



THERMAL HEAT EXCHANGER AND STORAGE SYSTEM

A dynamic, high-speed photograph of water splashing, with numerous clear droplets and bubbles of varying sizes against a light blue background. The water is captured in mid-air, creating a sense of movement and freshness.

# THE NEW AQUACELL SH-500 II



THE NEW AQUACELL IDEAL FOR MULTIPLE APPLICATIONS



## THE NEW AQUACELL SH-500 II. INNOVATION & VERSITILITY TAKEN EVEN FURTHER

At SmartHeat as we say we are curious not only with the function and performance of our range of systems both commercially and domestically but with the emotional role they play in people's lives. For us, innovation and design are a human endeavor to make life better.

Continuous innovation and opportunity is a major part of the SmartHeat design philosophy, hence the development of new exciting highly efficient SH-500 II Aquacell thermal heat exchanger storage system designed here in Australia.

There is no other system like it on the market today with multiple heat source inputs and a 460 L storage capacity, which has the flexibility to incorporate many options if required, the SH-500 II Aquacell is the perfect system when looking into running one of our hydronic designs, the system is capable of supplying underfloor heating, radiators while taking care of the pool and all your domestic hot water needs with a solar component built in.

With that comes the added capability for the system to be connected to a Biomass boiler, heat pump or gas boiler to take care of all your heating and hot water requirements.

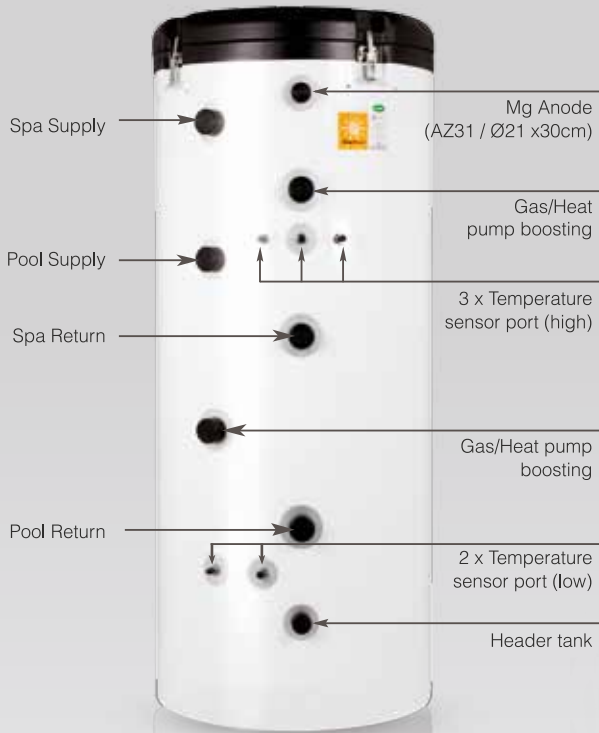
The SH500 II Aquacell is an ideal multipurpose system designed to respond to the changing environment of today's modern living.

At SmartHeat aim to meet the highest industry standards with our systems achieving top results when it comes to water and energy ratings.

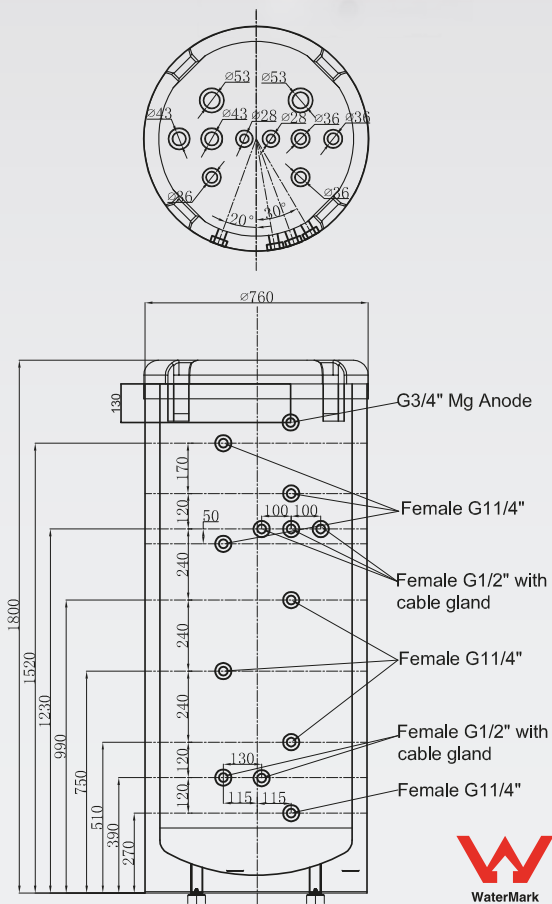
The combination of the SH-500 II Aquacell with one of our hydronic options would reduce your energy consumption quite significantly.

Investing wisely at the planning stage will save you time and money today.

# THE NEW SH-500 II



Dimensions (Unit : mm)



## Features

- Designed in Australia / Compact design / Large storage capacity
- Equal distribution of hot water temperature due to cylindrical casing
- Multiple heat source inputs
- Gas Booster /Biomass Options: Biomass Boiler Solid Wood /Pellet Heater
- Gas Booster models incorporate 5 star continuous flow water heater (26 & 32 litre/min). Providing backup on cloudy days.
- Suitable for indoor and outdoor installation

## Highest quality material used

- Superior Chemical Resistance
  - Internal Tank 2mm 304 High Grade Stainless Steel
  - ANSI 316L Marine Grade Stainless Steel Helical Corrugated pipe
  - Outer Tank 0.5mm Normal Steel Colour Coded White
- Complies with Australia AS/NZS4766 UV 24/ASTM D2565

## Sh-500 II: Determination of The Heat Loss

Stabilisation Period	H 312.96
Test Period	H 93.32
Average Ambient Air Temp	°C 19.5 ± 0.5
Average Container Temp	°C 73.2 ± 0.5
Average container core temperature	°C 75.1 ± 0.5
Standing Heat Loss	---Kwh/24H 2.821±0.027
Maximum Allowable Heat Loss	---Kwh/24H 2.93 (400L)

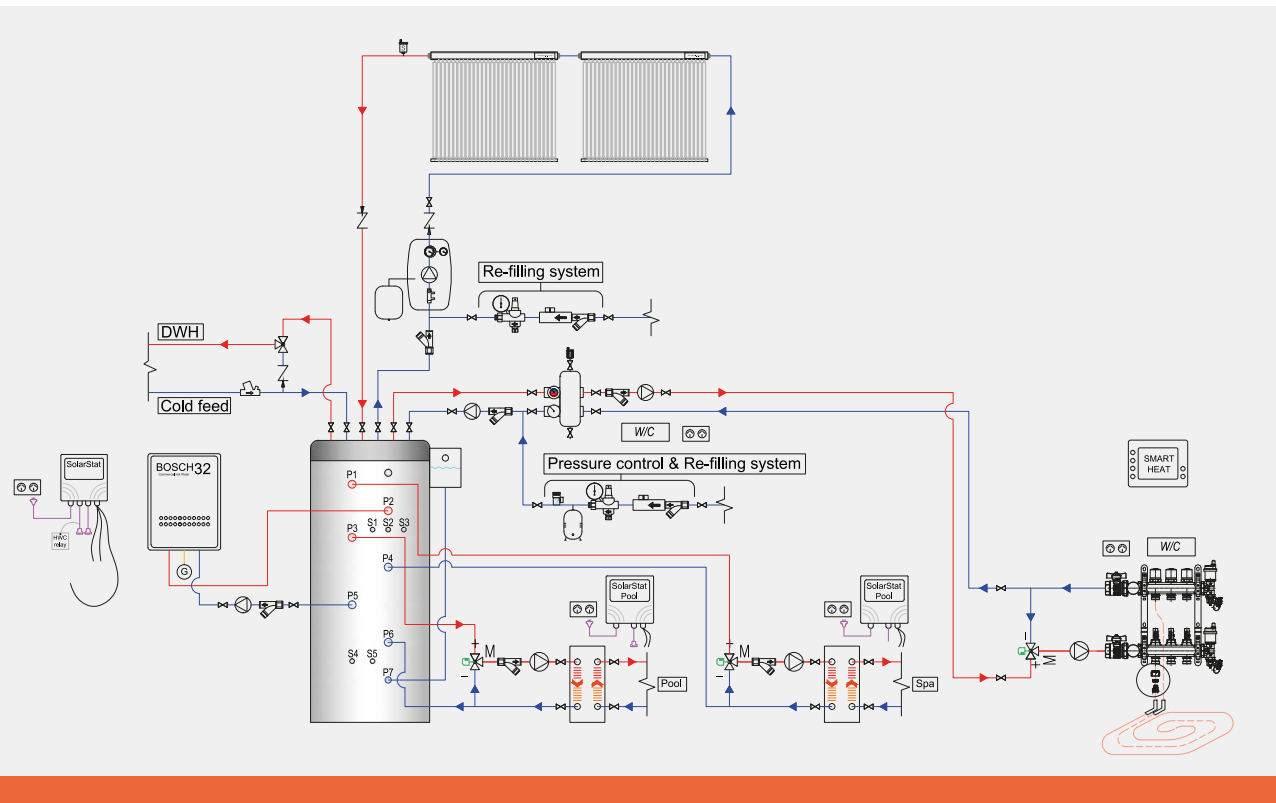
[Vented Heaters without attached feed tank]

Complies with AS/NZS 4766 & UV Resistance UV24/ASTM D2565

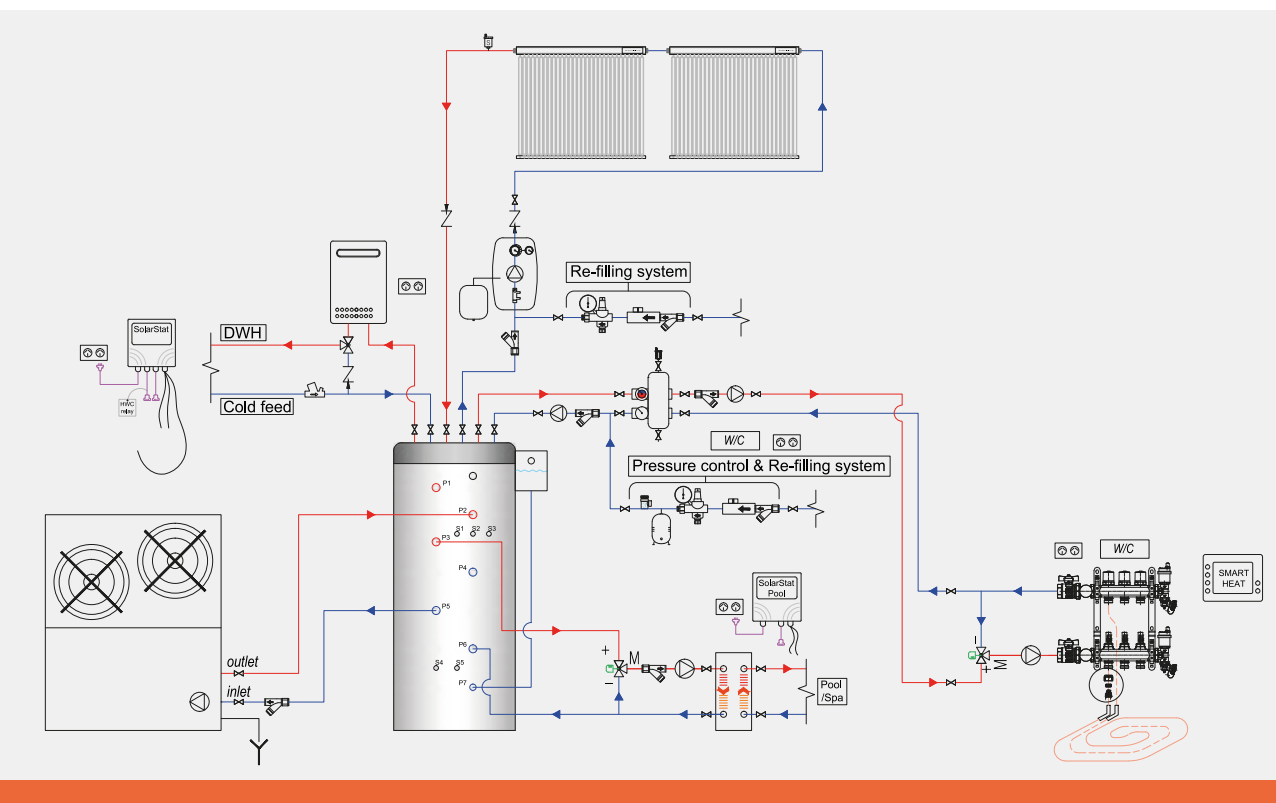
## Applications

Underfloor Heating, Pool/Spa, Domestic Hot Water, Reclaiming Heat

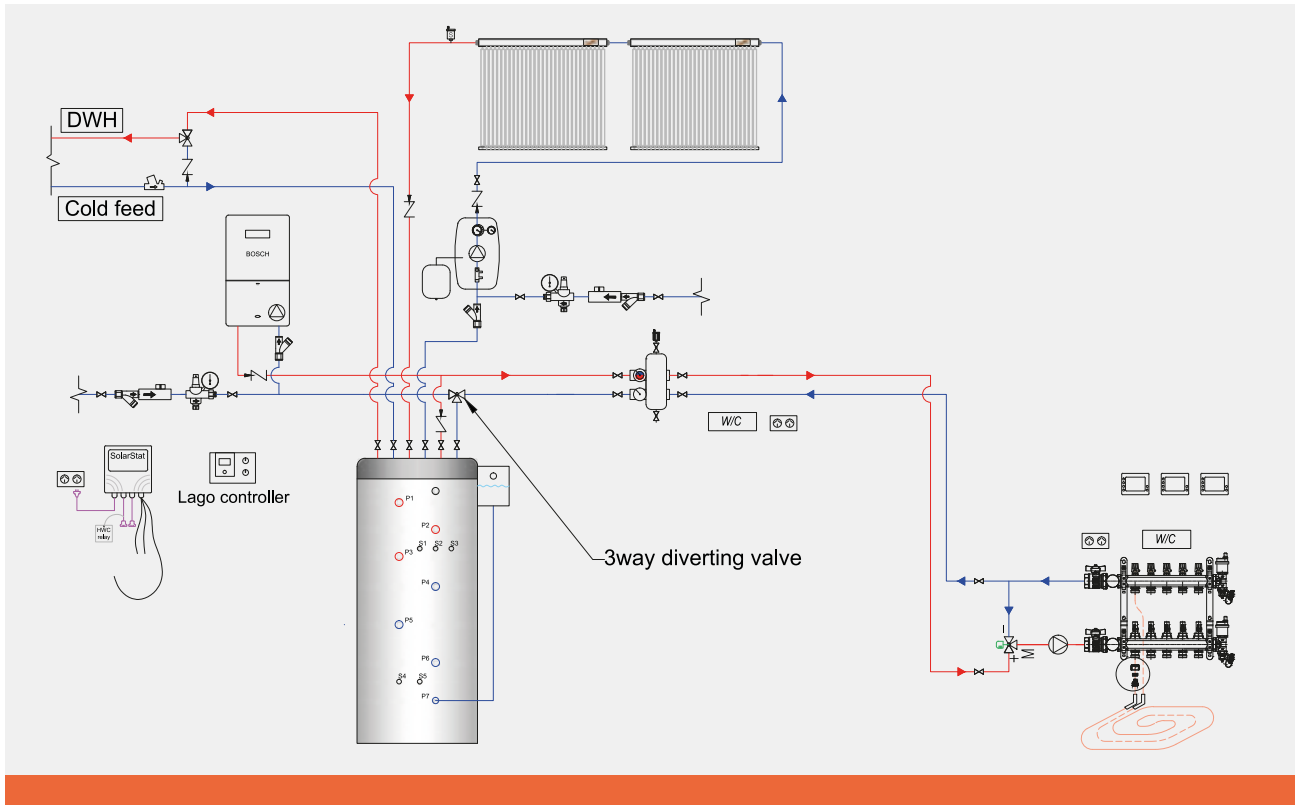
# SH-500 II SOLAR COMBINATION



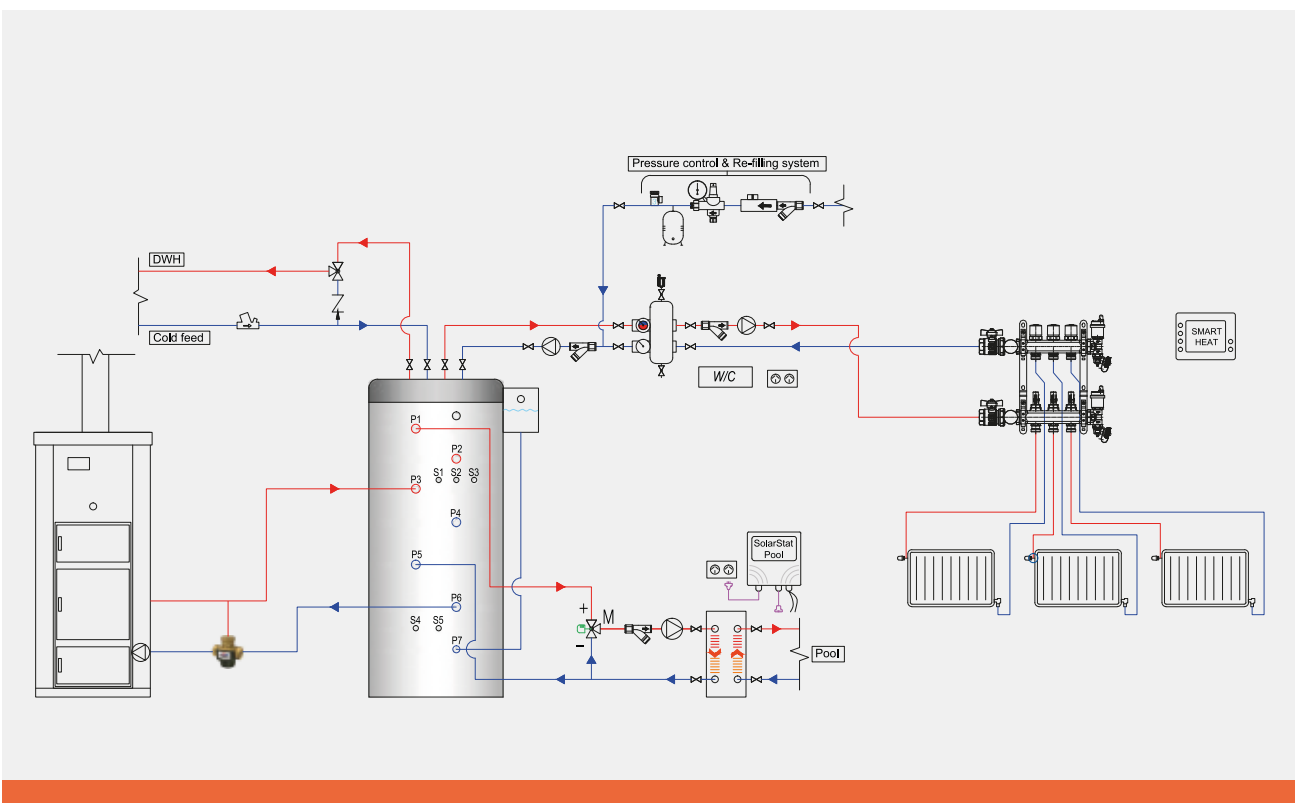
# SH-500 II HEAT PUMP COMBINATION



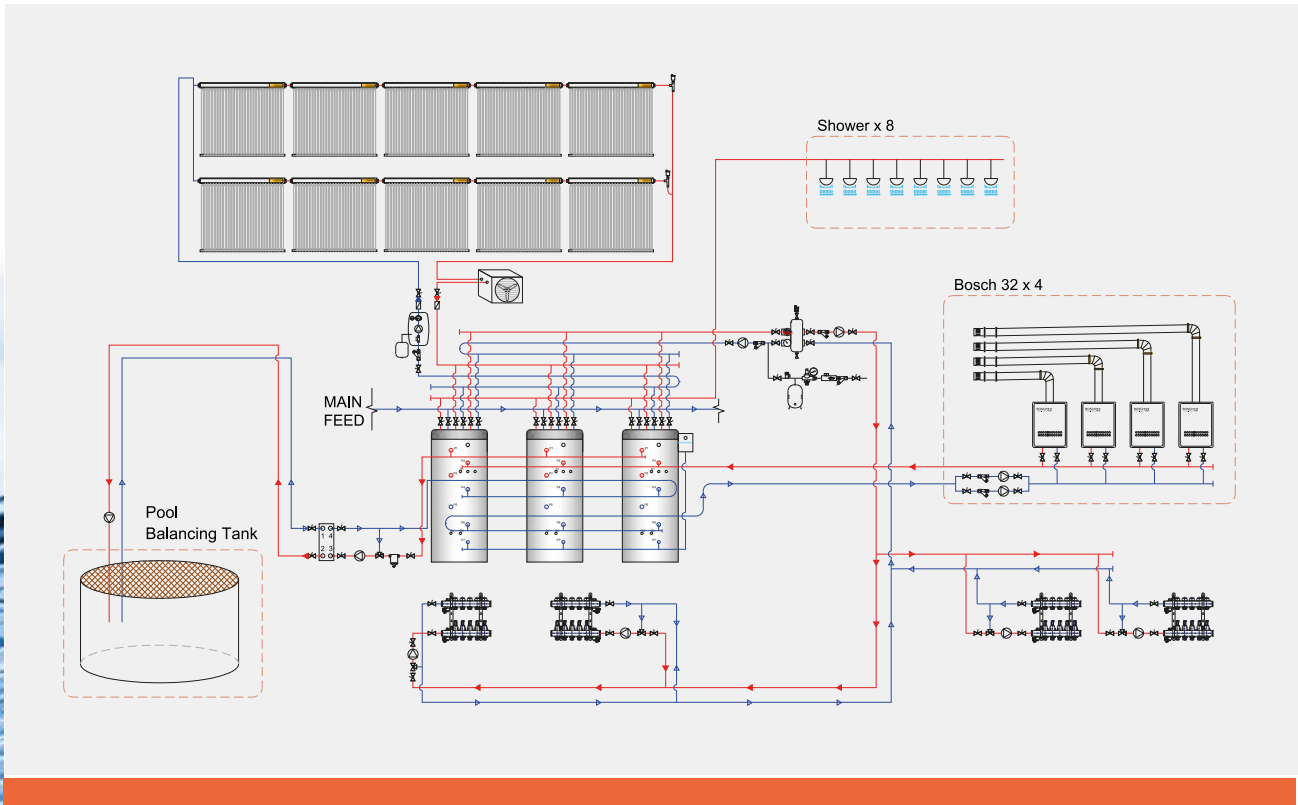
# DOMESTIC SH-500 II HYDRONIC BOILER+SOLAR



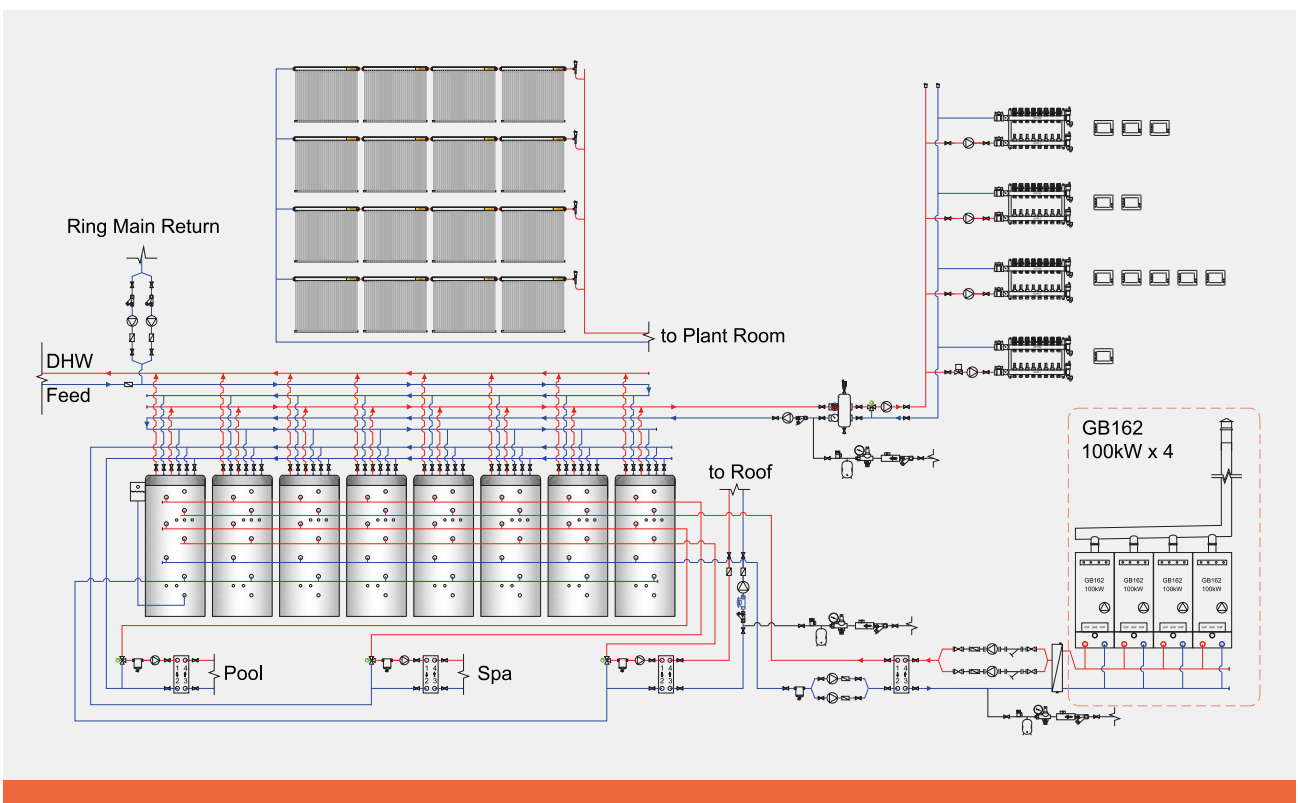
# DOMESTIC SH-500 II BIOMASS / WOOD BOILER






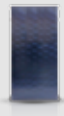




# SH-500 II COMMERCIAL AQUATIC CENTRE





# SH-500 II COMMERCIAL / RESIDENTIAL



# SH-500 II BIOMASS / BOSCH 32 + SOLAR

Items		Unit	Specification				
Model number	Thermal storage tank		 SmartHeat Aquacell SH-500 II				
	Biomass		 KL 40		 BOSCH32		
	Gas booster						
	Solar Collector / Flat Panel	SH1200D	SmartHeat Solar Collector System- SH58-30R5 / SH47-15U				
Solar Collectors / Flat Panel SH1200D							
People per Household			1-3	2-4	3-6	4-7	
Number of Bedrooms			1 to 2	2 to 3	3 to 4	4 or more	
Number of Bathrooms			1	2	2 or 3	3 or more	
Total storage capacity		litres	460				
Booster capacity	25 °C rise	litres/min.	26(HD-200)		32(BOSCH32)		
Max storage tank water temperature		°C	90				
Pipe connections		mm	25				
No. of internal coils	Up to		5				
Insulation thickness		mm	75				
Material	Lid		PP. Poly Propylene				
	External Tank		0.5mm Normal Steel Colour Coded White				
	Internal tank		2mm 304 High Grade Stainless Steel				
Heat exchanger	Material		Stainless steel (ANSI 316L)				
	Coil type		Helical Corrugated				
Solar heating - Based on SmartHeat Solar Collectors	Coil diameter(Nominal)		15A(1/2")				
	Flow rate	l/min	2	4	6	8	
	Heat transfer surface area	m <sup>2</sup>	0.79	1.58	2.37	3.16	
	Heat capacity	W	2,095	4,190	6,285	8,380	
Domestic hot water heating	Coil diameter(Nominal)		20A(3/4")				
	Peak demand	litres	75	100	150	175	
	Max.operating pressure	bar	6	6	6	6	
	Heat transfer surface area	m <sup>2</sup>	1.8	2.8	3.7	4.6	
	Heat capacity	W	3,490	4,650	6,980	8,140	
Hydronic heating	Floor area	m <sup>2</sup>	Up to 100	101 to 150	151 to 200	over 200	
	Coil diameter(Nominal)		20A(3/4")				
	Flow rate	l/min	11.5	17.2	22.9	28.7	
	Heat transfer surface area	m <sup>2</sup>	1.6	2.3	3.1	3.9	
	Heat capacity	W	8,000	12,000	16,000	20,000	
Pool/Spa heating - Based on 50,000L	Coil diameter(Nominal)		25A(1")				
	Flow rate	l/min	35				
	Heat transfer surface area	m <sup>2</sup>	2.9				
	Heat capacity	W	12,100				
Dimensions	Tank	Height x Diameter	1817 x Ø760				
	Booster	Height x Width x Depth	600x350x251 (HD-200)		615x464x240 (BOSCH32)		
	Solar collector	SH58-30R5	L1971 X W 2420 X H 115				
		SH1200D - Flat Panel	L2000 X W100 X H80				
SH47-15U		L1640X W1270 X H130					
Biomass		WxHxD(mm)	W650 X H1500 X D650				
Weight	Tank	Empty	90				
	Booster		29 (BOSCH-32)				
	Solar collector	SH58-30R5	kg	122			
		SH1200D - Flat Panel		32			
		SH47-15U		43			
Biomass		kg	305				

# COMMERCIAL SH-500 II & BOSCH 32

Items			Unit	Specification				
Model number	Thermal storage tank			 SmartHeat Aquacell SH-500 II				
	Gas booster			 BOSCH32				
Number of rooms		room	50	100	150	200		
Number of storage tank		sets	4	6	8	8		
Number of Boosters	50°C rise	units	2	3	4	6		
Max storage tank water temperature		°C	90					
Pipe connections		mm	25					
No. of internal coils	Up to		5					
Insulation thickness		mm	75					
Material	Lid		PP. Poly Propylene					
	Internal tank		2mm 304 High Grade Stainless Steel					
	External Tank		0.5mm Normal Steel Colour Coded White					
Heat exchanger	Material		Stainless steel(ANSI 316L)					
	Coil type		Helical Corrugated					
Commercial hot water system	Coil diameter(Nominal)			25A(1")				
	Hot water peak demand @65°C		litres	2250	4500	6750	9000	
	Hot water produced over one hour peak(@65°C)		litres	250	1500	2750	5000	
	Heat transfer surface area		m <sup>2</sup>	29.6	44.4	59.2	59.2	
	Required total capacity (50°C rise)		kW	130.8	261.6	392.4	523.3	
	Required capacity produced over one hour peak		kW	14.5	87.2	159.9	290.7	
Dimensions	Tank	Height x Diameter	mm/set	1817 x Ø760				
	Booster	Height x Width x Depth		615 x 464 x 240				
Weight	Tank	Empty	kg	260	390	520	520	
	Booster			58	87	116	174	



# DOMESTIC SH-500 II AIR WATER HEAT PUMP

Items		Unit	Specification			
Model number	a) SH-ATW17 kW Air To Water heat pump					
	b) The new SH-500 II Aquacell thermal storage tank					
	c) Domestic Hot water(DHW) Heat pump <sup>(1)</sup> (Stiebel Eltron WWK300A)					
	d) Smart-Heat Solar Systems (SH58-30R5 / SH1200D / SH47-15U)					
Number of Solar collectors						
Number of Bedrooms			1 to 2	2 to 3	3 to 4	4 or more
Number of Bathrooms			1	2	2 or 3	3 or more
People per Household			1-3	2-4	3-6	4-7
Capacity	Tank - total hot water storage	litres	460			
	Solar collector (GL100-16PT, Based on heated fluid delta T of 50K)					
	Peak output <sup>(2)</sup>	MJ/hour	7.6	15,2	22,8	30,4
	Annual energy yield <sup>(3)</sup>	MJ/year	16,080	32,160	48,240	64,320
Heat transfer area and capacity inside storage tank						
Solar heating -Based on on Smart Heat solar systems	Coil diameter(Nominal)		15A (1/2")			
	Flow rate	l/min.	2	4	6	8
	Heat transfer surface area	m <sup>2</sup>	0.79	1.58	2.37	3.16
	Heat capacity	W	2095	4190	6285	8380
Domestic hot water	Coil diameter(Nominal)		20A (3/4")			
	Peak demand	litres	75	100	150	175
	Heat transfer surface area	m <sup>2</sup>	1.8	2.8	3.7	4.6
	Heat capacity	W	3490	4650	6980	8140
Hydronic heating	Floor area	m <sup>2</sup>	Up to 50	51 to 80	81 to 120	121 to 150
	Coil diameter(Nominal)		20A(3/4")			
	Flow rate	l/min.	5.7	9.2	13.8	17.2
	Heat transfer surface area	m <sup>2</sup>	1.6	2.3	3.1	3.9
Pool/Spa heating -Based on 35,000L volume	Coil diameter(Nominal)		25A (1")			
	Flow rate	l/min	24			
	Heat transfer surface area	m <sup>2</sup>	2.2			
	Heat capacity (delta t=5°C,with blanket)	W	8480			
Dimensions	Tank	HxDia.(mm)	1817 x Ø760			
	Solar collector	SH58-30R5 / SH1200D / SH47-15U	LxWxH(mm) 1971 X 2420 X 115 / 2000 X 100 X 80 / 1640 X 1270 X 130			
Weight	Tank	Empty	90			
	Solar collector	SH58-30R5 / SH1200D / SH47-15U	122 / 32 / 43			
Air/water Heat pump (SH-ATW17)						
Operating mode			Mono / Dual alternative / Dual parallel			
Hydronic heating (Low temperature Radiators) <sup>(5)</sup>	Heating output	Air inlet 15 °C / Hot water 60 °C	kW		13.5	
	Power consumption	Air inlet 15 °C / Hot water 60 °C	kW		6.7	
	COP	Air inlet 15 °C / Hot water 60 °C	kW		2.6	
Hydronic heating (Under floor) <sup>(5)</sup>	Heating output	Air inlet 15 °C / Heating flow 50 °C	kW		17.7	
		Air inlet 10 °C / Heating flow 50 °C	kW		17.2	
	Power consumption	Air inlet 15 °C / Heating flow 50 °C	kW		5.5	
		Air inlet 10 °C / Heating flow 50 °C	kW		5.2	
	COP	Air inlet 15 °C / Heating flow 50 °C	kW		3.2	
		Air inlet 10 °C / Heating flow 50 °C	kW		3.3	
Flow rate (standard operation)		Heating side(water) / Heat source side(air)	m <sup>3</sup> /h		2.8 / 3500	
Pressure differential		Water(nominal)	kPa		20	
		Air(nominal for ducted installations)	Pa		150	
Stated temperature limits		Heating side(water) min./max.	°C		+15 / +60	
		Heat source side(air) min./max.	°C		-20 / +40	
Electrical	Current	Rated / Starting	A		20,4/17,8	
	Power supply	Compressor / Booster heater / Control	V-ph-Hz		230V~/50Hz	

# DOMESTIC SH-500 II AIR WATER HEAT PUMP

Items		Unit	Specification	
Internal electric booster(DHC)		Heating capacity (Max.)	kW	9.6
Type / Materials		Evaporator		Copper pipe + Aluminium fin
		Condenser		Plate water heat exchanger / Stainless steel
Compressor		Maker / Type		Copeland / High efficient scroll type
Refrigerant		Type / Charging amount	kg	R407C / 3.4
Pipe/hose connections		Water flow / return	mm(inch)	Φ32(1 1/4)
		Air hose (internal installation only)	mm	248 x 721 oval
Defrost operation		Type / Defrost method		Demand, Manual / Flow reverse cycle
Noise levels	Indoor Outdoor	internal / external		56
Dimensions	Air/water Heat pump	STD / EXT / INT <sup>(4)</sup>	HxWxD(mm)	1116x1128x784 / 1434x1240x1280 / 1182x1240x800
Weight	DHW Heat pump	Empty / Filled	kg	125 / 428
<b>DHW Heat pump (WWK300A)</b>				
Storage capacity			litres	300
Heating output		Air temperature 15°C		1.7
Power consumption		Relative humidity 70%	kW	0.53
COP		Hot water temperature 60°C		3.19
Application range		Air temperature limit	°C	0 to 42
Air flow rate			m <sup>3</sup> /h	550
Allowable operating pressure		Domestic hot water	kPa	700
DHW temperature		Maximum	°C	60
Electrical	Power supply	Rated voltage/Phase/Frequency	V-ph-Hz	240-1-50
	Max.power input		kW	0.7
	Current	Rated	A	2.5
	Protection			IP24
Refrigerant		Type / Charging amount	g	R134a / 900
Pipe/hose connections		Hot / Cold	mm(inch)	Φ25.4(1) (3/4" female with adaptor)
		Condensate drain		19.05(3/4)
Sound	Pressure level	@1m distance in a free field		56
	Power level	EN 12102		64
Dimensions	DHW Heat pump	Height with adjustable feet	HxDia.(mm)	1875 x Φ660
Weight	Air/water Heat pump	STD / EXT / INT <sup>(4)</sup>	kg	225 / 255 / 235

## COMMERCIAL

Items		Unit	Specification			
Model number	a) SHSATW23 kW Air to water heat pump					
	b) The new SH-500 II Aquacell thermal storage tank					
Number of rooms		room	50	100	150	200
Number of storage tank		sets	4	6	10	12
Number of Heat pump		units	2	3	5	6
<b>Heat Pump</b>						
Required heating output	Based on 45°C rise	kW	118	235	353	471
Recovery time	Based on output 20kW	hours	2.62	2.62	2.62	2.62
<b>Storage tank</b>						
Heat exchanger coil diameter	Norminal size		25A(1")			
Hot water peak demand	Hot water temperature 60°C	litres	2250	4500	6750	9000
Hot water storage		litres	2000	3000	5000	6000
Heat transfer surface area		m <sup>2</sup>	29.6	44.4	73.9	88.7

(1) Optional product : If the demand for heating is very high, it is necessary to add SHSATW23 kW in the system.

(2) Measured at 1000W/m<sup>2</sup> of normal global irradiance.

(3) Location : Canberra, ACT, on historical solar data.

(4) STD / EXT / INT : Standard appliance / External installation / Internal installation

- Optional parts may be included in the system depend on the thermal load and clients' demand.  
Available optional parts : Heat exchangers for Pool/Spa, Circulating pump kit, Remote thermostat, Remote controller etc.
- The values of heating output/power consumption/COP are based on measurement of EN 14511 standard.
- Above specifications and design subject to change without notice for further improvement. Please check with your dealer for details.

# SMARTHEAT AQUACELL SH-500 II APPLICATIONS



## SMARTHEAT AQUACELL SH-500 II WARRANTY

SmartHeat SH-500 II		10 years
SmartHeat Heat Exchanger		3 years
Gas booster	Bosch 26	1 Year [Parts & Labour]/5 Years [Heat Exchanger]
	Bosch 32	1 Year [Parts & Labour]/5 Years [Heat Exchanger]
Biomass	Biomass	5 Years on boiler body & 2 years on component parts

Notes) 1) Please refer to manufacturer's warranty.

2) Above table outlines the warranty terms for commercial applications only.



For more information please call  
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