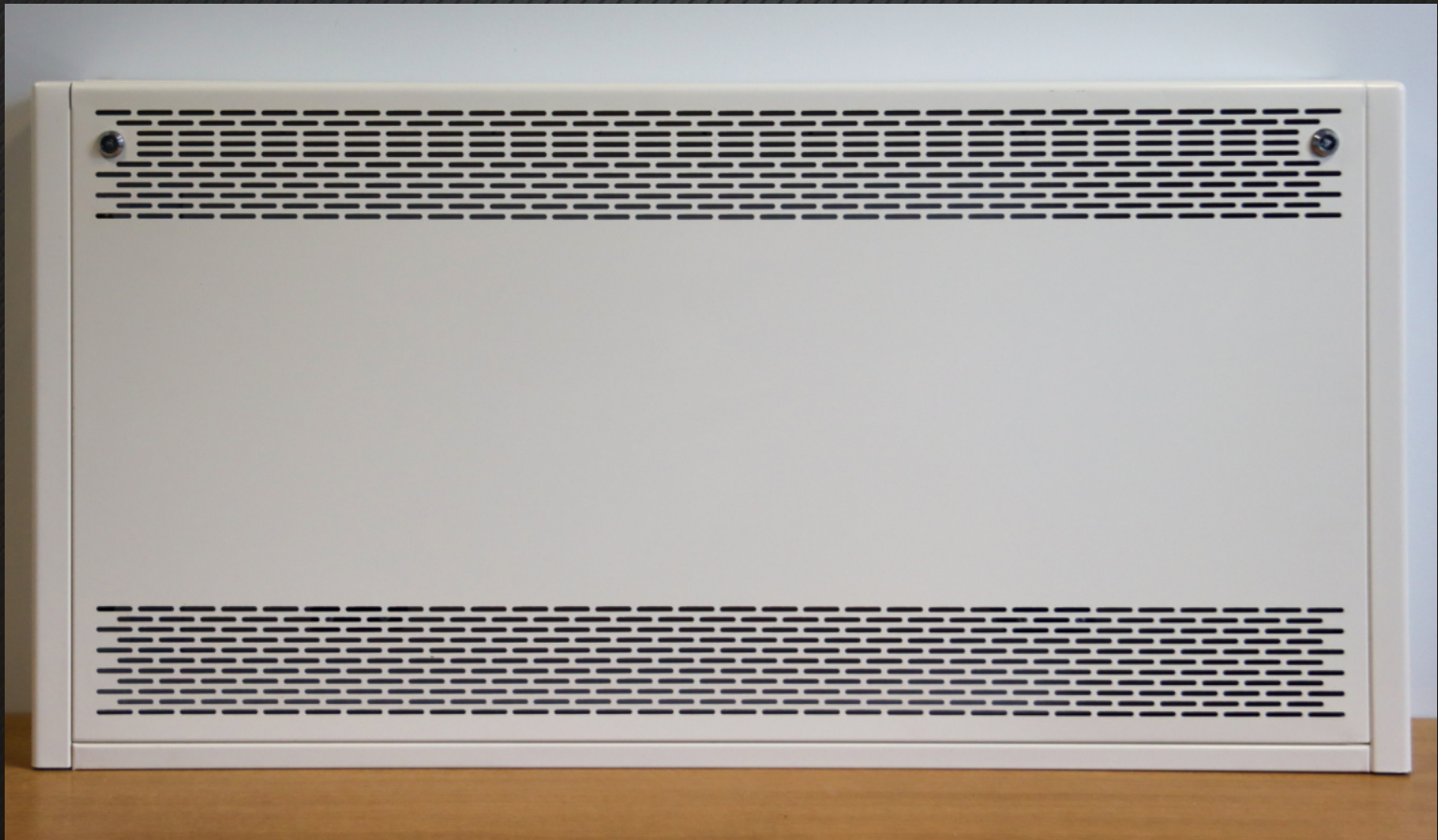


Low Surface Temperature (LST) Radiators



Solray Low Surface Temperature Radiators

Solray LST Radiators deliver efficient ambient heating in applications where safety is paramount. Heating pipework and heat emitters are totally enclosed within a robust steel casing.

The clever casing design permits secure key access for cleaning – while thermostatic radiator control valves can be selected for external or internal (tamper-proof) control.

By applying test results through a mathematical model, Solray engineers have developed a selection program to help the heating designer optimise their radiator schedules for all conceivable scenarios.

Emitters are BSRIA tested to BS EN 442 heating performance and NHS Guidance touch temperatures.

Solray have a outstanding reputation for quality, and after sales back-up built up over nearly 100 years of manufacturing HVAC products and offer a 10 year guarantee.



Key features

- ✓ Mild steel casing (powder coated to any RAL colour)
- ✓ Integral pencil-proof grilles
- ✓ Zinc-coated steel back plate (heat reflective)
- ✓ Integral emitter brackets
- ✓ 1.2mm thick steel casings (2mm option available)
- ✓ Top grille either on top side, or at top of the front door.
- ✓ BS EN 442 certified heat outputs
- ✓ Compliant with NHS touch temperature guidance

Standard Sizes

Height	Length	Depth
600 mm	600-2800 in 200mm increments	160mm
900 mm		
1200 mm		

Form Factors

TTBV

Top grille mounted on the top horizontal surface. Bottom grille mounted on the bottom of the front vertical surface.

TFBV

Top grille mounted on the top of the front vertical surface. Bottom grille mounted on the bottom of the front vertical surface.

Benefits of Solray LSTs

- ✓ 1st and 2nd fix deliveries
- ✓ Rapid, cost effective installation
- ✓ No special tools or fasteners required
- ✓ Pencil proof grilles (fully integrated - no additional parts)
- ✓ Compatible with leading makes of TRVs and LSVs
- ✓ Lockable access panels
- ✓ Easy access for cleaning
- ✓ Silent operation with no moving parts

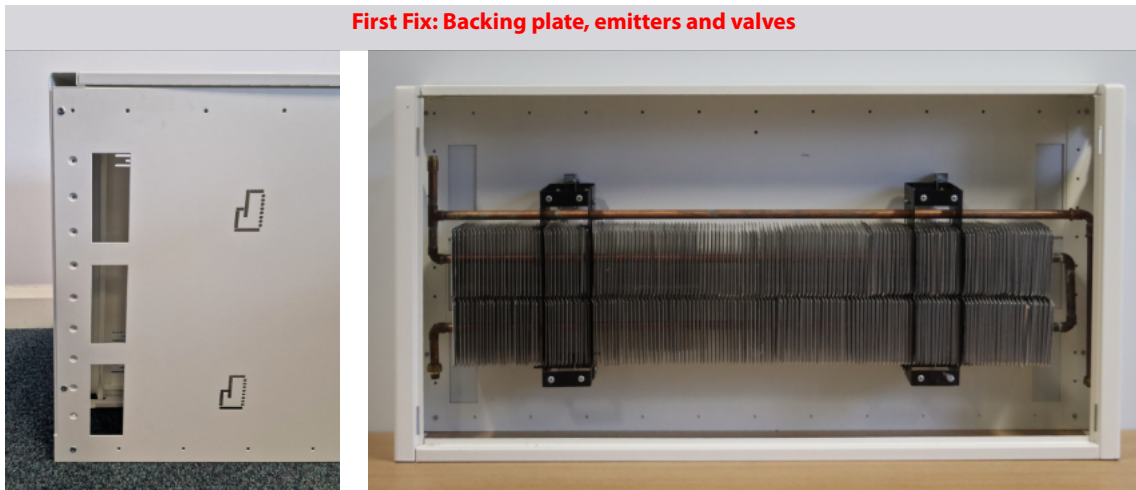


Fully integrated pencil-proof grilles

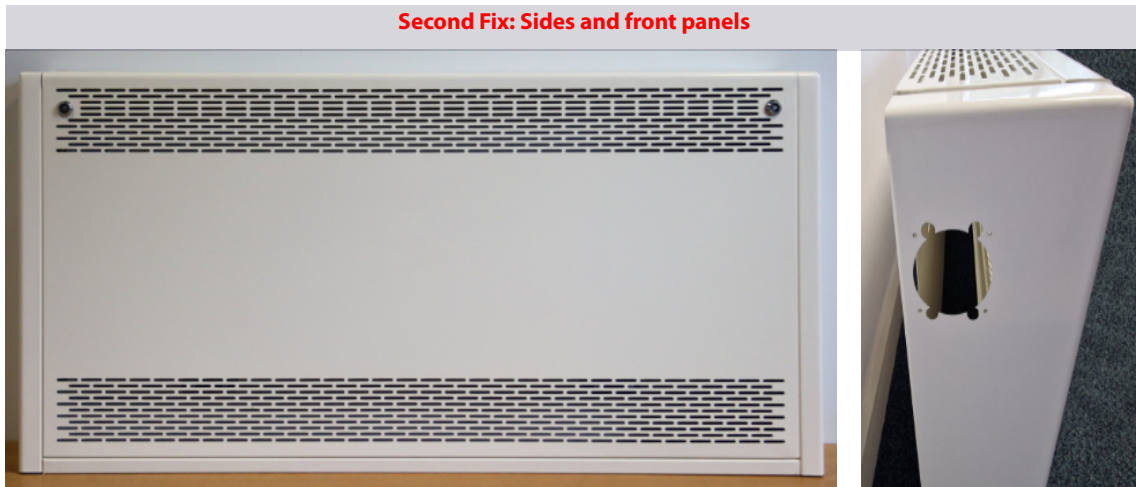


Lockable access panels

First Fix: Backing plate, emitters and valves



Second Fix: Sides and front panels



Why use Low Surface Temperature (LST) Radiators?

Under the legal requirements of the Health & Safety at Work Act 1974, a duty of care is placed on employers and service providers to ensure that adequate precautions are taken to safeguard employees and building occupants.

Risk assessments should be carried out to evaluate the potential hazards from burning on hot surfaces. All heating appliances are to be fit for purpose and the responsibility lies with manufacturers, system designers, installers and end users to ensure compliance.

The NHS guidelines laid down in "Safe Hot Water & Surface Temperatures, March 1998" require surface temperatures to be controlled to prevent burns.

A limit of 43°C is recommended for applications where occupants may be at risk.



Premises where LST heat emitters should be considered as a result of the legislation include:

- Child care: creches, nurseries, play and primary schools
- Health care: Acute, community and psychiatric
- Elderly care: Nursing homes, warden assisted, sheltered, retirement
- Disabled facilities
- Prisons and secure units
- Public buildings and sports facilities

Solray LST radiators deliver high levels of safety and heating efficiency to meet the demands of the modern building environment.

If the mean water – room temperature difference is not 30 K or 50 K, use $\text{Output}/W = K(\Delta T)^n$ and the constants below to calculate the heat output per active metre. Active element lengths are 200mm less than the casing lengths.

TTBV

(Top Grill on top horizontal surface, Bottom Grille on front vertical door)



Output (Watts) at Ambient 20°C with MWT 70°C ($\Delta T = 50$ K)

Casing Length (mm)	Casing Height (mm)		
	600	900	1200
600	301	320	348
800	452	481	522
1000	603	641	696
1200	754	801	870
1400	904	961	1,044
1600	1,055	1,121	1,218
1800	1,206	1,282	1,392
2000	1,357	1,442	1,566
2200	1,507	1,602	1,740
2400	1,658	1,762	1,914
2600	1,809	1,922	2,087
2800	1,960	2,083	2,261
K	2.83	3.76	4.26
n	1.43	1.37	1.36

Output (Watts) at Ambient 20°C with MWT 50°C ($\Delta T = 30$ K)

Casing Length (mm)	Casing Height (mm)		
	600	900	1200
600	145	159	174
800	218	239	261
1000	291	318	347
1200	364	398	434
1400	436	477	521
1600	509	557	608
1800	582	636	695
2000	654	716	782
2200	727	795	868
2400	800	875	955
2600	872	955	1,042
2800	945	1,034	1,129
K	2.83	3.76	4.26
n	1.43	1.37	1.36

TFBV

(Top Grill at top of front vertical surface, Bottom Grille on front vertical door)



Output (Watts) at Ambient 20°C with MWT 70°C ($\Delta T = 50$ K)

Casing Length (mm)	Casing Height (mm)		
	600	900	1200
600	285	313	363
800	428	469	544
1000	571	626	726
1200	714	782	907
1400	856	938	1,089
1600	999	1,095	1,270
1800	1,142	1,251	1,452
2000	1,284	1,408	1,633
2200	1,427	1,564	1,815
2400	1,570	1,720	1,996
2600	1,712	1,877	2,178
2800	1,855	2,033	2,359
K	2.92	3.57	4.16
n	1.41	1.38	1.38

Output (Watts) at Ambient 20°C with MWT 50°C ($\Delta T = 30$ K)

Casing Length (mm)	Casing Height (mm)		
	600	900	1200
600	139	155	180
800	209	232	269
1000	278	310	359
1200	348	387	449
1400	418	464	539
1600	487	542	629
1800	557	619	719
2000	626	696	808
2200	696	774	898
2400	766	851	988
2600	835	929	1,078
2800	905	1,006	1,168
K	2.92	3.57	4.16
n	1.41	1.38	1.38

LST Surface temperatures by casing height and flow temperature

TTBV

(Top Grill on top horizontal surface, Bottom Grille on front vertical door)



Maximum Surface Temperature (°C)

		Casing Height (mm)		
Flow Temp (°C)		600	900	1200
	40	31	28	28
	50	35	32	32
	60	40	36	35
	70	45	40	39
	80	49	44	42

TFBV

(Top Grill at top of front vertical surface, Bottom Grille on front vertical door)



Maximum Surface Temperature (°C)

		Casing Height (mm)		
Flow Temp (°C)		600	900	1200
	40	31	29	28
	50	37	33	32
	60	42	37	36
	70	47	41	40
	80	53	45	44

Accessories

Thermostatic radiator valve bodies and heads (TRVs)

Solray LST radiators are available to order with optional TRVs. Solray LST radiators can accommodate most makes of internal and external TRVs. Removable patch plates are supplied to blank off any unneeded fixing holes on the casing side plates.

Stock TRV kits are supplied boxed and ready for 1st fix deliveries and include fittings for the 15mm OD element connections. All versions employ capillary tube design for internal tamper proof or external locations. Internal TRV kits include a remote bulb sensor which is safely attached at the bottom of the inlet space secured to a fold-out back plate clip.

Handings (left or right) can be decided on site as required during installation.

Lock shield valves (LSVs)

Stock LSV kits are supplied boxed and ready for 1st fix deliveries and include fittings for the 15mm OD element connections.

Solray LST Radiators

Solray LST Radiators shall be manufactured by Comyn Ching & Co (Solray) Limited to the selection schedule and/or drawings and shall comply with the following specification.

Certification and performance

Solray LST Radiators shall be independently tested and rated to BS EN 442.

Casings

Backplates shall be fabricated from 1.2mm zinc coated steel and shall include fold out emitter brackets and be pre-formed to provide a drilling and fixing template.

Sideplates shall be 1.2mm thick mild steel finished in polyester powder coating with rounded edges and corners for additional safety. Removable or repositionable blanking plates shall be fitted ready to accept TRV adjusters.

Grilles shall be formed from CNC punch holes in the faceplate material in such a manner as to ensure that pencils and other small objects cannot be introduced into the LST casing.

Front access panels shall be 1.2mm thick mild steel finished in polyester powder coating with robust key operated latches to enable easy access for maintenance and cleaning.

Element emitter

Element emitters shall comprise finned tube blocks with aluminium fins mechanically bonded to 15mm copper tube to ensure maximum heat transfer from the tube to the fins.

All bends and fittings within the element blocks shall be formed from brazed capillary fittings.

All copper tube and element blocks shall be available in lengths to match the casing sizes.

Element blocks shall have plain 15mm OD tails suitable for standard 15mm connection fittings.

Test and working pressures

All emitters shall be suitable for a maximum cold test pressure of 10.5 bar and a maximum working pressure of 7 bar. Element emitters shall be limited to a maximum working temperature of 110°C. Test and working pressures may be reduced in the event that fittings and valves supplied by others have lower performance.

Finishes

Cases, backplates and internal brackets shall be finished in RAL 9016 polyester powder coating.

Accessories

Where specified, optional TRV and LSV kits shall be supplied loose for site fitting and connection. All fixings to building fabric shall be selected and supplied by others.

Support

Where to go next

Tools

Panel sizing and outputs tools (see website)

Technical sales managers

Sales@solray.co.uk www.

South East / South West / London / Midlands /
North / Scotland / Northern Ireland / Ireland

solray.co.uk/people

01792 892211

Website

www.solray.co.uk

Design and technical support services

Sales@solray.co.uk

BIM models

www.solray.co.uk/bim

Sector specific expertise

Heritage@solray.co.uk (*churches and historic buildings*)

Sportshalls@solray.co.uk (*sports facilities*)

Education@solray.co.uk (*schools and colleges*)

Health@solray.co.uk (*hospitals and health facilities*)

Custodial@solray.co.uk (*prisons and secure units*)

Detailed technical specifications

www.solray.co.uk

Sales@solray.co.uk

Detailed product guides

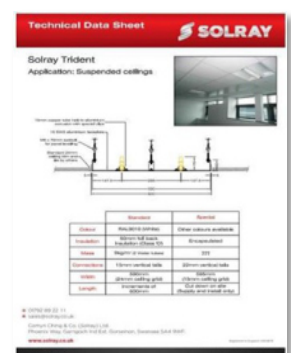
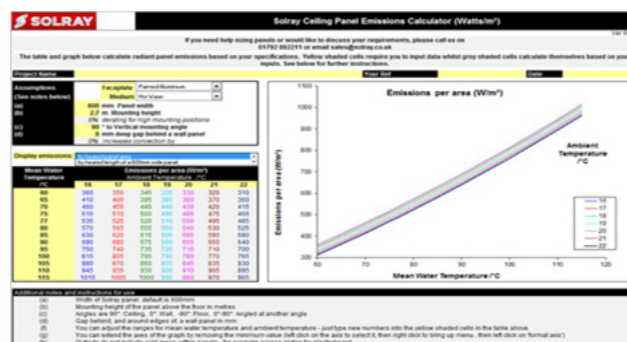
www.solray.co.uk

Sales@solray.co.uk

Continuing Professional Development

Sales@solray.co.uk

www.solray.co.uk/cpd



 Sales@solray.co.uk

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Comyn Ching & Co. (Solray) Ltd.
Phoenix Way, Garngoch Ind Est, Gorseinon, Swansea SA4 9WF
Registered in England No 01254878



Peace of mind

You can have total piece of mind when choosing Solray because no other company is able to combine over 90 years of experience with such a unique and modern heating solution. A century of experience - a solution for tomorrow.

You can also be assured of the quality. Solray systems are designed and manufactured to the highest standards. But then you don't last over 90 years without consistently delivering on quality.

Close to home

Solray LSTs are manufactured right here in the UK. Our offices and skilled service teams are also based in the UK.

This means you benefit from a local contact and a highly responsive technical support team. Manufacturing panels in the UK also helps reduce a building's carbon footprint and makes the supply chain more robust.

All Solray systems are designed to suit your specific requirements

To discuss how we could benefit your project, or if you have any questions, please call us on

01792 89 22 11.

Comyn Ching & Co (Solray) Limited
Phoenix Way, Garngoch Ind Est, Gorseinon, Swansea, SA4 9WF

**UK manufactured heating and cooling
solutions for today's most demanding
buildings**

