

BIOPHILIA, NATURE BASED SOLUTIONS

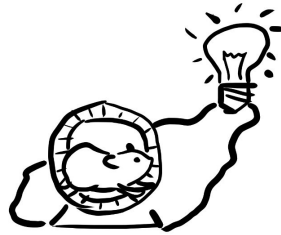
CONCEPT OVERVIEW

BIOPHILIA, NATURE BASED SOLUTIONS



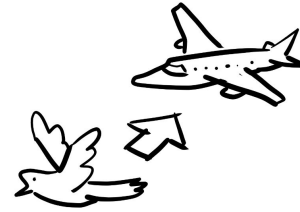
BIOPHILIA

Characteristic of human beings. The urge to affiliate with other forms of life. Biophilic design is design that responds to this natural human need. This problematic is especially important for urban areas where contact with nature is disturbed.



NATURE BASED SOLUTIONS

Design utilizing characteristics of different forms of life for human benefit. Due to years of evolution, nature has developed solutions that on many fields far surpass our current level of technology.

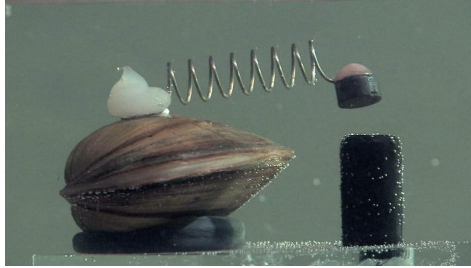


BIONICS

Application of systems and solutions found in nature to engineering and technology. Imitating mechanisms found and established by evolution.

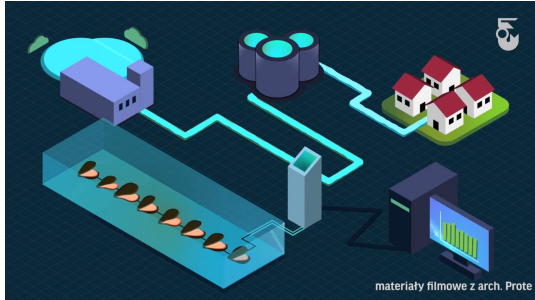
CASE STUDIES

Biomonitoring of water purity in Warsaw (Poland) utilizing clams



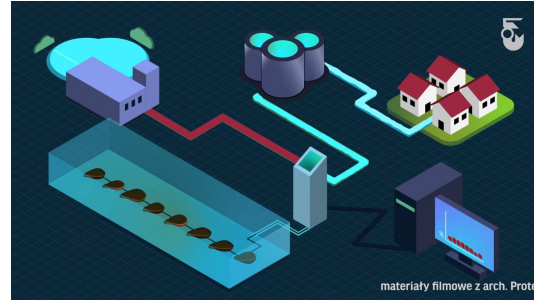
<https://youtu.be/K2JF80dexfQ>

Clams of the pointed scallop species are very sensitive to water pollution. In Warsaw's waterworks, they are used as water quality sensors. Attached to the clam shells are sensors connected to a digital water quality testing system. When the water quality drops, the clam closes its shell, which triggers an alarm system.



materiały filmowe z arch. Prote

When water quality is good, the clams remain open



materiały filmowe z arch. Prote

When water quality is bad, the clams close and trigger alarm system

<https://youtu.be/K2JF80dexfQ>

Gruba Kaśka - Warsaw water intake and urban well building in the Vistula riverbed



https://pl.wikipedia.org/wiki/Gruba_Ka%C5%9Bka#/media/Plik:Gruba_Ka%C5%9Bka_Warszawa_03.JPG

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CASE STUDIES

Velcro

Burdock

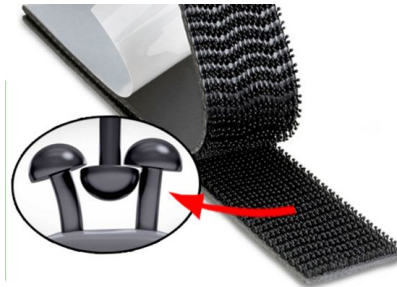


https://static.fainyogrod.pl/media/uploads/media_image/auto/plant-gallery/461/desktop/lopian-wiekszy-1.jpg

The velcro was invented by George de Mestral in 1941.

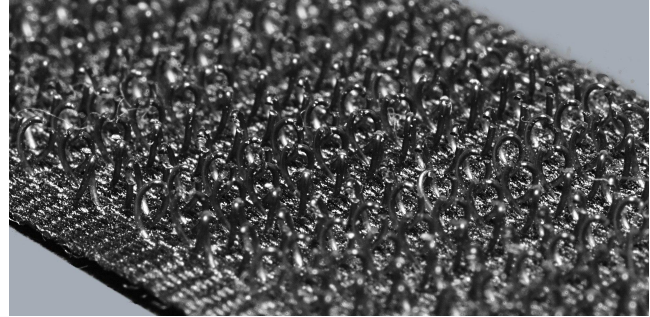
It was inspired by burdock fruiting bodies, which spread the fruit by attaching themselves to clothing, animal hair

Velcro - mushroom hook



https://dzieciakwzskole.pl/pol/plm_Rzep-przemyslowy-2-5x20cm-z-klejem-3M-Dual-Lock-12910_8.png

Velcro: hooks



https://upload.wikimedia.org/wikipedia/commons/thumb/9/91/Velcro_Hooks.jpg/1920px-Velcro_Hooks.jpg

Velcro: loops



https://upload.wikimedia.org/wikipedia/commons/thumb/7/7f/Velcro_Loops.jpg/1280px-Velcro_Loops.jpg

CASE STUDIES

Building with cooling system inspired by termitier



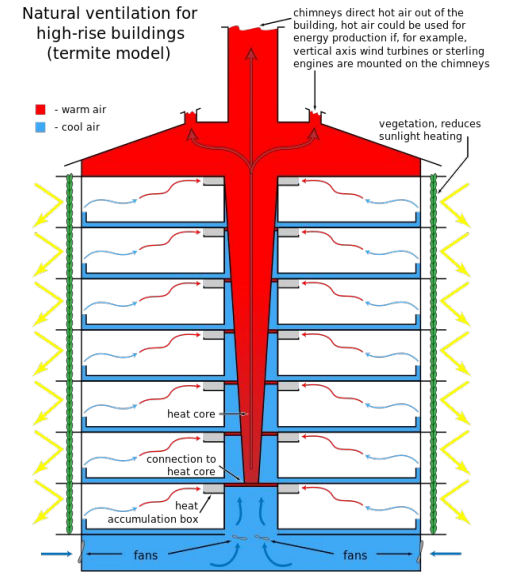
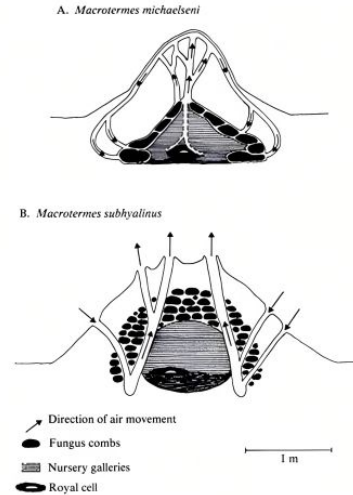
Passive cooling system inspired by termitier
Eastgate Centre, Harare, Zimbabwe, Mick Pearce, 1996

Passive cooling works by storing heat in the day and venting it at night as temperatures drop.

- **Start of day:** the building is cool.
- **During day:** machines and people generate heat, and the sun shines. Heat is absorbed by the fabric of the building, which has a high heat capacity, so that the temperature inside increases but not greatly.
- **Evening:** temperatures outside drop. The warm internal air is vented through chimneys, assisted by fans but also rising naturally because it is less dense, and drawing in denser cool air at the bottom of the building.
- **Night:** this process continues, cold air flowing through cavities in the floor slabs until the building's fabric has reached the ideal temperature to start the next day.

Passively cooled, Eastgate uses only **10%** of the energy needed by a similar conventionally cooled building. When actively cooled, the Centre consumes **35%** less energy to maintain the same temperature as a conventionally cooled building.

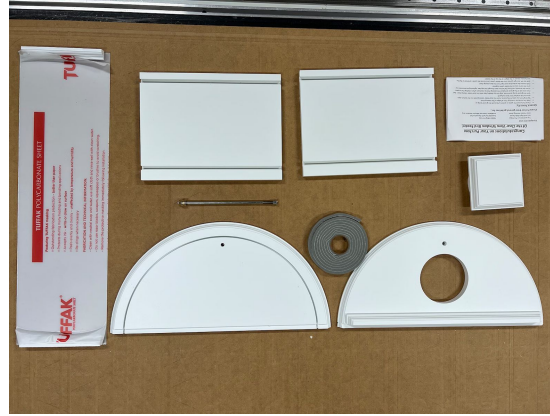
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<https://archestudy.com/biomimicry-architecture-eastgate-center-harare-zimbabwe/>

CASE STUDIES

Clear View Bird Feeder



Window Bird Feeder made from White PVC, Made in the U.S.A., Adjustable for windows from a 27" up to 36"

"Using an in-house window feeder helps bring avian activity near you, encouraging a love of nature for your whole family"

The idea behind Clear View Bird Feeder is quite simple, but in some way revolutionary. By putting the bird feeder inside a house one can have much better view at creatures that are using it.

Device, used with vertically sliding windows common in America, is easy to assemble and disassemble.

It's not a perfect product. Basing on internet reviews its quality is rather questionable and it's not worth its price. But the idea is definitely worth noticing.

<https://www.etsy.com/listing/676731250/clear-view-bird-feeder>