LOW ENERGY HEATING & COOLING
Thermally Activated Building Structures
"A key reason for specification of REHAU TABS was the REHAU EVERLOC™ jointing system."

Anders Heating Limited
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.

**WHAT IS TABS?**

Thermally Activated Building Structures
University of Leicester, School of Medicine

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

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 center/ arena |

Advantages

50% lower capacity operating costs
30% lower investment costs
HOW DOES IT WORK?
Radiant heating and 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

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

The difference between air and radiant heating & cooling

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Evaporation: Transfer of heat by evaporation of water

Convection: Transfer of heat by air movement

Radiation: Transfer of heat through electromagnetic radiation

Conduction: Transfer of heat by surface contact

Elevation: Thermal loss and heat transfer in the human body
"With the University keen to create a low carbon campus, REHAU TABS was the ideal choice"

Paul, Amroc Heating
Beyond the REHAU PE-Xa pipe, the jointing system plays a central role.

Over 750 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

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

**In-situ concrete slabs**
- Large circuits possible
- Minimal connections within structure
- Around 300m² 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/m²

**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
Scoring a BREEAM ‘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.
CASE STUDIES

Summary

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

School of Medicine, University of Leicester
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 Passivehaus standard

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

Tate Modern, London
Type: Gallery
Product: TABS, PE-Xa pipe and fittings
Description: More than 24,000m of pipework installed with REHAU EVERLOC™ fittings
The REHAU Docs App contains all relevant document about our systems. Whether you need brochures, technical information, installation instructions or a catalogue – the app provides fast access at any time.

More information and download at: www.rehau.uk