



Engineering progress  
Enhancing lives

# Thermally Activated Building Structures

Low energy heating and cooling  
[www.rehau.uk/tabs](http://www.rehau.uk/tabs)

#expectmore from REHAU



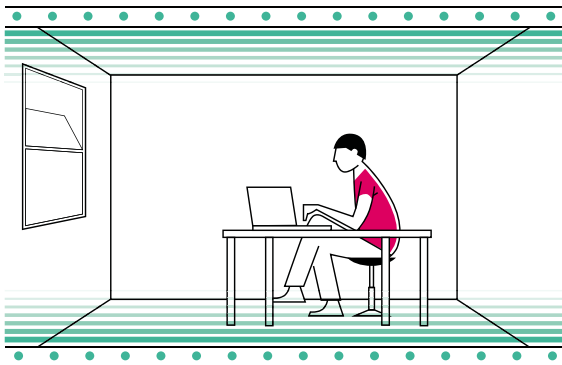
# What is TABS?

## Thermally Activated Building Structures

New commercial buildings are facing the combined challenge of meeting sustainability requirements and avoiding overheating whilst creating a comfortable environment for the occupants.

TABS uses a building's concrete mass to store heat energy, allowing heating and cooling operations to be carried out at low-energy saving temperatures. It does this by circulating hot or cold water through REHAU PE-Xa pipes within the concrete slab of the building.

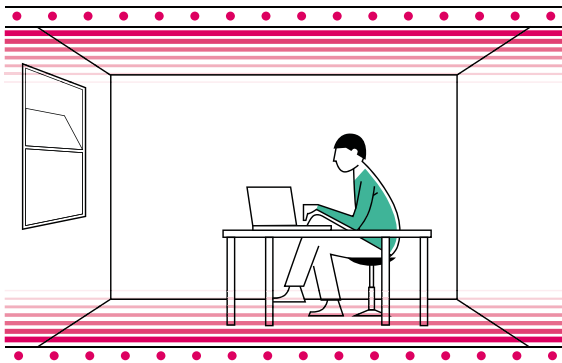
The slab effectively becomes a giant thermal accumulator extracting heat from the space in the day and cooling the building at night.



TABS cooling functionality

Outdoor temperature

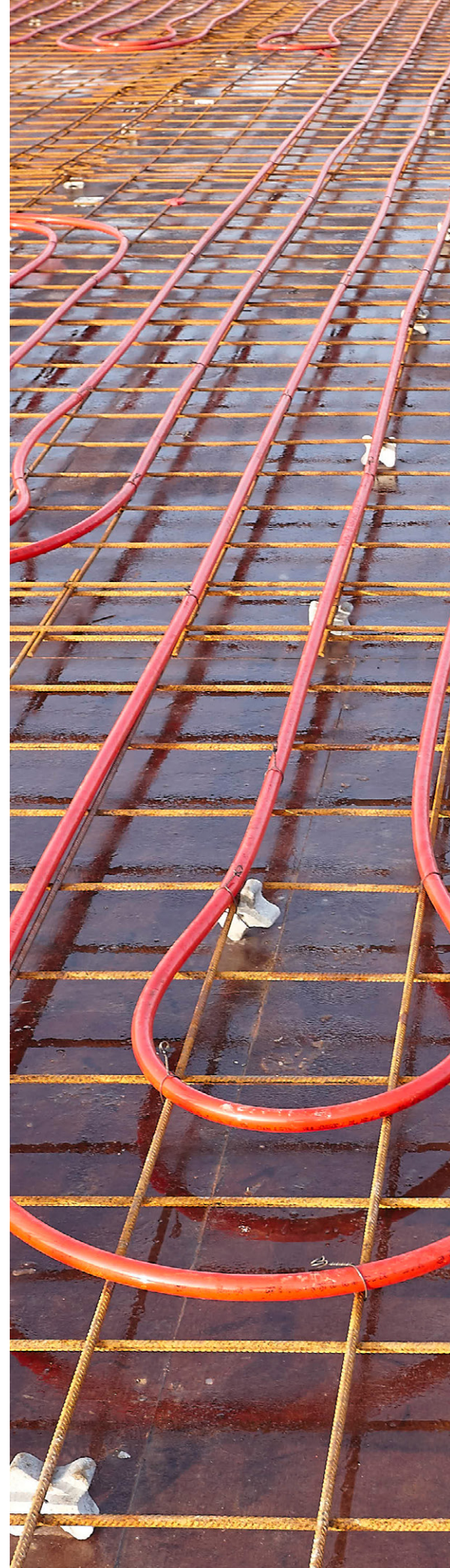
28°C



TABS heating functionality

Outdoor temperature

-2°C





“A key reason for specification of REHAU TABS was the REHAU EVERLOC™ jointing system.”

**Anders Heating Limited**



# What are the benefits?

## A healthy climate

Thermally activated building structures have the following benefits:

- Low investment and operating costs
- "Comfort cooling" without draft effects
- Reduced air exchange in combination with ventilation systems
- No Sick Building Syndrome
- Use of renewable energy sources
- Low flow temperatures mean efficient performance of alternative energy sources
- Increased revenue by reducing required height per floor, allowing for the potential to add an additional floor
- Quick and easy installation



**University of Leicester, School of Medicine –**  
The largest 'non - residential' project in the UK to have Passivhaus standard.

## Energy saving benefits

### Air Conditioning

- Reduced air volumes when combined with TABS so smaller plant and fan size required
- Reduced energy consumption

### Chillers

- TABS uses closer to ambient temperatures (15-18°C) versus typical chiller temperatures of 6-12°C
- This increases the COP of the chiller

## Applications



Office



Transport hubs/  
Stations



Retail



Museums/  
Galleries



Hospitals



Sports centre/  
arena

## Advantages

50%

lower capacity  
operating costs

30%

lower investment costs

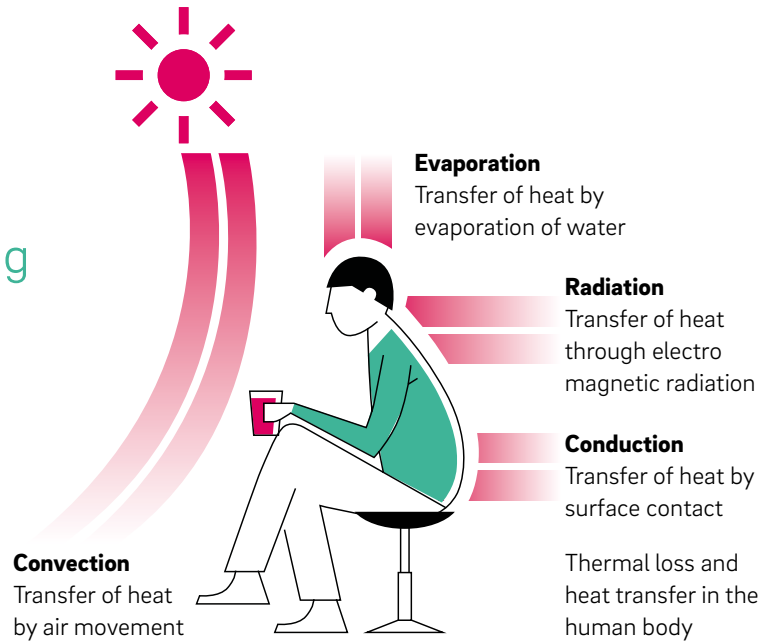
# How does it work?

## Radiant heating & cooling

TABS works by using radiant heating & cooling to achieve more comfortable temperatures.

### The thermal comfort of a person is determined by:

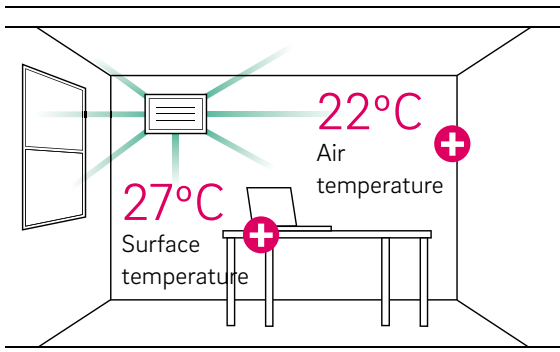
- The person's activity
- The person's clothes
- Air temperature
- Air speed
- Air humidity
- Surface temperature



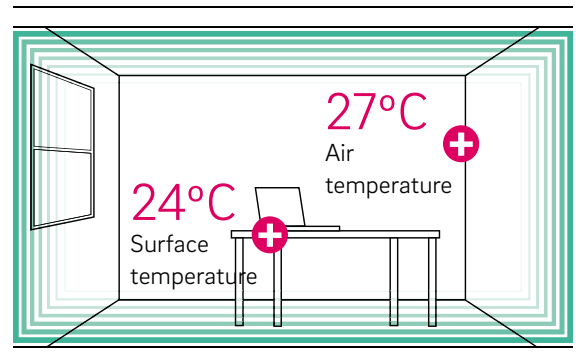
## The difference between air & radiant heating & cooling

### Radiant Heating and cooling benefit:

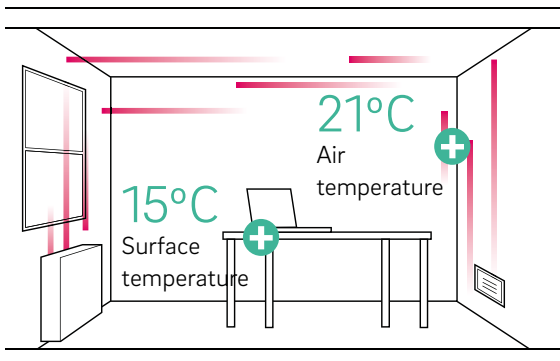
- More energy efficient compared to air based systems
- Higher comfort level for building occupants
- Greater design freedom
- Reduced air movement (better for allergy sufferers)
- Low maintenance



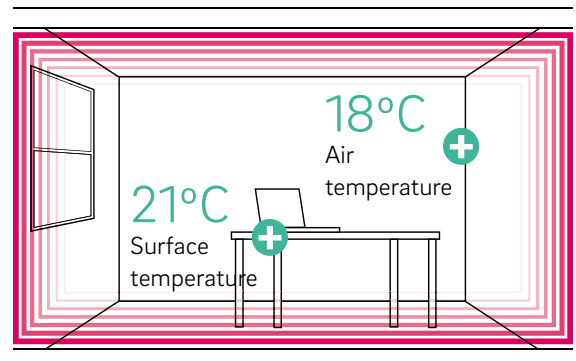
**Air cooling** perceived temperature: 25°C



**Radiant cooling** perceived temperature: 25°C



**Air heating** perceived temperature: 18°C



**Radiant heating** perceived temperature: 20°C



“With the University of Northampton keen to create a low carbon campus, REHAU TABS was the ideal choice”

**Paul, Amroc Heating**

# Our system - pipe and fitting

Over 850 million fittings  
manufactured worldwide

Beyond the REHAU PE-Xa pipe, the jointing system plays a central role. Over 850 million fittings have been installed worldwide with no leaks, REHAU EVERLOC™ consists of only 2 components making it the installers choice.

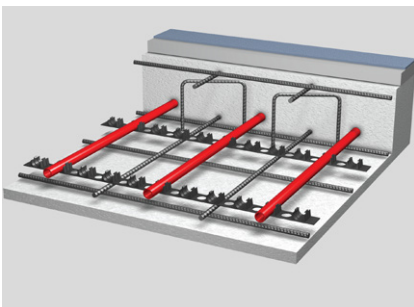
- Compression sleeve
- Fitting

## REHAU EVERLOC™ offers the following benefits:

- Fast and easy to install
- No hot works on site, no mess
- 10 year comprehensive warranty
- No O-ring
- Installation is immediately able to handle pressure loads
- REHAU fittings embedded in the concrete are also covered by our comprehensive warranty

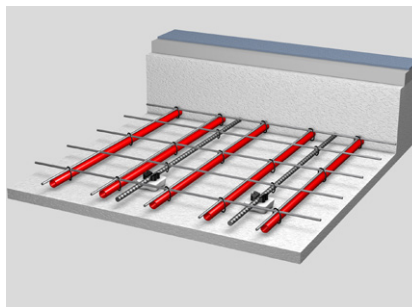


## REHAU offer 3 main installation options for thermally activated building structures:



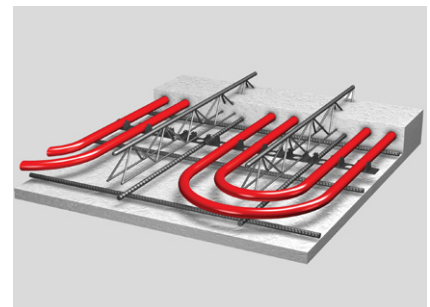
### In-situ concrete slabs

- Large circuits possible
- Minimal connections within structure
- Around 300m<sup>2</sup> installed per day (2 people)
- Can sit anywhere within structural slab



### Precast concrete planks

- Off site construction methods
- Quick to install on site
- Easy connections into building services
- High cooling capacity of up to 90 W/m<sup>2</sup>



### Pre-fabricated mesh

- Fast installation
- Can be used for PT slab applications
- Better outputs when near slab surface
- Ideal for Tichelmann Loops
- Two options available - sTABS or TABS module

\* Post and pre tension (PT) slabs and hollow core slabs are also available





London Zoo. A bit further from Old Street to the lemurs.  
Google Maps  
15.11

# Case studies

## Summary

### White Collar Factory

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Type	Offices
Product	TABS, PE-Xa pipe and fittings
Description	Over 150km of pipe installed across 15 floors

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### School of Medicine, University of Leicester

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Type	Education
Product	TABS, PE-Xa pipe and fittings
Description	Leicester University's new Centre for Medicine is the largest non-residential project in the UK to have been built to the Passivhaus standard

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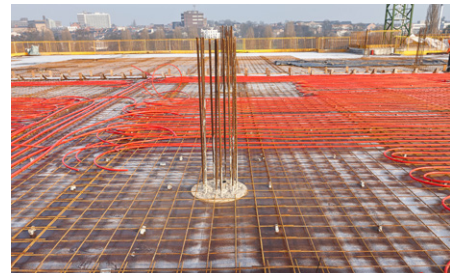


### University of Northampton

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Type	Education
Product	TABS, PE-Xa pipe and fittings
Description	40,000m of pipework installed

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### Tate Modern, London

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Type	Gallery
Product	TABS, PE-Xa pipe and fittings
Description	More than 24,000m of pipework installed with REHAU EVERLOC™ fittings

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Scoring a 'Very Good' rating, the new Tate building is predicted to use 50% less energy than a typical gallery and generate 44% less carbon than current building regulations demand.



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Hill Court, Walford,  
Ross-on-Wye, HR9 5QN

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