DIADEM® PRODUCT & SYSTEMS

DIADEM® Systems

■ DIADEM® green roofs are available as a range of complete systems with all the elements required and you can choose the one that is best for your needs.

DIADEM®150

■ DIADEM®150 provides everything you need for a simple, low-maintenance extensive green roof that will not only protect your roof, but help to insulate your building and reduce the strain on rainwater drainage.

DIADEM®350

■ If you are looking for a solution that extends the living space of your building with a simple range of plants, and are happy with a higher level of maintenance, then the DIADEM®350 system allows you to create a semi-intensive green roof.

DIADEM®750

■ For a more sophisticated intensive green roof with an optional built-in irrigation system, the DIADEM®750 enables you to create a garden in the sky that is the equal of any at ground level.

DiaDomino

■ For sloping or even domed roofs DiaDomino is the perfect choice. Using light, recycled material, it can be easily installed to add an attractive living roof with all the advantages of an extensive green roof.

Distributor:

…Green Up the Roof!

Feature Article

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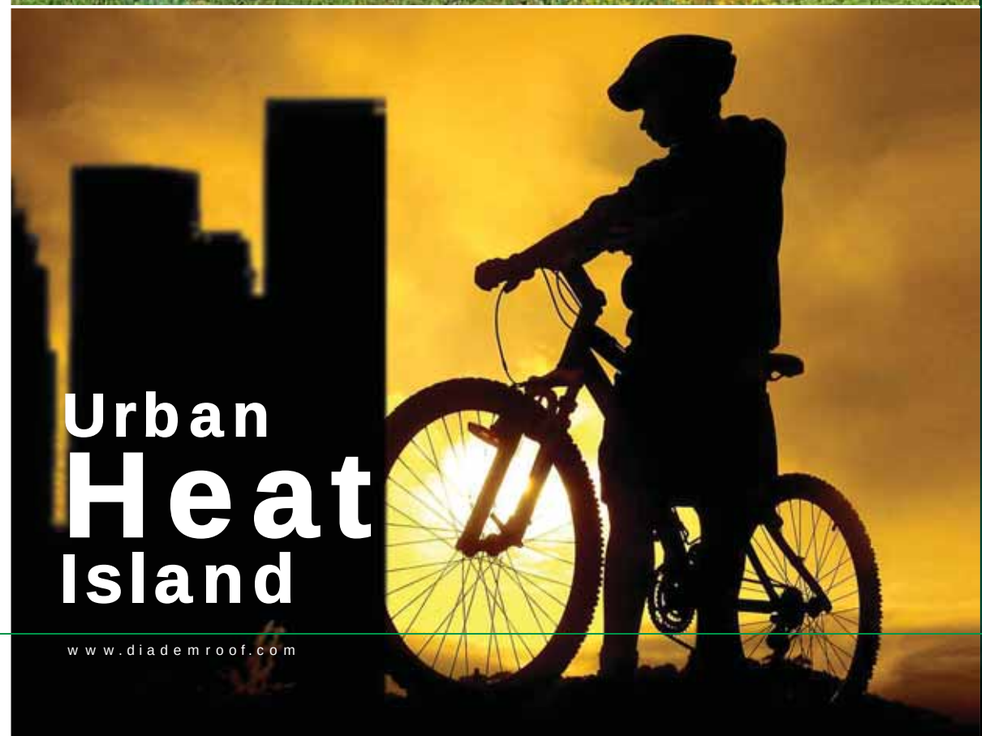
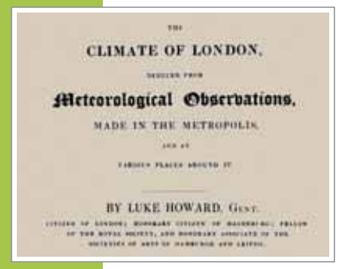


Urban Heat Island

Urban Heat Island

When was the last time you cycled out of the city in the evening? Did you notice how the temperature dropped as you left the buildings behind? Without the protection of a car's air conditioning in the summer, you immediately notice, how our built landscape generates and stores heat which is then released - it is most noticeable at night, when there is no wind. There is a name for it: the Urban Heat Island Effect.

■ An urban heat island is created when the concrete and bricks of buildings and the asphalt of roads have replaced the permeable vegetation layers of the natural landscape. These new structures can be from 27°C to 50°C hotter than the surrounding air, whereas in rural areas the presence of trees and vegetation means that the temperature differences are normally negligible.


THE
CLIMATE OF LONDON,
DEDUCED FROM
Meteorological Observations,
MADE IN THE METROPOLIS
AND AT
VARIOUS PLACES AROUND IT.
BY LUKE HOWARD, GENT.

□ The ability of a city to collect and store heat in this way was first noticed by a British meteorologist, Luke Howard, in the early 1800's. Since that time, cities have grown much larger and so have the structures within them. Not only have buildings increased in numbers and scale, but we have introduced more technology, from cars to air-conditioning, which pumps more heat into the places where people live. Satellite technology now allows us to measure much more accurately the temperatures of our urban and rural areas. The results show that we have created 'islands' within our natural landscape, which are warmer than the surrounding natural landscape. Typically urban heat islands are between 2 and 6°C higher but sometimes the difference can be as high as 12°C.

□ The rise in temperature leads to increased energy consumption due to the demand for increased cooling and this in turn also generates further pollution of the air. Increased pollution and higher temperatures make cities less comfortable places to live in and can also affect the health of people who live and work there. Stormwater is warmed as it runs off the non-porous surfaces of buildings and roads and when it is released into rivers, can damage delicate ecosystems. Often the rainfall itself can cause problems so that architects and urban planners need to develop complex systems to channel it away from population centres. These are sometimes overwhelmed when rainwater mixes with sewage and causes greater health problems and damage to ecosystems.

□ Approximately half the world's population lives in cities and the numbers are rising every year. Since we can't change where people live, urban planners look for ways of making the available living space healthier and more energy-efficient.

□ A large proportion of any city's surface area consists of rooftops. Perhaps because they are largely out of sight, they are often ignored, but in fact they represent a major element in the heat island problem. The rate at which an object can reflect radiation from the sun is called its 'albedo'. Surfaces in a city which have a higher albedo are better because they reflect radiation away from the surface and therefore help to keep structures cooler.

Photo: http://earthobservatory.nasa.gov

□ Traditional asphalt built-up (Diagram 2) roofs have a low albedo, reflecting at most 26% of the sun's radiation. The figure can be as low as 6%. The rest of the solar radiation is absorbed and generates heat that stays in the area if there is no wind. Stuart Gaffin of the Earth Institute at Columbia University, explains that "The tar beach roof – ubiquitous in cities – is an oven in the summer, reaching 160°F (71°C), so cooling off this roof is like turning off an open oven."

□ A green roof (Diagram 3) on the other hand, having a high albedo, reflects more of the sun's radiation away from the building. It also provides shade and heat insulation which keeps the building under it cooler. The vegetative layer holds rainwater, rather than simply warming it and moving it away. The evaporation of water from the substrate and transpiration of moisture from the plants serves to cool the roof and prevent it from becoming another source of urban heat.

□ In our own tests, we measured the temperature differences between a space protected by a living roof and one covered by a conventional bitumen roof with 3 cm of XPS insulation with an external temperature of 74 °C. Below the traditional roof, the temperature reached 32 °C. The growing medium of the DIADEM® roof did not have any vegetation or water, but the temperature in the chamber below was 6° lower.

□ It is clear that replacing conventional rooftops with roofs that are cooler can play an important role in offsetting the negative effect of the urban heat island. Metropolitan authorities in many countries are introducing policy measures such as 'green rebates' to encourage the adoption of cool roofs in new construction projects as well as existing structures. But of course there are other benefits, in enriching the ecosystems of the city, providing extra green space that people can use and adding to the aesthetic value of the urban landscape.

There's only one thing we wouldn't recommend on a green roof: a bicycle. ■

…Green Up the Roof!

Diagram 1

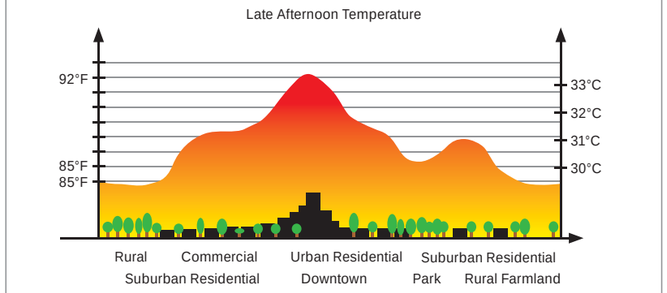


Diagram 2

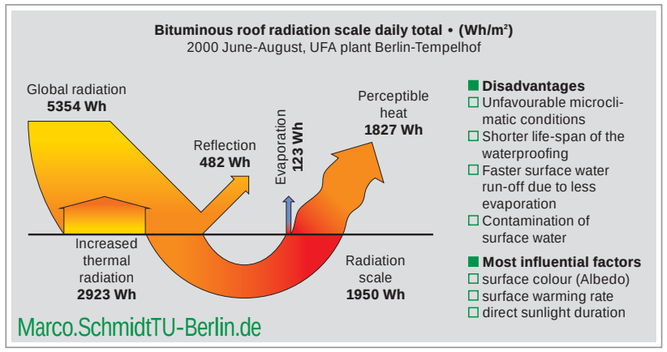


Diagram 3