

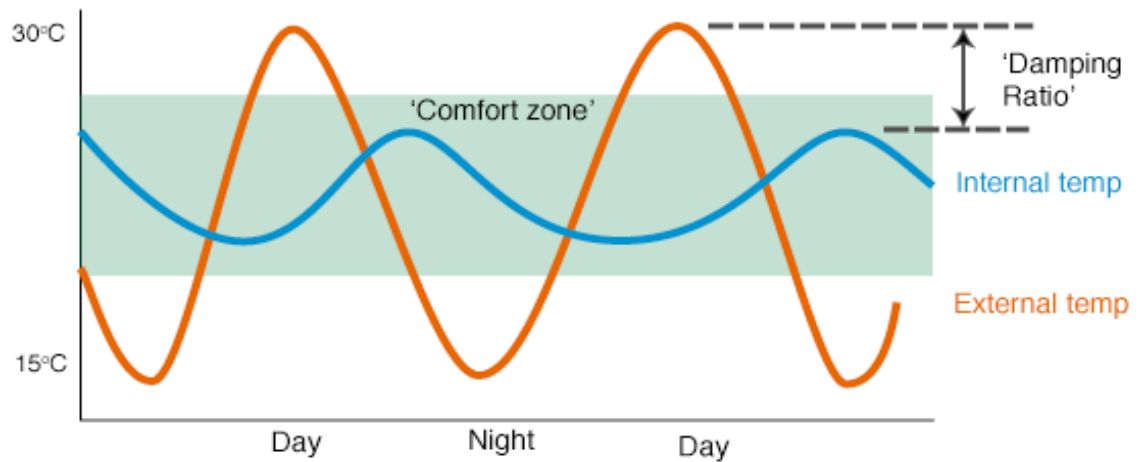


CORNISH CONCRETE PRODUCTS LTD

THERMAL MASS

Thermal mass is the ability of a material to absorb heat. A lot of heat energy is required to change the temperature of a high-density material like concrete. High thermal mass materials act as thermal sponges,

absorbing heat during the summer and so cooling the building, and storing heat from the sun or heaters to release it at night during. Yet, thermal mass is not a substitute for insulation as it generally stores and re-radiates heat.



Insulation stops heat flowing into or out of the building. The right combination of these two elements, plus a building design that allows the capture of solar light and heat can improve the thermal performance of new buildings and lower energy requirements.

The thermal capacity of concrete structures can be utilised to improve the energy efficiency of buildings. Compared to air conditioning, Active Fabric Energy Storage (FES) reduces carbon dioxide emissions by up to 50%. About 90% of the environmental impact from buildings is from heating cooling and lighting, and only about 10% is from the embodied energy used to produce the fabric of the building itself (taken over a 60 year life-cycle).

Keeping our buildings comfortable usually means providing an insulating layer in the walls, roof and floors.

By adopting an environmentally responsible attitude towards the specification, design, and construction of our building, infrastructure and civil engineering projects, we can choose materials for all the right reasons and our choice can have beneficial effects all the way through the life-cycle of a building or structure.

To understand the difference between lightweight and heavyweight structures and the thermal mass effect, we have suggested the following example.

Imagine you are in a tent in the desert. During the day it will be very hot. At night, it will be very cold. However, if you were to put a cathedral in the same desert, during the day it will be relatively cool as the masonry structure will absorb much of the heat. At night it will be relatively mild as that heat is radiated out.

Now if you add the benefits of insulation suitable shading and appropriate passive ventilation, then this combination can improve building design, running costs and environmental impacts on our ever changing world.