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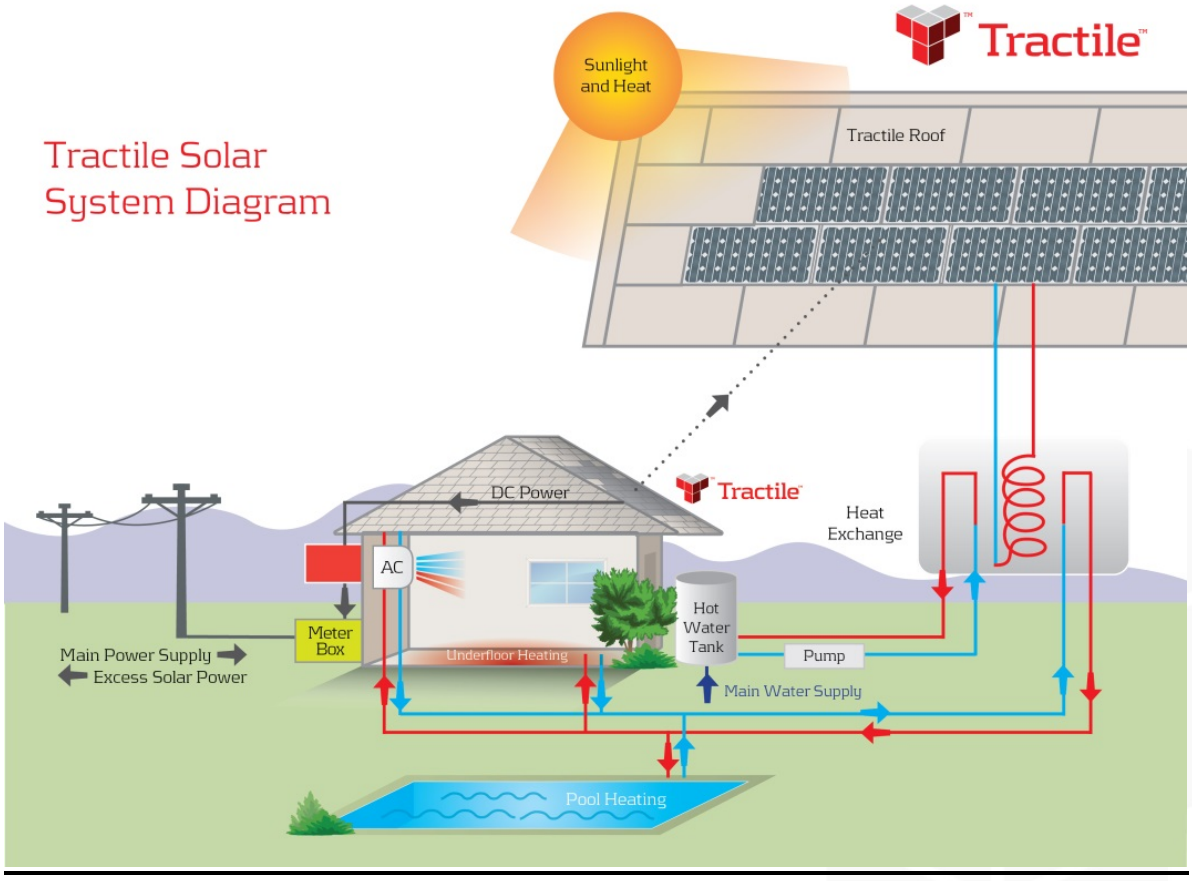
TRACTILE ECLIPSE

ROOF CONFIGURATION OPTIONS

Tractile is a 4 in 1 solution with integrated options for roofing, solar PV, solar hot water and insulation. Tractile Eclipse allows for endless combinations of roofing and energy generation. The key drivers for decision making are:

- Square meter roof required
- Solar PV capacity required
- Usage of the solar (pre-)heated hot water (domestic, pool heating, hydronic infloor heating, HVAC)



1. Eclipse roof only

A Tractile Eclipse roof can be supplied and installed without the solar power or solar hot water features.

2. Eclipse roof with Eclipse Solar tiles: solar power & pre-heated hot water

This is the most common residential installation. The average electricity consumption of a 4 person family in Australia is approximately 20 kWh per day over 24 hours. A 3kW Eclipse Solar system generates on average an estimated 10 to 13 kWh per day between 8am and 4pm. This 3kWp Eclipse Solar system consists of 40 Eclipse Solar tiles and covers 24 square meter roof space. On average 50% of the daily electricity consumption of an average 4 person family can be supplied by the 3kW Eclipse Solar system.

The 40 Eclipse Solar tiles also generate per day an estimated average of 3 to 5 litres of 30 ° - 35 ° C pre-heated hot water per tile. This is equal to a daily production of 120 to 200 litres of pre-heated water.

Tractile recommends to always installing a hot water booster to ensure sufficient hot water is available in case of a rainy day or unusual high hot water consumption. Hot water booster options are:

- heat pump
- instantaneous gas or electrical
- gas or electrical heated storage tank

In each option the pre-heated water outlet of the Tractile system is connected through a heat exchange tank with the inlet of the hot water booster system. Under normal conditions the booster thus has only to heat the water from 30 ° - 35 °C to 55 °C.

3. Eclipse roof with Eclipse Solar & Eclipse Thermo tiles: solar power & hot water

The Eclipse Thermo tiles can generate water up to 75 ° C. This hot water can then be used for:

- domestic hot water consumption
- pool heating
- support hydraulic infloor heating
- support solar air-conditioning

In Melbourne in winter on an average day, 1 square meter of Eclipse Thermo tiles can heat during the day 15 to 18 litres water to 40 ° - 45 ° C. If required a heatpump or (instantaneous) gas or electrical booster can then further boost the hot water to the desired temperature. In spring, summer and autumn the Eclipse Thermo system produces more water and of a higher temperature compared with winter. Further North in for example Sydney, also more water of a higher temperature is generated.

Besides the aesthetic gains from the Eclipse Thermo built-in pool heating vs. black pipes, an additional benefit in using Eclipse Thermo for pool heating is that birds and pests can no longer cause damage to the pipes.

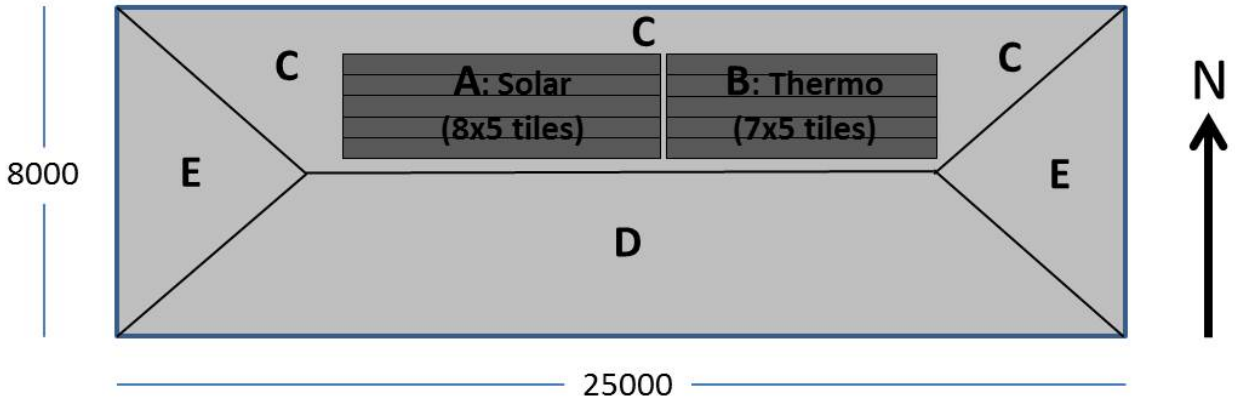
4. Extending and expanding the Tractile Eclipse roof system

Eclipse Flush tiles can be replaced with additional Eclipse Solar or Eclipse Thermo tiles. This ensure the resident is prepared when at a later stage battery charging, car charging or pool heating is required. etc.

5. Optimised Tractile Eclipse Roof - A Smart Configuration

EXAMPLE: A house in Sydney has a built up plan of 200 square meter. With a roof pitch of 22.5 degrees the roof area is 216 square meter. Assuming that 50% of the roof is North facing, than the following Tractile configuration could be considered:

A. 24 square meter with Eclipse Solar (40 tiles x 76Wp = 3kWp PV) on North facing roof
B. 21 square meter with Eclipse Thermo (35 tiles) on North facing roof
C. 46 square meter with Eclipse Flush (whole and partial tiles) on North facing roof
D. 91 square meter with Eclipse Flush on South facing roof
E. 34 square meter with Eclipse flush on East and West facing roof



Roof segment A generates an estimated average of 4327kWh electricity per year + 1363kWh in pre-heated hot water. This is approximately 70% to 80% of the average yearly energy consumption for a 4 person family in Sydney.

Roof segment B generates an estimated average of 1908kWh in hot water per year (increase temperature with 35 degrees daily for 4 litre per tile per day). This hot water could be used:

1) to further boost the pre-heated hot water from the Eclipse Solar tiles
2) to heat a 20 square meter swimming pool and extend swimming season with several months
3) to support heating of 20 square meter hydronic infloor heating, and save 10% to 40% on these energy costs
4) to support solar air-conditioning by pre-heating refrigerant and extend period of pressure of compressor, saving 30% to 50% on air-conditioning costs. Note that solar air-conditioning needs 45 to 50 ° C for reasonable operation.

Segment C. is “spare” capacity. The existing whole Eclipse Flush tiles can be replaced at a later date when solar PV capacity needs to be extended to support charging of batteries and electrical cars. There is space for approximately 35 additional Eclipse Solar or Eclipse Thermo tile.

Segment D. this South facing roof has limited solar exposure and will thus only be roofed with Eclipse Flush tiles.

Segment E. solar on the East and West facing roofs will work approximately 15% less efficiently. It is still possible to install an additional 12 Eclipse Solar or Thermo tiles on each roof segment.

Please note that without a battery storage system an electricity grid connection is still required. In addition, a hot water booster is required for cold or rainy days and in periods of unusual high hot water consumption.