Technical Documentation

egger Wohlfühl-Klima

Stand: 2022
egger Wohlfühl-Klima GmbH
eggerklima.at
Gewerbepark 5, 6068 Mils
Österreich

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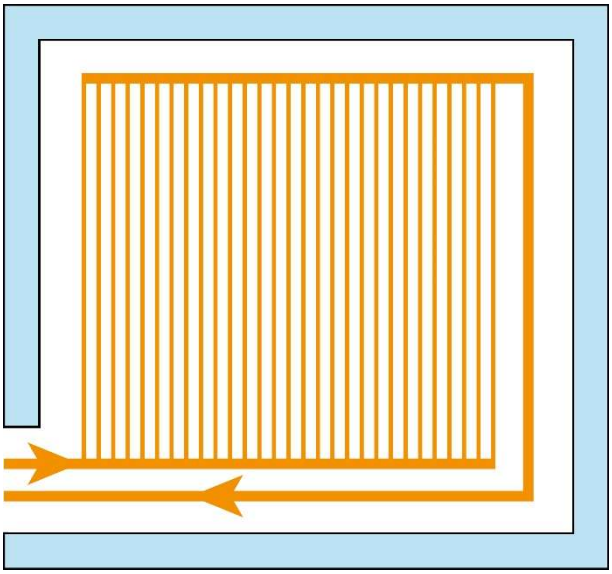
System Overview

In the 1990s, Christian Egger developed the Egger system. Since the year 2000, it has been manufactured using the latest plastic processing technology. More than 3,500 satisfied customers already benefit from the comfort of a well-balanced indoor climate. Approximately 30,000 m² of heating registers are produced annually at the headquarters in Tyrol and installed at customer locations.

Egger Register – Tichelmann Principle

Parallel-Flow Egger Register

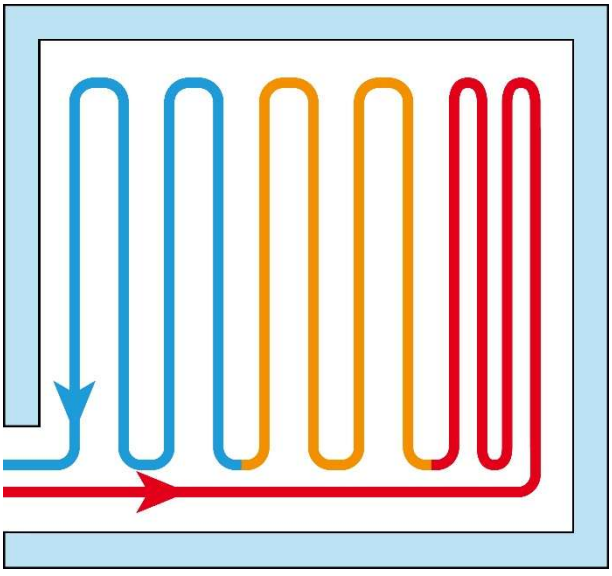


Example:

Heated Area:	10 m²
Pipe Spacing:	8 cm
Required Material:	6 pieces 300/8 5 m pipe
Total Pipe Length:	130 m

Total Pressure Loss: approx. 25 mbar

Serial-Flow Piping System with 16x2 Plastic Pipe



Example:

Heated Area:	10 m²
Pipe Spacing:	10 cm
Required Material:	100 m pipe
Total Pipe Length:	100 m

Total Pressure Loss: approx. 95 mbar

Material Properties

Material	Polypropylene Random (PPR) 100% recyclable Food-safe (Not oxygen-tight according to DIN 4726)
Connection Technology	Polyfusion
Ø Collector Pipe	16x2,0 mm
Ø Parallel Pipe	10x1,5 mm
Parallel Pipe Spacing	8 cm / 16 cm
Length	60 cm – 300 cm (in 20 cm increments)
Width	24 cm – 112 cm (in 8 cm / 16 cm increments)
Maximum Operating Pressure	6 bar
Maximum Medium Temperature	60 °C
Minimum Medium Temperature	0 °C
Thermal Conductivity at 20°C	0,24 W/(mK)
Linear Thermal Expansion Coefficient	1,6 1/K * 10^{-4}
Specific Density	0,91 g/m³
Flammability	B2 (DIN 4102)
UV Compatibility	NO
Physiologically Safe	YES
FDA (Food Approved)	YES

Time-Temp. Diagram/Allowable Overpressures

Water Temperature	Operating Duration	Allowable Maximum Pressure
10 °C	100 Years	28 bar
20 °C	100 Jahre	24 bar
30 °C	50 Jahre	20 bar
40 °C	50 Jahre	17 bar
50 °C	50 Jahre	14 bar

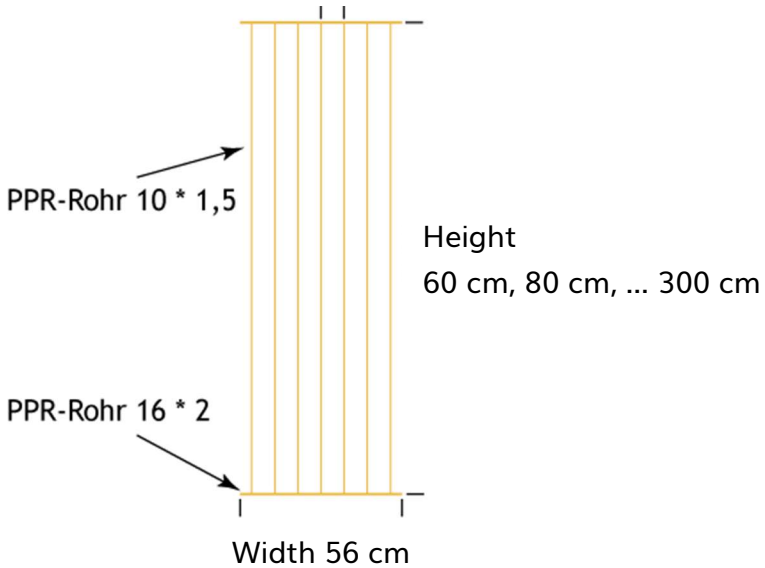
Register Sizes

Standard Register Sizes with 8 cm Pipe Spacing

Width 56 cm with 7 Pieces of 10 mm Pipes at 8 cm Spacing

			Water Content		Weight (incl. Mounting Rails)	
Designation	Height	Area	per register	per m²	empty	with water
60/8	60 cm	0,33 m²	340 ml	1030 ml	300 g	640 g
80/8	80 cm	0,45 m²	396 ml	880 ml	360 g	755 g
100/8	100 cm	0,56 m²	452 ml	807 ml	455 g	905 g
120/8	120 cm	0,67 m²	508 ml	758 ml	515 g	1025 g
140/8	140 cm	0,78 m²	564 ml	723 ml	575 g	1140 g
160/8	160 cm	0,89 m²	620 ml	696 ml	670 g	1290 g
180/8	180 cm	1,01 m²	676 ml	669 ml	730 g	1405 g
200/8	200 cm	1,12 m²	732 ml	653 ml	790 g	1520 g
220/8	220 cm	1,23 m²	788 ml	640 ml	885 g	1675 g
240/8	240 cm	1,34 m²	844 ml	630 ml	945 g	1790 g
260/8	260 cm	1,46 m²	900 ml	616 ml	1005 g	1905 g
280/8	280 cm	1,57 m²	956 ml	609 ml	1065 g	2020 g
300/8	300 cm	1,68 m²	1012 ml	602 ml	1125 g	2135 g

Pipe spacing 8 cm

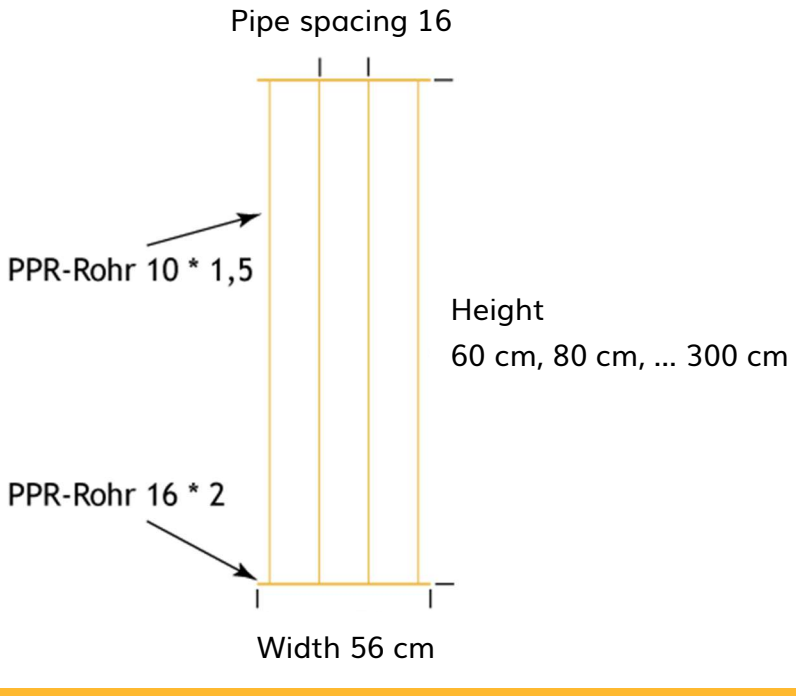


Width 56 cm

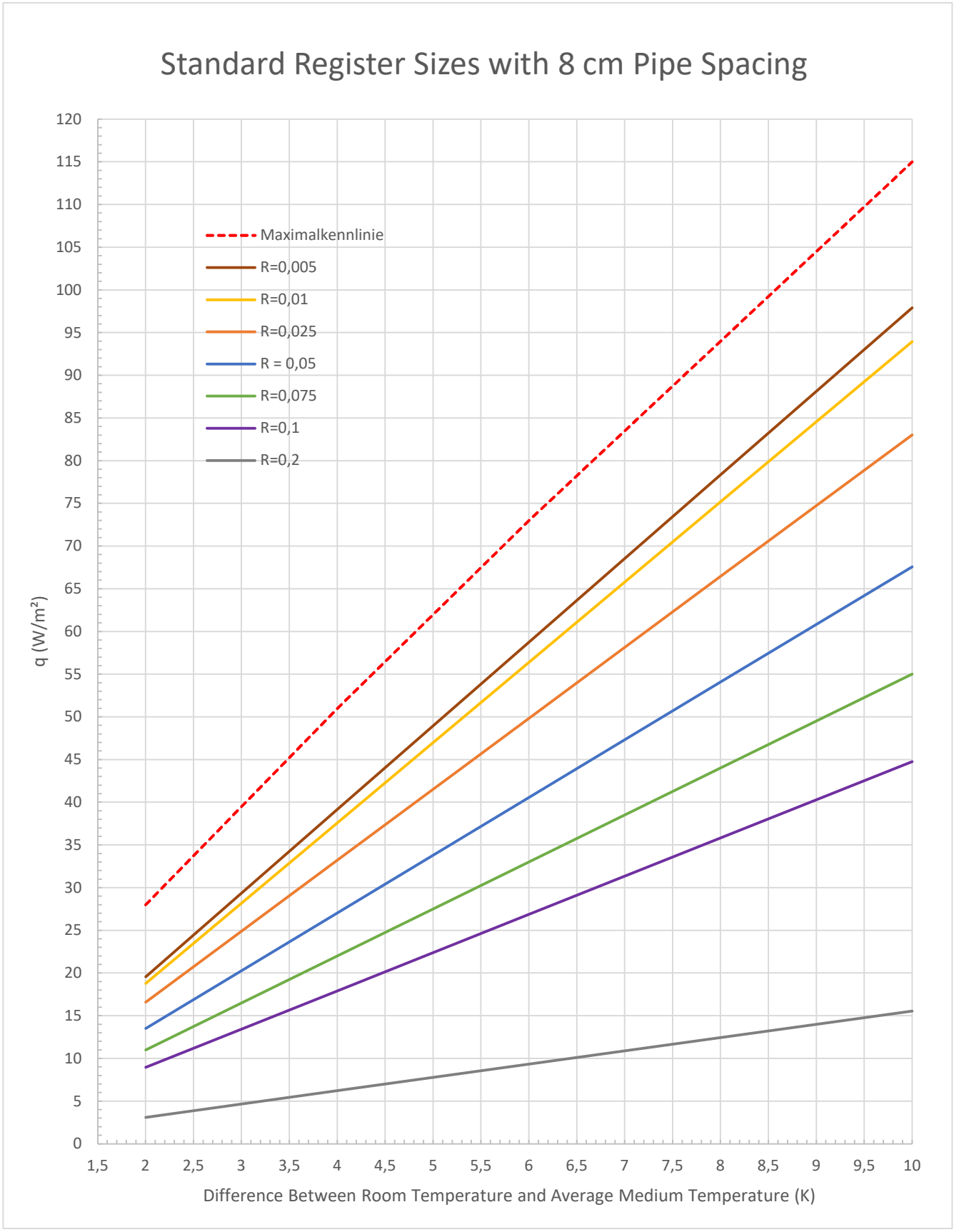
Standard Register Sizes with 16 cm Pipe Spacing

Width 56 cm with 4 Pieces of 10 mm Pipes at 16 cm Spacing

			Water Content		Weight (incl. Mounting Rails)	
Designation	Height	Area	per register	per m²	empty	Height
60/16	60 cm	0,33 m²	268 ml	812 ml	225 g	490 g
80/16	80 cm	0,45 m²	300 ml	666 ml	260 g	560 g
100/16	100 cm	0,56 m²	332 ml	593 ml	330 g	660 g
120/16	120 cm	0,67 m²	364 ml	543 ml	360 g	725 g
140/16	140 cm	0,78 m²	396 ml	508 ml	395 g	790 g
160/16	160 cm	0,89 m²	428 ml	481 ml	430 g	890 g
180/16	180 cm	1,01 m²	460 ml	455 ml	460 g	960 g
200/16	200 cm	1,12 m²	492 ml	439 ml	495 g	1025 g
220/16	220 cm	1,23 m²	524 ml	426 ml	525 g	1125 g
240/16	240 cm	1,34 m²	556 ml	415 ml	555 g	1195 g
260/16	260 cm	1,46 m²	588 ml	403 ml	590 g	1260 g
280/16	280 cm	1,57 m²	620 ml	395 ml	620 g	1325 g
300/16	300 cm	1,68 m²	652 ml	388 ml	650 g	1395 g



Performance Diagram



Calculation of the R-Value (Thermal Resistance ($\frac{m^2*K}{W}$))

$R = \frac{\Delta x}{\lambda}$ Δx = overlap (m) $R = \frac{\Delta x}{\lambda}$ ($\frac{m^2*K}{W}$)

λ = Thermal conductivity of the material ($\frac{W}{m*K}$)

Example Values for λ

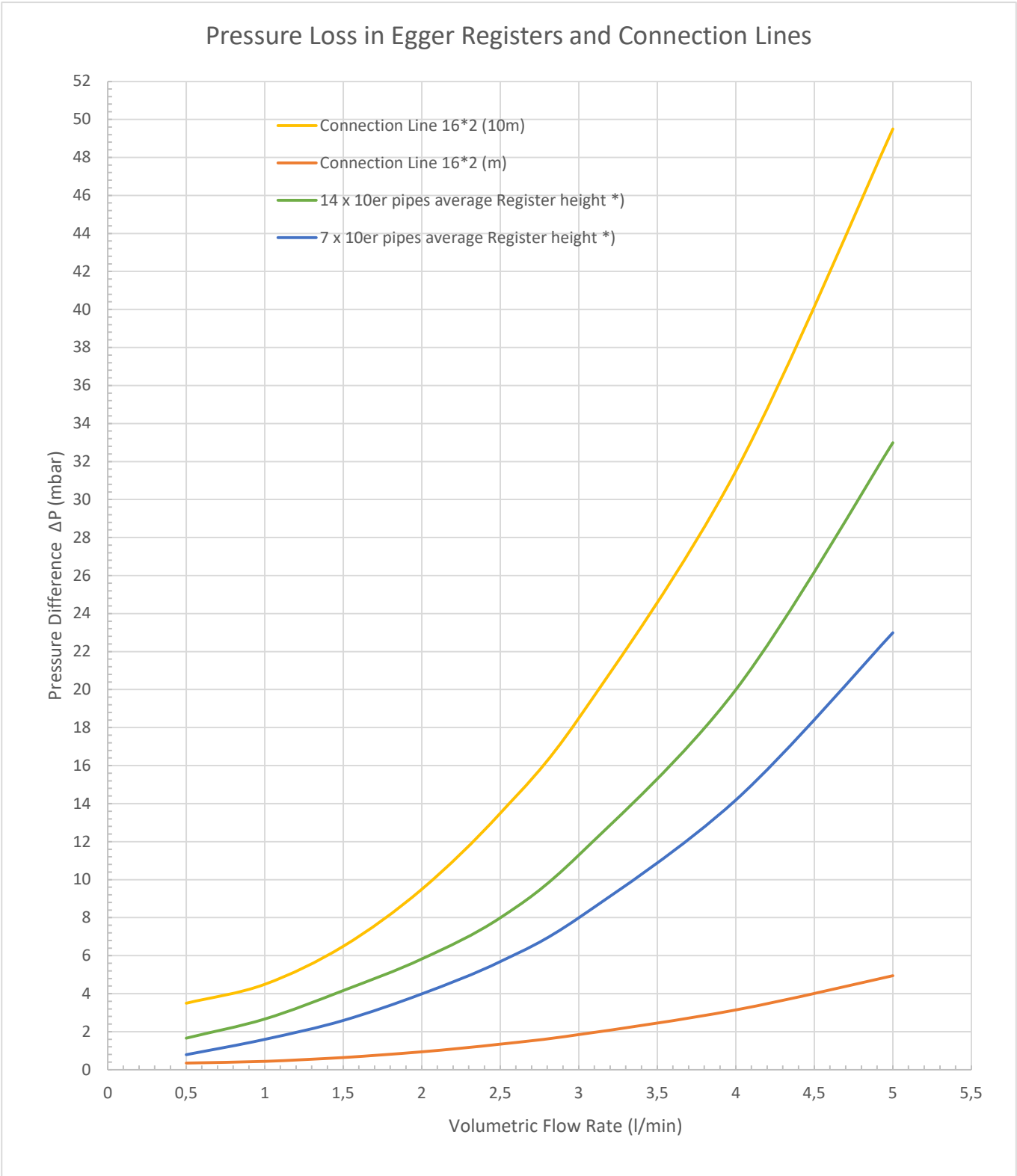
Material	λ ($\frac{W}{m*K}$)	Relevant Thickness Δx	$R = \frac{\Delta x}{\lambda}$ ($\frac{m^2*K}{W}$)
Reinforced Concrete	2,3	5,0 cm	0,021
	2,3	10,0 cm	0,043
	2,3	15,0 cm	0,065
Cement Screed	1,4	5,0 cm	0,036
Anhydrite Screed	1,0	5,0 cm	0,050
Levelling Compound	1,7	1,0 cm	0,006
Cement Plaster	1,4	1,0 cm	0,007
Lime-Cement Plaster	1,0	1,0 cm	0,010
Lime Plaster	0,8	1,0 cm	0,013
Gypsum Plaster	0,7	1,0 cm	0,014
Clay Plaster	0,8	1,0 cm	0,013
Bulk Material (dry sand, etc.)	1,4	2,0 cm	0,014
Still Air Layer	0,07	1,0 cm	0,150
Still Air Layer	0,28	5,0 cm	0,180
Still Air Layer	0,56	10,0 cm	0,180
Coverings			
tiles	1,2	1,5 cm	0,013
parquet	0,2	1,5 cm	0,075
drywall	0,3	1,5 cm	0,050
OSB	0,2	1,5 cm	0,075

Example: A floor construction with anhydrite screed having a relevant thickness of 5 cm (total screed thickness of approximately 6 cm) plus a 1.5 cm tile covering:

$$R_{Total} = R_{\text{anhydrite screed}} + R_{tile} = 0{,}05\ \frac{m^2*K}{W} + 0{,}013\ \frac{m^2*K}{W} = 0{,}063\ \frac{m^2*K}{W}$$

Pressure Loss

Pressure Loss per Register



Pressure Loss per m²