

Test report
for the determination of the heating capacity
of hot surface for rooms

heating ceiling

Type: Pannello Radiante in Cartongesso
Soffitto / parete: PRC 5.0

closed heating ceiling,
PEX-tubes (8 x 1mm) integrated in plasterboard panel
distance between the tubes: 50mm

proterclima s.r.l.
I – 70024 Gravina in Puglia (BA)

Test report

No.: DF10 H26.2856

heating capacity: 72 W/m² (Δt : 15K)

(referring to the active area: 7,20m²)



This test report consists of 6 pages and it may be reproduced only in its integral form.
The results of the test refer only to the test samples.

The HVAC Institute, Lehrstuhl für Heiz- und Raumlufttechnik (LHR), is from DAR accredited according to ISO/IEC 17025 and is from DINCERTCO recognised as an independent test laboratory.
Further on the Institute is also an accredited inspection body according to EN 45004.

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test report A
for the determination of the heating capacity of a heating surface close to EN 14037

- Initial testing -

1 Test laboratory Prüfstelle Heizung - Lüftung - Klimatechnik Stuttgart
Pfaffenwaldring 6A
70569 Stuttgart



2 Applicant proterclima s.r.l.
Via B. Croce, 14
I - 70024 Gravina in Puglia (BA)



3 Manufacturer the applicant

4 Data of the tested ceiling surface gypsum panels, 15mm, with insulation (25mm).
(drawing and photo: page 3,6) **active ceiling area:** 7,20 m²
type: Pannello Radiante in Cartongesso **total ceiling area:** 7,20 m²
soffitto/parete: PRC 5.0 PE-tubes (8mm x 1mm), circle flow, 3 panels
distance between tubes: 50mm

date of entry of test samples: 02.01.2008

date of entry of technical documents: -

sampling: delivery by applicant

date of installation: 21.01.2008

connection: the 6 elements (3 panels) are connected in parallel serie,
two elements (1 panel) in circuit.

surface coating: without coating

5 correction due to nominal pressure

radiation ratio: 0,7 exponent for correction: 0,5

6 test results The results of the test refer only to the test samples

Characteristic equation: $\dot{q} = C \cdot \Delta t^n$

exponent n = 1,111 constant C = 3,561

nominal capacity at $\Delta t=15K$: 72 W/m² referring to the active area

Stuttgart, the 18.01.2010

Universität Stuttgart
Institut für Gebäudeenergetik
Pfaffenwaldring 35 · 70569 Stuttgart
Tel.: (+49)711 / 695 620 35
Fax: (+49)711 / 695 620 35
www.ige.uni-stuttgart.de

(stamp and signature of the test laboratory)

Prof. Dr.-Ing. M. Schmidt

Dr.-Ing. Chr. Beck

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test results

1 Measured values for the determination of the capacity

test no.:		1	2	3
date:		21. Jan	21. Jan	21. Jan
air pressure	kPa	97,11	97,20	97,39
water mass flow rate	kg/h	299,07	299,32	299,70
reference temperature (globe: 0,75m)	°C	19,80	20,05	20,36
water inlet temperature	°C	45,84	40,87	35,39
water outlet temperature	°C	43,25	38,85	33,98
temperature difference	K	2,59	2,02	1,41

2 Additional values

mean insufficient temperature	K	24,74	19,81	14,32
measured cooling capacity	W	900	700	490
corrected capacity, 1013mbar	W	906	705	493
cooling capacity per m ² active area	W/m ²	126	98	69

3 Control temperatures

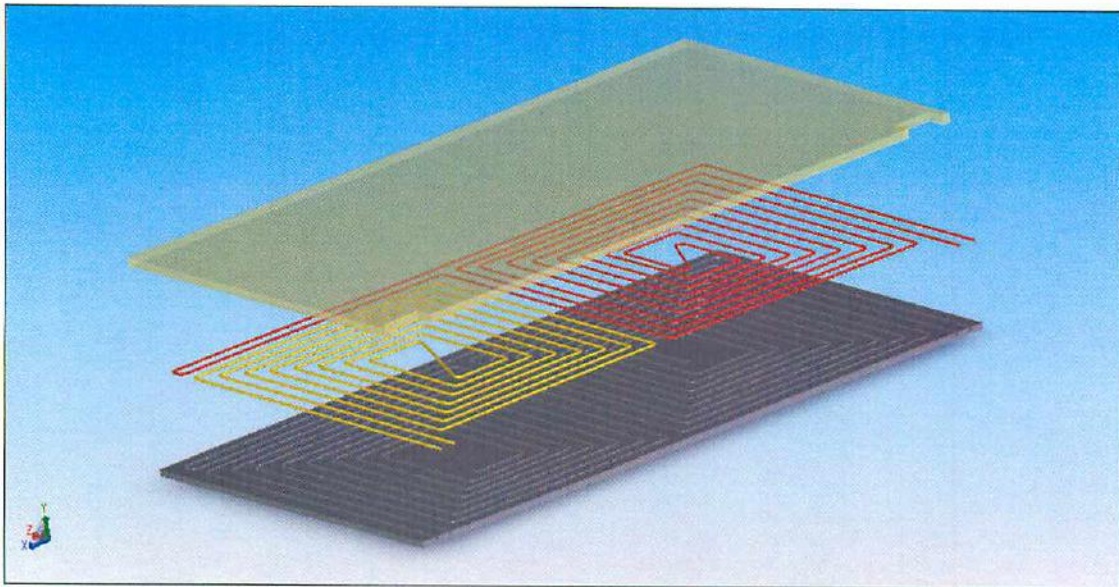
mean floor temperature		°C	17,5	18,3	19,0
mean wall temperature	A:	°C	17,5	18,3	19,1
	B:	°C	17,6	18,2	19,0
	C:	°C	17,6	18,2	19,0
	D:	°C	17,5	18,3	19,1
mean ceiling temperature		°C	17,5	18,3	19,0

4 air temperatures in test room

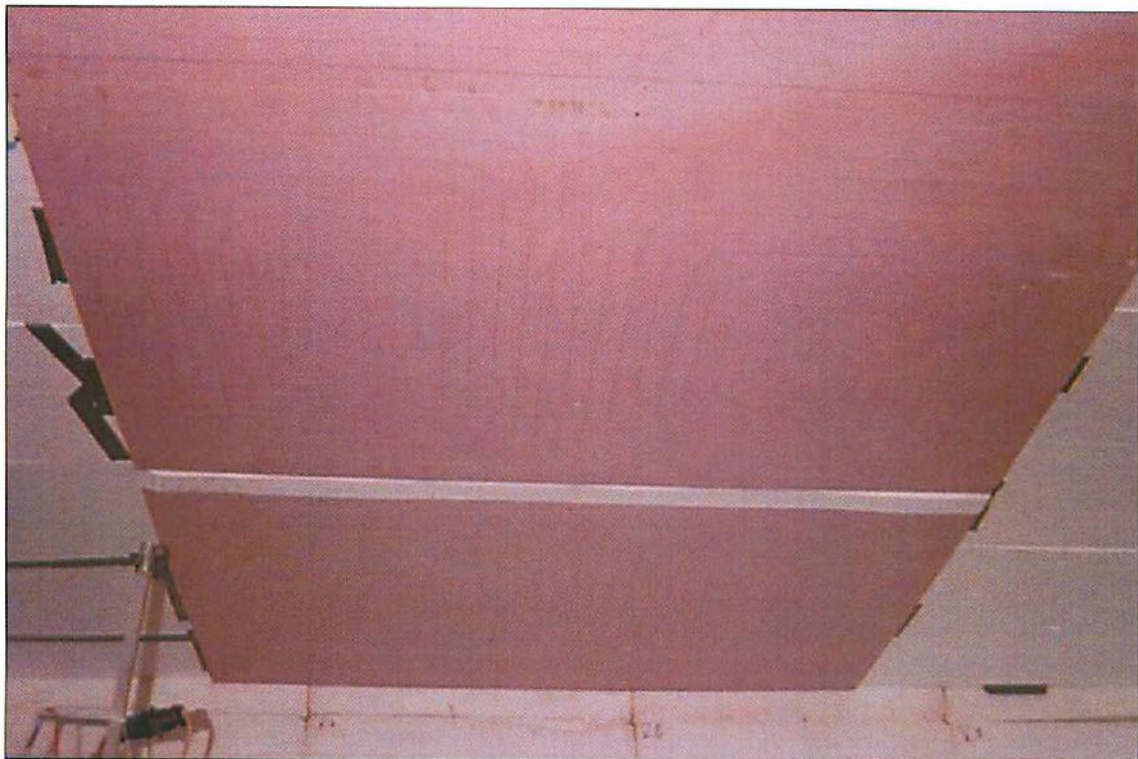
air temperature	Höhe:	0,05 m	°C	18,5	18,9	19,5
hight over floor level	0,75 m		°C	19,1	19,4	19,9
	1,70 m		°C	19,4	19,7	20,1
temperature above the ceiling	2,70 m		°C	32,6	30,8	28,2

5 surface temperatures

calculated surface temperature		°C	37,8	34,0	30,2
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heating surface element 1200mm x 2000mm, distance between pipes: 50mm
proterclima s.r.l., PE-Xc - pipe 8mm x 1mm, plasterboard panel: 15mm
Pipes integrated in panels, with insulation above: 25mm

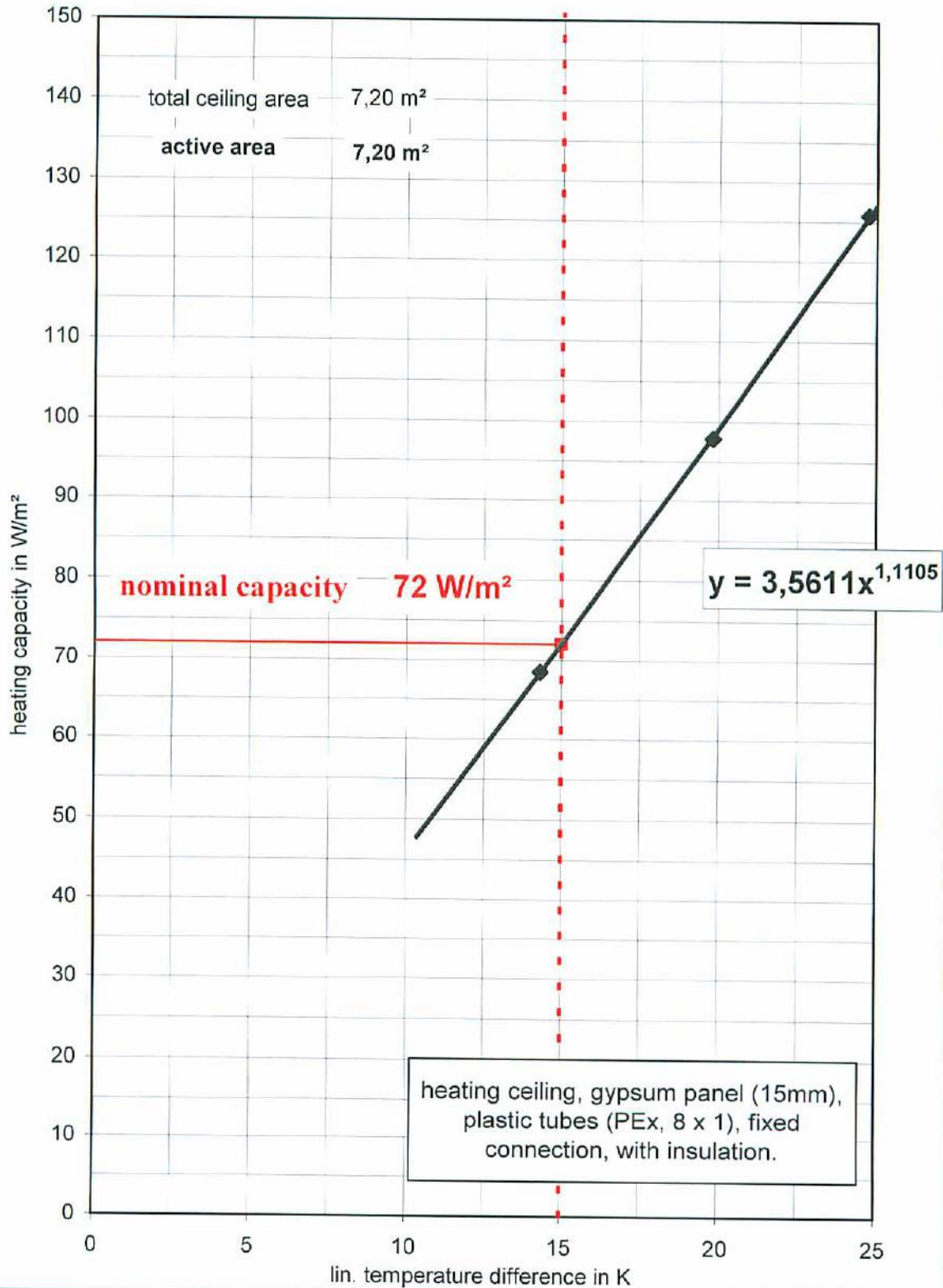


Installation in the test booth closed to EN 14037,
designed as closed heating surface

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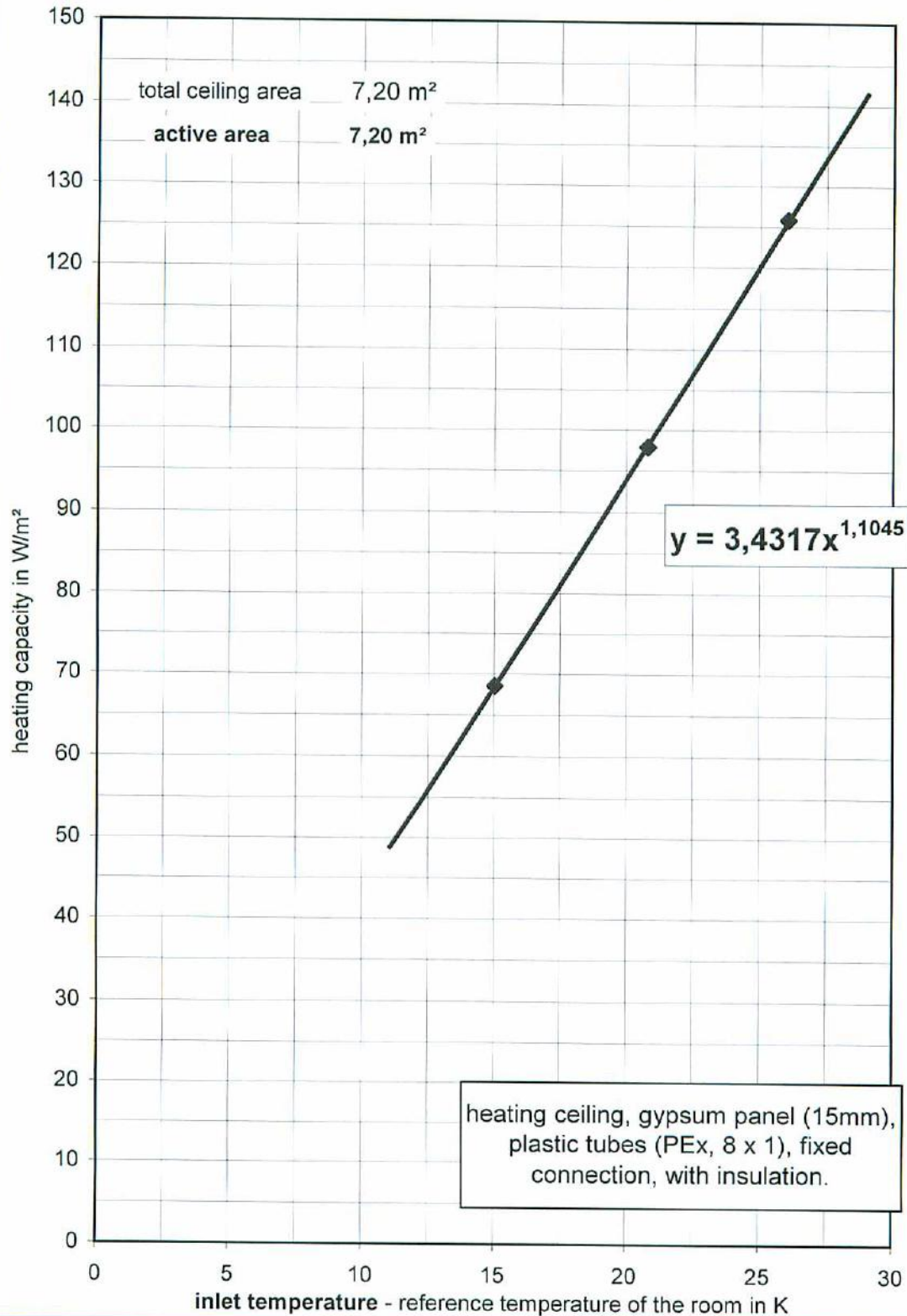
Typ: Pannello Radiante in Cartongesso
soffitto/parete: PRC 5.0

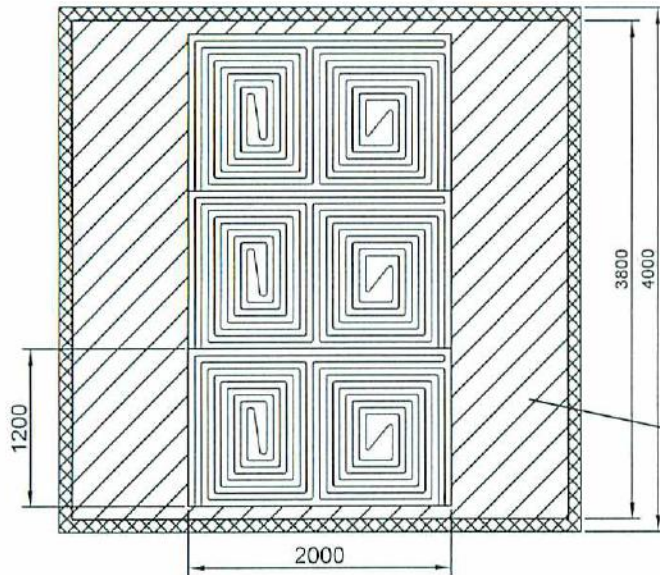


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Typ: Pannello Radiante in Cartongesso
soffitto/parete: PRC 5.0

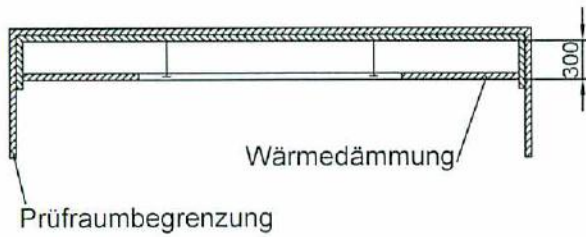




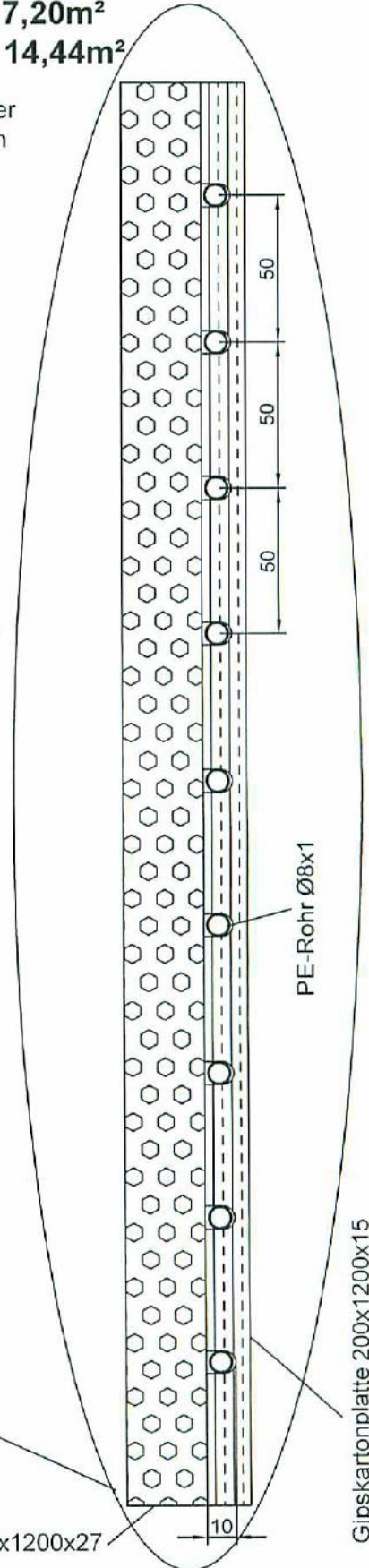
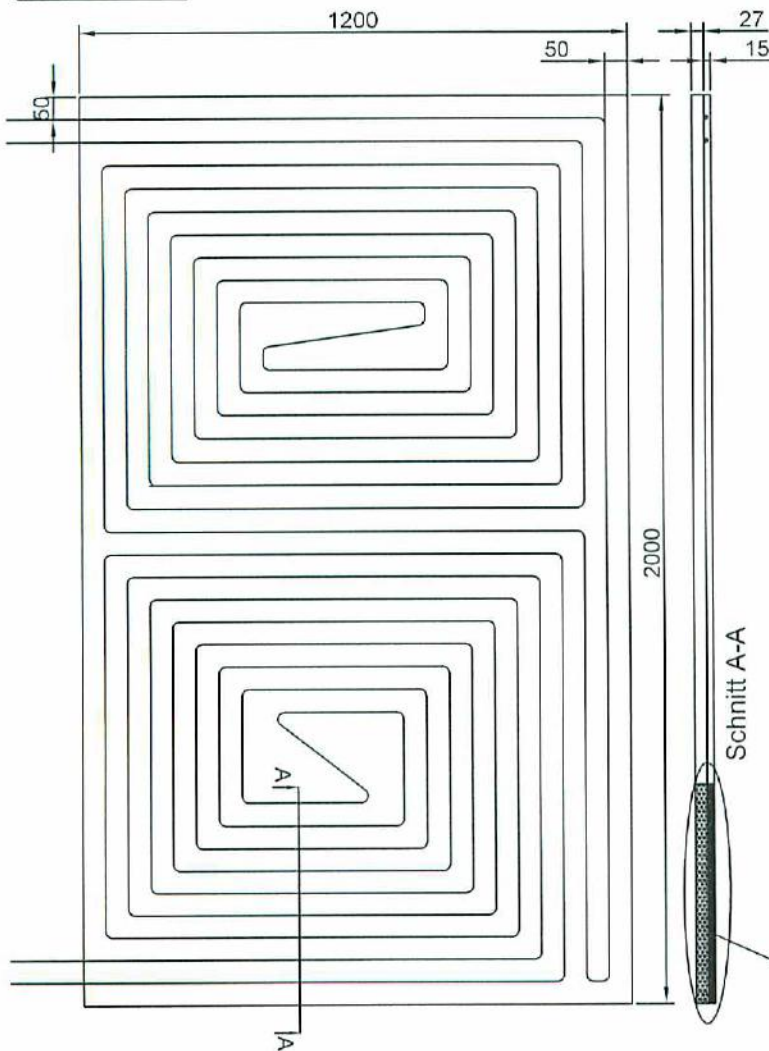
Leistungsprüfung:
Heizdecke in
Anlehnung an
DIN EN 14037
Parallel-Schaltung
mit 3 Kühlgruppen

- Aa = 7,20m²**
- Ap = 7,20m²**
- Ai = 7,20m²**
- At = 14,44m²**

inaktiver Bereich

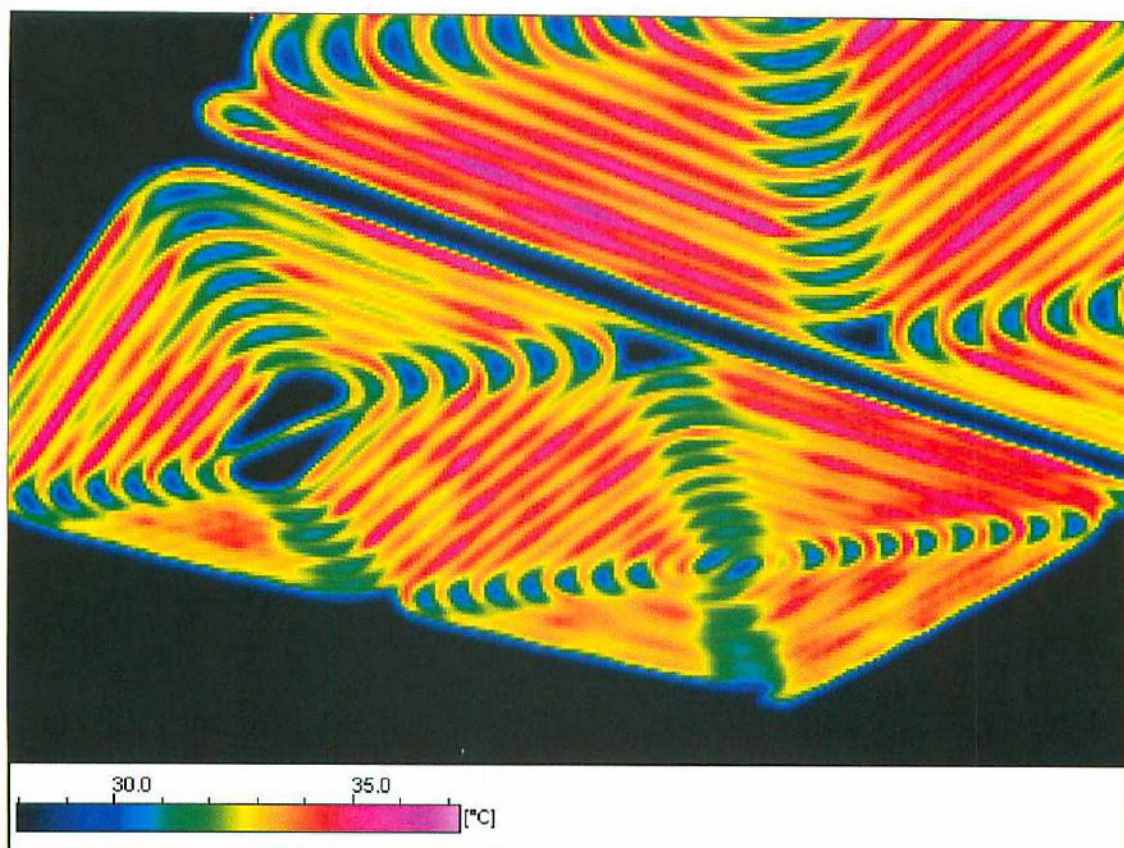


Heizmodul

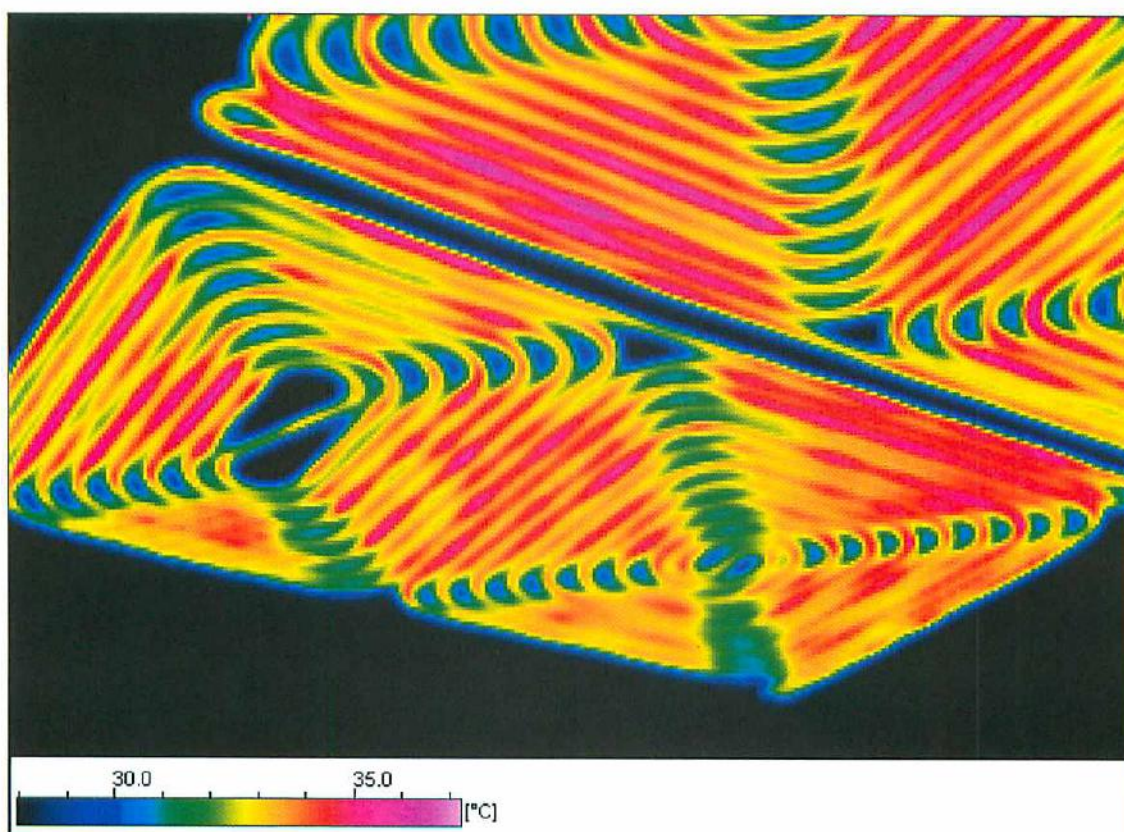


Dämmung EPS 200x1200x27

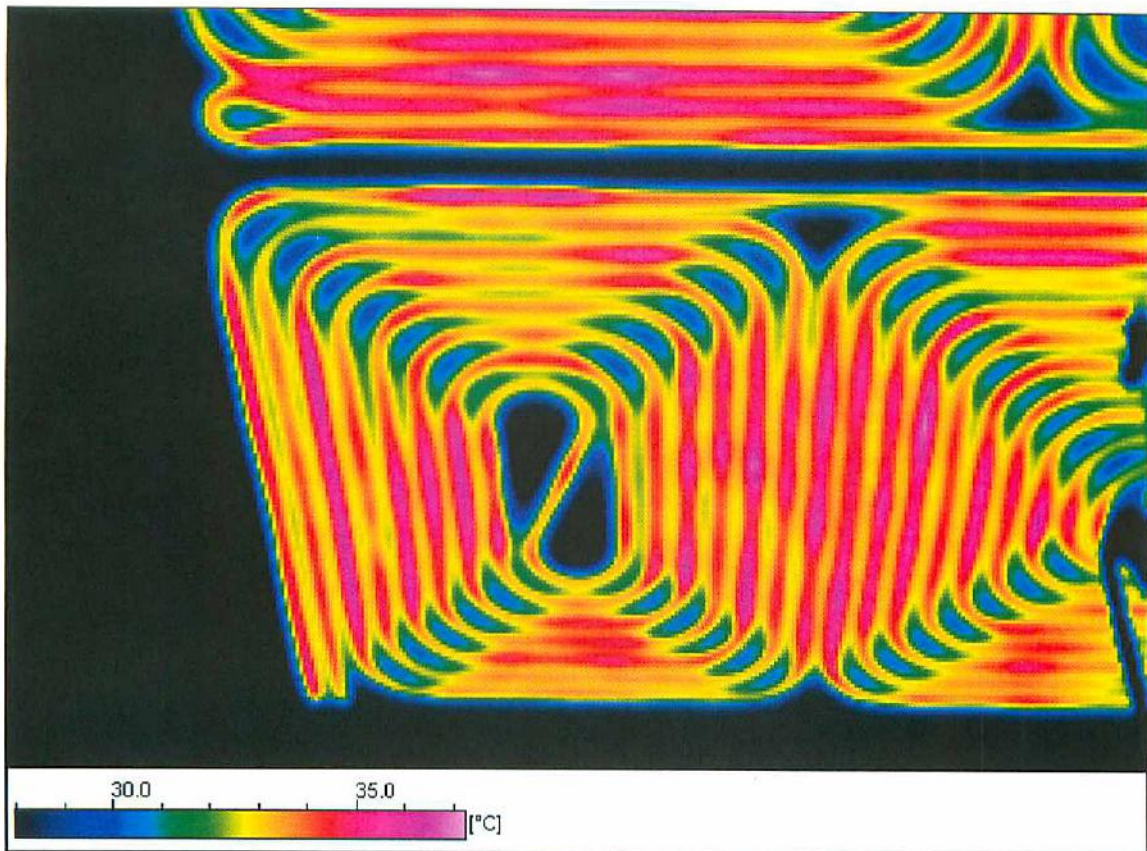
Gipskartonplatte 200x1200x15



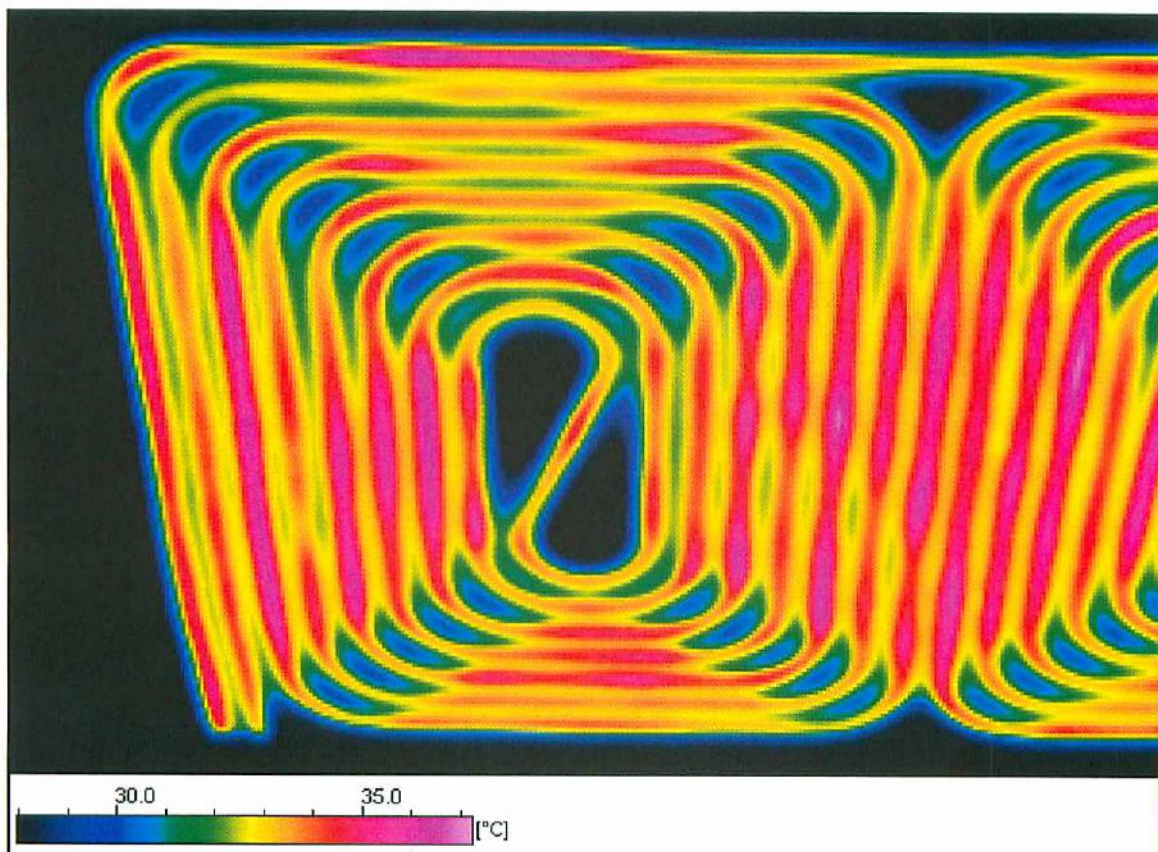
measuring point I: mean water temperature: 44,5°C, room temperature: 19,8°C,
left side of ceiling



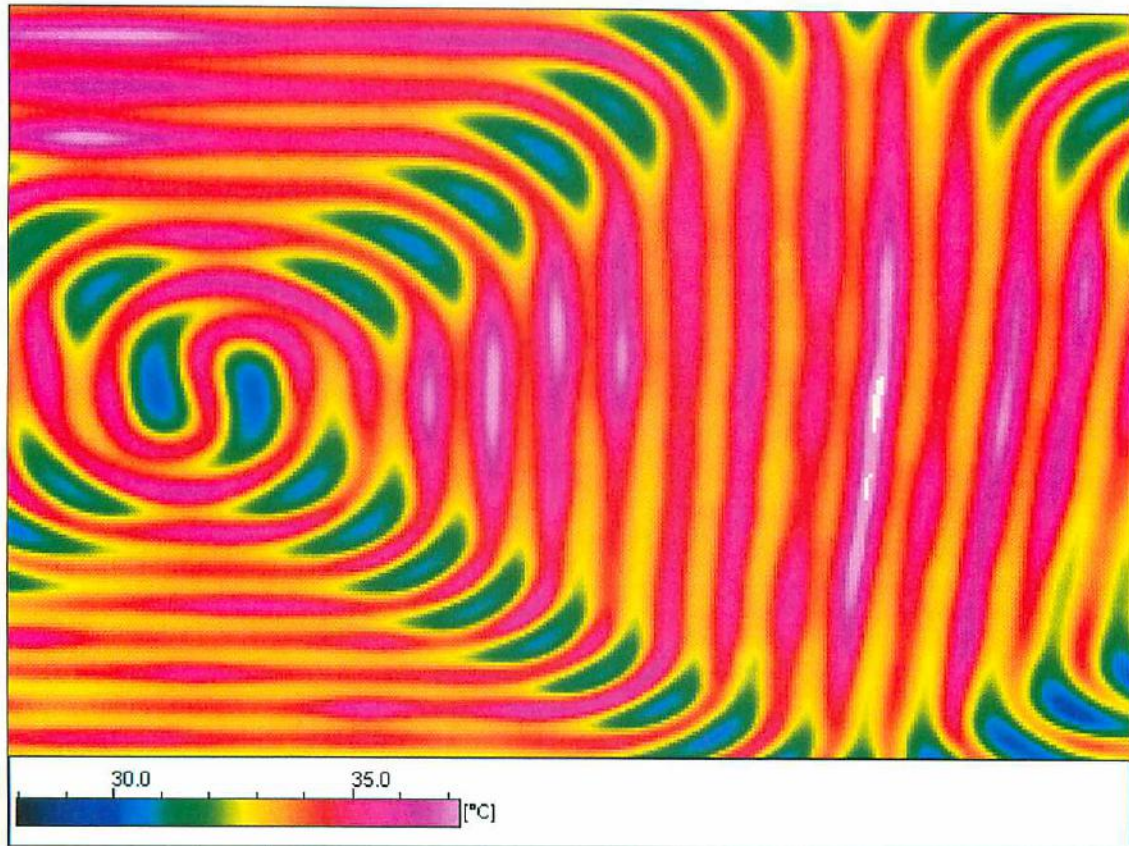
measuring point I: right side of ceiling



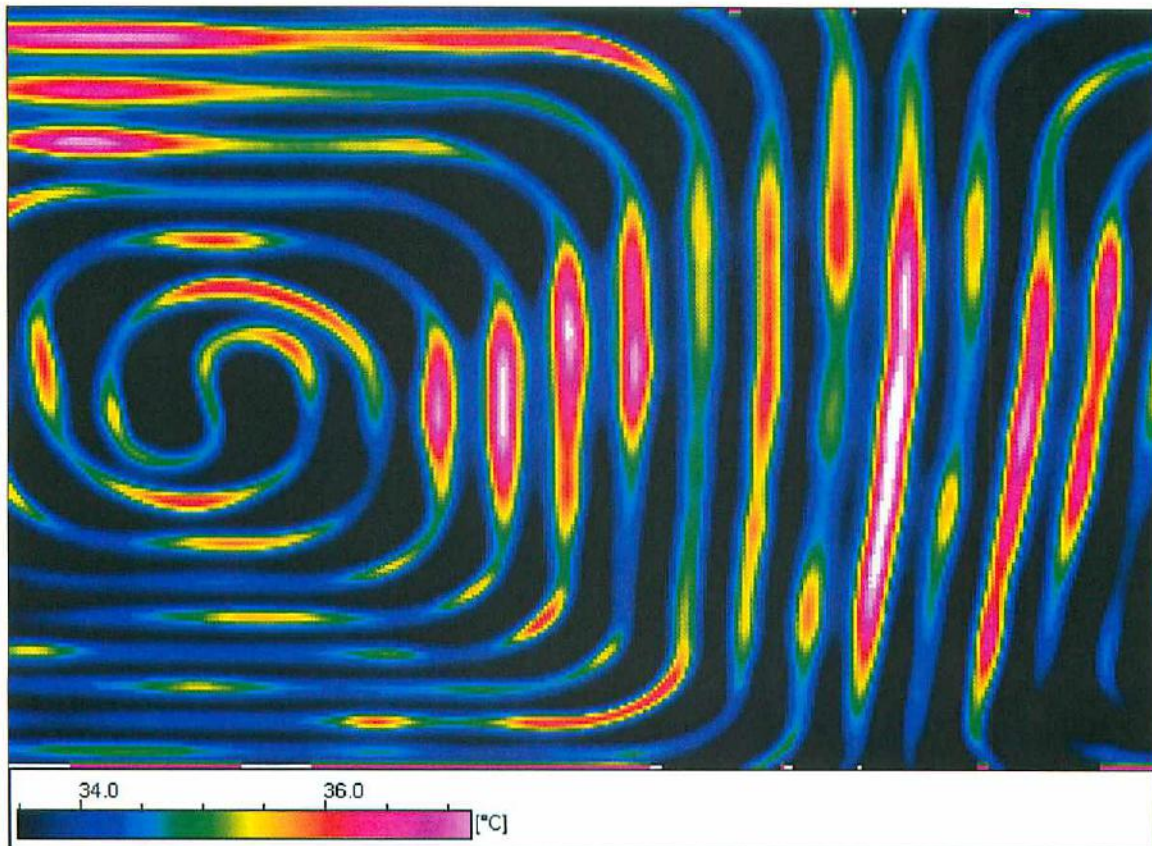
measuring point 1: mean water temperature: 44,5°C, room temperature: 19,8°C



as above, some more other panels



measuring point 1: mean water temperature: 44,5°C, room temperature: 19,8°C



as above, more details in temperatures