

AUBREN

SOLO

RADIATOR

AUBREN TECHNOLOGY



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**DESIGN.
MAKE.
DELIVER.**

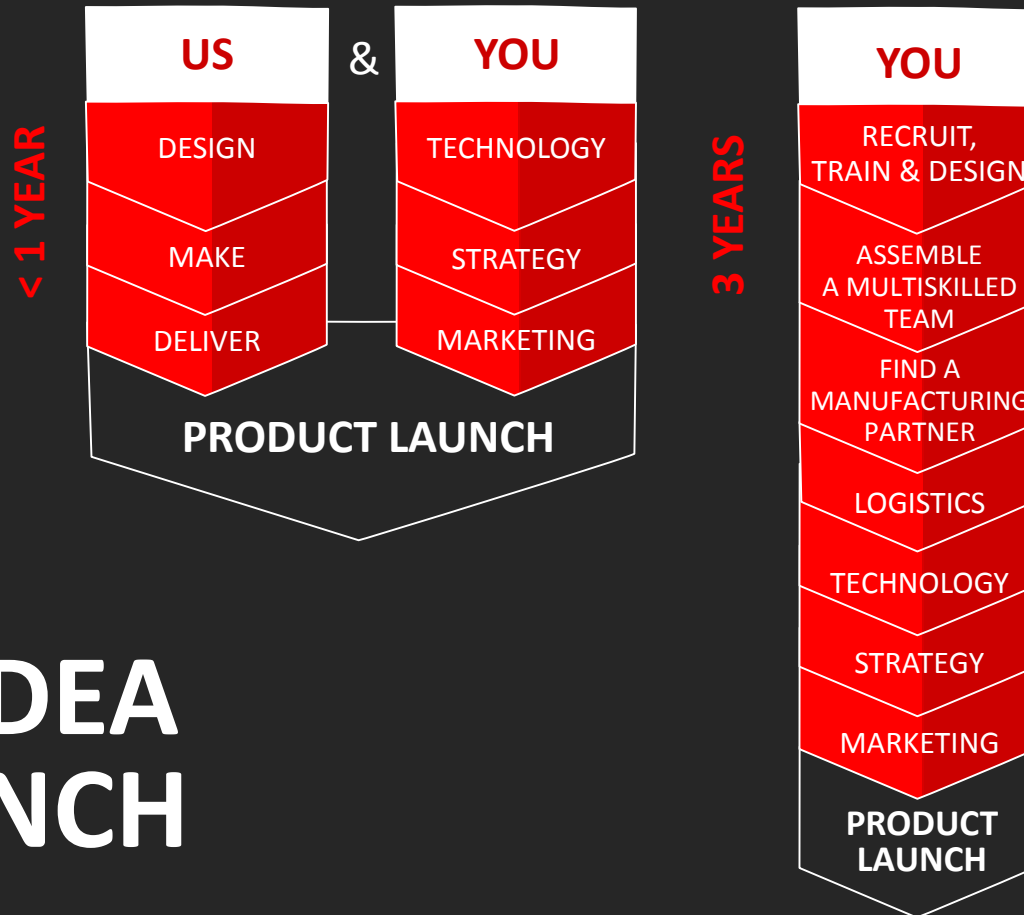
WELCOMES CUSTOMERS AND BUSINESS PARTNERS

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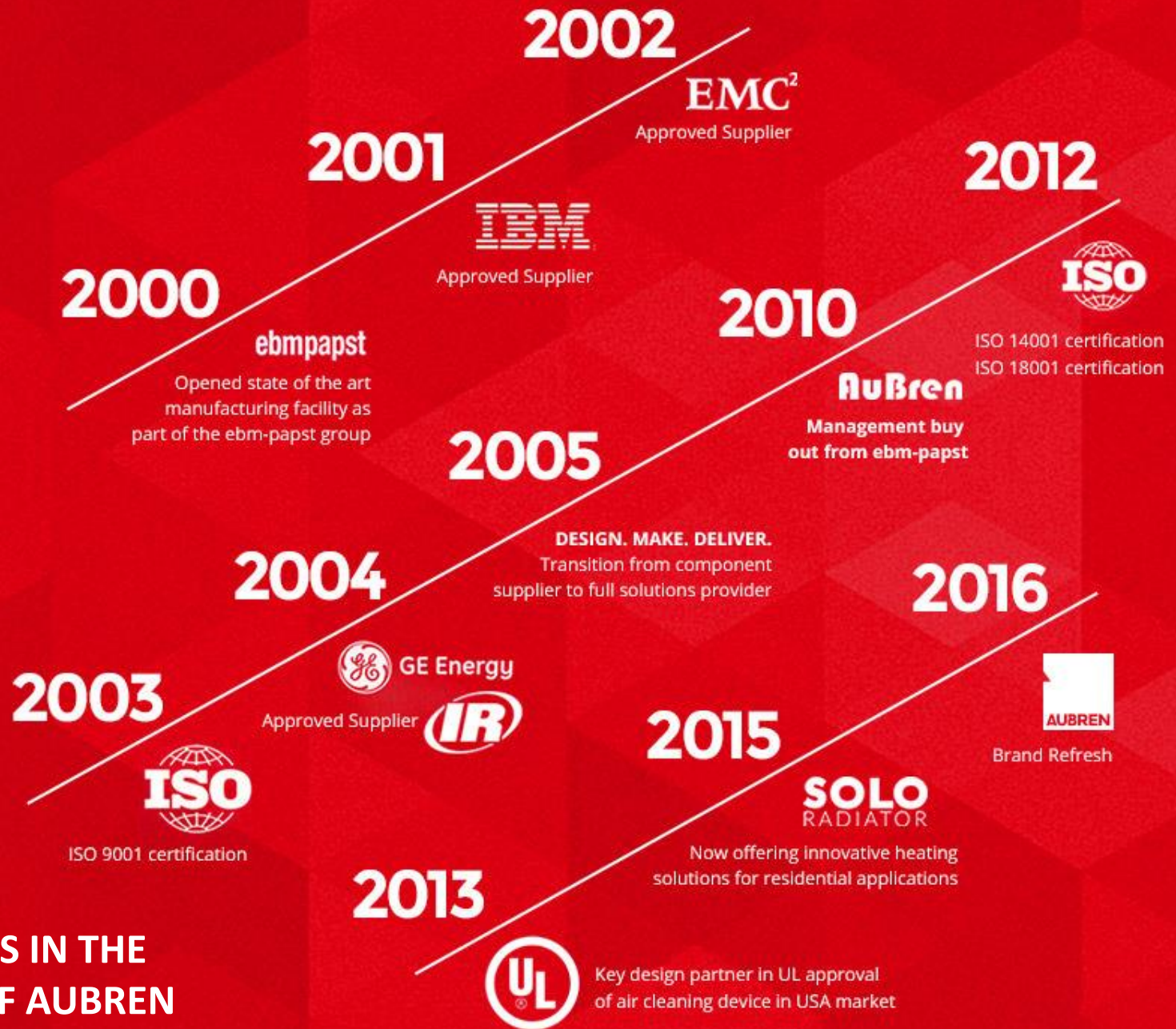
PRODUCT IDEA

ENGAGE AUBREN

NO PARTNER



FROM IDEA TO LAUNCH



KEY MOMENTS IN THE EVOLUTION OF AUBREN

AN ADVANCED, HIGHLY SPECIALIST MANUFACTURING FACILITY

We operate a 3,000 square meter, highly-specialist, advanced manufacturing facility. It is located in Portlaoise, at the centre of Ireland, adjacent to all motorways, and one hour from Dublin airport. A facility which operates and produces to world class standards.



OUR FACTORY IS YOUR FACTORY

QUALITY

Quality, Environmental and Safety Policies.



QUALITY



ENVIRONMENT



SAFETY



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AUBREN SOLO RADIATORS

Patented Design

Aubren has pioneered Hydronic Heating with the patented Solo system which like conventional heating systems is water based, but differs in that minute quantities of water are used, and advanced control techniques are embedded into the Solo Hydronic to help reduce boiler size whilst delivering exactly the heat required where and when needed with no warm up time.

Technology Manufactured in Europe

Solo is designed and manufactured and technically supported in Ireland by Aubren, a technology company specializing in the delivery of low energy heating and ventilation products.

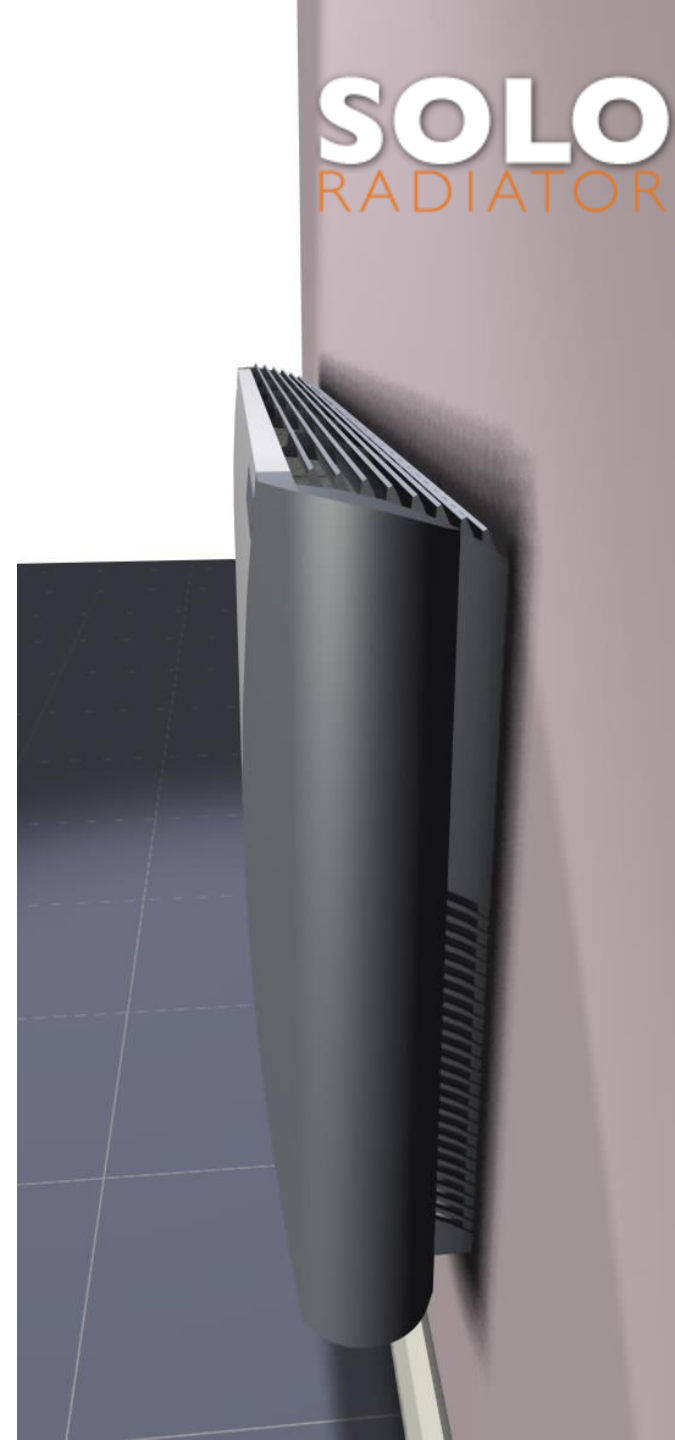
ENHANCES COMFORT, AND STYLE OF INDOOR SPACE

- Stylish & Discrete – Solo blends unobtrusively with all environments, whether commercial, institutional or domestic.
- Surface Temperature never reaches danger levels regardless of water temperature. Added safety for children and the elderly.
- Fastest Heatup Time. A Solo will generate significant heat immediately hot water is available to it
- Total control with minimal energy waste
- Significantly smaller than conventional radiators – easier to locate in room.
- Available in standard white or architect specified colours.



ENHANCES COMFORT, HEALTHINESS AND STYLE OF INDOOR SPACE

- Eliminates Wall Stats and allows room by room temperature control.
- Small and Stylish Design compliments all Décor in homes or commercial spaces. No need to design the room around the radiators. Slimmest on the market.
- Summer Comfort Cooling
- Kick-Space or Hideaway version available for kitchen or bedroom spaces – uses no wall space.
- Boost feature ignores temperature for 20 minutes and activates high airflow , then reverts to temperature control.



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SMARTER

SMART TECHNOLOGY FOR THE MODERN INDOOR SPACE

- Solo requires no water valves to prevent heat emission when not required. Even with 85°C water flow, there will be zero convection, but there will be a minor degree of heat radiation from the coil surface.
- As all Solo's can be on a single flow and return pipe system, zoning can be simply done by grouping areas electrically and feeding them from timeclocks or switches. Thus, eliminating the need for zone valves and piping complexity.
- Radiator selection is simple. There are only two capacity sizes, and they will automatically adjust capacity as required.
- All controls are built in with no external requirements.



SOLO ALLOWS TOTAL CONTROL WITH MINIMAL ENERGY WASTE

- Fast Acting
- Low Water Content
- Capacity Control
- Temperature Control
- Remote shutdown of pumps
- Setback feature
- Boost Function
- No unreliable valves



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CORRECT CHOICE

SOLO – BETTER CHOICE FOR HEATING SPACE

Boiler Sizing

Solo allows the designer to base the capacity on design heat loss, and not on the capacity to bring the temperature up in a reasonable time. This is possible because Solorad essentially may be considered as a variable size radiator, which becomes large or small as dictated by how cold the environment is relative to desired temperature.



Low Thermal Mass

The low thermal mass of Solo dramatically assists in both response as well as boiler or heat pump sizing. This allows the designer to downsize the boiler or heat pump by 40-50% relative to conventional sizing practice.



Condensing Boiler Operation

Because Solo operates effectively at much lower water temperatures than radiators, condensing boilers can be made condense under all load conditions. This results in major energy savings



SOLO – BETTER CHOICE FOR HEATING SPACE

Heat Pumps

Due to the fact that Solo can operate at low water temperatures, Solo is ideal for use with Heat Pumps. This was a primary design goal for Solo. Constant flow through the system greatly assists correct operation of heat pumps.



System Balancing

There is no balancing requirement with Solo as the hydraulic resistance relative to that encountered in flow and return piping is such that virtually the exact same flow will be provided to each terminal. This is also aided by the lack of valves in the system.



Pump Selection & Pressure

A further advantage ensues in selecting water pumps based on a constant flow rate. The installer must however ensure that circulation pumps are adequately sized – 6-7M head is recommended. Solo is tested to 9 bar, and unlike radiators, this allows higher pressure systems to be used where required.



SOLO – BETTER CHOICE FOR HEATING SPACE

Heatup Time

A Solo will generate heat immediately. For example, a conventional radiator delivering 6KW typically might weigh 90 Kg, and contains 15L of water. The energy required to bring both iron and water from 10⁰C to 80⁰C is 960W.hr. This is before the radiator emits any heat. By contrast, Solo only needs 37 W.Hr. A conventional radiator needs 25 times more energy before it begins to heat than Solo does.

Overheating Waste Energy

When temperature is satisfied by conventional radiator or underfloor, all the energy required to heat the system itself is emitted until the stored energy is dissipated and this is totally wasted by overheating the space.



SOLO SIMPLER CHOICE FOR HEATING SPACE

- Two Lower Wall Mount Models – air flow upwards.
 - Solo⁰³ 410H x 611W x 108D
 - Solo⁰⁶ 410H x 985W x 108D
- One Kick-Space Model – air flow from wall
 - Solo Hideaway⁰³ 120H x 700W x 418D
- Two Higher Wall Mount Models – air flow downwards
 - AirCurtain⁰⁴ 410H x 611W x 108D
 - AirCurtain⁰⁹ 410H x 985W x 108D
- All models are light and easy and cheaper to install – a one person operation



SOLO – THE INSTALLERS FRIEND



- No balancing of circuit
- Easy Pump selection
- Light - one person job.
- Only two sizes to choose from – covers all.
- No valves – just connect and run.
- Built in Controls and Stats
- Boost Function
- No unreliable valves

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IRON RADIATORS ??

SOLO vs RADIATOR

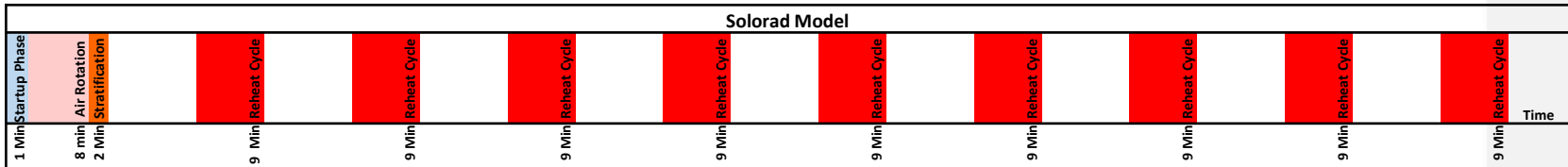
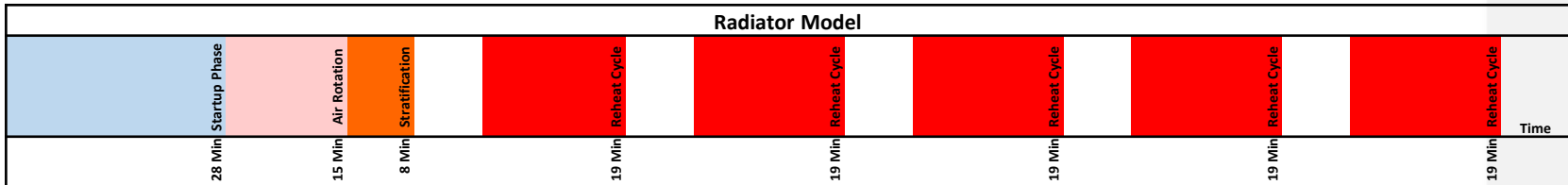
- Solo6 vs Iron Radiator
 - Height 410mm vs 395mm
 - Width 985mm vs 1556mm
 - Metal Weight 0.68Kg Cu vs 26.04 Kg Steel
 - Water Content 0.3L vs 10 L
- Typical Ten Solo6 vs Ten Radiators
 - Heatup Period 1 min vs 28 min
 - Room Air Rotation 8 min vs 15 min
 - Stratification Period 2 mins vs 8 mins
 - Initial Time to Satisfy Load 11 mins vs 51 mins
- Energy to Heat from 10-70C
 - Metal 19 Btu vs 924 Btu
 - Water 90 Btu vs 2987 Btu
 - Total 109 Btu vs 3911 Btu



SOLO vs RADIATOR



	Startup	Air Rotation	Stratification	Cycles	Total Run Time
Radiator	28	15	8	114	165
Solorad	1	8	2	90	101



Based on the above, Solorad saves 64 minutes on boiler run time compared to radiators. This represents a reduction of 40% on boiler time giving a 40% energy saving*

* Ask for our detailed calculation datasheet.

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UNDERFLOOR ??

SOLO vs UNDERFLOOR

Response Because underfloor heating entails a time lag of several hours between injecting heat energy into the floorslab, and releasing heat to the environment, this is actually out of step with our rapidly changing climate patterns. Solo instantly generates what's required when required.

Control Underfloor heating is in fact a storage heater (which is degraded when carpeted or floored with wood). A wall stat located in static air cannot control comfort conditions throughout an area when used with underfloor heating. A stat indicates the 'now temp.' whereas a floor radiates 'historic' heat input injected several hours previously which may have no bearing on the 'now temp.' requirement.

Energy Cost With underfloor, a decision is made by a timeclock or wall stat to run the system for a period. By the time the heat is emitted, there may be no need for heat that cannot be stopped. This is extremely wasteful.

SOLO vs UNDERFLOOR

Upstairs Operation

This is always problematic with underfloor systems, and usually results in radiators being used.

Zoning

Whereas underfloor heating requires complex manifolds and valves, Solorad simply requires a single flow and return in plastic or copper with no valves whatever in the system regardless of how complex the zoning plan is. This leads to much more reliability and simpler piping.

Water Temperature

Boilers are inappropriate to the requirements of underfloor systems as the water temperature is too high. Reducing the temperature will destroy many boilers. Other methods are used to reduce the impact of the elevated water temperatures, but only heat pumps ideally match the requirements of underfloor heating. Boilers produce water only at a much higher temperatures to prevent corrosion, and this requires the use of mixing valves. These devices contribute to boiler short cycling which destroys efficiency. Solorad however operates at any water temperature from 35-85 °C

SOLO vs UNDERFLOOR

Running Cost

Solo based systems can operate at 50-70% or less, of the running cost on an underfloor system.

Health

Dust mites thrive in the heated carpet and rugs, - particularly at high relative humidity levels now found regularly in modern homes where ventilation can be poor. The warmest part of an underfloor installation is the carpet where there irritants thrive. Solorad in contrast, only heats the air.

Summary

People require to have control of their environment. The demise of electric storage heating was caused by lack of control and perceived high running cost. Underfloor heating is also storage heating by a different name, and suffers from many of the shortcomings of its electrical ancestors. Underfloor in summary, represents a considerable improvement over radiators, but suffers from lack of any real control and excessive complexity.

SOLO vs UNDERFLOOR

International View

The efficiency review of energy use states that only where sustained low outdoor temperatures are the norm, will underfloor provide the efficiency and comfort levels required.

Climate across the Ireland, UK and much of Europe can provide all four seasons during a typical winter morning, and this renders the use of underfloor inappropriate, though it is still superior to radiators in some instances.

As water temperatures are reduced by legislation, or the desire to use different heat sources such as heat pumps or Solar, radiators will become even larger with even greater Thermal Mass.

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FAN SELECTION

SOLO - CORRECT FAN SELECTION IS CRITICAL

The Solo patent provides for the exclusive use of backward curved impeller fans in radiators. They operate like a millwheel going backwards. They do not blow air, rather they generate pressure equally in all directions, thus ensuring most efficient operation of the heating coil.

As the motor and impeller are all one, they are lifetime balanced, and as the tips are both aerofoil moulded and turning backwards, there is no dirt pickup and very little noise. They are also impedance protected, and can be spun backwards or indefinitely jammed while powered with no effect whatever. The inertia of the external rotor motor used in these fans allows gradual ramp up or down of speed with no noise

Backward curved impeller fans are selected for Solo and used in an unconventional configuration to ensure that when stopped, there is zero convection, thus eliminating the need for water valves.



WRONG FAN SELECTION IS PROBLEMATIC

The established competitors to Solo typically utilize tangential fans. These are rotating cylindrical wheels with fan blades extending in parallel along their length. Because of this length, it is fundamentally unbalanced and collects dirt due to the vanes cutting the air

The motor weight rests on one end bearing, and none on the other bearing. Bearing wear and noise is problematic.

Free convection can occur through the blades, and due to non aerofoil tips on the blades, fans are very noisy.

Tangential fans are primary used on low grade domestic fancoils, or in large commercial heaters where the rotational speed can be greatly reduced by using much larger diameter fans. These fans have applications, but are not suited to a product such as Solorad.



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SOLO USERS

SOLO USED IN COMMERCIAL, INSTITUTIONAL AND DOMESTIC HOMES

- 5000+ Domestic Homes
- Nursing Homes
- Retail Units and Offices
- Hotels and Restaurants
- Sports Halls and Parish Social Areas
- Creche and Montessori Schools
- Medical Day Care Facilities
- Modular and Factory Built Homes



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