

# TABS IN HYBRIDGEOTABS

Tues 28<sup>th</sup> May 2019 Workshop  
Qian Wang, Uponor

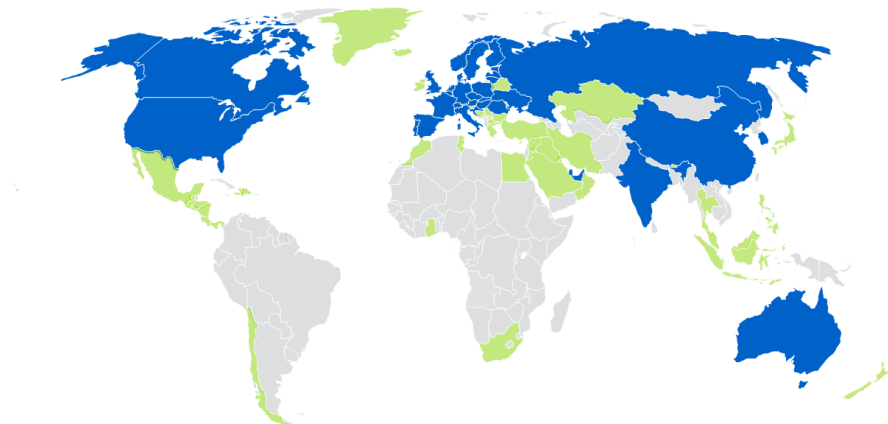


## Uponor at a glance

Leading international provider of plastic based piping systems for buildings and infrastructure

We provide safe drinking water delivery systems, energy-efficient radiant heating and cooling and reliable infrastructure solutions

As of January 2018, Uponor is listed in the Large Cap category on Nasdaq Helsinki



### FACTS & FIGURES

**1.2**

billion euro  
Net sales 2017

**30**

countries with  
Uponor operations

**15**

production  
sites worldwide

**4,000**

worldwide  
staff

**Uponor**

# Uponor at a glance

Controlling the power of the ground by integration

**Uponor**



Radiant heating and cooling



TASB



Ceiling cooling



Geothermal energy stations



Manifold stations



Controls



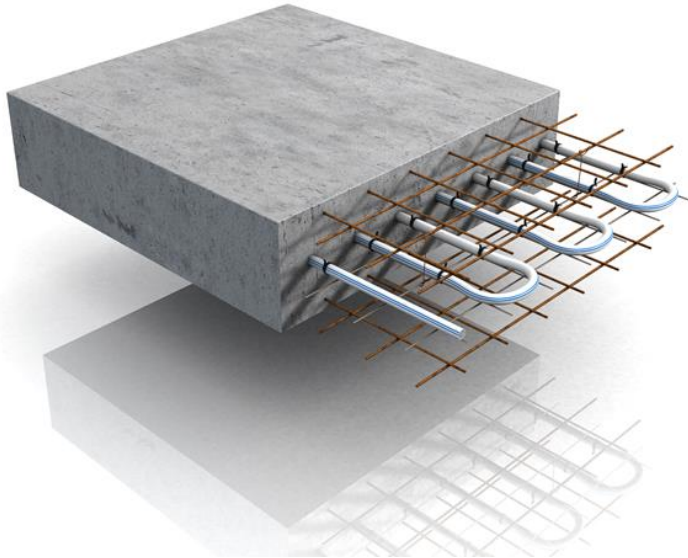
Local heat distribution



Ventilation

# TABS

## HEATING & COOLING SYSTEM BASED ON RADIATION



System with pipes embedded in the main building construction elements (concrete slabs or walls) in multi-storey buildings

Suitable primarily for **sensible cooling** and secondarily for base **heating**

TABS is **not any air-conditioning** and **does not substitute any ventilation system**

# TABS APPLIED BUILDING

- Office & commercial
- Education
- Healthcare
- Showroom
- Museum
- Library



Museum Bregenz Austria



Mercedes Show-  
room, Berlin  
Germany



American  
University,  
Beirut Lebanon



Hospital in Fürth  
Germany



Dockland office,  
Hamburg Germany



Semmelweis Medical  
University, Budapest  
Hungary

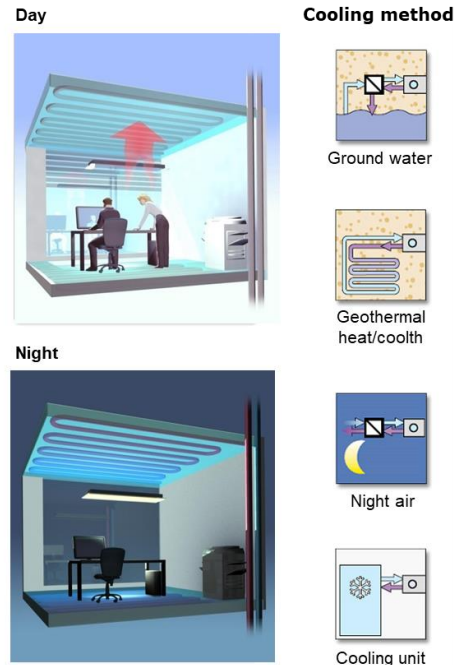
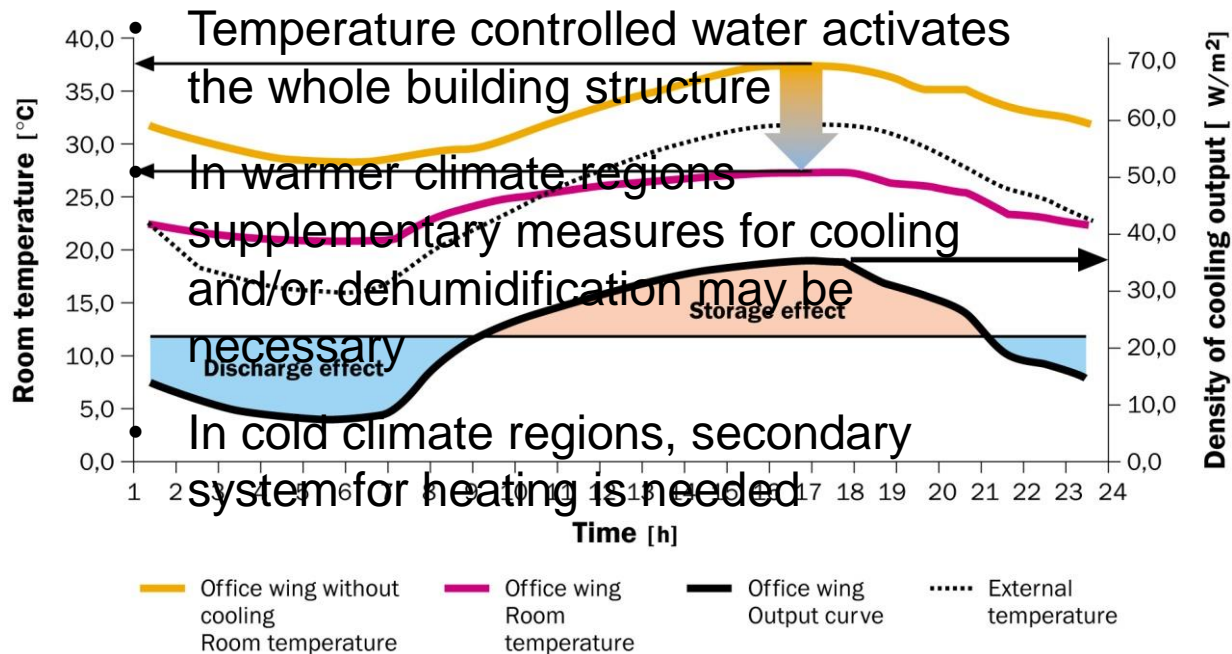


National Library,  
Prague Czech Republic



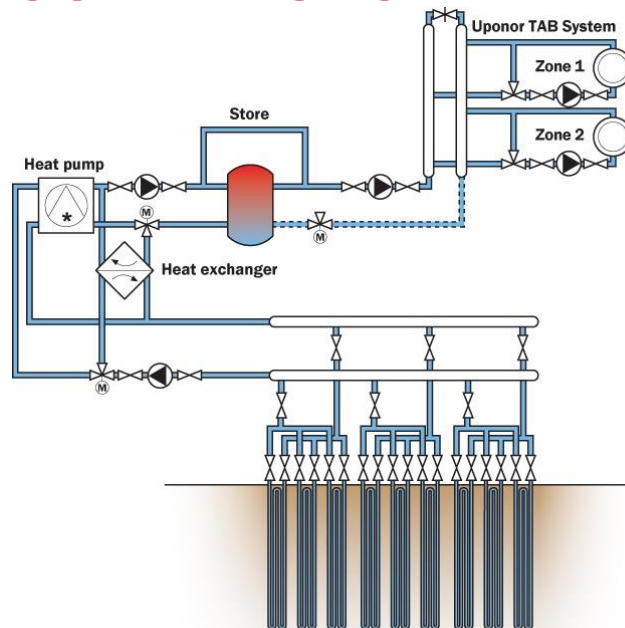
# WORKING PRINCIPLE OF TABS

Comparison of building with concrete core activation and building without space cooling – after a 14-day period of fine weather



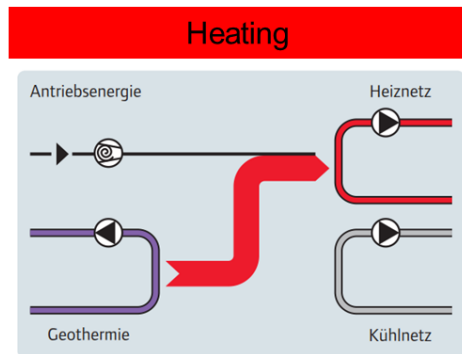
# INTEGRATION WITH ENERGY SUPPLY SYSTEM

- Water temperature near ambient temperature (between 16...28 °C)
- High energy efficiency of the heat-/cold-generator, such as COP of HP due to low-temperature heating and high-temperature cooling
- Suitable for renewable energies (geothermal, solar, etc)

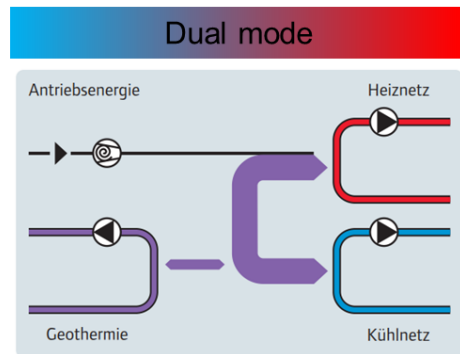
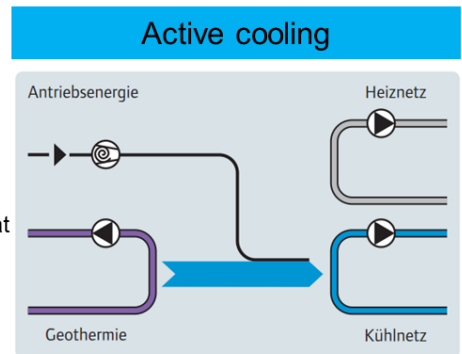


# INTEGRATION WITH HEAT PUMP SYSTEMS

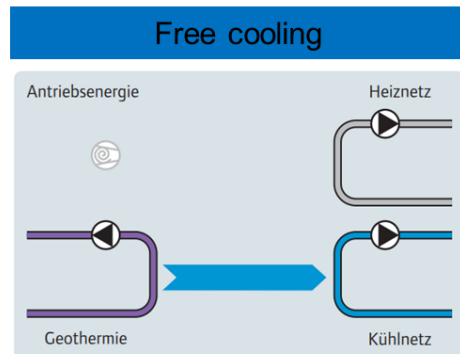
- Classic heating mode
- Heat pump extracts heat from the ground and releases the heat at a higher temperature level



- Classic cooling mode
- Heat pump extracts heat from the cooling circuit and releases the heat in the ground



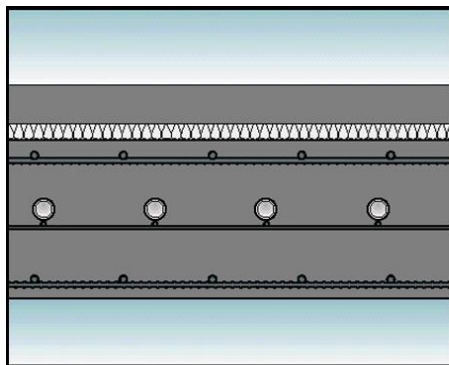
- Dual mode when heating and cooling loads are existing year-round
- Protection of geothermal energy source
- Prevention of standstill time
- COP-value up to 11 possible



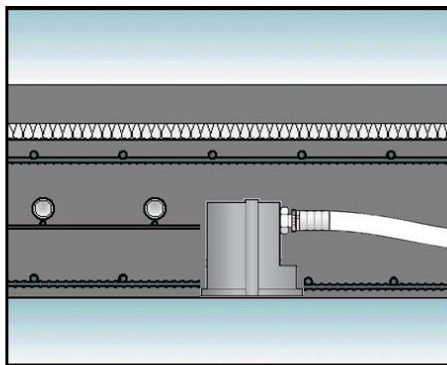
- At sufficient temperature level of the ground the heat pump operates in free cooling mode
- Only pumps are working
- COP-value between 20...30 possible



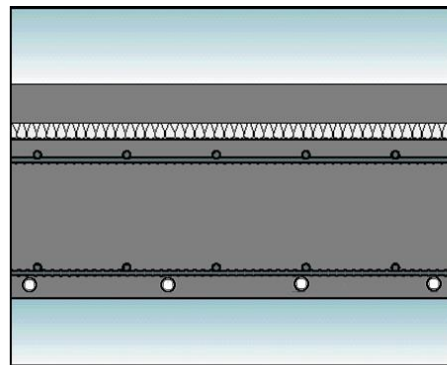
# BASIC TABS TYPES FOR OPTIMAL DESIGN



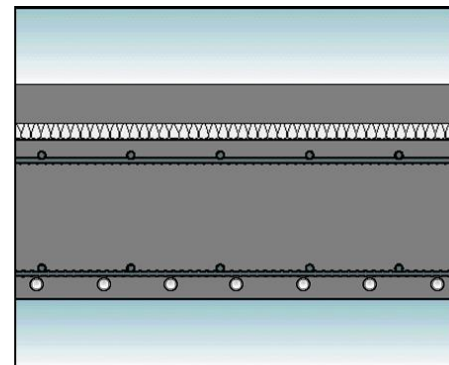
Standard



Thermal Socket



Surface near – standard



Surface near – high performance

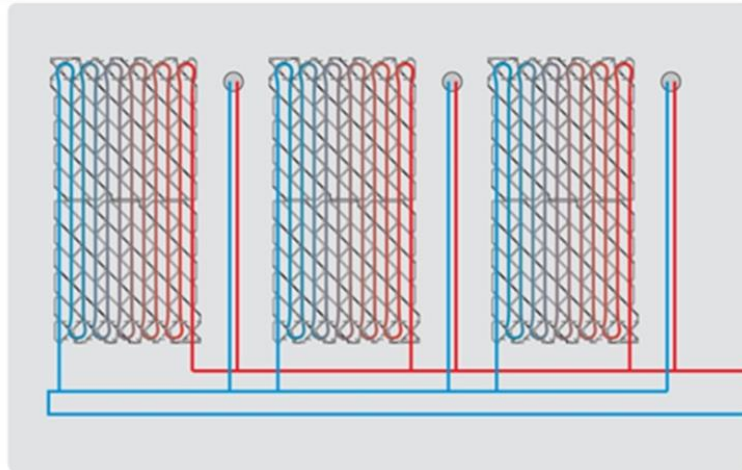


hybrid  
**GEOTABS**

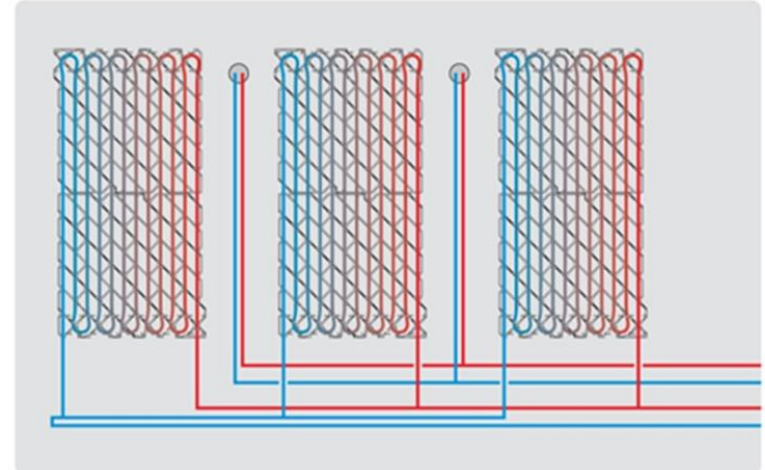
Controlling the power of the ground by integration

# INTEGRATED INSTALLATIONS OF TABS

2-pipe system: thermal socket integrated in the TABS water circuit.  
(only for covering basic thermal loads)



4-pipe system: Thermal socket is connected to a separate own water circuit.  
(optimal solution for independent peak load covering)



Funded by the European Commission under the Horizon 2020 Programme: project number 723649 (proposal name "MPC-GT")

REHVA 13<sup>th</sup> HUAC World Congress  
26 - 29 May, Bucharest, Romania

**VC** Ventilation and  
Air Conditioning  
Associations

**BUILT ENVIRONMENT FACING CLIMATE CHANGE**



hybrid  
**GEOTABS**

Controlling the power of the ground by integration

For more details, please visit the training session **How to Design hybridGEOTABS Buildings' Components**



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