

# Energy efficiency with adaptive controls

## Schlüter®-BEKOTEC-THERM





# Energy savings

## A major concern for all

In residential buildings, heating takes up the bulk of energy consumption at around 70%. That makes it imperative to reduce and optimise our heating energy use. Schlüter-Systems recognised the problem years ago and developed a solution with its energy-efficient surface



heating system BEKOTEC-THERM. The intelligent assembly makes optimum use of energy and resources with a unique functional design. BEKOTEC-THERM is eligible for subsidies by KfW Bank and the German Federal Office of Economics and Export Control (BAFA).

## Advantages of Schlüter®-BEKOTEC-THERM

You will love it



### Simple

The installation of Schlüter-BEKOTEC does not require complex components or expensive construction materials. All you need is simple technology, proven for decades. You can start heating the screed just 7 days after installing the ceramic/natural stone tile covering. Depending on the supply temperature, the heat curing phase only takes 2–3 days (start with a water temperature of 25 °C, then gradually increase the temperature by up to 5 °C a day until the supply temperature has been reached).



### Easy

The BEKOTEC system does not require joints in the screed (except for structural expansion joints etc.). The control joints in the top covering specified by the relevant guidelines can therefore be positioned independent of the screed. That eliminates unsightly joints in the tile pattern and creates results that speak for themselves.



### Safe

Are you planning to install a ceramic tile covering? Great! Schlüter-BEKOTEC keeps ceramic coverings permanently crack-free – starting from tile formats of 5 x 5 cm, without any size limitation. That means you can safely install and maintain stylish large formats free of damage. Another advantage: BEKOTEC is virtually buckle-free, which relegates torn skirting joints to the past.



### Sustainable

Due to its low assembly height, the BEKOTEC-THERM system can be operated with low supply temperatures. That makes it an excellent fit for combined use with sustainable, modern heat pumps. As an added benefit, the lower screed volume also decreases the consumption of resources such as sand and cement, which significantly lowers the ecological footprint.



### Quick

If using conventional cementitious screed and ceramic tile coverings, there is no need to measure or reach specific residual moisture levels. Your tile installation can start as soon as the screed is ready to bear weight. Without complex and expensive special construction materials, your customer will be able to move in 28 days earlier, which saves time and money.



### System warranty

Schlüter-Systems Ltd offers an expanded, project-specific warranty for users of the BEKOTEC floor covering assembly. It includes sufficient weight bearing ability and cracks forming in coverings made of ceramic tiles, natural stone or agglomerated stone. To qualify for the warranty, BEKOTEC systems must be installed in accordance with the relevant product data sheets and the specifications of Schlüter-Systems Ltd. Do you have any questions? Our sales team will be pleased to assist you!

E-Mail: [sales@schluter.co.uk](mailto:sales@schluter.co.uk) or Tel.: 01530 813396



# Schlüter®-BEKOTEC-THERM

The right system solution for every need

## SYSTEM P/PF

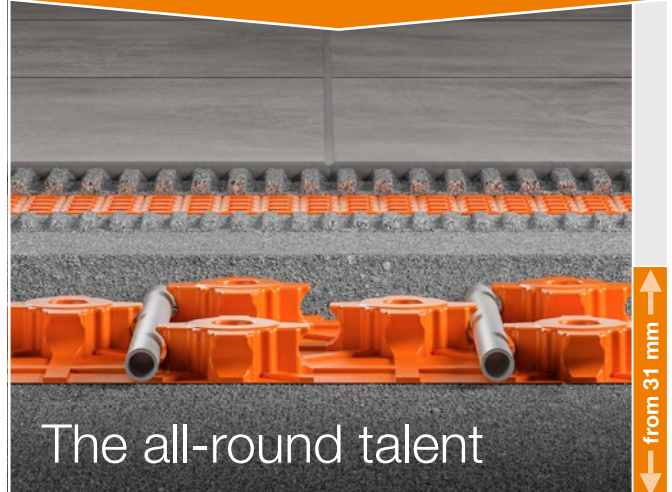


The insulated type

### Schlüter®-BEKOTEC-EN P/PF

- ✓ Assembly heights: 52–69 mm (plus DITRA uncoupling mat)
- ✓ With integrated heat insulation
- ✓ Weight per unit area from 57 kg/m<sup>2</sup>
- ✓ 75 mm installation grid
- ✓ Heat output up to 100 W/m<sup>2</sup>

## SYSTEM F



The all-round talent

### Schlüter®-BEKOTEC-EN F

- ✓ Assembly heights: 31–48 mm (plus DITRA uncoupling mat)
- ✓ Without insulation, but can be combined with insulation
- ✓ Weight per unit area from 57 kg/m<sup>2</sup>
- ✓ 75 mm installation grid
- ✓ Heat output up to 100 W/m<sup>2</sup>

## SYSTEM FTS

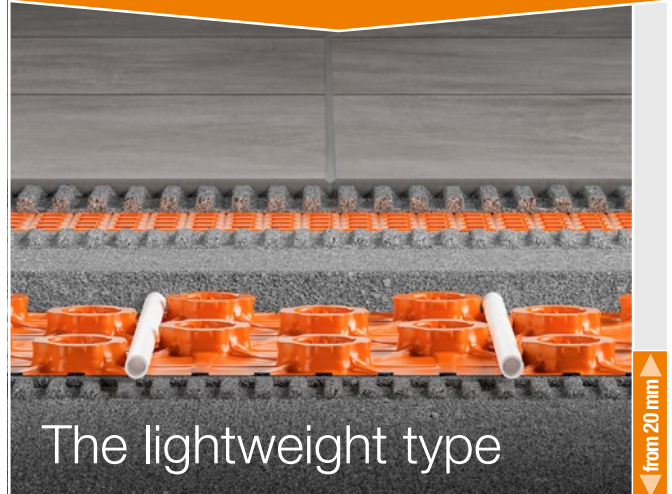


The quiet type

### Schlüter®-BEKOTEC-EN FTS

- ✓ Assembly heights: 31–43 mm (plus DITRA uncoupling mat)
- ✓ Integrated impact sound insulation
- ✓ Weight per unit area from 52 kg/m<sup>2</sup>
- ✓ 50 mm installation grid
- ✓ Heat output up to 100 W/m<sup>2</sup>

## SYSTEM FK



The lightweight type

### Schlüter®-BEKOTEC-EN FK

- ✓ Assembly heights: 20–27 mm (plus DITRA uncoupling mat)
- ✓ Adhered to substrate
- ✓ Weight per unit area from 40 kg/m<sup>2</sup>
- ✓ 50 mm installation grid
- ✓ Heat output up to 100 W/m<sup>2</sup>

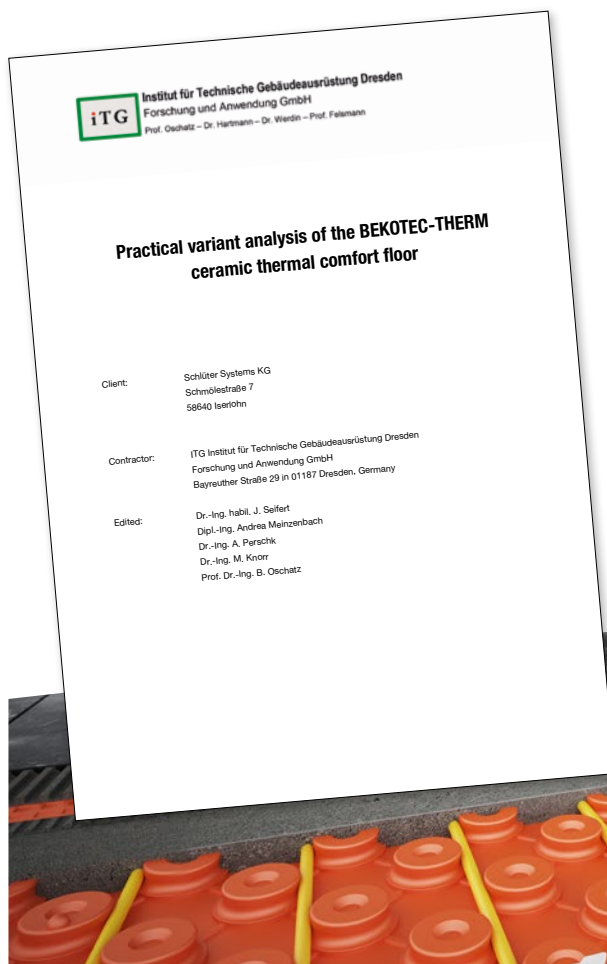
# Saving energy with Schlüter®-BEKOTEC-THERM

Thermal properties – scientific study

Schlüter-BEKOTEC-THERM offers considerable savings potential. The renowned Dresden Institute for Building Systems Engineering Research (ITG) compared the thin layer floor heating system BEKOTEC-THERM with a conventional radiant floor heating as a wet system in the scope of a research project. The assembly of the two systems was performed in accordance with the customary instructions and standards of the manufacturers. The results revealed remarkable energy differences between the conventional floor heating system and BEKOTEC-THERM.

**The use of a heat pump as the source of heat generated energy savings of up to 9.5%.**

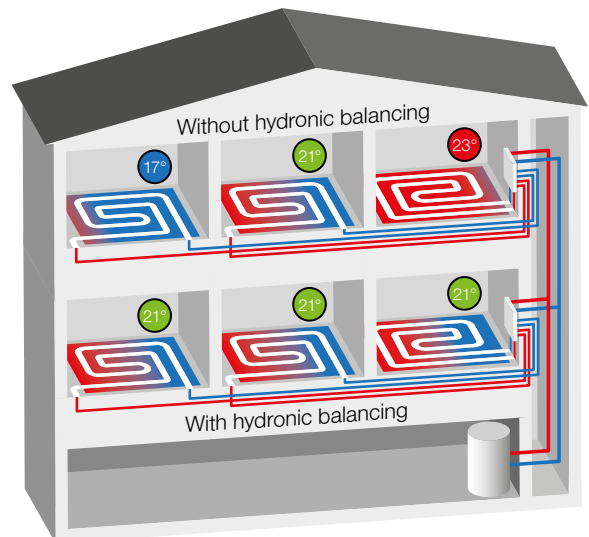
The systems were tested with a simulation program of Dresden Technical University, which specifies the same framework conditions for both assemblies. The base situation was a single family home with a living space of 160 m<sup>2</sup>, parallel buffer storage and an air source heat pump as the source of heat. The study incorporated 3 different thermal insulation levels for the homes, namely the Thermal Insulation Ordinance (WSVO) in the versions of 1982 and 1995 as well as the Energy Savings Ordinance (EnEV) of 2004. The heating system was operated continuously or intermittently (time controlled). Additionally, the operation was simulated over the course of the day.



# Adaptive hydronic balancing

## Schlüter®-BEKOTEC-THERM-EAHB

The efficiency of a heating or cooling system depends largely on its hydronic balancing. Since balancing provides every heating circuit with exactly the right supply volume, it makes the heating system especially responsive and energy efficient. Water in a heating system always uses the path of least resistance, which means it will flow more easily through short heating circuits than long ones. If this causes overly warm water to flow back to the boiler, the heat generated in the boiler can no longer be absorbed by the water and the boiler shuts off. As a result, a heating system without hydronic balancing “cycles” too much and becomes inefficient.



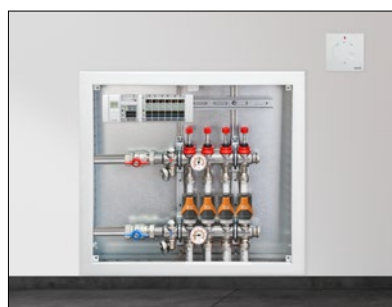
**There are various options for hydronic balancing. An intelligent adaptive adjustment has many advantages over the conventional static mode:**

- ✓ Continuous adjustment to fluctuating operating conditions
- ✓ Optimised cold leg temperatures
- ✓ No set point calculation for individual heating circuits
- ✓ Self-learning ability
- ✓ Simple to install
- ✓ Energy savings: 20 % energy savings compared to non-adjusted systems (see also Optimus study, Wolfenbüttel Polytechnic)
- ✓ Increased comfort: No uneven room temperatures

## Schlüter®-BEKOTEC-THERM-EAHB

Schlüter-BEKOTEC-THERM-EAHB is an actuator for adaptive hydronic balancing with a connector for Schlüter heating circuit distributors with an M 30 x 1.5 connection thread. An integrated artificial intelligence component optimises the spread between the measured temperatures and continuously adjusts it to variable situations based on stroke motion. The two temperature sensors are clipped onto the hot leg and cold leg pipe of the respective heating or cooling circuit. The self-learning function continuously optimises the drive response. The power is supplied by

the 230 V connector of the Schlüter terminal strip. The connector cable is 1 m long. Existing actuators (230 V, M 30 x 1.5) are generally replaceable.



# Learn more online

Would you like to know more about Schlüter-Systems?  
The quickest way is to visit our website.

[bekotec-therm.co.uk](http://bekotec-therm.co.uk)



You can also follow us on Instagram, Facebook and YouTube.



P R O F I L E   O F   I N N O V A T I O N

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