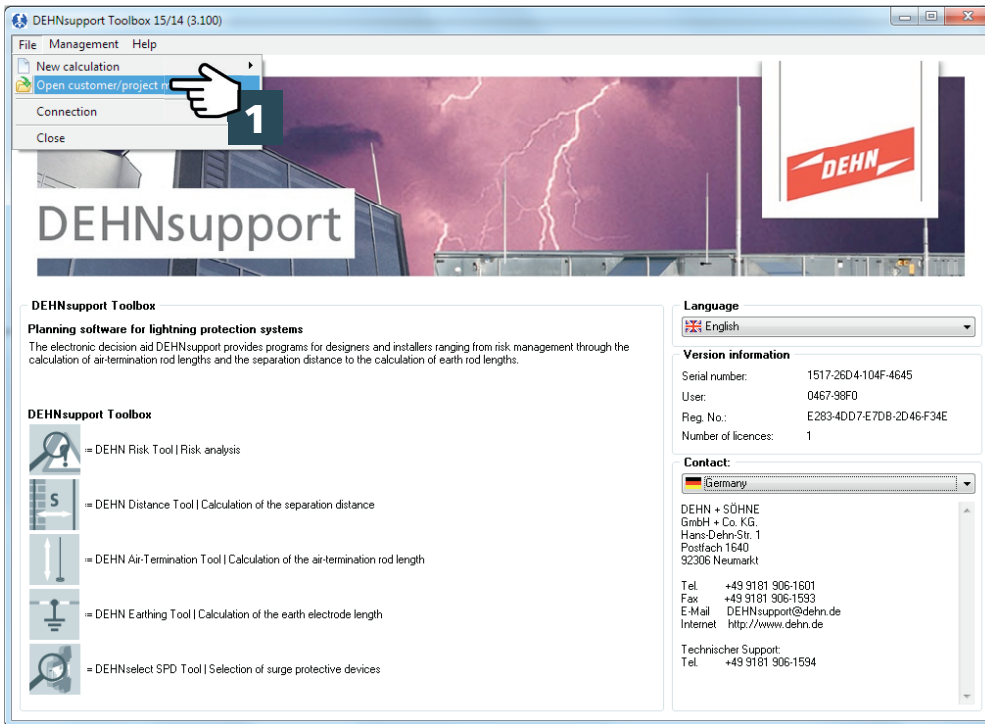


DEHNsupport Toolbox

DEHN Risk Tool - Brief Instructions

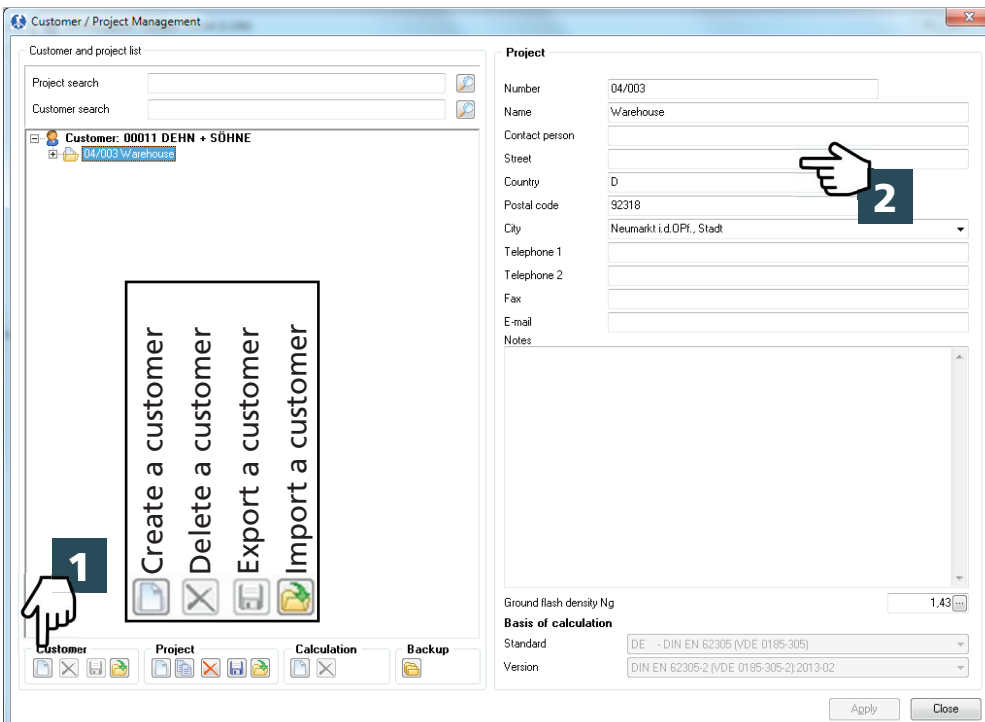


Program entry



1 Open project / customer management

Creating a Customer

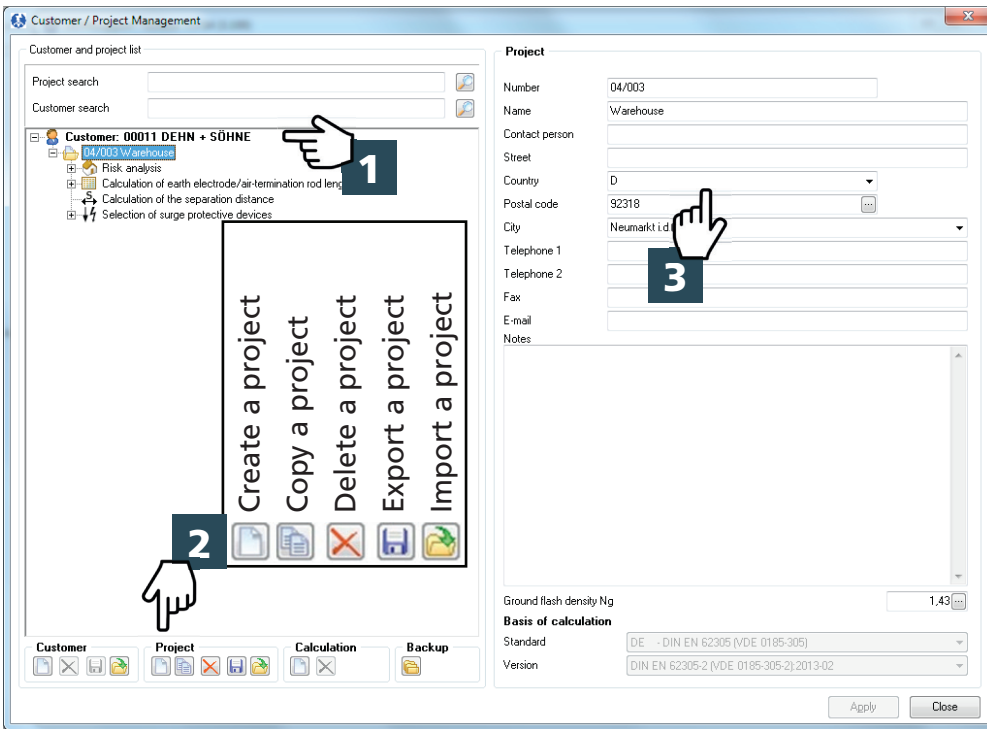


1 Create a customer

2 Enter customer data

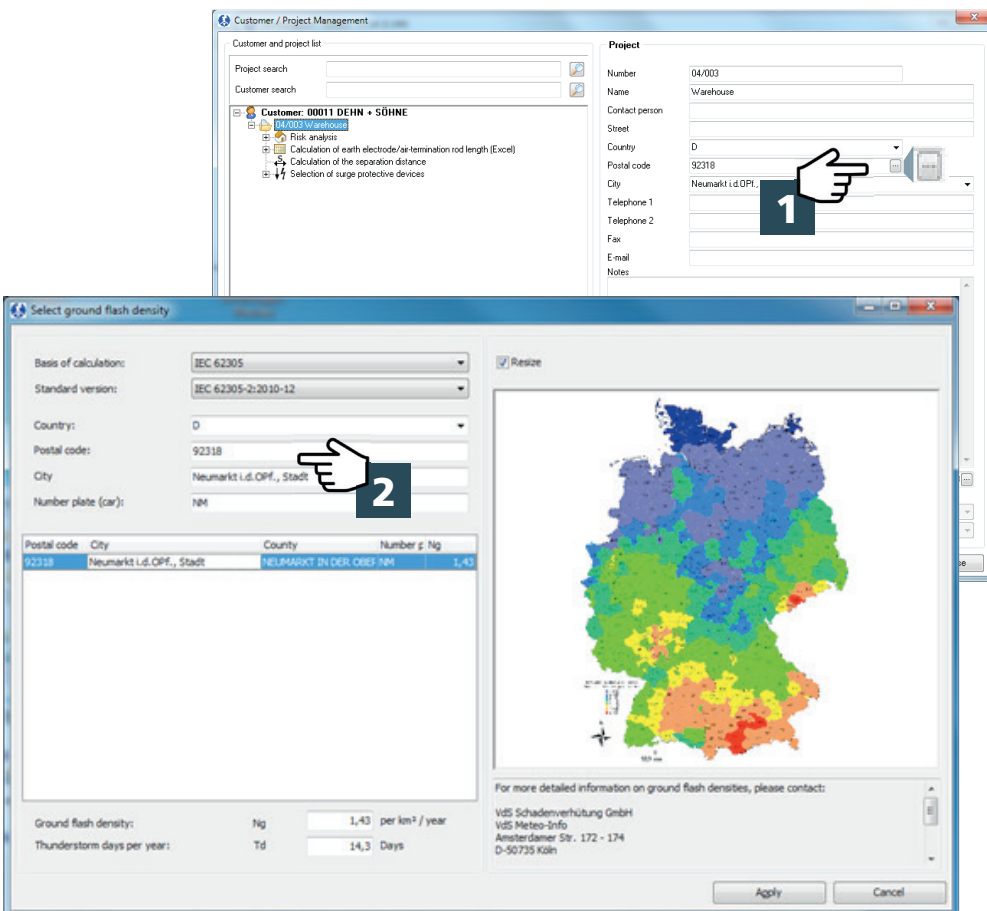
Note:
The entered customer data are also listed in the printout

Creating a project



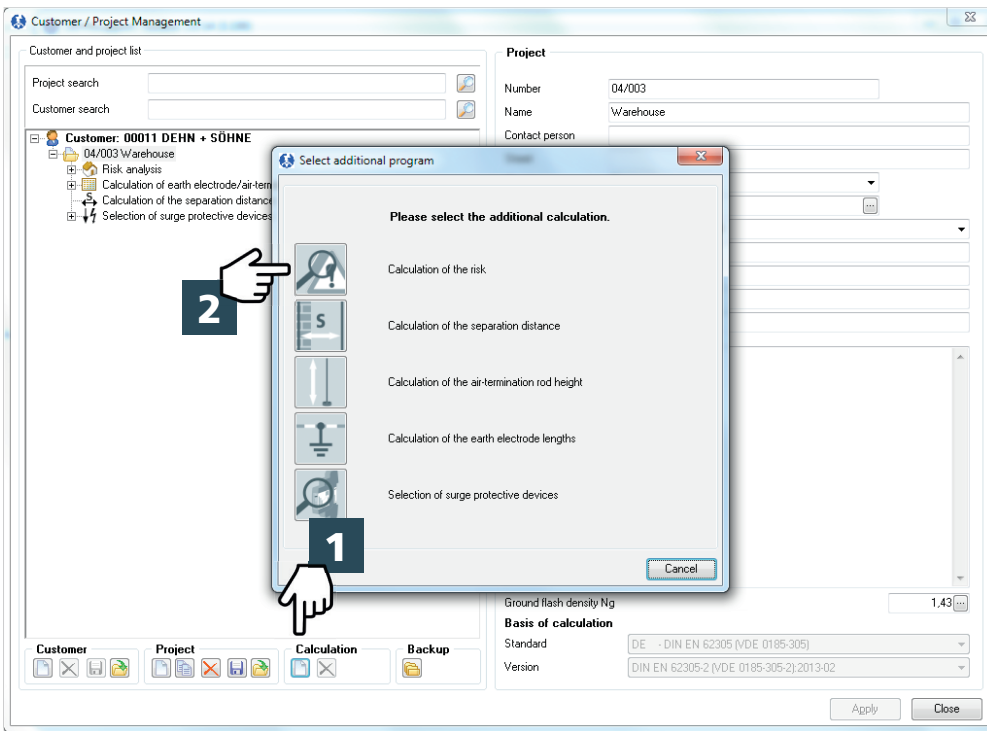
- 1** Highlight a customer
- 2** Create a project
- 3** Enter project data

Selecting the ground flash density



- 1** Open menu
- 2** Enter postal code

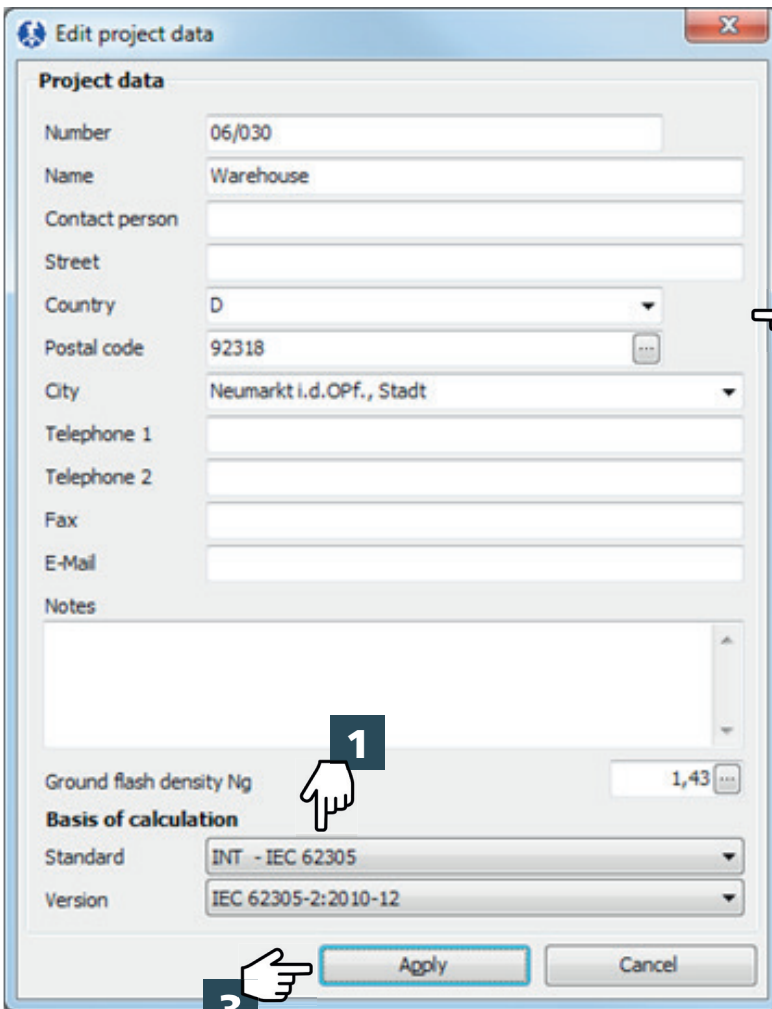
Selecting a calculation



1 Calculation

2 Risk calculation

Edit project data

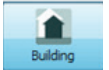


1 Select a basis of calculation

2 Enter project data

3 Apply

Selection of the risks to be considered



DEHN Risk Tool 13/31 (2.047)

File Edit language

Object: Object Edit objects

Building/basic data

Thunderstorm days per year Td 14 Days

Ground flash density Ng 1,43 per km² / year

Simple structure Building with high point Complex structure

Location factor of the structure Isolated object: No further obj

Select the risks to be considered.

Please select the risks to be considered.

R1: Risk of loss of human life 1,00E-05

R2: Risk of loss of service to the public 1,00E-03

R3: Risk of loss of cultural heritage 1,00E-04

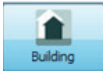
R4: Risk of loss of economic value 1,00E-03

Apply Cancel

1 Select the risks to be considered

2 Apply

Edit objects



DEHN Risk Tool 13/31 (2.047)

File Edit language

Object: Object Edit objects

Building/basic data

Thunderstorm days per year Td 14 Days

Edit objects

Name Warehouse

Without protection/actual state

Project data Evaluation Results

06/030 Warehouse

person

D

92318

Neumarkt i.d.OPf.,

1

2

sh density Ng 1,43

calculation

INT - REC 62305

REC 62305-2:2010

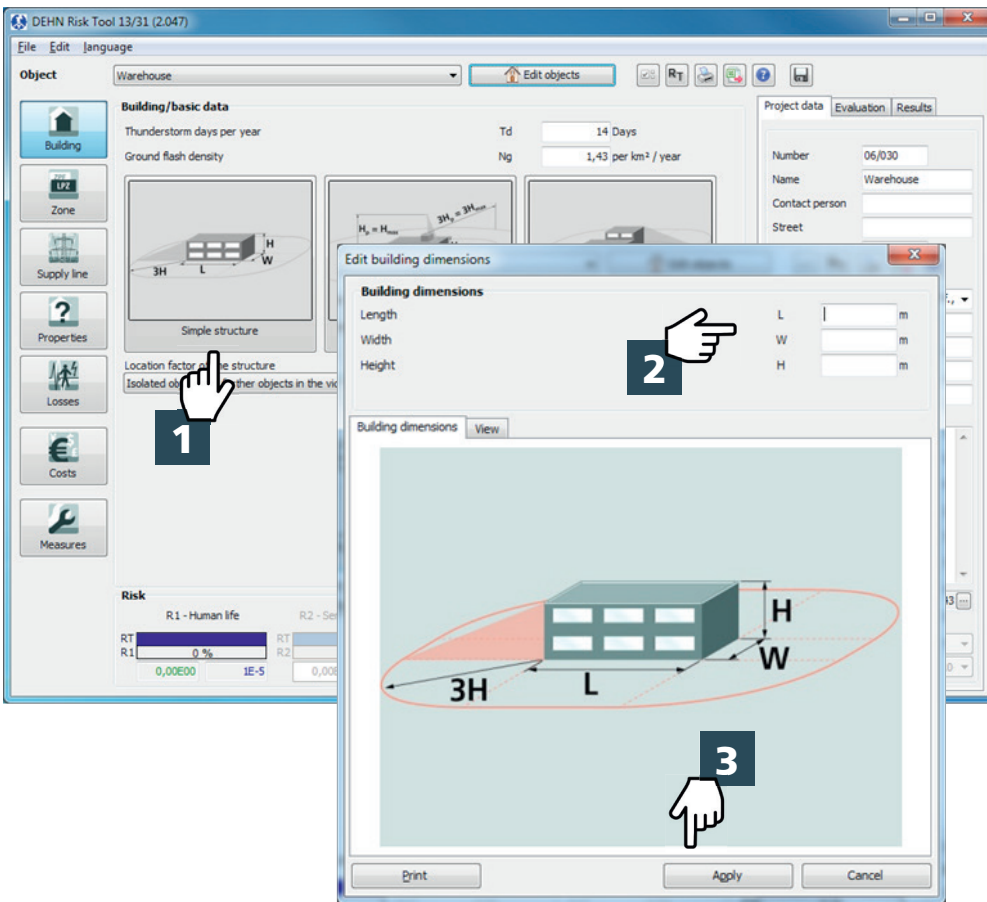
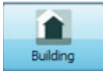
Apply Cancel

1 Edit object

2 Enter the name of the object

3 Apply

Edit building dimensions

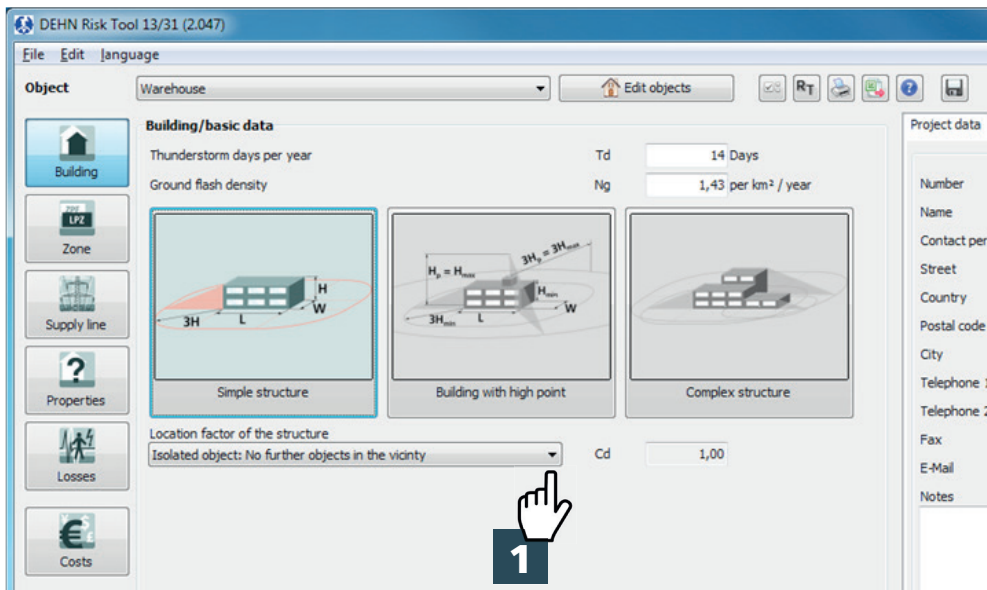
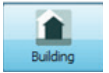


1 Select the building type

2 Enter building dimensions

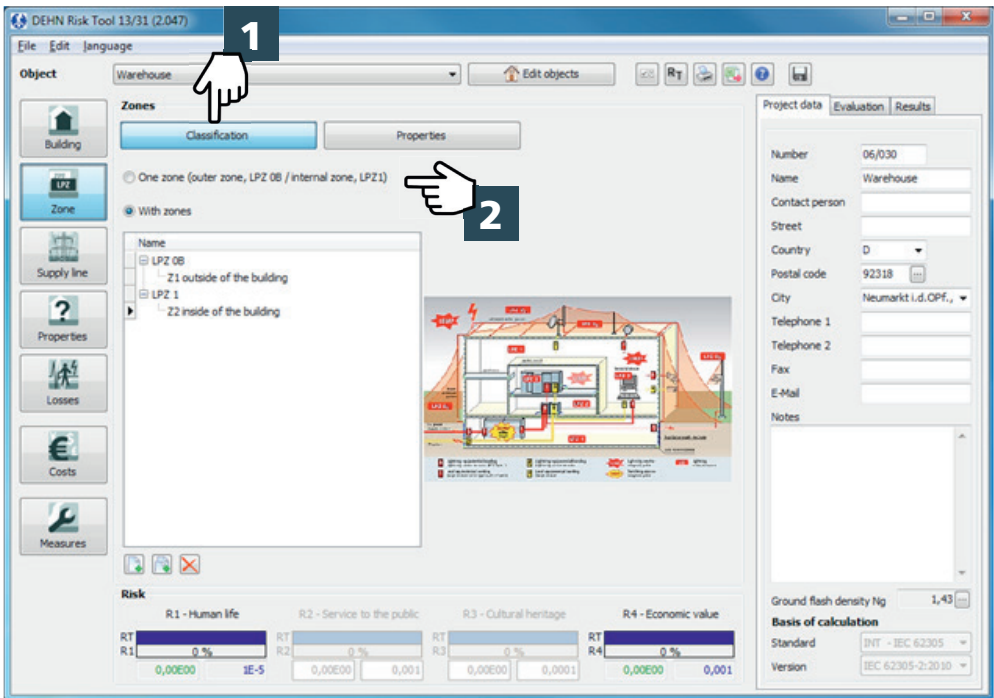
3 Apply

Building / basic data



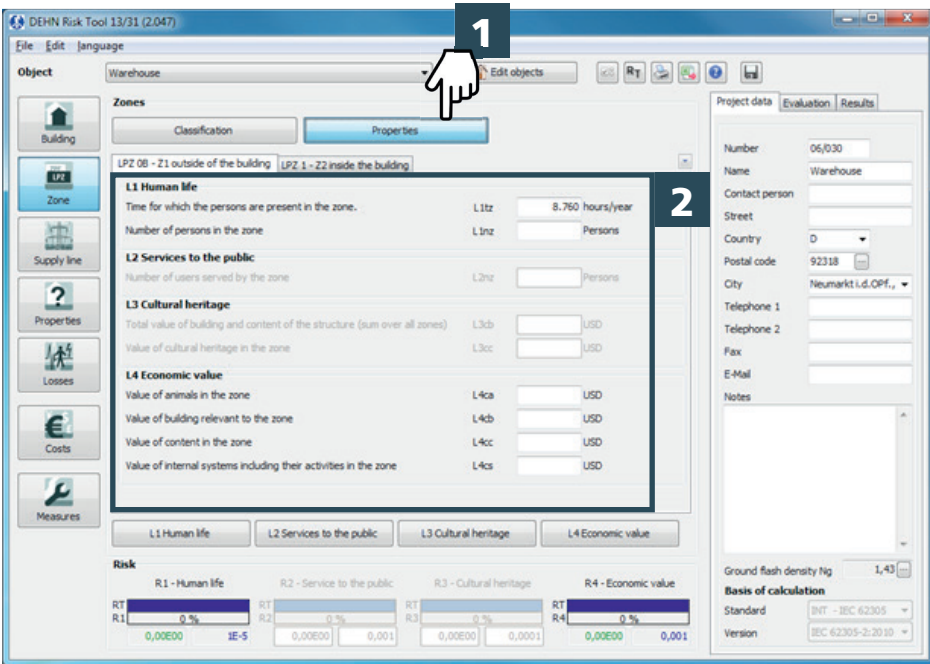
1 Define the relative location

Zones



- 1** Select classifications
- 2** Select and classify zones

Zones



- 1** Select properties
- 2** Describe the zone properties

Supply lines



- 1 Edit conductors
- 2 Add lines
- 3 Select lines
- 4 Apply

Supply lines



- 1 Select a line
- 2 Enter / select line parameters

Supply lines



DEHN Risk Tool 13/31 (2.047)

Object: Warehouse

Supply lines: Power supply line

Buttons: Conductor, System connected, Characteristics of internal systems

System connected diagrams: Simple structure, Building with high point, Complex structure

Relative position of the connected system: Isolated object: No further objects in the vicinity

Risk: R1 - Human life, R2 - Service to the public, R3 - Cultural heritage, R4 - Economic value

RT R1: 0.0%, 0,00E00, IE-5

RT R2: 0.0%, 0,00E00, 0,001

RT R3: 0.0%, 0,00E00, 0,0001

RT R4: 0.0%, 0,00E00, 0,001

Project data: Number 06/030, Name Warehouse, Country D, Postal code 92318, City Neumarkt i.d.OPf., Ground flash density Ng 1,43

Basis of calculation: Standard INT - IEC 62305, Version IEC 62305-2:2010

1 Describe the system connected, if any

Supply lines



DEHN Risk Tool 13/31 (2.047)

Object: Warehouse

Supply lines: Telecommunication supply line

Buttons: Conductor, System connected, Characteristics of internal systems

Zone: LPZ 0B - Z1 outside of the building, LPZ 1 - Z2 inside the building

Characteristics of internal systems:

- Calculate conductor in this zone
- Coordinated SPD protection: No coordinated SPD system, pSPD 1
- Type of internal wiring: Unshielded cable - no routing precaution in order to avoid loops, KS3 1
- Rated impulse withstand voltage of system to be protected (kV): $U_{iw} \leq 1,0$ kV, U_{iw} 1
- Failure of internal systems due to flashes to a line: PLD 1
- Failure of internal systems due to flashes near an incoming line: PLI 1

Risk: R1 - Human life, R2 - Service to the public, R3 - Cultural heritage, R4 - Economic value

RT R1: 0.0%, 0,00E00, IE-5

RT R2: 0.0%, 0,00E00, 0,001

RT R3: 0.0%, 0,00E00, 0,0001

RT R4: 0.0%, 0,00E00, 0,001

Project data: Number 06/030, Name Warehouse, Country D, Postal code 92318, City Neumarkt i.d.OPf., Ground flash density Ng 1,43

Basis of calculation: Standard INT - IEC 62305, Version IEC 62305-2:2010

1 Describe the characteristics of the internal systems in the zones

Properties



DEHN Risk Tool 13/31 (2.047)

File Edit Language

Object Warehouse

Properties

Factors Shielding

LPZ 0B - Z1 outside of the building LPZ 1 - Z2 inside the building

Contact resistance

Soil / floor properties

Asphalt, linoleum, wood $R \geq 100 \text{ k}\Omega\text{m}$ rt $1\text{E-}5$

Electric shock

Protection against electric shock (lightning strike in structure)

No measures pta 1

Protection against electric shock (lightning strike in supply line)

No measures ptu 1

Fire

Fire precautions

No measures rp 1

Reduction factor of risk of fire or explosion

Normal risk of fire rf 0,01

Risk

R1 - Human life R2 - Service to the public R3 - Cultural heritage R4 - Economic value

RT R1 0 % 0,00E00 1E-5 RT R2 0 % 0,00E00 0,001 RT R3 0 % 0,00E00 0,0001 RT R4 0 % 0,00E00 0,001

Project data Evaluation Results

Number 06/030

Name Warehouse

Contact person

Street

Country D

Postal code 92318

City Neumarkt i.d.OPf.,

Telephone 1

Telephone 2

Fax

E-Mail

Notes

Ground flash density Ng 1,43

Basis of calculation

Standard INT - IEC 62305

Version IEC 62305-2:2010

1 Select factors

2 Describe the properties of the zones

Properties



DEHN Risk Tool 13/31 (2.047)

File Edit Language

Object Warehouse

Properties

Factors Shielding

Lightning protection system/equipotential bonding (all zones)

Lightning protection system (LPS)

No protection by LPS pB 1

Lightning equipotential bonding

No equipotential bonding pEB 1

Spatial shielding

External spatial shielding (all zones)

No shielding KS1 1

Mesh size KS IW

LPZ 0B - Z1 outside of the building LPZ 1 - Z2 inside the building

Internal spatial shielding

No shielding KS2 1

Mesh size KS2W

Risk

R1 - Human life R2 - Service to the public R3 - Cultural heritage R4 - Economic value

RT R1 0 % 0,00E00 1E-5 RT R2 0 % 0,00E00 0,001 RT R3 0 % 0,00E00 0,0001 RT R4 0 % 0,00E00 0,001

Project data Evaluation Results

Number 06/030

Name Warehouse

Contact person

Street

Country D

Postal code 92318

City Neumarkt i.d.OPf.,

Telephone 1

Telephone 2

Fax

E-Mail

Notes

Ground flash density Ng 1,43

Basis of calculation

Standard INT - IEC 62305

Version IEC 62305-2:2010

1 Select shielding

2 Describe shielding

Losses



DEHN Risk Tool 13/31 (2.047)

Object: Warehouse

Losses: L1 Human life, L2 Services to the public, L3 Cultural heritage, L4 Economic value

Zone: LPZ 0B - Z1 outside of the building

Factor for touch and step voltage: Typical value, L1Lt: 0,01

Factor for fire: Industrial, commercial, L1Lf: 0,02

Kind of special hazard: Average level of panic (e.g. structures designed for cultural or sport), L1hz: 5

Damage factor for overvoltage: No loss, L1Lo:

Calculate additional loss:

Presence of people in the dangerous place outside the structure: L1te: hours/year

Persons injured outside the structure: L1lfe: %

Risk: R1 - Human life, R2 - Service to the public, R3 - Cultural heritage, R4 - Economic value

RT R1: 1447%, 1,45E-04, 1E-5

RT R2: 0%, 0,00E00, 0,001

RT R3: 0%, 0,00E00, 0,0001

RT R4: 0%, 0,00E00, 0,001

Project data: Evaluation Results

Number: 06/030

Name: Warehouse

Contact person:

Street:

Country: D

Postal code: 92318

City: Neumarkt i.d.OPf.,

Telephone 1:

Telephone 2:

Fax:

E-Mail:

Notes:

Ground flash density Ng: 1,43

Basis of calculation: Standard: INT - IEC 62305, Version: IEC 62305-2:2010

- 1 Select a type of loss
- 2 Select factors for losses in the zone

Costs



DEHN Risk Tool 13/31 (2.047)

Object: Warehouse

Losses: L1 Human life, L2 Services to the public, L3 Cultural heritage, L4 Economic value

Zone: LPZ 0B - Z1 outside of the building, LPZ 1 - Z2 inside the building

Factor for touch and step voltage: No loss, L4Lt: 0

Factor for fire: Hospital, industrial

Damage factor for: Hospital, industry

Calculate additional loss:

Total value of goods in dangerous place outside the structure: L4ce: USD

Value of all goods damaged outside the structure: L4lfe: %

Risk: R1 - Human life, R2 - Service to the public, R3 - Cultural heritage, R4 - Economic value

RT R1: 1447%, 1,45E-04, 1E-5

RT R2: 0%, 0,00E00, 0,001

RT R3: 0%, 0,00E00, 0,0001

RT R4: 1928%, 1,93E-02, 0,001

Project data: Evaluation Results

Number: 06/030

Name: Warehouse

Contact person:

Street:

Country: D

Postal code: 92318

City: Neumarkt i.d.OPf.,

Telephone 1:

Telephone 2:

Fax:

E-Mail:

Notes:

Ground flash density Ng: 1,43

Basis of calculation: Standard: INT - IEC 62305, Version: IEC 62305-2:2010

Dialog box: DEHN Risk Tool 13/31 (2.047)

A protected version of the object is required for this part of the program! (A protected version will now be automatically created.)

OK

- 1 Confirm

Cost estimation



Economic value (L4)

Cost estimation

Object: Warehouse

Interest rates	i	4,00 %
Maintenance rates	m	1,00 %
Amortization time	at	20 years
Amortization rates	a	5,00 %
Value of animals in the zone	L4ca	€
Value of building relevant to the zone	L4cb	3.750.000 €
Value of content in the zone	L4cc	500.000 €
Value of internal systems including their activities in the zone	L4cs	750.000 €
Total value of the structure	L4ct	5.000.000 €
Costs of a total loss	CL	0 €

Warehouse protected

Costs of protection measures	CP	€
Costs of total loss with protection	CRL	0 €
Annual costs of protection	CPM	0 €
Savings	S	0 €

Close

1 Enter rates

Measures



Select measures

Object: Warehouse

Type of risk: R1 - Human life

RA RB RC RM RW RV RU RZ

With protection/target state

Lightning protection system (LPS)
Class of LPS III pB 0,1

Lightning equipotential bonding
Equipotential bonding for LPL I pEB 0,01

Power supply line
Connection of the conductor
No special conditions

Telecommunication supply line
Connection of the conductor
No special conditions

Risk
RT 8,71E-06
R 1E-5

Evaluation Results Costs

LPZ 0B - Z1 outside of the building

LPZ 1 - Z2 inside the building

Close

1 Select a type of risk

2 Select risk components according to the existing risk

3 Define protection measures

Measures



- 1** Select „Economic value“
- 2** Click „Evaluation“ tab
- 3** Select risk components according to the existing risk

Measures



- 1** Select zones
- 2** Define protection measures

Measures



The screenshot shows the 'Select measures' dialog box with the following data:

Measure	Costs
Costs of a total loss (CL)	1.446.738 USD
Costs of protection measures (CP)	25.000 USD
Costs of total loss with protection (CRL)	20.759 USD
Annual costs of protection (CPM)	0 USD
Savings (S)	1.425.978 USD

1 Click „Costs“ tab

2 Enter costs of protection measures

