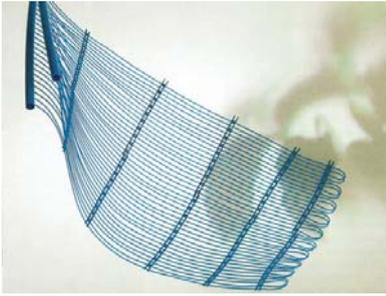


The Kapillarrohr System

"We give your building thermal life.



Katube mat 1989

A network of katubes through which water flows is embedded into ceilings, floors and walls. This makes the building components become thermally efficient heat exchangers and storage. “

This was the basic idea while developing the cooling ceiling with katubes (German: Kapillarrohre) back in the 1980s. Like the veins in our body, mats of katubes accumulate the excess heat in a building and then carry it to the outside, regulating the entire process through a microprocessor that functions like the brain. This is much more cost-effective than air-conditioning systems because water needs only a thousandth of the transport volume compared to air for moving the same volume of heat.

The katube mat

The heart of the system lies in the katube mat that contains thin katubes through which water constantly flows. Owing to their small diameter, the KaRo mats can be embedded close to the surface of walls, floors and ceilings, transforming these buildings components into easily adjustable cooling and heating surfaces and only require low temperature changes to have a large impact.

Special Features

The small diameter of the katubes gives the katube mat essential thermodynamic advantages over systems that utilize thick tubes.

Dear Visitors!



Donald Herbst
Inventor of the capillary tube system

In the past, if someone were to complain about the draft caused by an air-conditioner, there was no way of detecting the draft through measuring instruments. Up until the mid-1980s, we first measured the air speeds in a room. If it was below 25 cm per second, everything seemed fine to us. There was definitely no draft. Discomfort was attributed to other factors: poor sleep, the wicked mother-in-law, the neighbour or something else: everything but the air-conditioner.

Now we know better.

New, much faster measuring devices tell us that what we had measured was merely the average speed of room air. In reality, great fluctuations, today known as “inner turbulences”, can overlay the detected speed. These turbulences can cause drafts at relatively low average speeds, breaking through the second skin of human beings, a one-millimetre warm-air layer and alarming our cold receptors.

The Kapillarrohr System

Air-conditioning with air



KaRo-Cooling Ceiling with katubes
1991 in a bank in Geneva

Air-conditioners that cool a room with cooled air through ceiling grids often cause a draft because the ventilators and air grids that are supposed to create the right mixture of cooled air together with the supply-air actually create a high level of inner-turbulence.

An Energy Saving House

Within the framework of a federal competition to design an energy-saving house supervised under IBA I developed the capillary tube mats in 1984. In the process, I learned that it is practical and possible to integrate capillary tubes into ceilings and walls in order to regulate heating and cooling through mild water temperatures.

Silent Cooling

After gaining first-hand practical experience with the energy-saving house, the KaRo mats were extensively tested at the Technical University of Berlin in an experiment measuring the comfort threshold. The katube mats achieved excellent results, at the time surprising many people. Today the durability of katube mats is designed to last for a building's lifetime.

The Advantages Are Large

Capillary tube mats, in comparison to central air-conditioning systems that cool only with air, require less room, reduce energy costs, and offer an incomparably high level of comfort.

Natural Cooling

With this new type of natural cooling, Europe has broken its ties to its master, the United States, enriching the cooling of buildings by opting for radiant cooling instead of air-based cooling only. The new cooling system is like a good English butler:

You can't see it,
You can't hear it,
But it's always there,
when you need it,
-and it's very economical.



Katube mat 2006

Berlin, 06.07.06

A handwritten signature in blue ink, which appears to be "D. Herbst", is written over a blue rectangular stamp.

Donald Herbst