

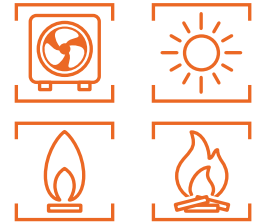


## SMX - Combined buffer store / DHW pipe in pipe Solarmax

Carbon steel hot water thermal buffer for the storage of primary water produced from continuous and discontinuous heat sources. It is equipped with an innovative system of fluid distribution that enhances its performance in the most critical working conditions. Instantaneous production of domestic hot water (DHW) through a high efficiency heat exchanger made of a corrugated stainless steel pipe.

Available in:  
 - storage + DHW production + one auxiliary fixed coil (SM1X)  
 - storage + DHW production + two auxiliary fixed coils (SM2X)  
 The thermal fluid contained in the cylinder and in the primary heat exchangers must operate in closed circuit (without oxygen), in order to avoid corrosion phenomena. Cylinders are also prepared to host a backup immersion heater (not supplied).

HEAT SOURCE



APPLICATION



TECHNICAL FEATURES

DHW Heat exchanger

Material	AISI 316L Stainless steel (1.4404)
Internal protective treatment	Pickling and passivation
External protective treatment	Pickling and passivation
Type	High exchanging surface corrugated pipe
Rating (P max. / T max.)	6 bar / 95°C

Buffer vessel

Material	S 235 Jr Carbon steel
Internal protective treatment	None
External protective treatment	Anti rust protection + epoxy painting
Rating (P max. / T max.)	3 bar / 95°C

Upper heat exchanger (boiler)

Material	S 235 Jr Carbon steel
Internal protective treatment	None
External protective treatment	None
Type	Fixed coil
Rating (P max. / T max.)	10 bar / 95°C

Lower heat exchanger (solar)

Material	Finned copper
Internal protective treatment	None
External protective treatment	None
Type	Flat spiral coil
Rating (P max. / T max.)	10 bar / 95°C

General features

Capacity	600 - 2000 L
Warranty	5 years
Insulation	- Soft insulation with polyester + PVC: Fire retardant class B2 (DIN 4102) - Hard insulation: - Polyurethane foam + PVC for 600/800/1000/1500/2000 litres capacity: Fire retardant class B3 (DIN 4102) - Polyester (15mm) + polystyrene (85mm) + PVC for 1250 litres capacity: Fire retardant class B2 (DIN 4102)
In compliance with	- Pressure Equipment Directive (PED) 2014/68/UE Art. 4 Para 3 - Italian MOH specifications (products suitable to contain potable water) - Energy related Products (Erp) Directive 2009/125/CE

ACCESSORIES (page 218)



DHW Recirculation kit



Electronic control unit



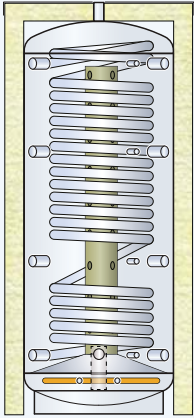
Thermostat



Thermometer



1 1/2 electric immersion heater

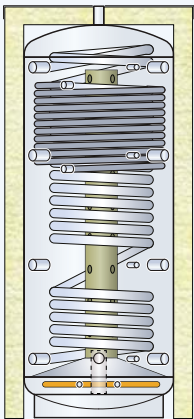


### SMIX - Hard insulation with rigid polyurethane foam and PVC jacket

CODE	INSULATION THICK. (mm)	ErP CLASS	HEAT LOSS S (W)	BUFFER CAPACITY (L)	DHW HEAT EXCHANGER (m <sup>2</sup> ) / (L) *	LOWER HEAT EXCHANGER (m <sup>2</sup> ) / (L) *
SMIX 00600 R	50	C	94,7	585,2	5,5 / 31,9	3,0 / 3,9
SMIX 00800 R	100	C	109,9	749,3	7,0 / 40,6	3,0 / 3,9
SMIX 01000 R	100	C	113,8	931,0	7,5 / 43,5	3,6 / 4,8
SMIX 01250 R	100	C	140,0	1266,8	8,5 / 49,3	3,6 / 4,8
SMIX 01500 R	100	C	132,8	1472,4	10,0 / 58,0	5,0 / 6,7
SMIX 02000 R	100	C	143,5	1950,0	12,0 / 69,6	5,0 / 6,7

### SMIX - Soft insulation with polyester and PVC jacket

CODE	INSULATION THICK. (mm)	ErP CLASS	HEAT LOSS S (W)	BUFFER CAPACITY (L)	DHW HEAT EXCHANGER (m <sup>2</sup> ) / (L) *	LOWER HEAT EXCHANGER (m <sup>2</sup> ) / (L) *
SMIX 00800 F	130	C	129,4	749,3	7,0 / 40,6	3,0 / 3,9
SMIX 01000 F	130	C	141,2	931,0	7,5 / 43,5	3,6 / 4,8
SMIX 01250 F	130	C	159,6	1266,8	8,5 / 49,3	3,6 / 4,8
SMIX 01500 F	130	C	168,2	1472,4	10,0 / 58,0	5,0 / 6,7
SMIX 02000 F	130	C	184,0	1950,0	12,0 / 69,6	5,0 / 6,7



### SM2X - Hard insulation with rigid polyurethane foam and PVC jacket

CODE	INSULATION THICK. (mm)	ErP CLASS	HEAT LOSS S (W)	BUFFER CAPACITY (L)	DHW HEAT EXCHANGER (m <sup>2</sup> ) / (L) *	AUXILIARY HEAT EXCHANGERS LOWER (m <sup>2</sup> ) / (L) *	AUXILIARY HEAT EXCHANGERS UPPER (m <sup>2</sup> ) / (L) *
SM2X 00600 R	50	C	94,7	585,2	5,5 / 31,9	3,0 / 3,9	1,8 / 17,6
SM2X 00800 R	100	C	109,9	749,3	7,0 / 40,6	3,0 / 3,9	2,0 / 19,6
SM2X 01000 R	100	C	113,8	931,0	7,5 / 43,5	3,6 / 4,8	2,5 / 24,5
SM2X 01250 R	100	C	140,0	1266,8	8,5 / 49,3	3,6 / 4,8	2,6 / 25,5
SM2X 01500 R	100	C	132,8	1472,4	10,0 / 58,0	5,0 / 6,7	2,8 / 27,4
SM2X 02000 R	100	C	143,5	1950,0	12,0 / 69,6	5,0 / 6,7	3,8 / 37,2

### SM2X - Soft insulation with polyester and PVC jacket

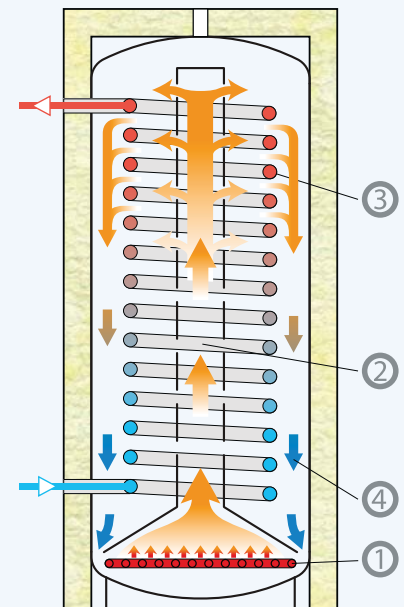
CODE	INSULATION THICK. (mm)	ErP CLASS	HEAT LOSS S (W)	BUFFER CAPACITY (L)	DHW HEAT EXCHANGER (m <sup>2</sup> ) / (L) *	AUXILIARY HEAT EXCHANGERS LOWER (m <sup>2</sup> ) / (L) *	AUXILIARY HEAT EXCHANGERS UPPER (m <sup>2</sup> ) / (L) *
SM2X 00800 F	130	C	129,4	749,3	7,0 / 40,6	3,0 / 3,9	2,0 / 19,6
SM2X 01000 F	130	C	141,2	931,0	7,5 / 43,5	3,6 / 4,8	2,5 / 24,5
SM2X 01250 F	130	C	159,6	1266,8	8,5 / 49,3	3,6 / 4,8	2,6 / 25,5
SM2X 01500 F	130	C	168,2	1472,4	10,0 / 58,0	5,0 / 6,7	2,8 / 27,4
SM2X 02000 F	130	C	184,0	1950,0	12,0 / 69,6	5,0 / 6,7	3,8 / 37,2

#### How it works

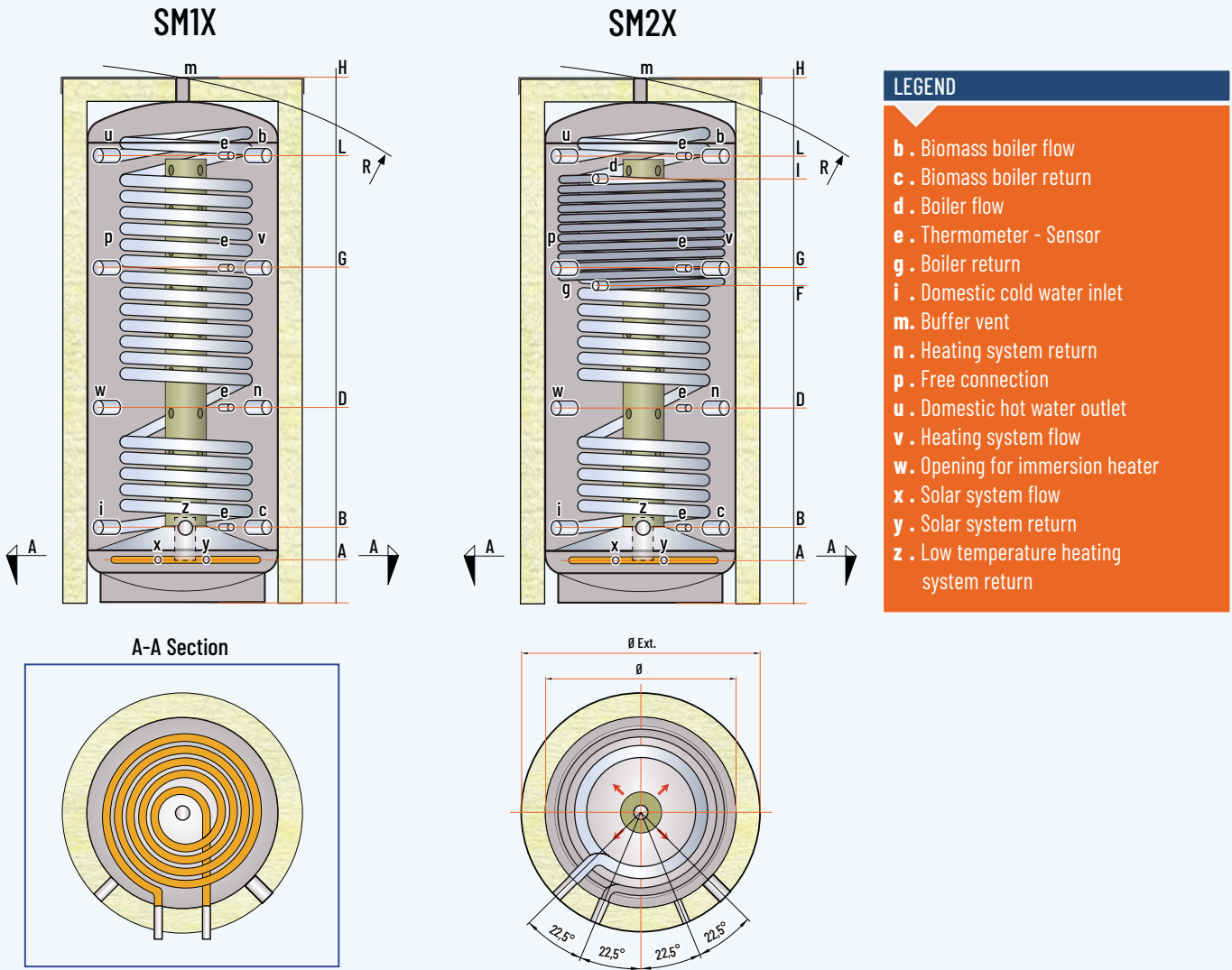
The solar heat exchanger (1), placed inside the lower dome, heats fastly the small amount of fluid contained therein. Thanks to a central conveyor (2) this liquid is directly diverted to the top of the cylinder. Hence, the heat flow crosses and heats the high capacity DHW pipe (3) starting the heat exchanging process. As the temperature of the primary fluid drops, it starts to run way down along the peripheral area of the vessel (4) to be heated once again. This is a neat and constant cycle according to the



principle of the natural convective motion. The heat flow conveyor allows to benefit immediately of the very first energy delivered by the solar system without the need to wait for the thermal stratification of the entire buffer vessel.



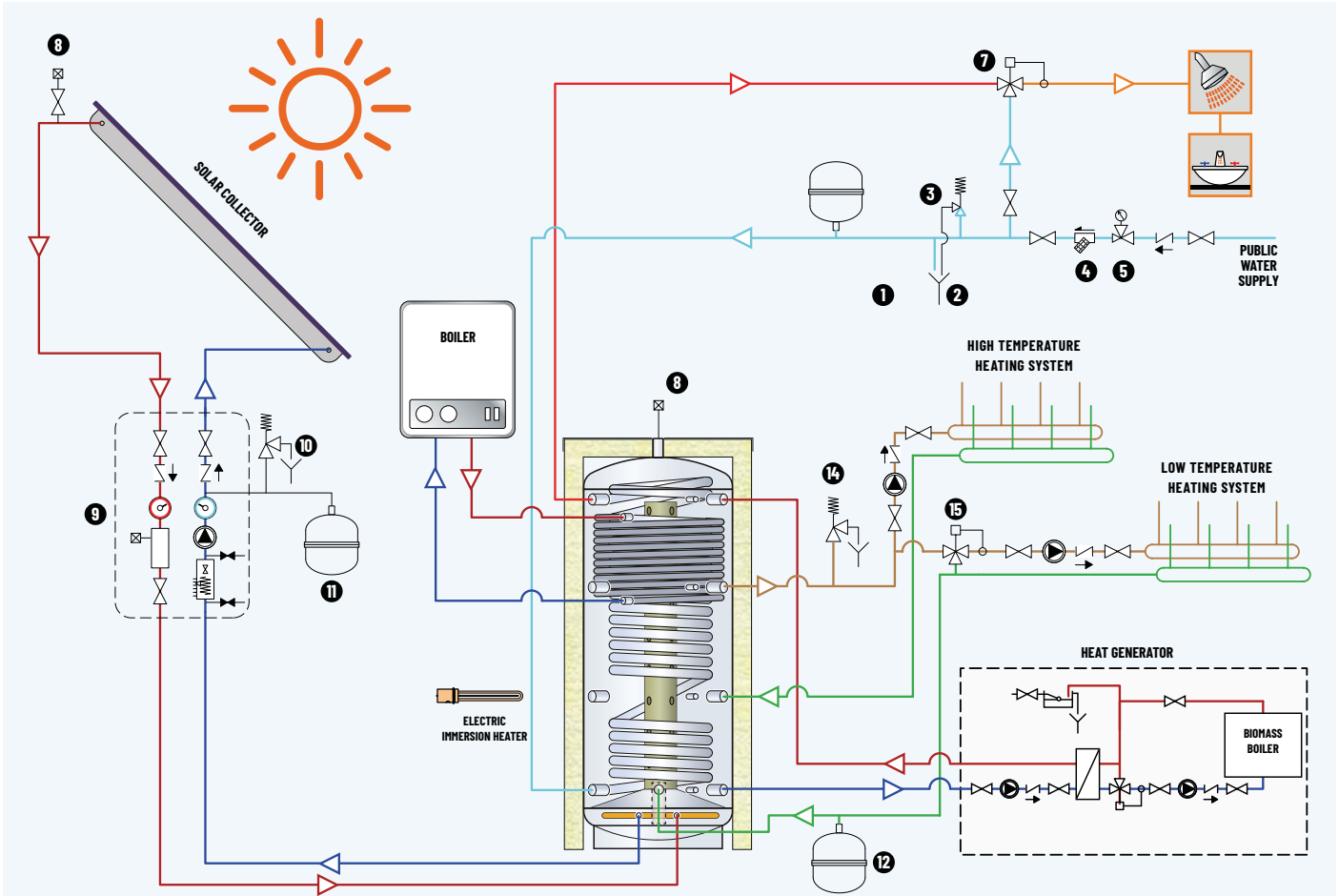
\* Volume occupied by the heat exchanger and its support structure



MODEL	DIMENSIONS (mm)		Ø EXT ** (Hard/Soft ins.)	R	HEAT EXCHANGER (m <sup>2</sup> )		SS DHW HEAT EXCHANGER	WEIGHT SM2X (kg)
	Ø	H			LOWER (COPPER)	UPPER		
SM_X 00600 R	650	1895	750	2050 *	3,00	1,80	5,50	143
SM_X 00800_	790	1750	990/1050	1745	3,00	2,00	7,00	180
SM_X 01000_	790	2110	990/1050	2095	3,60	2,50	7,50	208
SM_X 01250_	950	2075	1150/1210	2090	3,60	2,60	8,50	240
SM_X 01500_	1000	2115	1200/1260	2145	5,00	2,80	10,00	263
SM_X 02000_	1100	2380	1300/1360	2385	5,00	3,80	12,00	309

\* For the 600 litres model, the tilt height refers to the insulated cylinder  
 \*\* The insulation is removable except for the 600 litres model

MODEL	HEIGHTS (mm)							CONNECTIONS (GAS)				
	A	B	D	F	G	I	L	d g	e	i u	x y	b c m n p v w z
SM_X 00600 R	135	235	700	1120	1270	1480	1630	1"	1/2"	1 1/4"	3/4" male thread	1 1/2"
SM_X 00800_	170	275	655	1015	1145	1345	1410	1"	1/2"	1 1/4"	3/4" male thread	1 1/2"
SM_X 01000_	170	275	810	1195	1355	1675	1755	1"	1/2"	1 1/4"	3/4" male thread	1 1/2"
SM_X 01250_	215	320	745	1200	1380	1600	1705	1"	1/2"	1 1/4"	3/4" male thread	1 1/2"
SM_X 01500_	235	340	765	1220	1400	1620	1725	1"	1/2"	1 1/4"	1" male thread	1 1/2"
SM_X 02000_	265	370	930	1230	1435	1710	1945	1"	1/2"	1 1/4"	1" male thread	1 1/2"

*Disclaimer: this layout is purely indicative. It does not replace consultant's design*


COMBINED THERMAL STORES

**LEGEND**

- |   |                                      |   |
|---|--------------------------------------|---|
| 1 . Domestic water expansion vessel     | 7 . DHW 3-way valve                  | 12 . Heating system expansion vessel            |
| 2 . Domestic water drain                | 8 . Vent with valve                  | 14 . Heating system safety valve                |
| 3 . Domestic water safety valve (6 bar) | 9 . Solar system control unit        | 15 . 3-way valve low temperature heating system |
| 4 . Strainer                            | 10 . Solar system safety kit (6 bar) |   |
| 5 . Pressure reducing valve             | 11 . Solar system expansion vessel   |   |

**Finned copper lower heat exchanger**
**Carbon steel upper heat exchanger**

CODE	m <sup>2</sup> (L)	Power (kW)				m <sup>2</sup> (L)	Power (kW)			
		$\Delta T^* 10\text{ }^\circ\text{C}$	$\Delta T^* 15\text{ }^\circ\text{C}$	$\Delta T^* 20\text{ }^\circ\text{C}$	$\Delta T^* 25\text{ }^\circ\text{C}$		$\Delta T^* 10\text{ }^\circ\text{C}$	$\Delta T^* 15\text{ }^\circ\text{C}$	$\Delta T^* 20\text{ }^\circ\text{C}$	$\Delta T^* 25\text{ }^\circ\text{C}$
SM_X 00600 R	3,0 (2,6)	10,2	15,3	20,4	25,5	1,8 (12,8)	11,5	17,3	23,0	28,8
SM_X 00800_	3,0 (2,6)	10,2	15,3	20,4	25,5	2,0 (14,2)	12,8	19,2	25,6	32,0
SM_X 01000_	3,6 (3,1)	11,0	16,5	22,0	27,5	2,5 (17,8)	16,0	24,0	32,0	40,0
SM_X 01250_	3,6 (3,1)	11,0	16,5	22,0	27,5	2,6 (18,5)	16,6	24,9	33,3	41,6
SM_X 01500_	5,0 (4,2)	12,8	19,2	25,6	32,0	2,8 (19,9)	17,9	26,9	35,8	44,8
SM_X 02000_	5,0 (4,2)	12,8	19,2	25,6	32,0	3,8 (27,0)	24,3	36,5	48,6	60,8

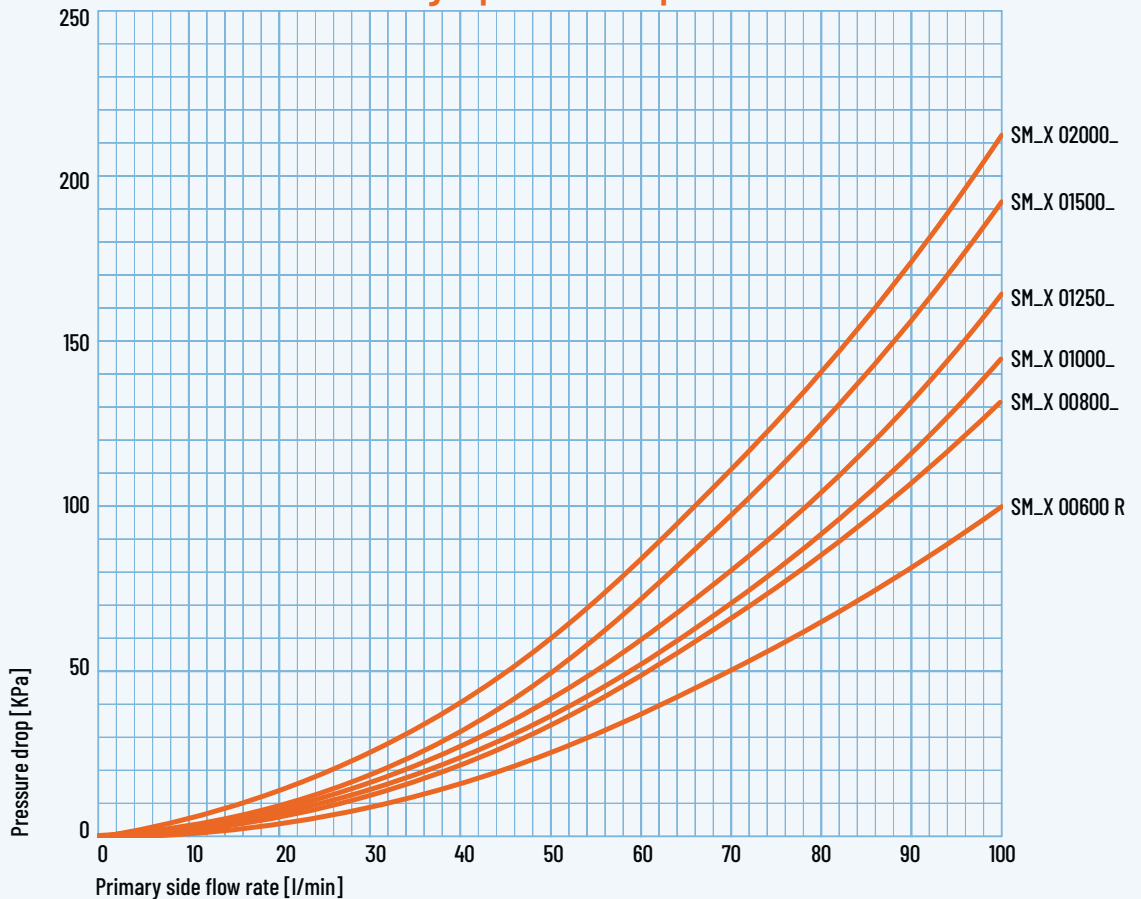
\*  $\Delta T$ : difference between the average temperature of the heating fluid (inside the heat exchanger) and the average temperature of the heated fluid (internal to the buffer in the area affected by the coil).

### SMX - Domestic Hot Water performance

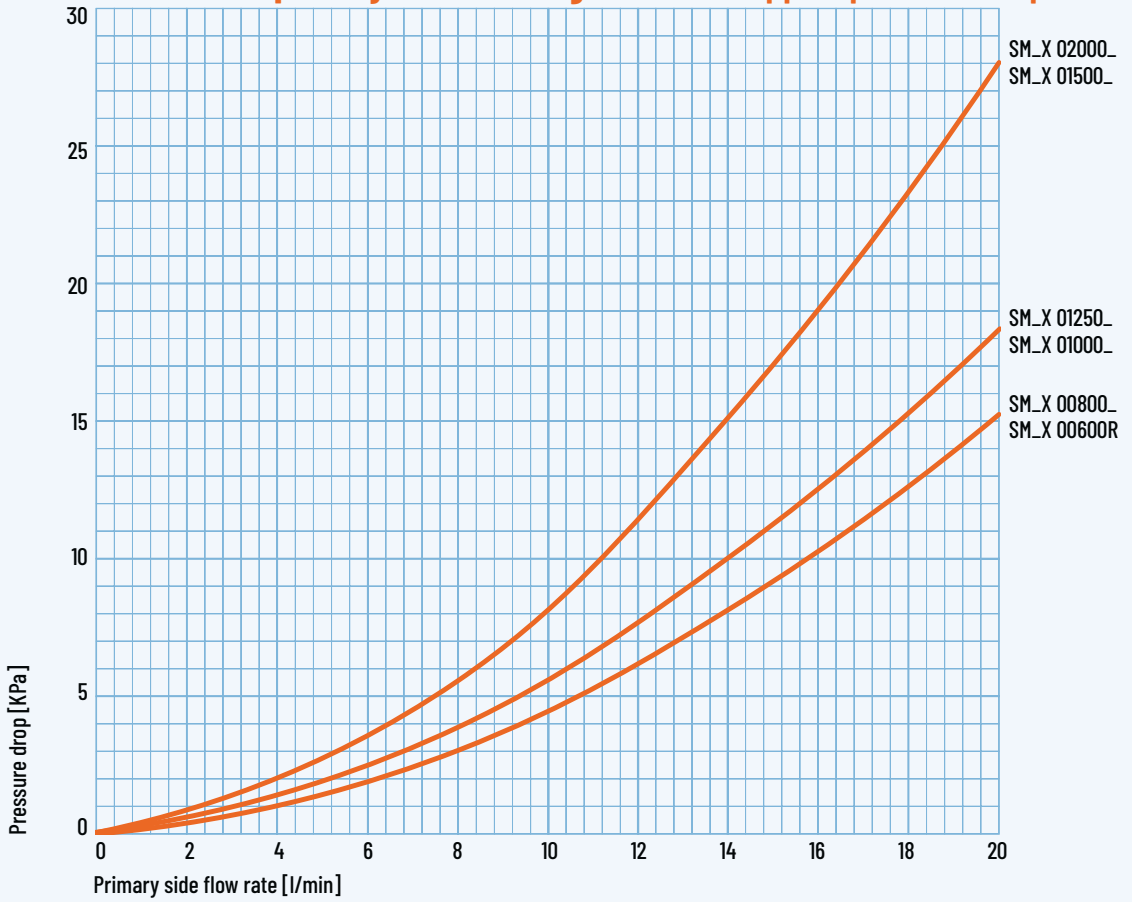
CODE	SM_X 00600 R	SM_X 00800_	SM_X 01000_	SM_X 01250_	SM_X 01500_	SM_X 02000_
DHW Heat exchanger m <sup>2</sup> (L)	5,5 (27,5)	7,0 (35,0)	7,5 (37,5)	8,5 (42,5)	10,0 (50,0)	12,0 (60,0)
DHW Power and flow rate (from 10 to 45 °C) in continuous draw at different primary side temperatures						
Primary at 55 °C Kw (L/h)	31,8 (744)	45,7 (1069)	50,5 (1182)	58,9 (1739)	73,4 (1717)	91,3 (2137)
Primary at 65 °C Kw (L/h)	49,1 (1207)	70,6 (1733)	78,0 (1917)	91,0 (2236)	113,4 (2786)	141,1 (3467)
Primary at 75 °C Kw (L/h)	57,5 (1412)	82,5 (2028)	91,3 (2242)	106,5 (2616)	132,7 (3259)	165,1 (4056)
DHW* producible with a 10 L/min flow rate from a totally heated buffer and a not running heat source						
Buffer at 55 °C (L)	170	265	352	527	698	1113
Buffer at 65 °C (L)	232	357	476	712	941	1244
Buffer at 70 °C (L)	441	564	701	953	1107	1465
DHW* producible with a 20 L/min flow rate from a totally heated buffer and a not running heat source						
Buffer at 55 °C (L)	115	170	221	324	417	642
Buffer at 65 °C (L)	157	248	331	498	664	1067
Buffer at 70 °C (L)	263	376	486	702	888	1333
DHW* producible with a 10 L/min flow rate, from a buffer heated only on the upper part and a not running heat source						
Buffer at 55 °C (L)	107	166	217	338	446	678
Buffer at 65 °C (L)	146	224	293	456	600	758
Buffer at 70 °C (L)	278	353	432	611	707	893
DHW* producible with a 20 L/min flow rate, from a buffer heated only on the upper part and a not running heat source						
Buffer at 55 °C (L)	73	106	136	208	266	391
Buffer at 65 °C (L)	99	155	331	319	424	650
Buffer at 70 °C (L)	166	235	486	450	567	812
NL **	2,1	3,2	4,0	4,2	4,4	5,3

\* from 10 to 45 °C  
 \*\* Buffer at 70 °C, DHW from 10 to 45 °C

### SMX - DHW heat exchanger pressure drops



**SMX - Lower primary heat exchanger (finned copper) pressure drops**



**SMX - Upper primary heat exchanger pressure drops**

