



LAUNCH **10X**
ENERGY STORAGE

PCM ENERGY CAPSULE

UNLOCK GREATER ENERGY STORAGE
WITH HIGHER ENERGY DENSITY

ADAPT TO VARIOUS
WATER THERMAL STORAGE SCENARIOS

PASSIVE EDGE TECH

A PRODUCT RESEARCH AND DEVELOPMENT BY
SINGAPORE PASSIVE EDGE GREEN ENERGY PTE. LTD

PRODUCT BROCHURE

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PASSIVE EDGE® PCM ENERGY CAPSULE

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PASSIVE EDGE TECH



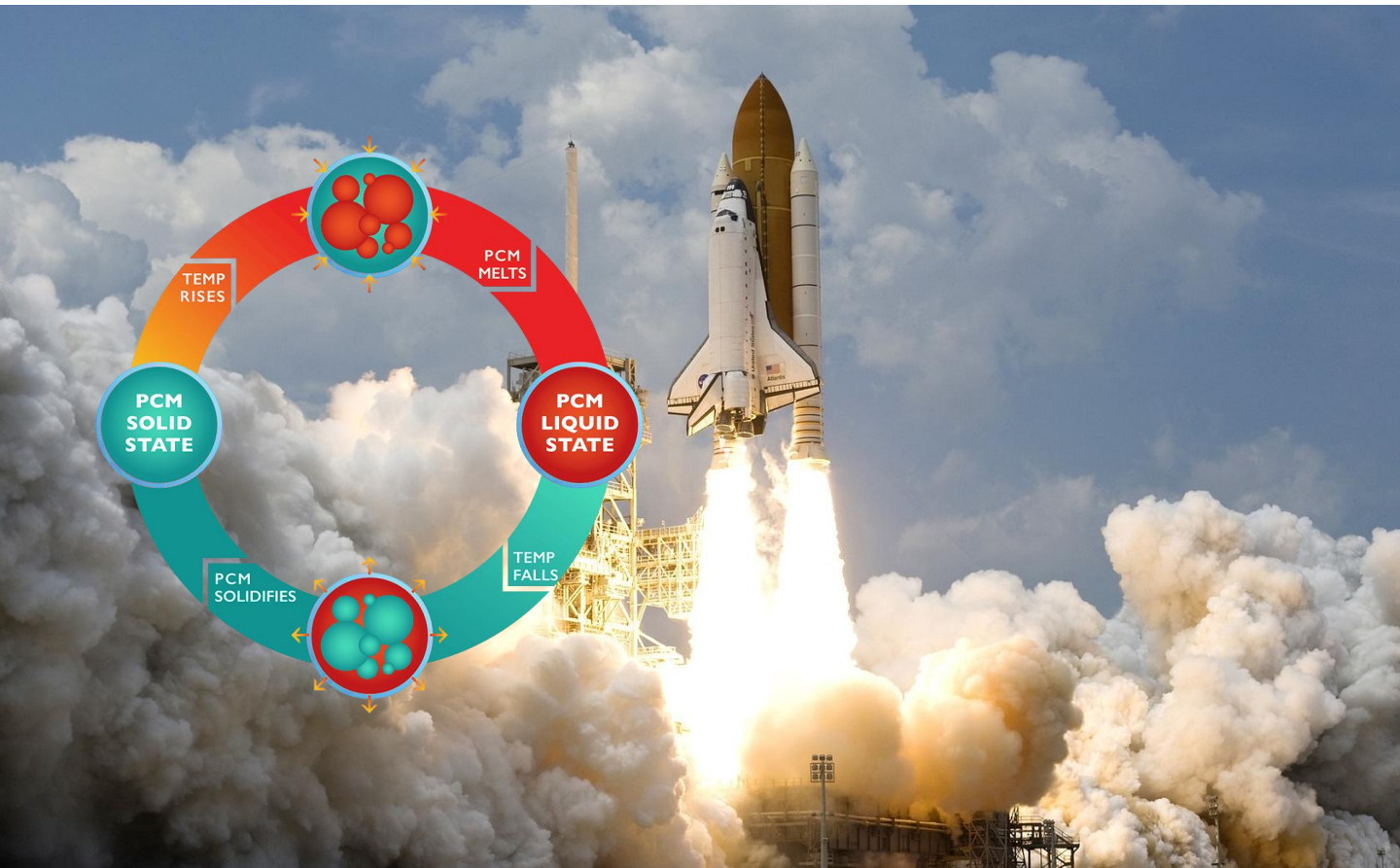
PASSIVE EDGE TECH is a technology company specializing in sustainable energy solutions and zero-carbon buildings. We are dedicated to technological innovation and utilize advanced phase change materials (PCM) to enhance your home's energy efficiency and comfort.

INDUSTRIAL LEADING
PCM EXPERTISE
OVER 15 YEARS EXPERIENCE

CUSTOMER AND PARTNER



PHASE CHANGE MATERIAL



AEROSPACE TECHNOLOGY SUPER COMPACTED GREEN THERMAL STORAGE SOLUTION

PHASE CHANGE MATERIAL (PCM) was initially developed by NASA in 1950 for thermal control in outer space. PCM is capable of absorbing and releasing large amount of thermal energy to maintain a consistent temperature. When the external temperature drops, the PCM transitions into its liquid phase and releases the previously absorbed heat. Simultaneously, the PCM solidifies, resulting in a warming effect.

PASSIVE EDGE[®] PCM ENERGY CAPSULE



PASSIVE EDGE[®] PCM ENERGY CAPSULE is a patented product that can store large amount of heat for household use. It is filled with advanced patented phase change materials when put in the hot water cylinder, greatly increasing the heat storage capacity to meet your needs



ENSURING YOUR THERMAL NEED

Greatively improve tank heat storage capacity Ensuring your hot demand at any time.



SAVE YOUR MORE MONEY

Save money with large energy storage Solar energy valley electricity & heat pump



EASY APPLICATION

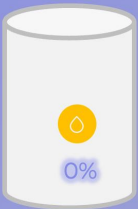
DIY boost thermal storage solution
Insert PCM Capsule through 1
½" standard sleeve



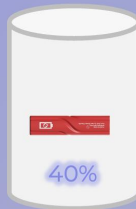
ENVIRONMENTLE FRIENDLY

Environmentally friendly materials
Reduce the risk of legionella

BENEFIT



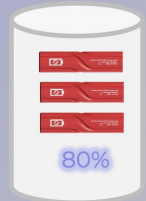
120L
HOT WATER TANK
WITHOUT
ENERGY CAPSULE
HEAT STORAGE
1 KWH



120L
HOT WATER TANK
WITH
ENERGY CAPSULE
HEAT STORAGE
6 KWH



120L
HOT WATER TANK
WITH
ENERGY CAPSULE
HEAT STORAGE
8 KWH



120L
HOT WATER TANK
WITH
ENERGY CAPSULE
HEAT STORAGE
10 KWH

*Calculate Data :Local Heating Network In Winter With 55 °C Flow And 45 °C Return, 58°C PCM Energy Capsule ,375 KJ/L

PASSIVE EDGE[®] PCM ENERGY CAPSULE

The phase change material in passive edge[®] PCM energy capsule stores a large amount of heat during phase transition, over 50 times more than water's specific heat capacity. Adding high-energy density capsules to the water tank greatly enhances its thermal storage capacity. This allows you to store more green energy and save more money.



SOLAR PANELS

Utilize excess solar electricity to drive thermal devices for heat storage.



SOLAR THERMAL PANEL

Save money with large energy storage Solar energy & valley electricity & heat pump .



AIR-SOURCE HEAT PUMPS

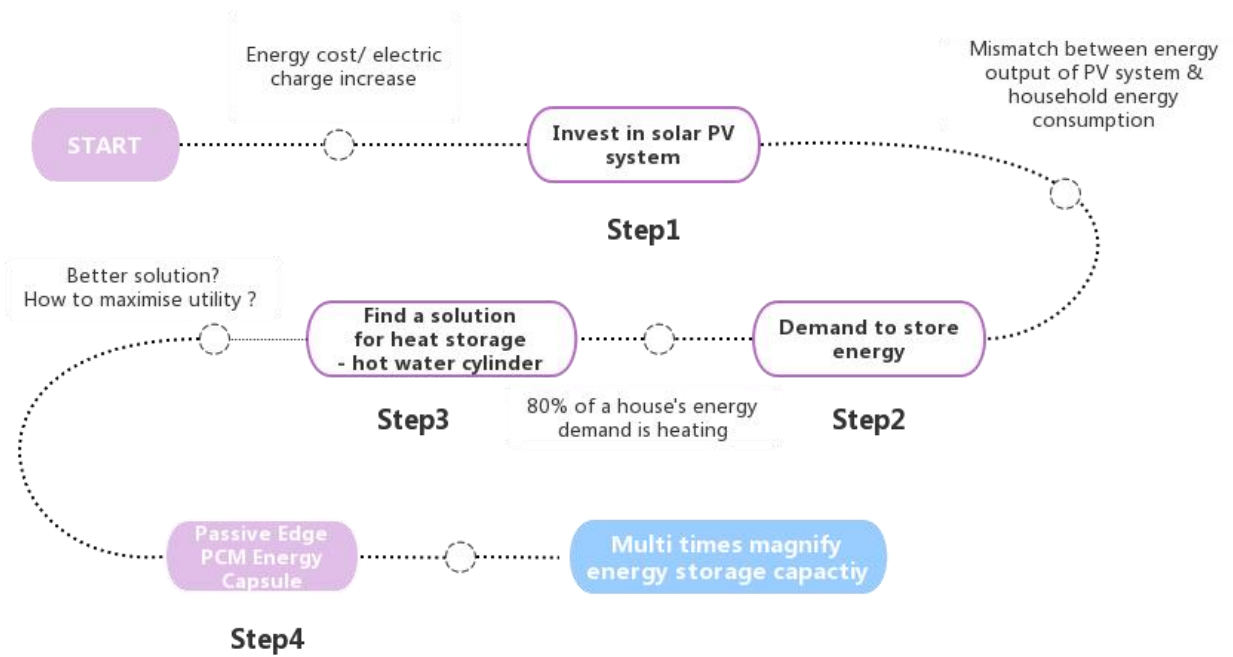
Heat storage heat during high-efficiency operation periods.



OFF-PEAK ELECTRICITY PRICE STORAGE

Time-of-use energy storage leverages off-peak electricity to store heat, reducing energy expenses.

APPLICATION PHOTOVOLTAIC



MAXIMISE USAGE OF SOLAR POWER

Store extra PV energy in the day, and release at night



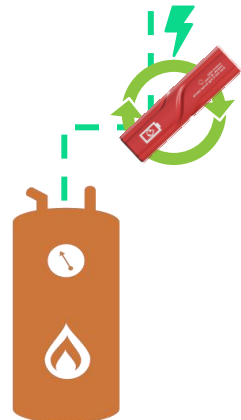
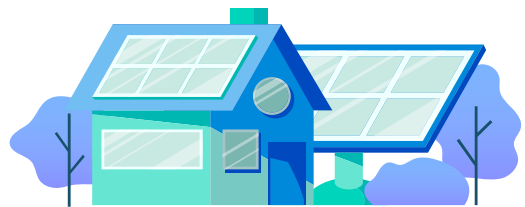
MINIMISE COST OF ENERGY STORAGE

1/5 cost of lithium battery

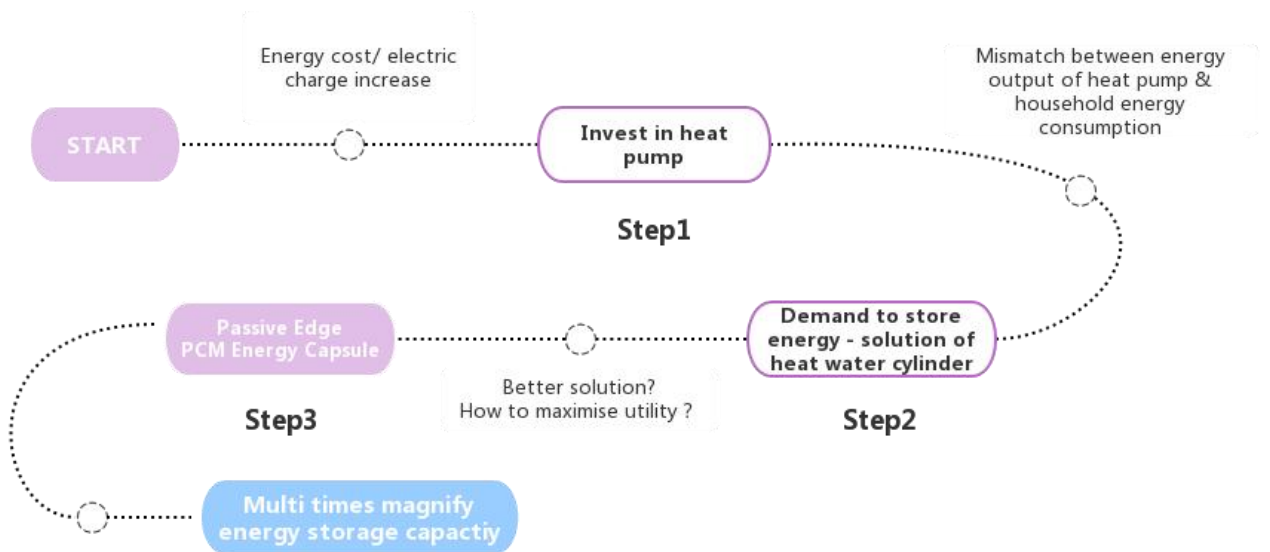


LONGER LIFESPAN, SAFER ENERGY STORAGE

Three times longer than lithium batteries, with no risk of combustion or explosion.



APPLICATION HEAT PUMP



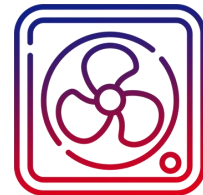
MAXIMIZE THE USAGE OF HEAT PUMP

Store extra air source heat in the day, and release at night



HIGHER COP EFFICIENCY

More efficient heat transfer optimises the COP of your heat pump



CASE STUDY

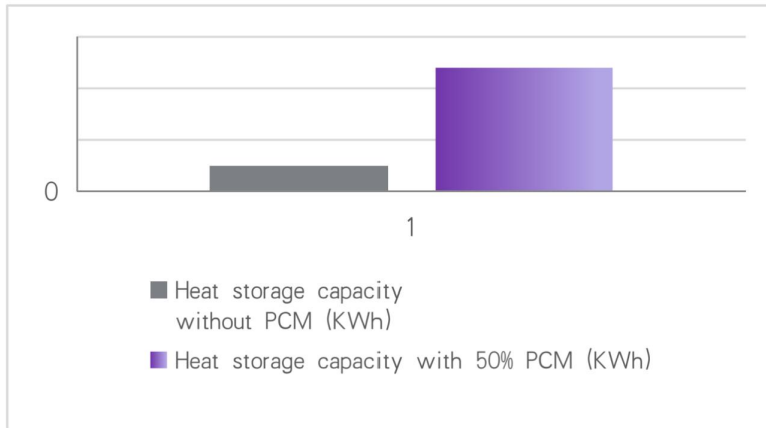
Current tank size: 210 L

Current tank heat storage capacity: 2kwh

Solution: adding Passive Edge ®PCM energy capsule (50% volume of the tank)

Adding Passive Edge 58°C PCM Energy Capsule					
Heat storage capacity without PCM (KWh)	Adding Ratio (total capsule volume/tank volume)	Adding number of PCM Capsule Number (pc)	PCM energy capsule price (€/pc)	PCM Capsule Cost (€)	Total Storage (KWH)
2	50%	1313	1.65 €	€2,166	12.2

(Local heating network in winter with 55 °C flow and 45 °C return; Choose 58°C PCM energy capsule)



Lab result: heat storage capacity increase from 2kwh to 12.2kwh

COST COMPARATION: DIFFERENT SOLUTIONS TO ACHIEVE SAME EFFECT

(increase heat storage capacity from 2kwh to 12.2kwh)

Solutions	Water Tank	Passive Edge PCM Energy Capsule	Lithium Battery
Purchase number	5	1235	1
Cost of Each €	1000	1.65	7000
Total Cost €	5000	2037.8	7000
Energy Type	Thermal	Thermal	Electricity

Data analysis: Passive Edge PCM energy capsule is the most cost-efficient solution.

HOW TO USE / INSTALL?

NO PROFESSIONAL INSTALLATION

With a diameter of 3cm and a height of 17cm, it can effortlessly fit into your current hot water tank via an immersion heater hole or any other accessible opening.



PCM ENERGY CAPSULE
INSERTION



HOW MANY CAPSULES DO I NEED ?

PASSIVE EDGE® PCM ENERGY CAPSULE DESIGNED FOR FLEXIBILITY.

You can determine the number of energy capsules to purchase according to your energy storage requirements.

For example:

Each 58 °C Passive Edge® PCM energy capsule has a volume of 85ml and provides 30 kJ of heat energy per capsule. To achieve a heat energy storage of 1 kWh, you would require 113 capsules. The maximum number of capsules you put into your tank does not exceed 80% of its total volume.

Datasheet & Price list

Dimension	Φ30 x 170 mm	Φ30 x 170 mm
Weight	139g	82g
Volume	0.085L	0.085L
Thermal Storage Materials	Phase Change Material (PCM)	Phase Change Material (PCM)
Hot Water Temperature	58°C	6°C
PCM Latent Heat	360kj/L	176kg/L
Encapsulation Material	PP	PP
Heat Storage Capacity/Pc	30kj	15kj
Max Installation Volume Ratio	80%	80%
Cycle Stability	>10000cycles	>10000cycles
Installation	1 ½" standard sleeve	1 ½ " standard sleeve
Retail price/pc	€1.65	€2.2

MAIN APPLICATIONS

PASSIVE EDGE® PCM ENERGY CAPSULE

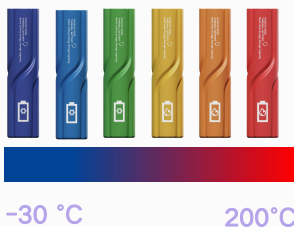
DIFFERENT PHASE CHANGE POINT TEMPERATURES MEET THE THERMAL STORAGE NEEDS OF VARIOUS SCENARIOS.

HEAT

- Solar Heat
- PV Heat
- Heat Pump
- Condensing Technology
- Boiler
- Process Heat
- Local And District Heating Networks
- Concrete Core Activation
- Solar House
- Ventilation/Heat Recovery

COOLING

- Ventilation/Air Conditioning Technology
- Process Cold
- Refrigerated Cabinets
- Supermarket Refrigeration System
- Ice Accumulator



FAQ

IS SPECIFIC INSTALLATION REQUIRED?

No, specific installation is not required. It is a DIY (Do-It-Yourself) process. Simply insert the capsules into the cylinder through a sleeve or any suitable openings.

WILL IT AFFECT THE WATER FLOW RATE?

The water flow rate won't be affected significantly, The streamlined exterior design of the PCM energy capsule ensures minimal water flow resistance and efficient heat exchange.

HOW MANY UNITS DO I NEED?

You can purchase any number based on your requirements, up to a maximum of 80% of your cylinder's volume. For reference, please see the CASE STUDY on the preceding pages. For a heat storage capacity of 1 kWh, you would need 113 units.

WHAT IS THE LIFE SPAN?

The service life is more than 10,000 recycles. We suggest you to replace the capsules after 5 years.

CAN I ADD MORE CAPSULES LATER IF NEEDED?

Absolutely, our energy capsule solution is designed for flexible usage. You can add more capsules later to meet your heat storage demands.

WHOM SHOULD I CONTACT IF I HAVE ANY QUESTIONS?

You can reach out to us directly via email or leave a message on our website. Additionally, you can contact our local distributors, whose contact information can be found on our website as well.



Passive Edge

We Create Sustainability

ADVANCED MATERIAL INSIDE



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