4.00
1750	10.50	7.00	9.40	9.10	4.40
2000	11.70	7.50	10.50	10.20	5.00
2500	13.80	8.90	12.30	12.00	5.80
3000	15.90	9.40	14.10	13.80	6.40

## Example

### 150 bedroom hotel

150 showers, 150 private hand basins, 10 public hand basins, 4 cleaner sinks, 4 bar sinks, 4 kitchen sinks.

### Determine total output (l/hr) required

150 shower	x 1.50 = 225
150 private hand basins	x 0.75 = 112.5
10 public hand basins	x 1.00 = 10
4 cleaner sinks	x 2.50 = 10
4 bar sinks	x 2.00 = 8
4 kitchen sinks	x 1.50 = 6
<b>Total demand units</b>	<b>371.5 litres/hour</b>
	<b>(0.10 litres/sec)</b>

### Select nearest standard unit HPP831

371.5 demand units for a hotel requires a secondary flow rate of 3.8 litres per second.

Alternatively 2-HPP 519 each rated at approx. 66%.

# HPP plate heat exchanger and buffer vessel package

We also offer a range of packages suitable for both vented and unvented applications. Where boiler power is limited the addition of a buffer vessel can ensure that peak demands are met. By circulating the secondary water through the entire buffer vessel, a reservoir of hot water is always available. Following peak demands the exchanger control valve will remain open until the full buffer vessel contents have reached the design temperature, normally 60°C.

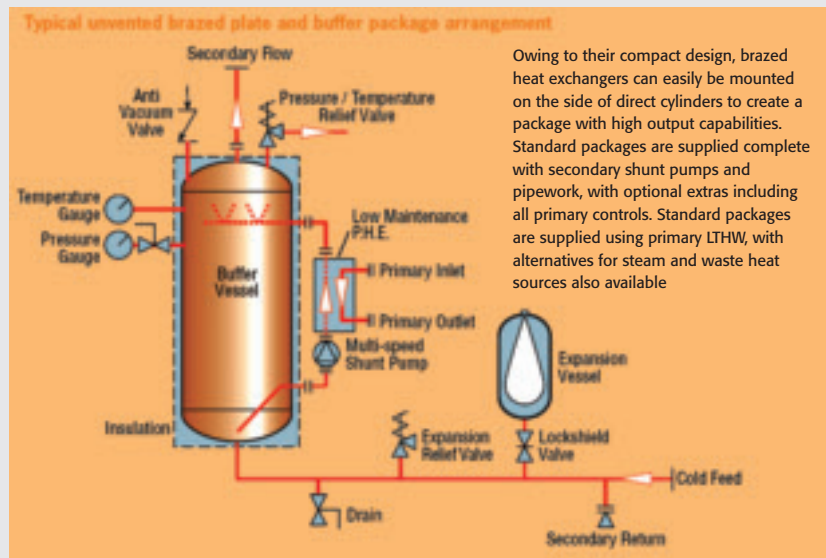
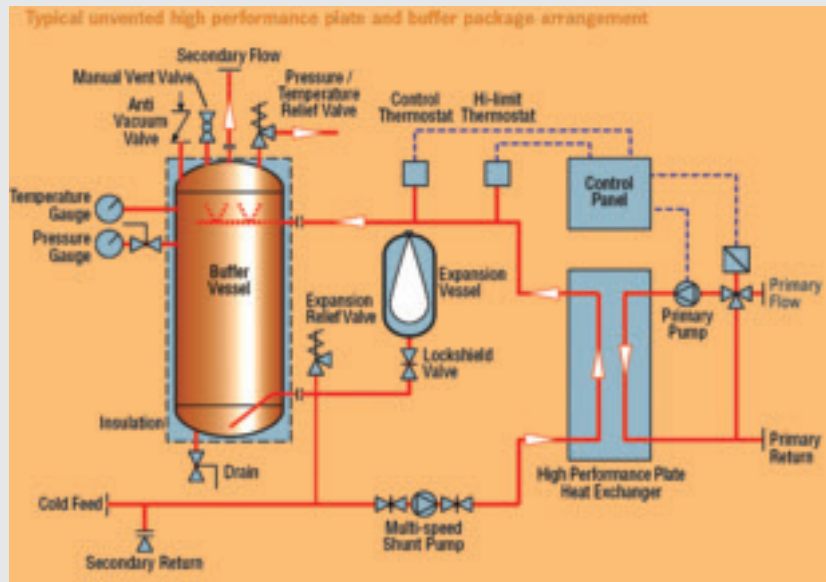
This reduces the risk from Legionnaires' disease. Plate exchanger and buffer vessel packages are particularly suited to buildings where the demand is not constant but which require high peak flows. Hospitals, hotels and leisure centres are examples of buildings with peak demands for hot water that can be supplied by these packages, without the need for excessive boiler ratings. Ferroli standard packages are supplied with skid mounted pre-piped heat

exchangers and buffer vessels, complete with secondary shunt pumps, isolating and regulating valves. The buffer vessels are also fitted with deflectors and sparge pipes to ensure peak performance. Unvented packages also include expansion vessels and all necessary safety devices to conform to Building Regulations. Where access is restricted the equipment can be supplied loose for on-site connection.

## HPP instantaneous water heaters

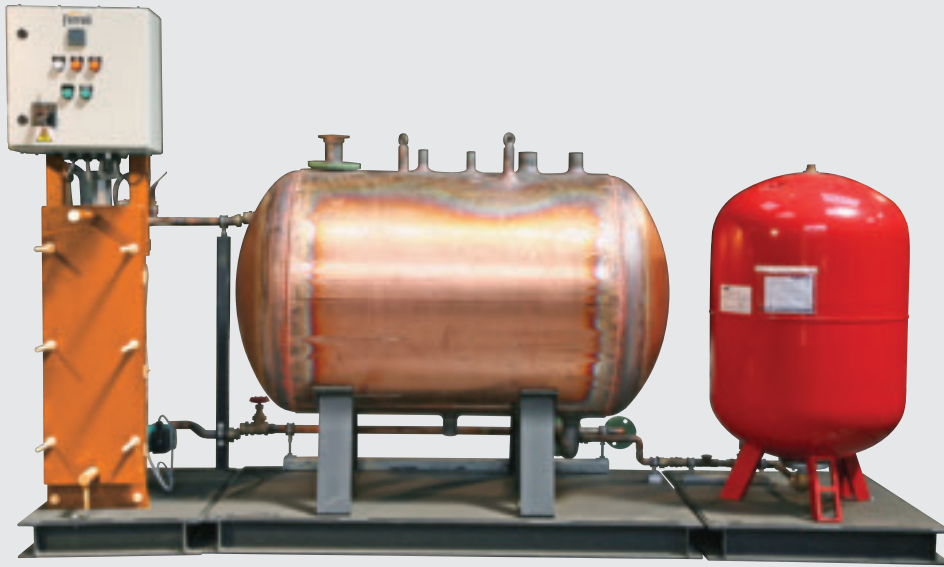
The Ferroli range of instantaneous water heaters comprises fully packaged plate heat exchangers incorporating all the necessary equipment to ensure accurate temperature control. Our standard LTHW range of heaters includes the following:

Unit reference	Power (kW)
HPP052	52
HPP104	104
HPP208	208
HPP311	311
HPP415	415
HPP519	519
HPP623	623
HPP727	727
HPP831	831
HPP934	934
HPP1038	1038



Owing to their compact design, brazed heat exchangers can easily be mounted on the side of direct cylinders to create a package with high output capabilities. Standard packages are supplied complete with secondary shunt pumps and pipework, with optional extras including all primary controls. Standard packages are supplied using primary LTHW, with alternatives for steam and waste heat sources also available

When coupled with a buffer vessel, the required maximum boiler rate can be reduced.



## Buffer vessel size

Capacity (litres)	Dimensions (mm)	
	A	B
450	600	1800
600	750	1550
700	750	1750
800	750	1950
900	850	1750
1000	850	1950
1250	900	2200
1350	900	2300
1500	1050	1950
1750	1050	2250
2000	1050	2500

Other sizes available on request.

A = diameter  
B = height

## Litres per hour per fixture (l/hr)

	Bath	Public Hand Basin	Private Hand Basin	Shower	Bar Sink	Cleaner Sink	Kitchen Sink	Lab Sink
Fitness Centre	42	11	3	126	14	14	28	-
Flats	26	6	3	39	-	26	-	-
Industrial/Factory	-	16	3	126	-	28	28	28
Hospital	12	4	3	39	-	11	11	11
Hotel	25	4	3	25	21	21	21	-
Office	-	6	3	39	-	41	41	-
School	-	21	3	126	-	28	28	28
University	-	15	3	126	-	28	41	41
Restaurant (4.5 litres per meal)	-	10	3	-	21	28	41	-

## Example

### 150 bedroom hotel

150 showers, 150 private hand basins, 10 public hand basins, 4 cleaner sinks, 4 bar sinks, 4 kitchen sinks.

### Determine total output (l/hr) required

150 shower	x 25 = 3750
150 private hand basins	x 3 = 450
10 public hand basins	x 4 = 40
4 cleaner sinks	x 21 = 84
4 bar sinks	x 21 = 84
4 kitchen sinks	x 21 = 84
<b>Total output</b>	<b>4492 litres/hour (1.25 litres/sec)</b>

### Select nearest standard unit HPP 311

The buffer vessel should be rated at 25% of the hourly demand, ie  $0.25 \times 4492 = 1123$  litres. Select nearest standard unit 1250 litres coupled with a HPP 311 Heat Exchanger.

Alternatively: 2 x 700 litre buffer vessels coupled with 2 x HPP 208 Heat Exchangers (rated at approx. 66%).

# Evoplate hot water generators



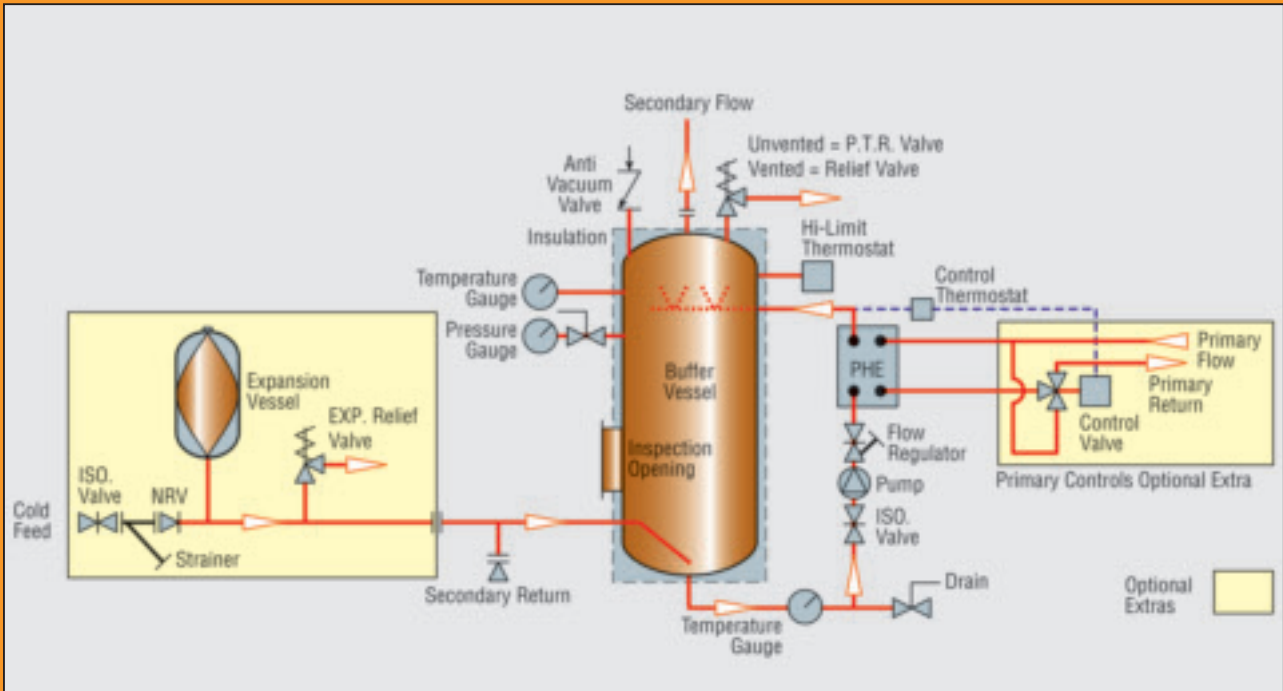
## Evoplate hot water generator for residential homes, schools, medical centres, sports clubs etc

The Evoplate is a compact, highly efficient packaged water heating system capable of supplying 600 - 9000 litres per hour of continuous hot water at 60°C as well as meeting peak demands in excess of the rated input duty.

The system comprises stored water volume, instantaneous brazed plate heat exchanger, domestic circulating pump, flow regulator and direct acting primary temperature controller. The Evoplate is supplied ready fitted and is easy to install.

- Reduced hot water storage up to 75% less than a traditional storage calorifier
- Lightweight with minimum footprint
- Achieve the maximum possible performance from condensing boiler installations
- Reduced downtime and maintenance
- Integral dual action domestic water pump ensuring constant flow through the exchanger and reducing the risk from Legionnaires' disease
- Direct acting temperature controller. Electronic controllers are not required
- Factory tested and ready to install
- Fully compliant with L8 and the PED
- Unvented kits available
- High heat transfer co-efficients when compared with traditional storage calorifiers
- Flexible storage buffer and heat exchanger selection to optimise equipment selection
- Available in copper or stainless steel

# Schematic arrangement



## Technical data

Storage Volume	30 Minute Recovery Power	Hourly Supply	Peak Flow For 5 Mins	20 Minute Recovery Power	Hourly Supply	Peak Flow For 5 mins	15 Minute Recovery Power	Hourly Supply	Peak Flow For 5 mins	10 Minute Recovery Power	Hourly Supply	Peak Flow For 5 mins
litres	kW	l/hour	l/sec	kW	l/hour	l/sec	kW	l/hour	l/sec	kW	l/hour	l/sec
300	35	600	0.97	52	900	1.05	70	1200	1.13	105	1800	1.3
500	58	1000	1.61	87	1500	1.75	116	2000	1.89	174	3000	2.17
700	81	1400	2.26	122	2100	2.45	163	2800	2.64	244	4200	3.03
1000	116	2000	3.22	174	3000	3.5	233	4000	3.78	349	6000	4.33
1250	145	2500	4.03	218	3750	4.38	291	5000	4.72	436	7500	5.42
1500	174	3000	4.83	262	4500	5.25	349	6000	5.67	523	9000	6.5

## Dimensions

Volume	Overall Height	Overall Width	Overall Length
litres	mm	mm	mm
300	1500	800	950
500	1910	875	1025
700	2050	950	1100
1000	2250	1050	1200
1250	2500	1100	1250
1500	2250	1250	1400

# Ferrolì



## Ferrolì Limited

Ferrolì began producing heating appliances and equipment in Italy during the 1950s. Today, the company is still family-owned but now operates ten ultra-modern factories in Europe, employing over 2,500 people and producing a wide range of wall hung, cast iron and welded steel boilers, making Ferrolì one of the largest and most successful heating appliance manufacturers in the world.



## Ferrolì Commercial and Industrial Boilers

The commercial and industrial boiler range covers steel and cast iron designs, atmospheric and pressure jet units, and oil, gas or biomass models. Outputs range from 50kW to 14,000kW. Other products include heat exchangers and pressurisation units. Ferrolì's UK warehouse, backed by its huge manufacturing facility in Italy, offers delivery ex-stock for most smaller boiler models and for all frequently used parts. It also assembles sectional boilers in the UK to suit particular requirements.



## Ferrolì Domestic Boilers

Offering gas wall mounted units with outputs from 5kW to 50kW, Ferrolì's stylish, compact domestic boilers provide maximum comfort with minimal fuel usage. With a choice of conventional, condensing and combi technologies, there's a boiler to match the heating and hot water requirements of every home.



## Ferrolì Service

Once the normal guarantee period on our boilers has expired, coverage can be extended cost-effectively with a choice of Ferrolì service contracts to suit your budget. All Ferrolì service engineers work to Benchmark standards and the Benchmark Code of Practice for the installation, commissioning and servicing of central heating systems, designed to improve the quality of work undertaken by plumbers and heating installers.



## Ferrolì Spares

The rapidly growing popularity of Ferrolì as first choice for both domestic and commercial installations means that heating parts stockists offer readily available spares for Ferrolì boilers. For less frequently needed items, we maintain a fully-stocked warehouse located centrally in the UK, enabling same-day despatch of just about any part needed to keep your Ferrolì boiler running at optimum efficiency.



## Ferrolì Training

Ferrolì understands that well-trained installers are the key to a safe and efficient heating system. That's why we run comprehensive training courses in our purpose-built facilities for everyone concerned in the installation and servicing of Ferrolì's range of boilers. These courses improve installers' knowledge and skills by providing both the theory and the hands-on practical experience essential to maintaining heating system performance and safety.



## Ferrolì Ltd

Lichfield Road Branston Industrial Estate  
Burton-Upon-Trent Staffordshire DE14 3HD  
tel 08707 272 755  
fax 08707 272 766  
e-mail: [commercial@ferrolì.co.uk](mailto:commercial@ferrolì.co.uk)  
[www.ferrolì.co.uk](http://www.ferrolì.co.uk)



## Mixed Sources

Product group from well-managed forests, and other controlled sources  
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