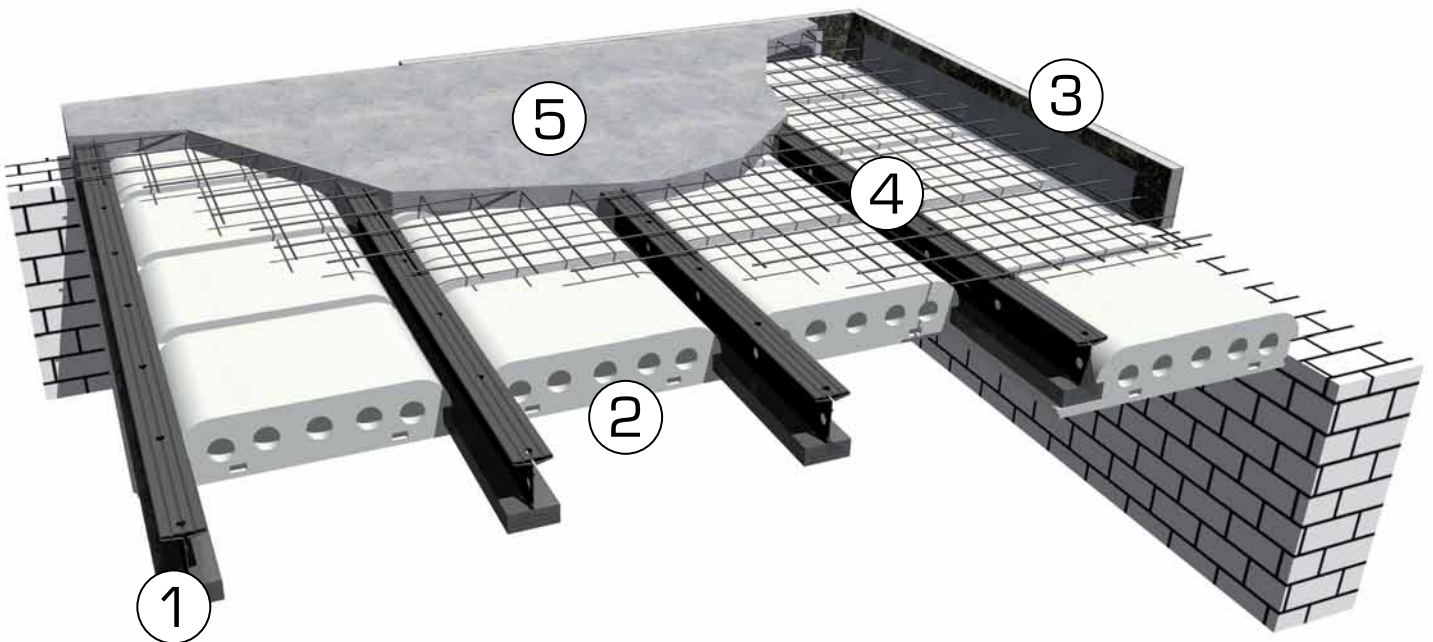


# THE ENERGY-SAVING CEILING

cost efficient  
DIY installation  
energy efficient



» *The energy-saving & innovative building system!*



## THE ENERGY-SAVING CEILING

» *in 5 steps*

- » **Step 1** Lay the ceiling supports (can be laid without a crane)
- » **Step 2** Install the ceiling filling material
- » **Step 3** Install the edge framework
- » **Step 4** Lay the reinforcement mesh
- » **Step 5** Pour the concrete ceiling



## EASY INSTALLATION

You can easily lay a complete 1-story ceiling in one day without special previous knowledge or experience.



## FLEXIBLE CEILING SYSTEM

In addition to the polystyrene filling material, we can also offer our ceiling system with alternative **filling material comprised of pumice**. Pumice is a naturally occurring construction material in our region, which likewise has beneficial heat and sound insulating properties in addition to the ecological aspects.



## MAXIMUM PERSONAL CONTRIBUTION

The HOWI ceiling system is distinguished by its simple and efficient installation. It enables even the do-it-yourselfer to actively contribute to the construction of his dream home and thus, to save money.



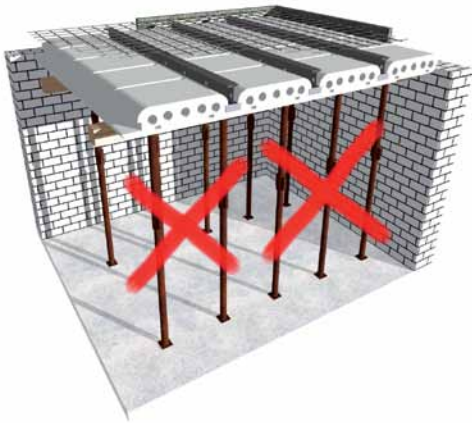
## CONSIDERATION HAS BEEN GIVEN TO EVERY DETAIL

In addition to our ceiling system, we optionally offer a wide variety of accessories as well, including our sound insulation system, special anchors as well as reinforcing bars and reinforcement steel mesh.

- » *Huge savings potential by doing it yourself*
- » *Installation possible without previous knowledge*
- » *No forms, no supports*
- » *No construction delays, quick install time*
- » *Ideal even for renovating old structures*
- » *Meets the Energy Saving Ordinance (EnEV Germany)*
- » *Ceiling statics and installation layout included*
- » *Made completely in Germany*



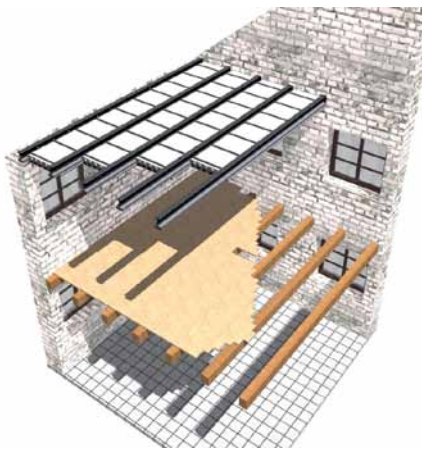
logical  
consistent  
well-designed



## FORMS AND SUPPORTS

» *are not necessary!*

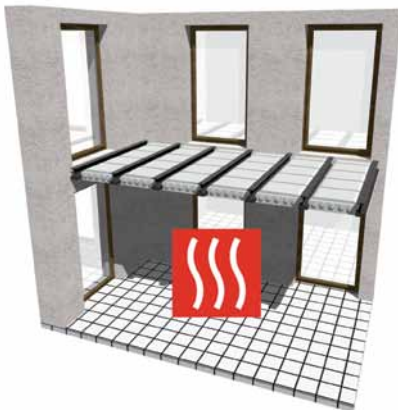
- » Spans up to approx. 6.00 meters are possible **without support**
- » Expensive and time-consuming supports are not necessary
- » Forms for the ceiling areas are not necessary at all
- » No stress on the ceilings below
- » No obstructions in the rooms below the ceiling
- » Installation time is shortened
- » Construction costs are reduced



## RENOVATION OF OLD BUILDINGS

» *innovative & efficient*

- » Versatile applicability
- » Flexible system comprised of individual supports and individual filling material
- » Minimal weight: Filling material approx. 1 kg/unit; ceiling supports approx. 18 kg/m
- » Replacement and strengthening of existing ceilings – even F90 is possible
- » Free of supports: no impact on the ceilings below
- » Minimal floor structures are possible



## THERMAL ENERGY

» *used specifically*

Due to the polystyrene filling material integrated in the ceiling, heat loss through the ceiling is nearly precluded. You do not need to heat the floors above - an additional benefit that cannot be underestimated as well and particularly when renting apartments. Furthermore, thermal insulation does not have to be installed under floor heating with our system. The heat remains exactly where it is produced.



## ENERGY SAVING

» *integrated*

With filling material from HOWI, you are directly incorporating thermal insulation. In conjunction with standard floor construction, our ceiling system meets EnEV (Energy Saving Ordinance, Germany) requirements for ceilings adjacent to unheated rooms and near ground contact as well as for ceilings exposed to outside air from below. Furthermore, the U-value of the ceiling can be additionally increased with our optionally available HOWI filling material made of Neopor.





## TRANSITION TO STAIRS

» *trouble-free*

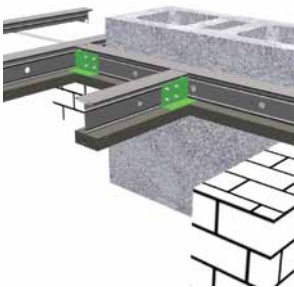
With our ceiling system, individual staircase openings can be implemented in any spot of a ceiling section without additional staircase supports or the time-consuming construction of forms.



## CANTILEVERED BALCONY

» *no thermal bridging*

You can easily install a cantilevered balcony without the costly and time-consuming construction of supports. Upon request, we will provide the structural elements necessary for preventing thermal bridging integrated directly into the system. As a result, the balcony will be thermally separated from the ceiling and thermal bridging is therefore reduced to a minimum.



## ALTERNATION

» *customized*

Pursuant to detailed planning, we will optionally furnish the ceiling joists with alternating brackets at the factory. Alternating brackets enable recesses and ceiling openings to be made for installation shafts, chimneys, etc.



## INSTALLATIONS

» *simple & flexible*

Our HOWI filling material is furnished with hollow spaces, which you can use as continuous installation ducts. Taking the respective manufacturer specifications into account, lights, vent openings, etc. can be integrated flush with the ceiling by simply making cutout in the filling material. The position of the fixtures can still be determined even after the ceiling has been completed. Analogously, recesses for heating, plumbing, ventilation, and electrical installations can be integrated individually. Thus, you always have flexibility.



## DROP-DOWN CEILING MADE EASY

» *even available in F90!*

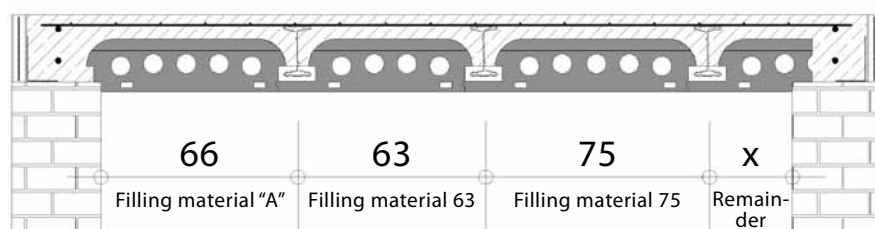
Marked fastening points for a drop-down ceiling are integrated in the HOWI ceiling system. Alternatively, plaster can also be applied directly to the flat ceiling to save money and time. Optionally, our polystyrene ceiling system can be delivered with a drop-down ceiling in the fire resistance class F90. A subsequent upgrade is likewise possible without trouble.

## POLYSTYRENE CEILING

Substrate	Sectional steel
Ceiling thickness	$t = 17.5 + 8 \text{ cm}$
Filling material	Comprised of polystyrene / Neopor (WLG 035, WLG 032)
Lightweight joists	Approx. 0.18 KN/m (approx. 18 kg/m)
Ceiling filling material	Approx. 0.01 KN/m (approx. 1 kg/m)
Net weight of ceiling	Starting at 2.60 KN/m <sup>2</sup> (approx. 260 kg/m <sup>2</sup> ); special solutions starting at approx. 2.00 KN/m <sup>2</sup>
Joist spacing	63 cm or 75 cm; according to static calculation
On-site mixed concrete to be delivered	Starting at C16/20, consistency C3, max. aggregate size $\leq 0/16 \text{ mm}$
Necessary quantity of on-site mixed concrete	Approx. 0.10 m <sup>3</sup> of concrete/ m <sup>2</sup> of ceiling area *
Transverse reinforcement	At least R131; approx. 0.14 unit/m <sup>2</sup> of ceiling area
Traffic load	According to static calculation
Heat transfer resistance $R_T$	From 2.43 m <sup>2</sup> K/W to 2.90 m <sup>2</sup> K/W
Air and impact sound insulation	According to DIN 4109
Fire protection	According to DIN 4102 (available in F30, F60 and F90)
Transport weight/volume	Approx. 35 kg/m <sup>2</sup> of ceiling area, approx. 0.20 m <sup>3</sup> /m <sup>2</sup> of ceiling area

\* only HOWI ceiling area

## SYSTEM PROFILE



Changes and additional developments reserved.

## HOWI.

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