Welcome

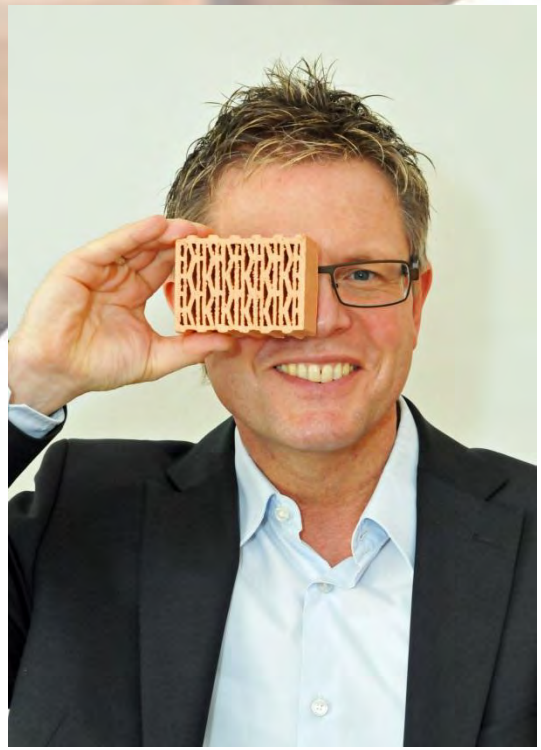
to

JUWÖ

POROTON®

mein ziegelhaus®

made in Germany



Stefan Jungk

Managing director
(also vice president of the german brick industry)

JUWÖ Poroton-Werke
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PC-Fax 0049 6703-9107114
Fax 0049 6703-910139
jungk@juwoe.de
www.mybrickhouse.eu

You will get information about:

- Who we are
- What‘s the product
- What‘s the advantage of the product
  - Handling, heat insulation, calculation (costs)

all information to download:

www.juwoe.de

Who is JUWÖ Poroton?

The JUWÖ Poroton-Company

The JUWÖ Poroton-Company

- Tradition and progress
  - Foundation 1862 ➡ 150 years
  - Owned and managed by the 5th generation of the Jungk family
  - Founder member of the German POROTON
    - **E.K. Jungk chairman for 36 years**
  - Plants
    - Plant III and Plant IIa: the most modern plants in the world

Full certificated

- European CE Certificate with highest range 2+
- Manufactured to EN 771-:2011
- Certificate by the belgian BENORM
- Certificate by French CSTB
- **Approved for the UK by the ZURICH building insurance**

European CE certificate with highest range

External quality control
Güteschutz Ziegelindustrie Süd

JUWÖ is certified according to Eco-Label III by the Institut Bauen und Umwelt e.V.

Approved for belgium **(BENOR)**

Approved for France **(Avis technique)**

Approved by Zurich Building Assurance

The Institut Fresenius confirms: JUWÖ clay can even be used as healing clay

mein ziegelhaus® ... ein starker Verbund.

150 Jahre JUWÖ POROTON
FAMILIENTRADITION SEIT 1862

JUWÖ in Europe

JUWÖ POROTON
www.juwoe.be

JUWÖ POROTON BLOCK COMPANY LTD.

Scanoton

JUWÖ POROTON
Luxemburg

JUWÖ POROTON
www.briques-juwo.com

Capacity

Capacity: 100 million clay blocks (4000 one family houses)

Products:

- extreme high insulating clay blocks with thermal conductivity up to thermal resistance lambda 0,09 W/mK and even to 0,07
- U-values of the wall up to 0,14 W/m²K without any additional insulation
- For single leaf wall constructions

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... ein starker Verbund.

WÄRMELEITFÄHIGKEIT
POROTON UND THERMOPLAN ZIEGEL

150 Jahre JUWÖ POROTON
FAMILIENTRADITION SEIT 1862

New 2013

ThermoPlan® S7⁵

Ziegelmassivbau in Vollendung.

S7⁵ ThermoPlan

DAS ist eine Wand!

ThermoPlan S75

U-values: only up to 42,5 cm width of wall

42,5 cm 0,16 W/m²K

49 cm 0,14 W/m²K

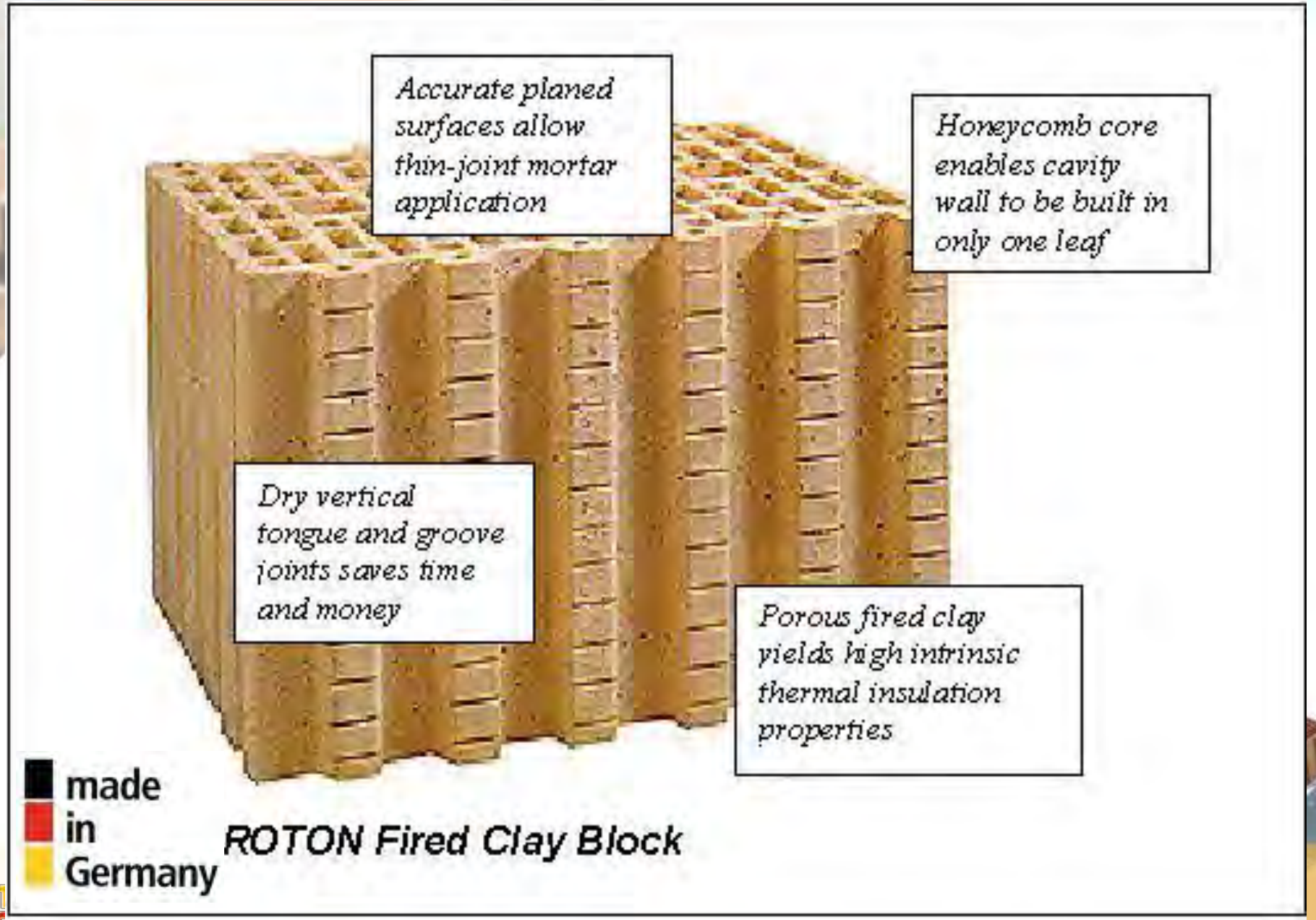
What is Poroton?

The non-face ends of the brick are keyed with a vertical tongue and groove interlock, eliminating the need for mortar between vertical faces.

Additional thermal resistance is achieved by mixing styrofoam or paper into the clay before firing, resulting in micro-pores in the finished block. The inner and outer face of the block is keyed ready to accept plaster.

What is the Plan-Block?

- Poroton blocks are available as "plan blocks" - blocks that, subsequent to firing, have been grinded to a tolerance of less than one millimetre. Plan blocks are suitable for thin-joint mortar systems, delivering faster construction times, reduced mortar usage, higher accuracy and better thermal resistance (U-value) of the finished wall.
  Poroton blocks can be easily cut accurately on site, and allow secure attachments to be made into the wall (pictures, shelves, etc).

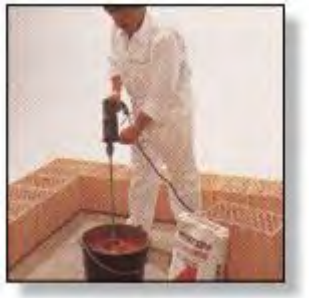

Accurate planed surfaces allow thin-joint mortar application
Honeycomb core enables cavity wall to be built in only one leaf
Dry vertical tongue and groove joints saves time and money
Porous fired clay yields high intrinsic thermal insulation properties
made in Germany
ROTON Fired Clay Block

The advantage of the Plan-Block

- **Saving time because of very fast processing and easy handling (see Video)**
- **Reduction of working time up to 35% compared to conventional big-block masonry – single leaf construction!**
- **High heat insulation of the bricks without using any artificial extra insulation layers**
- **Higher statical weight limits of the wall**
- **Highest fire protection**
- **Less than 90% of mortar is needed, compared to standard masonry, price of mortar is included**
- **No humidity or wetness because of mortar**
- **The masonry is a perfect, consistent backround for plasters and renders**
- **The buliding is finished earlier**
- **The building is significantly cheaper on a higher quality standard**

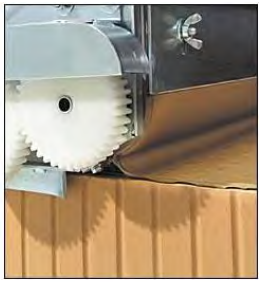
The handling

- To ensure perfect accuracy, the first course mortar bed is leveled. The first course is set on a bed of conventional mortar, carefully laid to be perfectly leveled.





- Subsequent courses are laid on thin-joint mortar: mix the mortar to manufactures instructions and fill the trough, dip the block not more than 5mm into the mortar, ensuring full mortar coverage of the bottom surface (easy with the handling tool) and position the block on the wall.
  Alternative: Apply mortar with a mortar roller.

- The mortar is included, One bag is emough for 2,5-3 pallets.

Schnelle Verarbeitung

- VD-System




- The accuracy of finish, combined with the blocks interlocking teeth mean, you can be sure that, for example, four courses of block will be 1 metre high, plus or minus 4mm.
  Specialised blocks are available, suitable for internal partition walls, also for angles, for the corners etc - To provide a correct masonry bond and to make the work fast and easy.

The Video

The “standard”

ThermoPlan S-9

Thermal conductivity = 0,09 W/mK (u-value=0.23 in 36.5 cm
or 0.28 in 30 cm)

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Better: The ThermoPlan S8 with 0,08 W/mK

36,5 cm 0,21 W/m²K

42,5 cm 0,18 W/m²K

Since
2009

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ThermoPlan MZ 7 – filled with Rockwool

ThermoPlan MZ 7

Width of wall: 30 36,5 42,5 49 cm

U-Value: 0,22 0,18 0,16 0,137 W/m²K

Gym hall in Passiv house standard

Kaarst, 49 cm MZ 7

The new ThermoPlan TS 13- for appartement houses

Nr. 1 in Noise reduction and heat insulation

(49 db, U-value 0,32 W/m²K)

ThermoPlan TS 13

12 Familien-Haus mit ThermoPlan TS 13 in Wörrstadt

Best solution – the single leaf wall

30 cm, 36,5 cm or 42,5 cm

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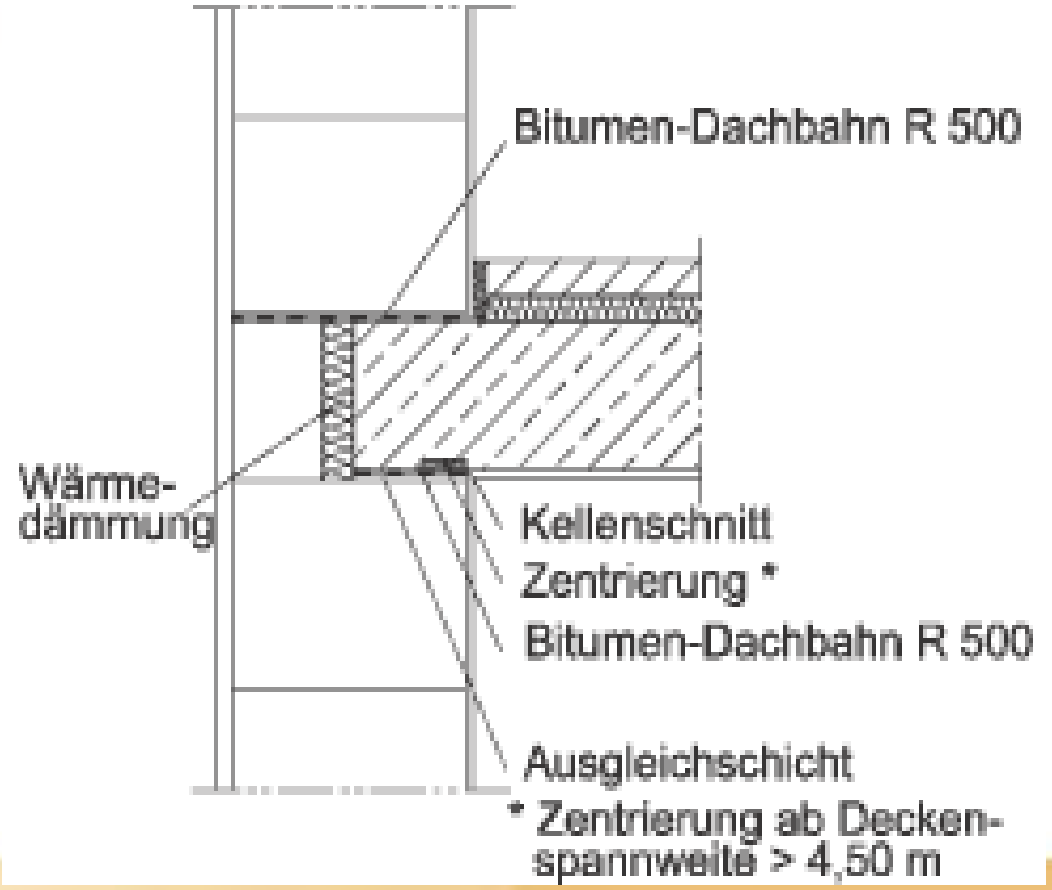
Best solution – the single leaf wall

30 cm or 36,5 cm



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Also possible – blocks for cavity walls or extra insulated walls

ThermoPlan T

10 cm – 24 cm wall, also belgium sizes 14 cm and 19 cm

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Clay block with insulation – not the best solution

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Also possible – blocks for cavity walls

ThermoPlan T

10 cm – 24 cm wall

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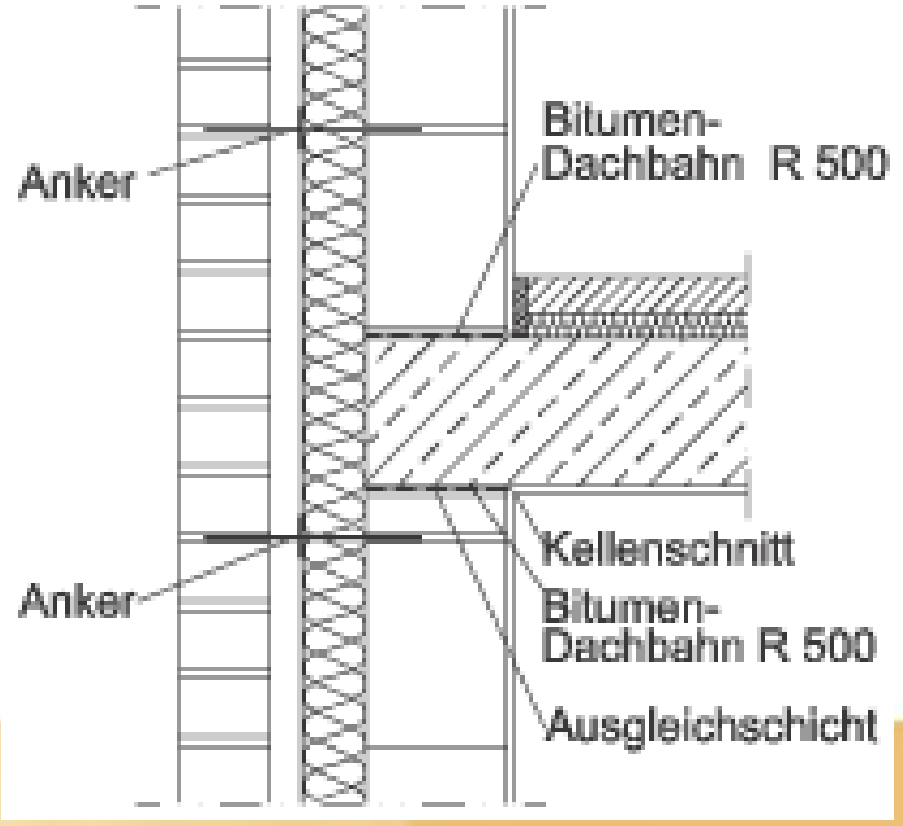
Also possible – blocks for cavity walls

ThermoPlan T

10 cm – 24 cm wall



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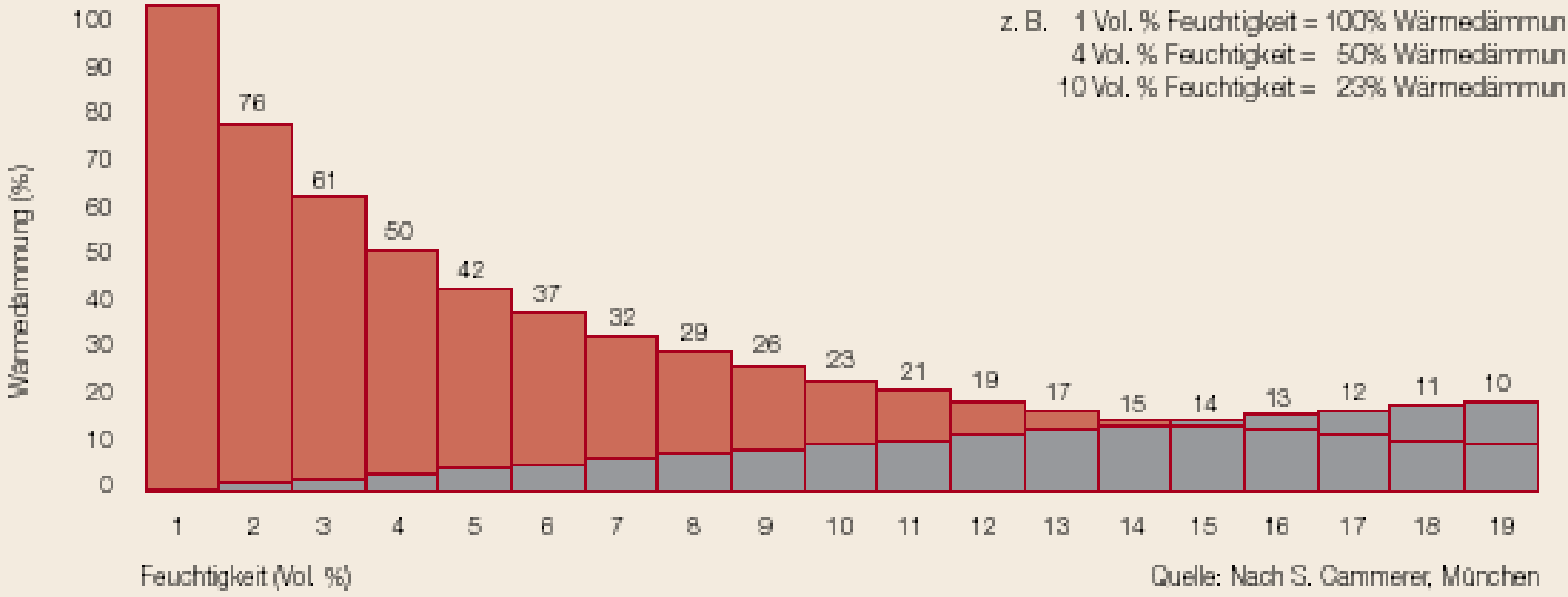
Wy clay blocks?

Dry

- Clay blocks are the dryest of all building materials
- Good feeling and heat insulation from start on !!!

Humidity

Relationship between humidity and heat insulation



Humidity of light weight silicat blocks, aircrete blocks, thermalite blocks

aus:
Forschungsbericht
F 7006
ibac, RWTH Aachen

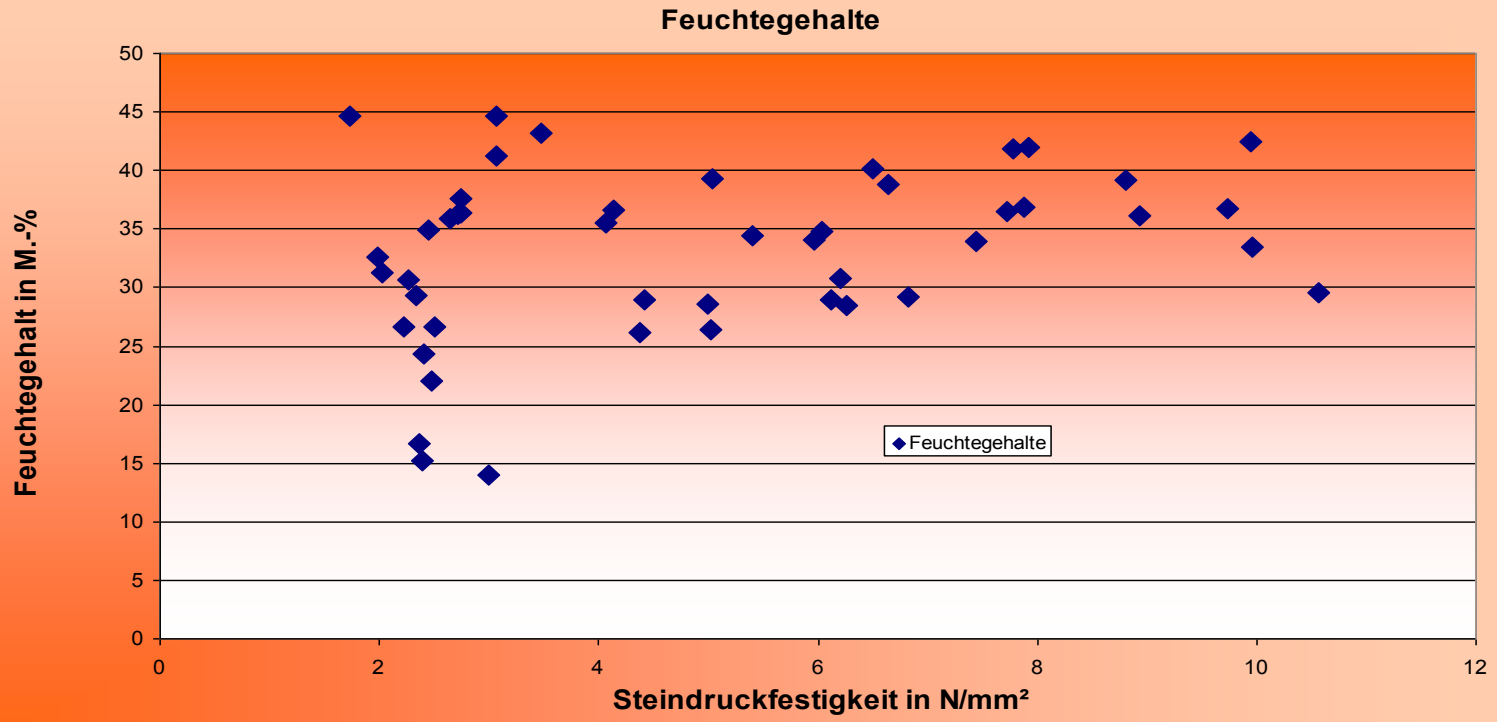
Tabelle A12: DIN V 4165-PP2-0,35-624x365x249, Lieferdatum 09.03.2004
Maße, Rohdichte (lufttrocken) ρ_l, Trockenrohdichte ρ_d
Feuchtegehalt h_m

Prüfkörper	Teilstück	Maße			ρ_l	ρ_d	h_m
		l	b	h			
-	-	mm			kg/dm³		M.-%
1	2	3	4	5	6	7	8
1	1	99,8	51,6	100,3	0,54	0,36	50,9
	2	100,0	51,3	100,1	0,54	0,36	51,3
	3	100,4	50,0	100,0	0,54	0,35	51,5
	4	100,4	50,9	100,1	0,54	0,36	51,0
	5	100,4	49,8	100,0	0,54	0,36	51,0
	6	100,5	49,4	99,8	0,54	0,36	50,4
	7	100,7	51,0	99,7	0,54	0,36	51,6
2	1	99,8	50,9	99,8	0,53	0,36	46,6
	2	100,5	49,6	99,6	0,53	0,36	49,6
	3	100,3	50,7	99,4	0,53	0,36	49,3
	4	100,2	50,7	99,5	0,53	0,36	49,5
	5	100,4	50,2	100,2	0,53	0,35	49,9
	6	100,0	50,8	99,1	0,53	0,36	49,0
	7	100,2	51,0	99,3	0,53	0,36	49,2
3	1	99,3	50,2	99,1	0,55	0,37	48,8
	2	99,4	49,8	99,4	0,55	0,36	50,0
	3	99,6	50,1	100,3	0,54	0,36	50,0
	4	99,6	50,1	100,2	0,54	0,36	49,9
	5	99,8	50,1	100,2	0,53	0,35	50,1
	6	99,4	50,9	100,0	0,53	0,35	49,6
	7	99,4	51,7	99,0	0,53	0,35	48,6

Humidity when delivered

Feuchtegehalte von Porenbetonsteinen

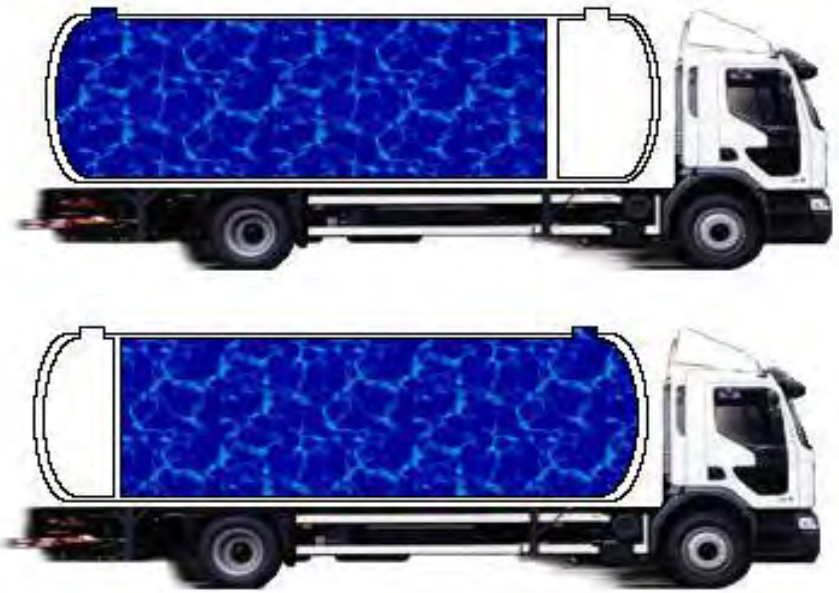
Mauerwerk 5/2004



Combined Water at the building shell (70 m³)

Thermalite 20 Vol.-%

ca. 14.000 Liter



Clay block 1 Vol.-%

ca. 700 Liter

Thermal conductivity of light weight concrete blocks in ralationship to humidity

Normative value	„nearly dry“	„a little bit dry“	best case Reality	Reality
4,5 M.-%	10 M.-%	15 M.-%	25 M.-%	45 M.-%
λ in W/mK				
0,08	0,098	0,114	0,146	0,210
0,09	0,110	0,128	0,164	0,236
0,10	0,122	0,142	0,182	0,262
0,11	0,134	0,156	0,200	0,288
0,12	0,146	0,170	0,218	0,314
0,13	0,159	0,185	0,237	0,341
0,14	0,171	0,199	0,255	0,367
0,16	0,195	0,227	0,291	0,419

Grundlage: Rechenwert (=Prospektangaben) von Porenbeton liegt bei 4,5 M.-% Aber:

Je 1 M.-% Feuchtigkeitszunahme steigt die Wärmeleitfähigkeit um 4 -10 % !

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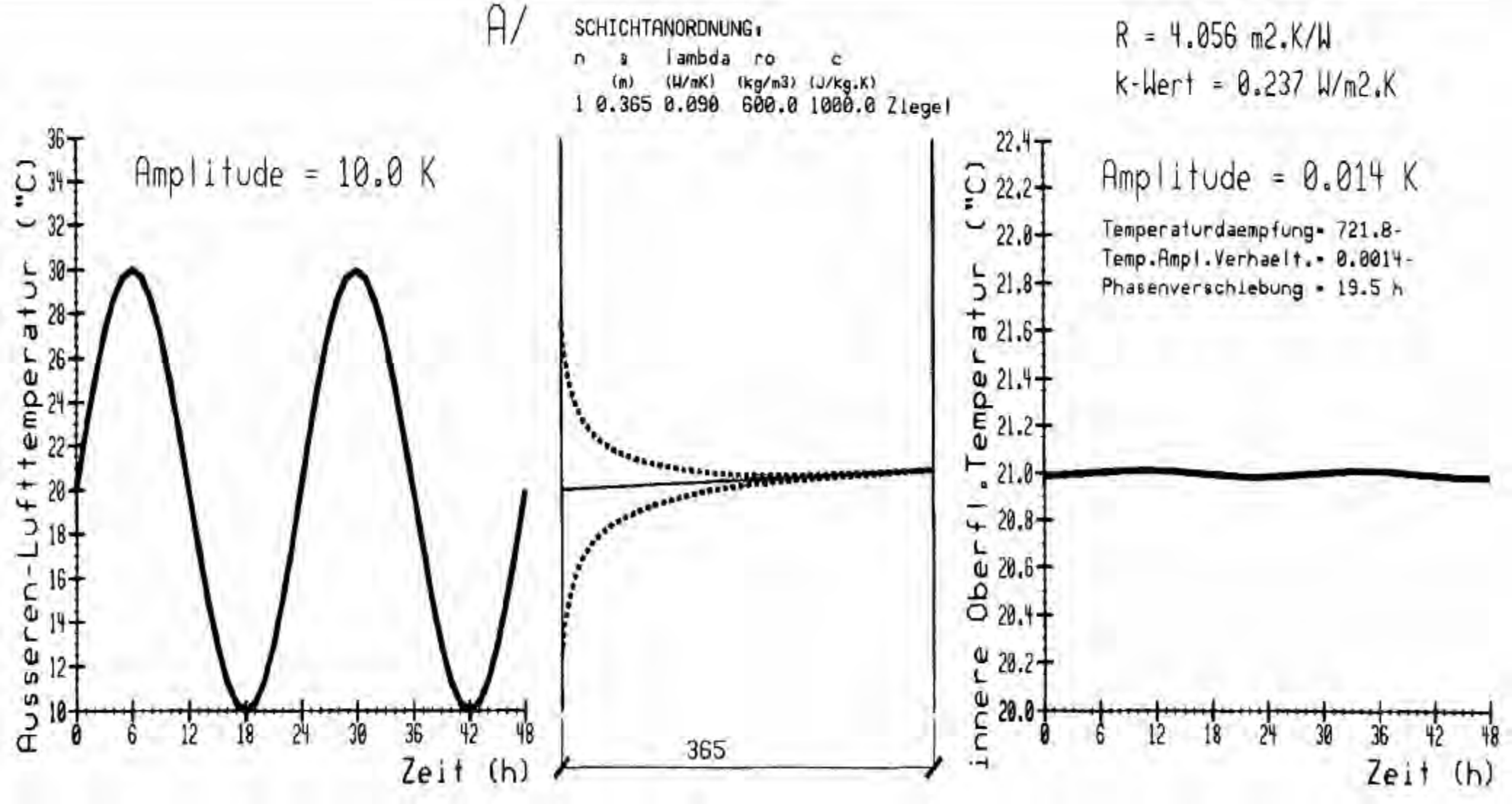
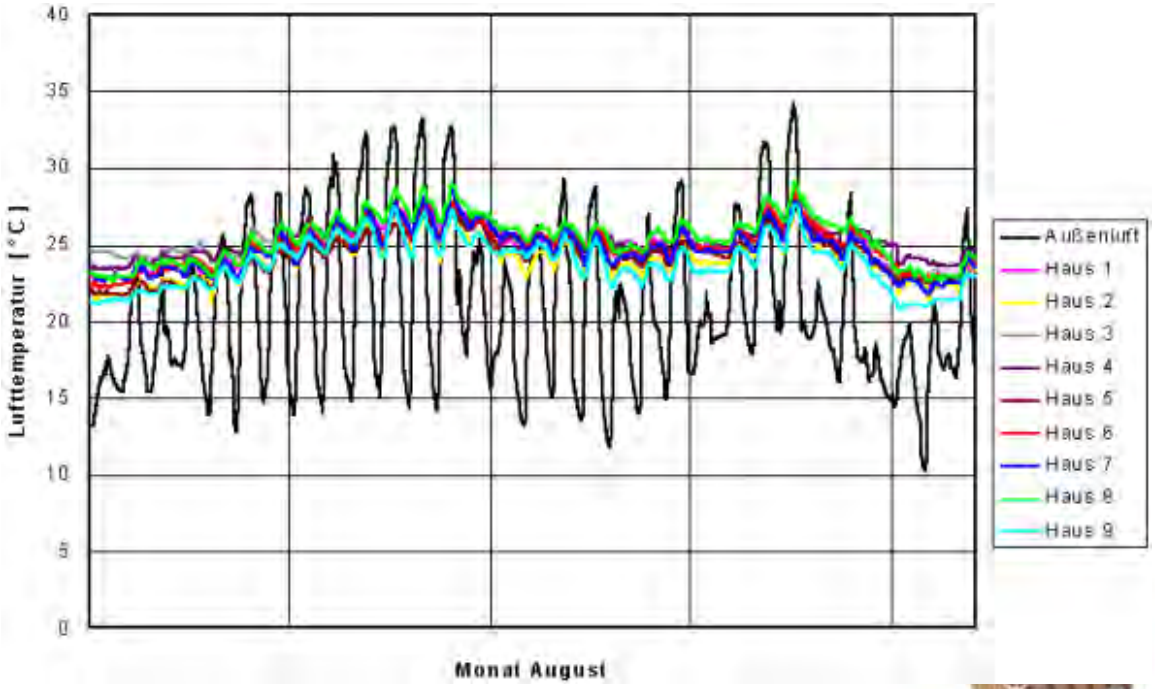
Shelter of heat in summer – natural air condition
Amplitude Attenuation (ThermoPlan S9)



Balanced room climate

Vorteil in mitteleuropäischen Klima
mit häufig wechselnden Außentemperaturen

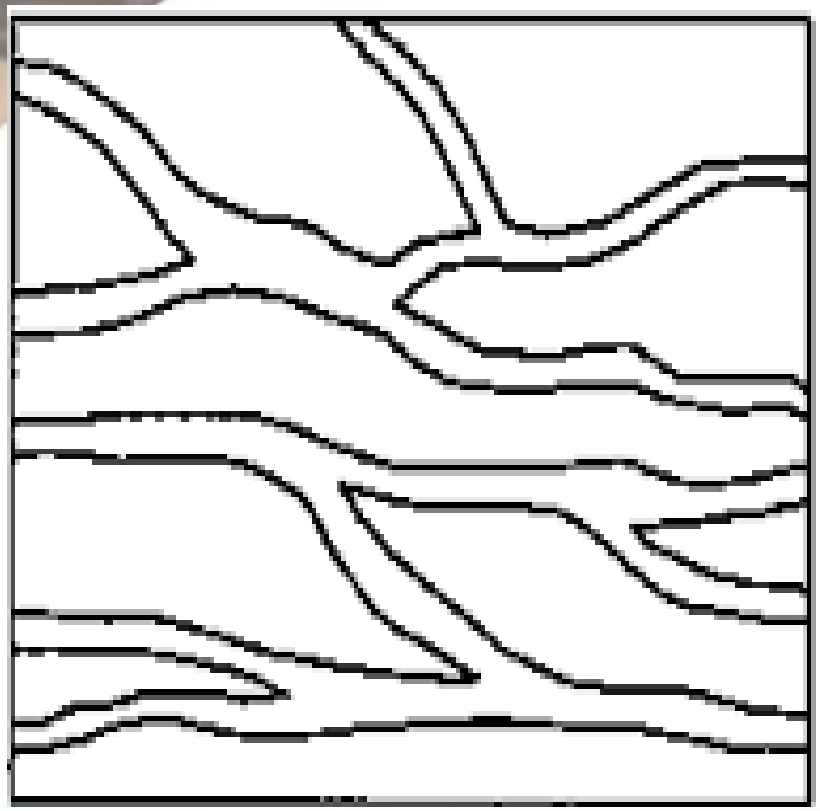
Example Buidlings in Bochum

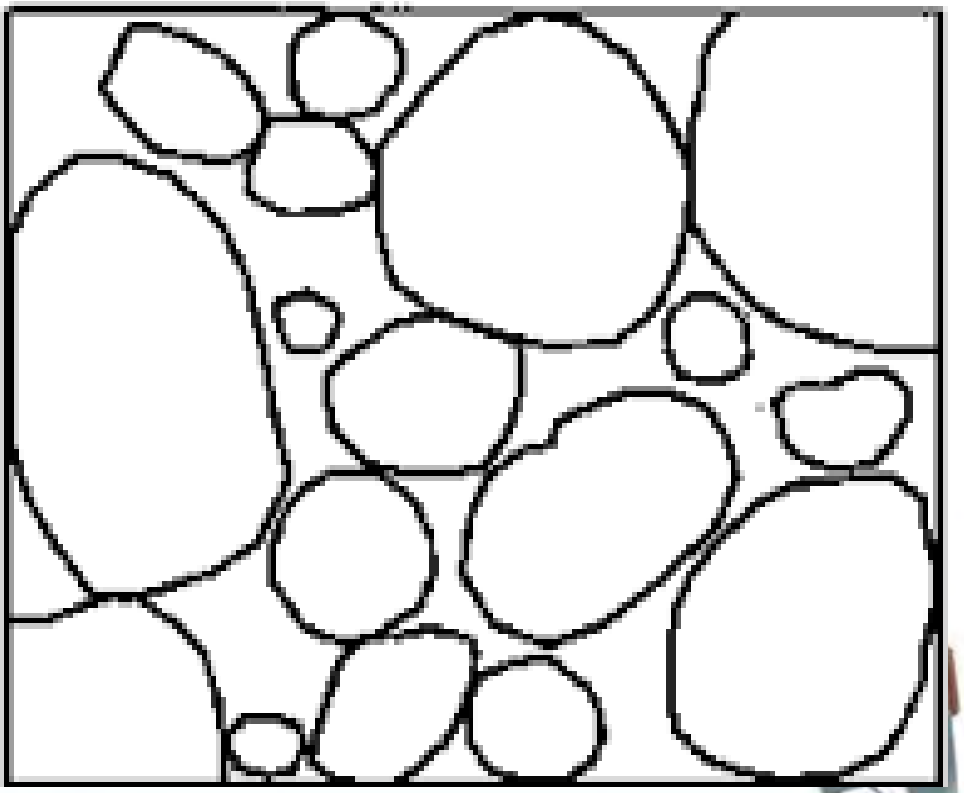


High diffusion to the exterior – best climate like natural air condition

- **the capilarity of clay blocks is unique**
- balanced room climate
- No mildew
- No risk of allergy
- in the whole house - even in the basement

Kapillare (Ziegel) / Haufwerksporen (Bims, Gasbeton)





Non shrinking

- no risk of cracks
- because
- clay blocks do not shrink

- Important:
- Build you house homogeneous !!
- Use one building material for your blocks, do not mix

Shrinking capacity of different materials

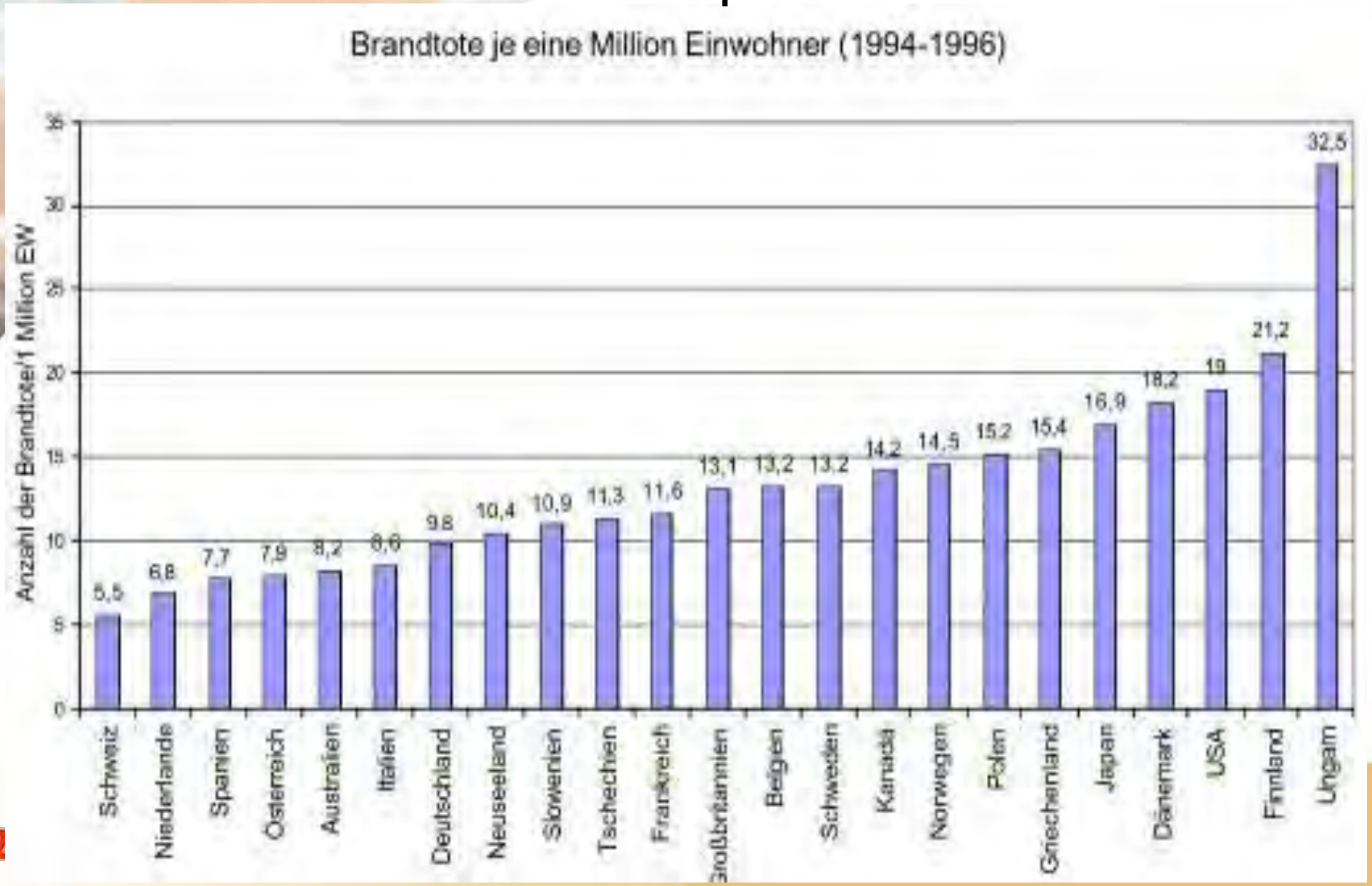
Verformungskennwerte für Schwinden und Kriechen (aus DIN 1053-1 11.96)

Mauersteinart	Endwert der Feuchtedehnung (Schwinden, Quellen) [1]		Endkriechzahl	
	$\varepsilon_{f\infty}$ [1]		φ_{∞} [2]	
	Rechenwert	Wertebereich	Rechenwert	Wertebereich
-	mm/m		-	
1	2	3	4	5
Clay blocks	0	+0,3 bis -0,2	1,0	0,5 bis 1,5
Lime stone [4]	-0,2	-0,1 bis -0,3	1,5	1,0 bis 2,0
Leight weight concrete	-0,4	-0,2 bis -0,5	2,0	1,5 bis 2,5
Concrete blocks	-0,2	-0,1 bis -0,3	1,0	-
Thermalite, Silikat blocks	-0,2	+0,1 bis -0,3	1,5	1,0 bis 2,5

Not flammable

Nice video

Death in cause of fire per million citizens

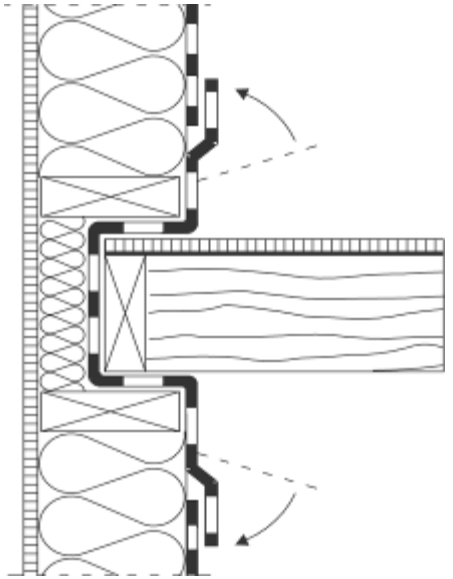


Windproof

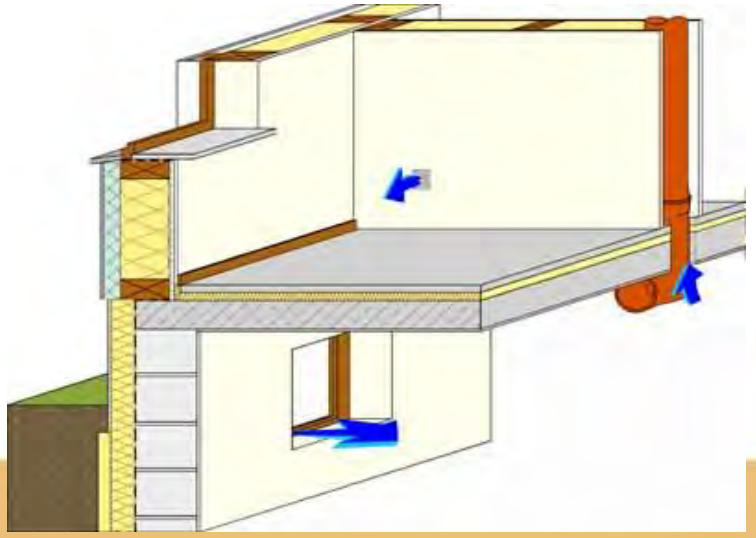
- The pre-condition for heat insulation
- A wall which is plastered at only one site is windproof

Timper frame has ist problems with that – it is possible but complicated

- vgl. DIN 4108 – 7, August 2001



- andere Bauweisen benötigen dafür
- Folien und Platten
- empfindlicher gegen Ausführungsfehler
- Stöße
- Anschlüsse
- Durchdringungen
- „arbeiten“ von Holzkonstruktionen



Results of calculation for Bellway homes:
Clay blocks vs. Concrete blocks for all wall constructions

Plaster and render: **Facing brick or timber:**

Wall construction	1. JUWÖ solid	2. JUWÖ 10+10	***3.Concrete 10+10***	4. JUWÖ 10	***5.Concrete 10***
Total costs £	11.978,--	13.407,--	17.128,--	8.319,--	10.456,--
Saving juwo block £	**5.150,--**	**3.721,--**		**2.137,--**	
Man-hours	**192 h**	**275 h**	**504 h**	**165 h**	**302 h**

The Production

The quarry

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Edge runner

Clay storaging and preparing

Roller mils

Extrusion

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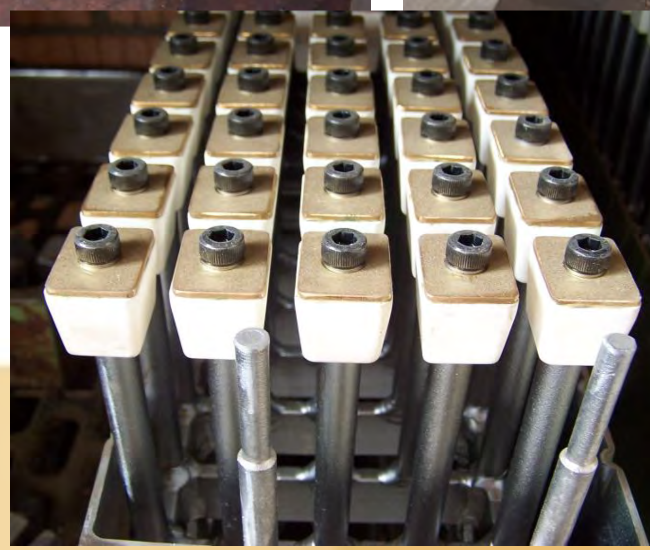
Brick dies




7

Firing in roller kiln

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... ein starker Verbund.

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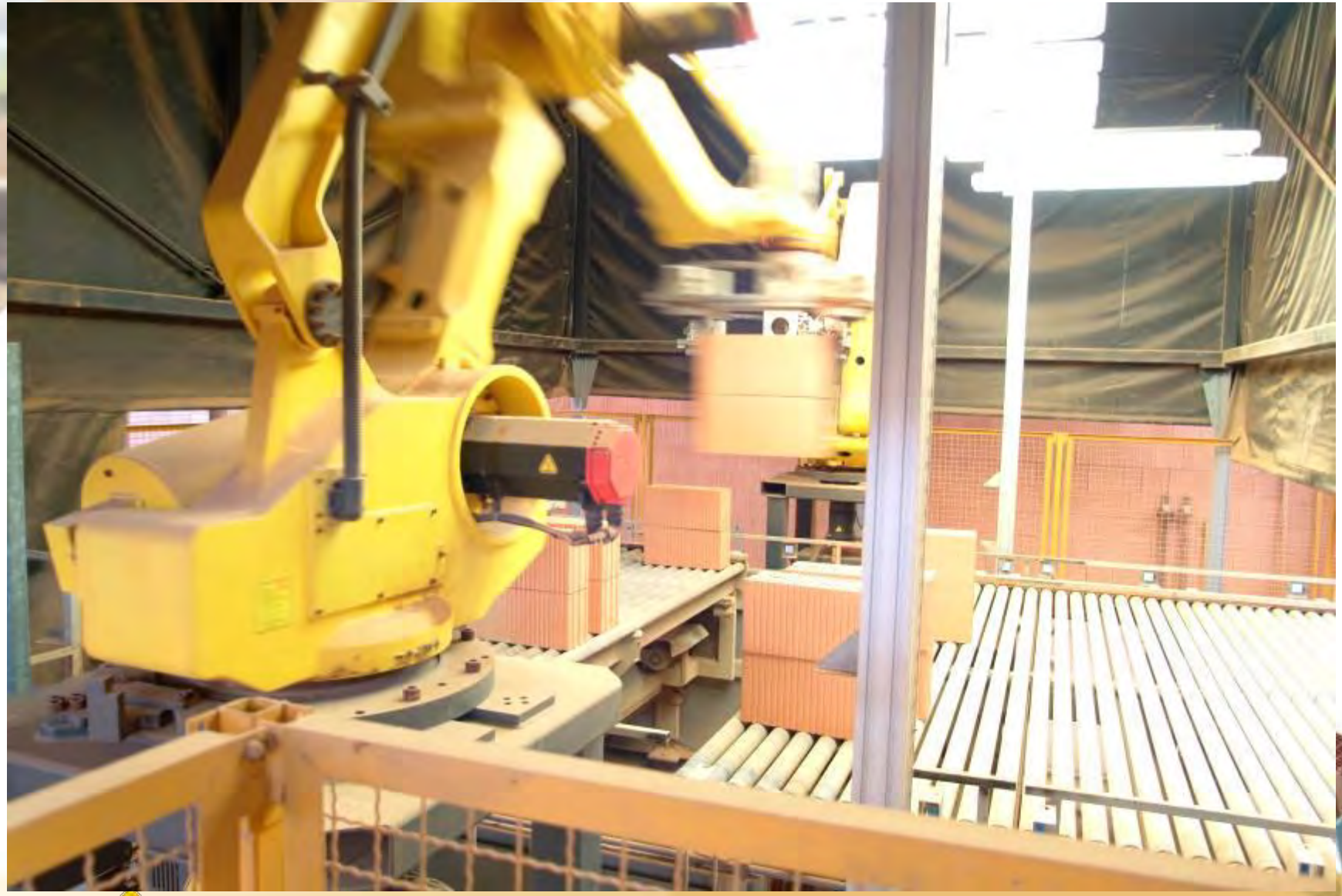

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Grinding

Packaging

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JUWÖ
Planziegel

JUWÖ service

Some DREAM HOMES

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ThermoPlan MZ 10

Wohn und Geschäftshaus
in Biberach

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Professional buildings

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Sparkasse Donnersberg BLZ: 540 519 90 KTO: 3000 2075 • Belegexemplar erbeten.

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Plugging problems don‘t exist

No percussion drill !!

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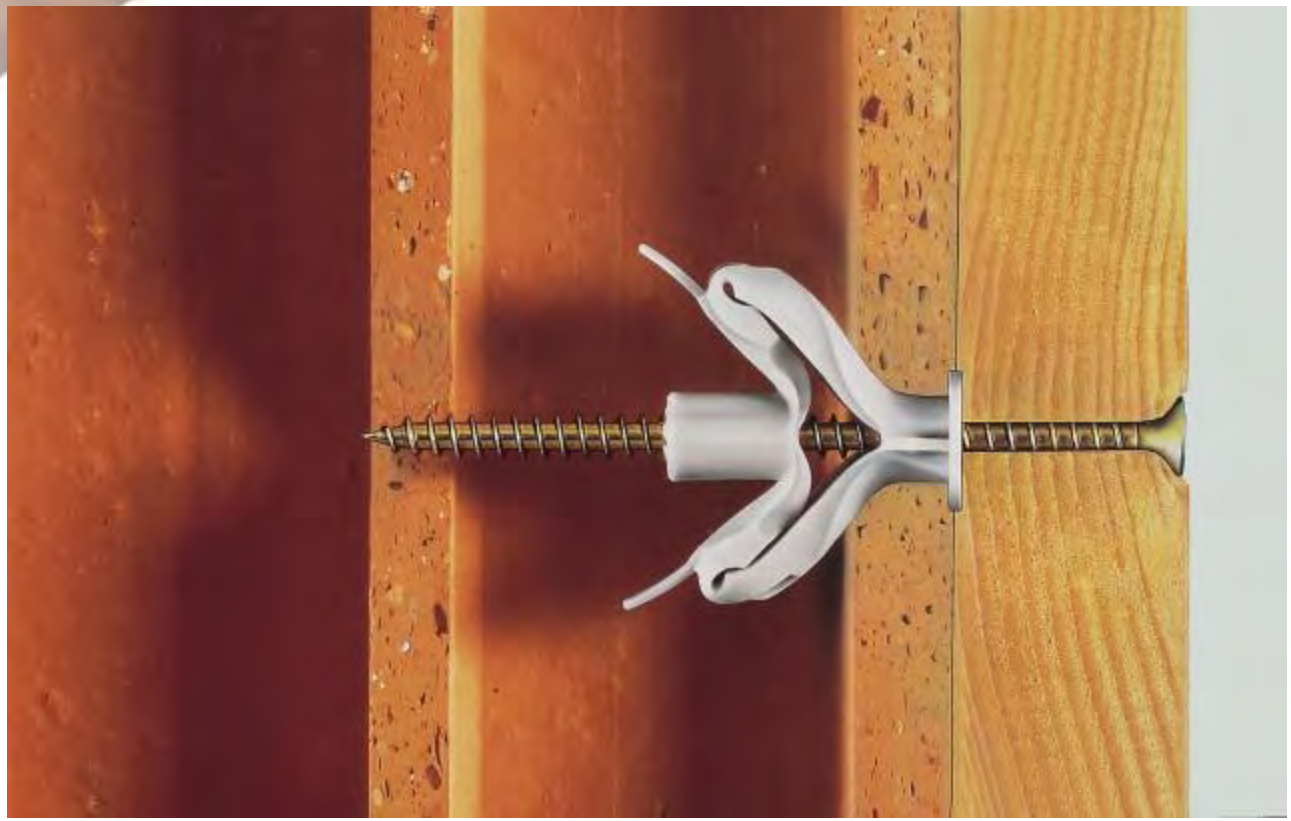

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Finally:

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A brick house makes you happy

Plan-Brick: Yes, I will

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Any questions?

Thank you
for your attention

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