Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -

Summary

Ambient parameters

Minimum temperature outside the enclosure Ta	10 °C
Maximum temperature outside the enclosure Ta	30 °C
Minimum temperature inside the enclosure Ti	30 °C
Maximum temperature inside the enclosure Ti	35 °C
Mains voltage	400 V
Frequency	60 Hz

Conjunto 1

Zone 1 (virtual)

COLUNA 2	TS 8006500
Installation type	First enclosure in a bayed suite, free-standing
Dimensions (W x H x D)	1,000 mm x 2,000 mm x 600 mm
K-factor of the enclosure	5.5
Number of doors	2
Calculated power dissipation	1,260 W
Power dissipation buffer	0%

Climate control calculation

Average temperature without climate control	68 °C
Power dissipation	1,260 W
Heat exchange across surface	169 W
Heat to be dissipated	1,092 W

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -

Order overview

Measures to maintain the temperature

⚠ The chosen climate control solution for this virtual zone has a different IP rating than the ones in neighbouring zones.

Part number	SK3244740 + SK3243300 chopped-fibre filter
Device type	Fan-and-filter unit
Cooling output	1,174 m^3/h
Necessary air throughput	765 m^3/h
Device mounting	Wall-mounted
IP rating	54
Quantity	2

Zone 2 (virtual)

COLUNA 3	TS 8606500
Installation type	Enclosure within a bayed suite, free-standing
Dimensions (W x H x D)	600 mm x 2,000 mm x 600 mm
K-factor of the enclosure	5.5
Number of doors	1
Calculated power dissipation	650 W
Power dissipation buffer	0%

Climate control calculation

Average temperature without climate control	61 °C
Power dissipation	650 W
Heat exchange across surface	107 W
Heat to be dissipated	544 W

ⓘ Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -

Order overview

Measures to maintain the temperature

⚠ The chosen climate control solution for this virtual zone has a different IP rating than the ones in neighbouring zones.

Part number	SK3140140 + SK3243200 chopped-fibre filter
Device type	Fan-and-filter unit
Cooling output	565 m^3/h
Air throughput, unimpeded air flow	853 m^3/h
Necessary air throughput	381 m^3/h
Device mounting	Roof-mounted
IP rating	55
Quantity	1

Zone 3 (virtual)

COLUNA 4	TS 8606500
Installation type	Last enclosure in a bayed suite, free-standing
Dimensions (W x H x D)	600 mm x 2,000 mm x 600 mm
K-factor of the enclosure	5.5
Number of doors	1
Calculated power dissipation	650 W
Power dissipation buffer	0%

Climate control calculation

Average temperature without climate control	58 °C
Power dissipation	650 W
Heat exchange across surface	120 W
Heat to be dissipated	531 W

ⓘ Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -

Order overview

Measures to maintain the temperature

⚠ The chosen climate control solution for this virtual zone has a different IP rating than the ones in neighbouring zones.

Part number	SK3140140 + SK3243200 chopped-fibre filter
Device type	Fan-and-filter unit
Cooling output	565 m^3/h
Air throughput, unimpeded air flow	853 m^3/h
Necessary air throughput	372 m^3/h
Device mounting	Roof-mounted
IP rating	55
Quantity	1

ⓘ Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -

Component list

Enclosure set: Conjunto 1 (Zone 1)

COLUNA 2 - TS 8006500

No component list was created for this enclosure. The calculation was performed using the entered power dissipation and simultaneity factor.

Entered power dissipation	Entered simultaneity factor	Power dissipation buffer	Calculated power dissipation
1,260 W	100%	0%	1,260 W

Enclosure set: Conjunto 1 (Zone 2)

COLUNA 3 - TS 8606500

No component list was created for this enclosure. The calculation was performed using the entered power dissipation and simultaneity factor.

Entered power dissipation	Entered simultaneity factor	Power dissipation buffer	Calculated power dissipation
650 W	100%	0%	650 W

Enclosure set: Conjunto 1 (Zone 3)

COLUNA 4 - TS 8606500

No component list was created for this enclosure. The calculation was performed using the entered power dissipation and simultaneity factor.

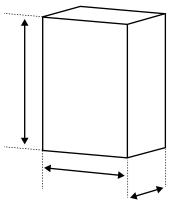
Entered power dissipation	Entered simultaneity factor	Power dissipation buffer	Calculated power dissipation
650 W	100%	0%	650 W

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -

Verification of temperature rise according to IEC 60890, as required in DIN EN 61439

Customer / order**:** PROJETO DE BANCO DE CAPACITORES - 225kVAr - Conjunto 1 - Zone 1		
Enclosure type**:** Single enclosure COLUNA 2 (8006500)		
Decisive dimensions for temperature rise	Height: 2,000 mm Width: 1,000 mm Depth: 600 mm	Installation type**:** Single enclosure, free-standing

Decisive dimensions for temperature rise		Dimensions	A_0	Area factor b acc. to table 3	A_e (Sp. 3) x (Sp. 4)
		m x m	m^2		m^2
		2	3	4	5
	Roof	1.00 x 0.60	0.60	0.90	0.54
	Floor	1.00 x 0.60	0.60	0.50	0.30
	Front	1.00 x 2.00	2.00	0.90	1.80
	Rear	1.00 x 2.00	2.00	0.90	1.80
	Left side	0.60 x 2.00	1.20	0.90	1.08
	Right side	0.60 x 2.00	1.20	0.50	0.60
				$A_e = \sum(A_O - b) =$	6.12

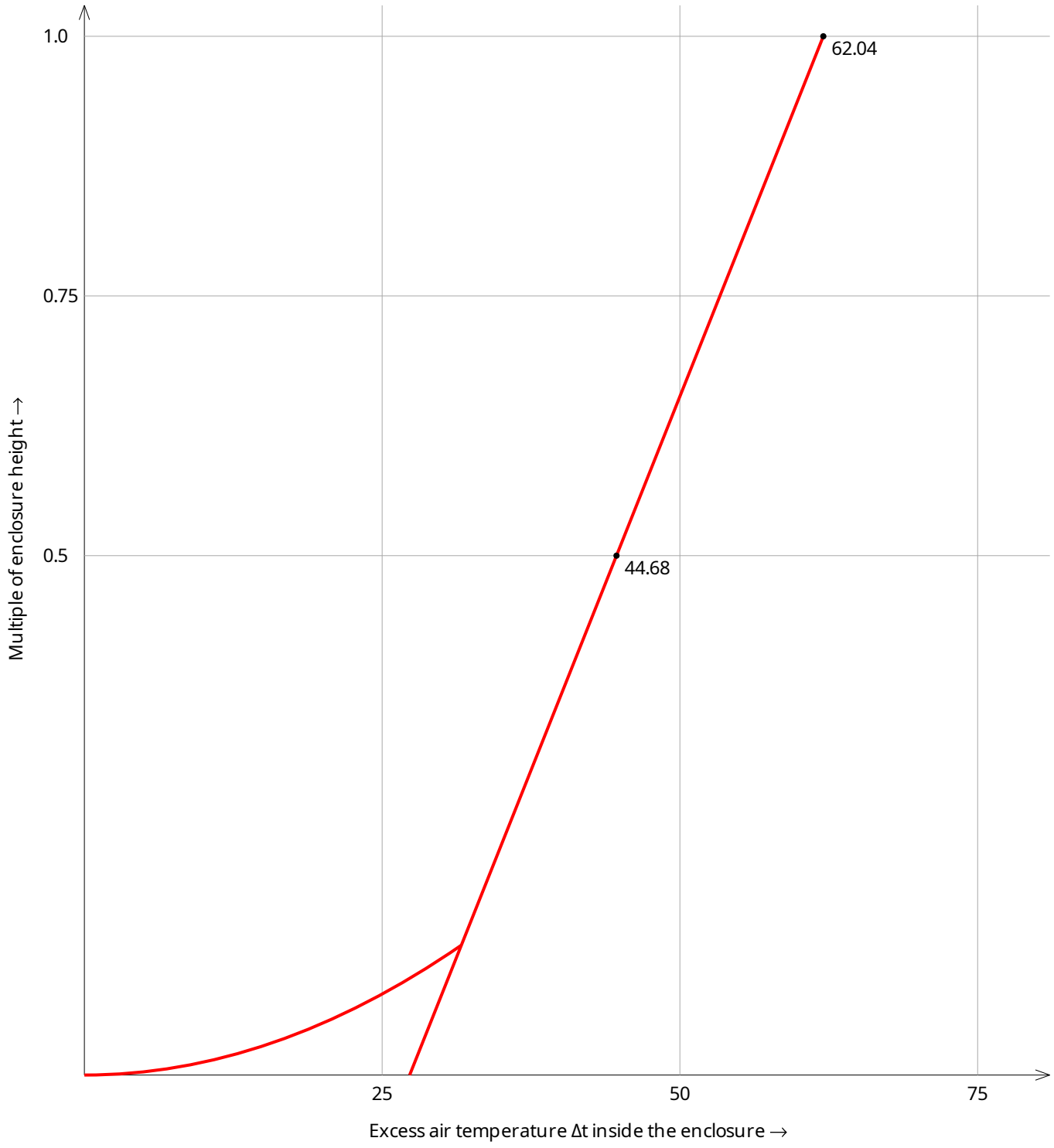
With effective cooling surface A_e	
> 1.25 m^2	≤ 1.25 m^2
$f = h^{1.35} \div A_b = 4.25$ (see 5.2.3)	g = h ÷ w = (see 5.2.3)

Air inlet openings	[cm^2]	0
Enclosure constant *k*		0.144
Factor for horizontal divider panels d		1.00
Effective power dissipation	W	1,260.00
$P^x = P^{***}$		310.96
$\Delta t_{0.5} = k \times d \times P^x$	[K]	44.68
Temperature distribution factor c		1.39
$\Delta t_{1.0} = c \times \Delta t^{0.5}$	[K]	62.04

Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -



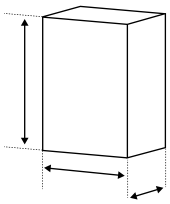
Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -

Verification of temperature rise according to IEC 60890, as required in DIN EN 61439

Customer / order**:** PROJETO DE BANCO DE CAPACITORES - 225kVAr - Conjunto 1 - Zone 2		
Enclosure type**:** Single enclosure COLUNA 3 (8606500)		
Decisive dimensions for temperature rise	Height: 2,000 mm Width: 600 mm Depth: 600 mm	Installation type**:** Single enclosure, free-standing

Decisive dimensions for temperature rise		Dimensions	A_0	Area factor b acc. to table 3	A_e (Sp. 3) x (Sp. 4)
		m x m	m^2		m^2
		2	3	4	5
	Roof	0.60 x 0.60	0.36	0.90	0.32
	Floor	0.60 x 0.60	0.36	0.50	0.18
	Front	0.60 x 2.00	1.20	0.90	1.08
	Rear	0.60 x 2.00	1.20	0.90	1.08
	Left side	0.60 x 2.00	1.20	0.50	0.60
	Right side	0.60 x 2.00	1.20	0.50	0.60
				$A_e = \sum(A_O - b) =$	3.86

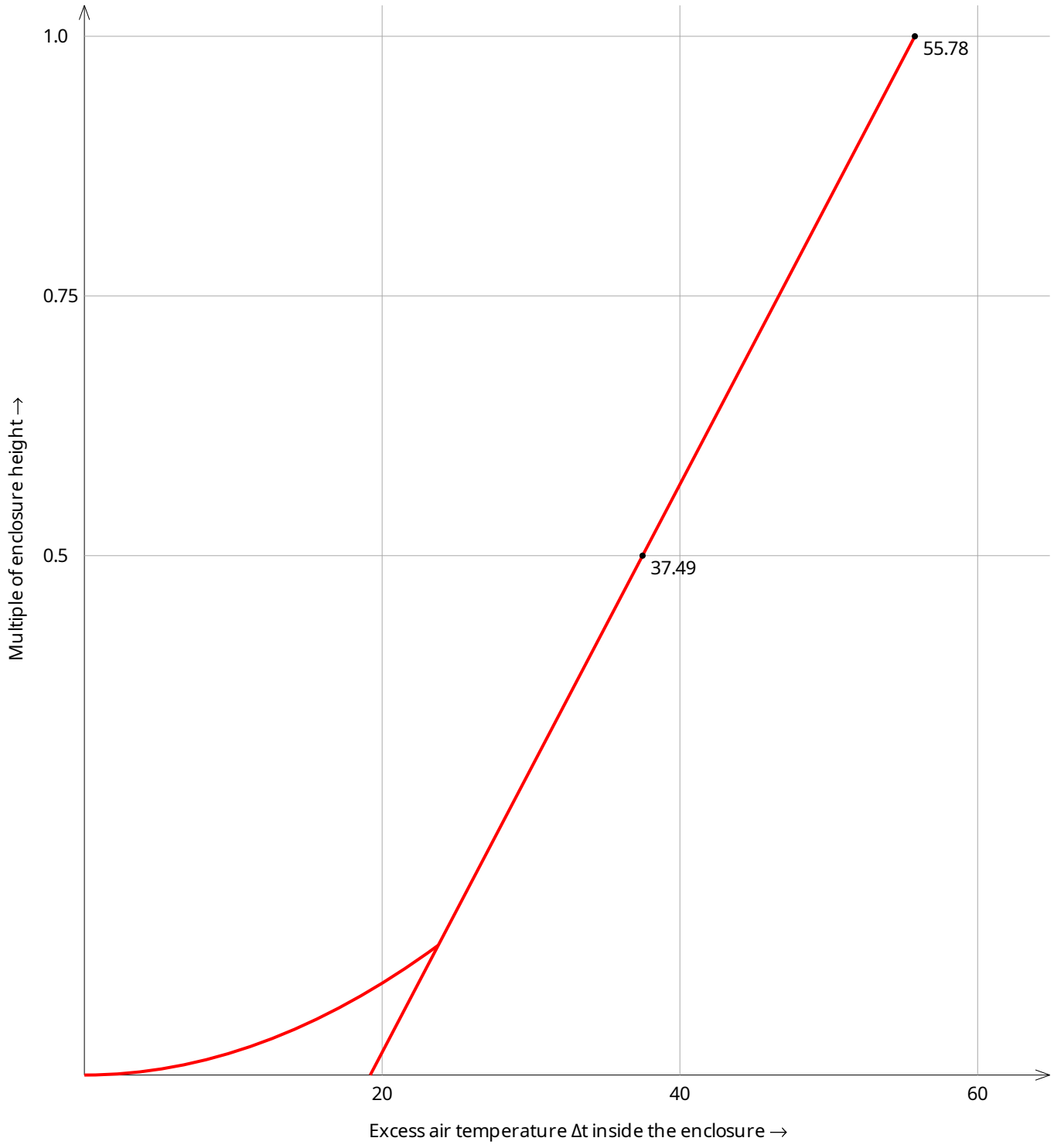
With effective cooling surface A_e	
> 1.25 m^2	≤ 1.25 m^2
$f = h^{1.35} \div A_b = 7.08$ (see 5.2.3)	g = h ÷ w = (see 5.2.3)

Air inlet openings	[cm^2]	0
Enclosure constant *k*		0.205
Factor for horizontal divider panels d		1.00
Effective power dissipation	W	650.00
$P^x = P^{***}$		182.63
$\Delta t_{0.5} = k \times d \times P^x$	[K]	37.49
Temperature distribution factor c		1.49
$\Delta t_{1.0} = c \times \Delta t^{0.5}$	[K]	55.78

Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -



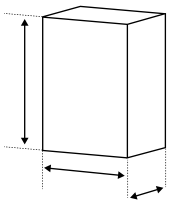
Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -

Verification of temperature rise according to IEC 60890, as required in DIN EN 61439

Customer / order**:** PROJETO DE BANCO DE CAPACITORES - 225kVAr - Conjunto 1 - Zone 3		
Enclosure type**:** Single enclosure COLUNA 4 (8606500)		
Decisive dimensions for temperature rise	Height: 2,000 mm Width: 600 mm Depth: 600 mm	Installation type**:** Single enclosure, free-standing

Decisive dimensions for temperature rise		Dimensions	A_0	Area factor b acc. to table 3	A_e (Sp. 3) x (Sp. 4)
		m x m	m^2		m^2
		2	3	4	5
	Roof	0.60 x 0.60	0.36	0.90	0.32
	Floor	0.60 x 0.60	0.36	0.50	0.18
	Front	0.60 x 2.00	1.20	0.90	1.08
	Rear	0.60 x 2.00	1.20	0.90	1.08
	Left side	0.60 x 2.00	1.20	0.50	0.60
	Right side	0.60 x 2.00	1.20	0.90	1.08
				$A_e = \sum(A_O - b) =$	4.34

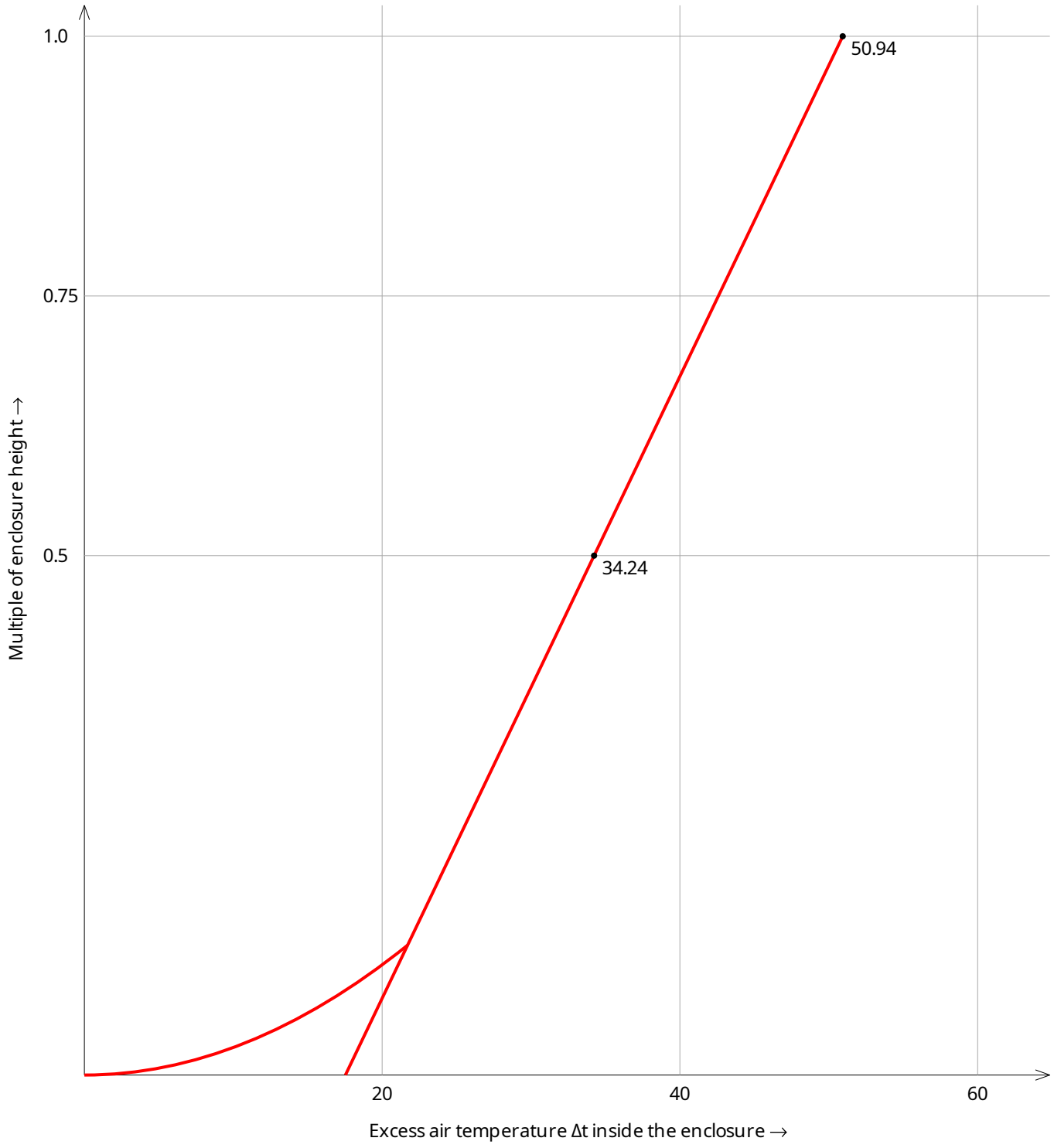
With effective cooling surface A_e	
> 1.25 m^2	≤ 1.25 m^2
$f = h^{1.35} \div A_b = 7.08$ (see 5.2.3)	g = h ÷ w = (see 5.2.3)

Air inlet openings	[cm^2]	0
Enclosure constant *k*		0.187
Factor for horizontal divider panels d		1.00
Effective power dissipation	W	650.00
$P^x = P^{***}$		182.63
$\Delta t_{0.5} = k \times d \times P^x$	[K]	34.24
Temperature distribution factor c		1.49
$\Delta t_{1.0} = c \times \Delta t^{0.5}$	[K]	50.94

Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.

Project: **-**
Calculation: **PROJETO DE BANCO DE CAPACITORES - 225kVAr**
Type: **Indoor**

Company: -
Contact person: -
Contact information: -



Please consider door opening angle, permissible weight load for door mounting and minimal distance between device and other objects. Rittal does not assume any liability for the calculation, dimensioning and selection.