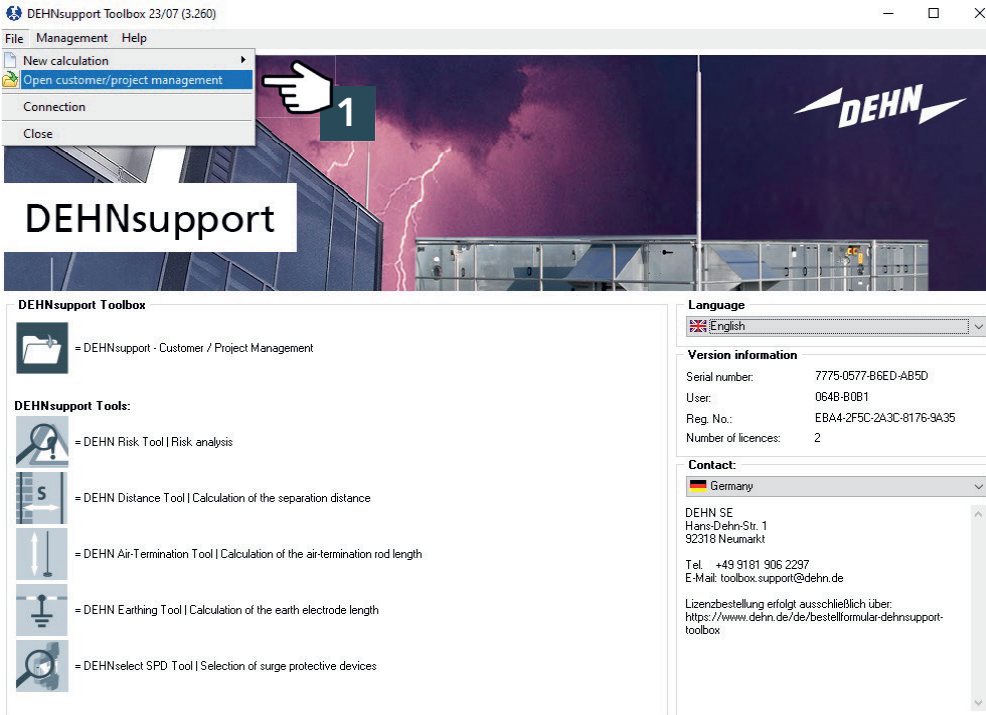


# DEHN Risk Tool - Brief Instructions

## DEHNsupport Toolbox

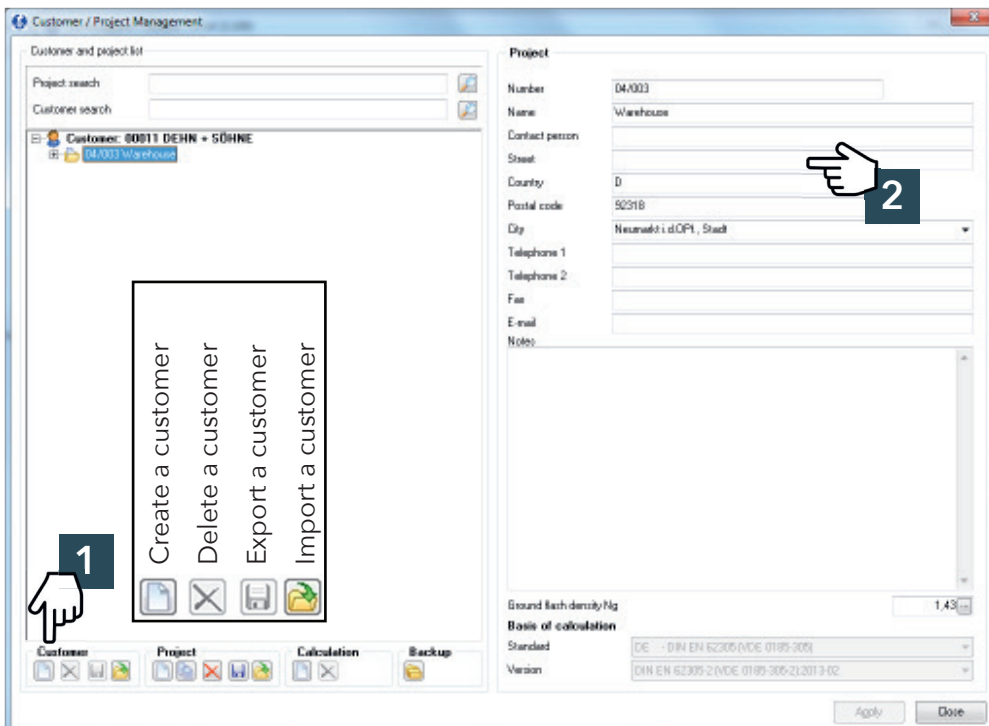


### Program entry



**1** Open project / customer management

### Creating a Customer

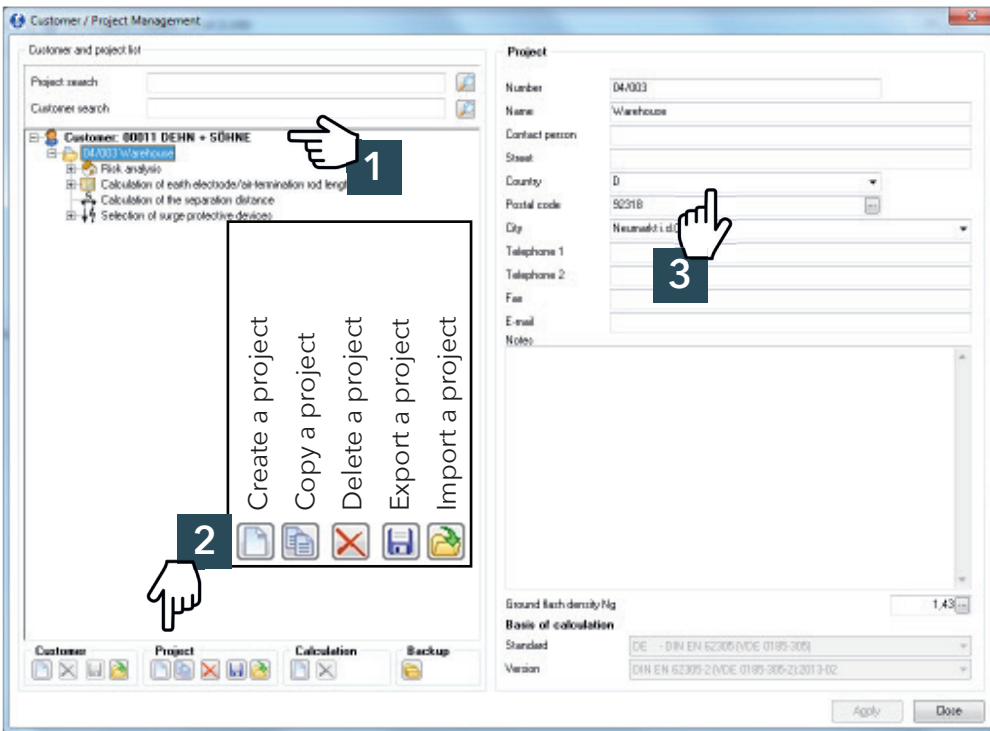


**1** Create a customer

**2** Enter customer data

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

## Creating a project

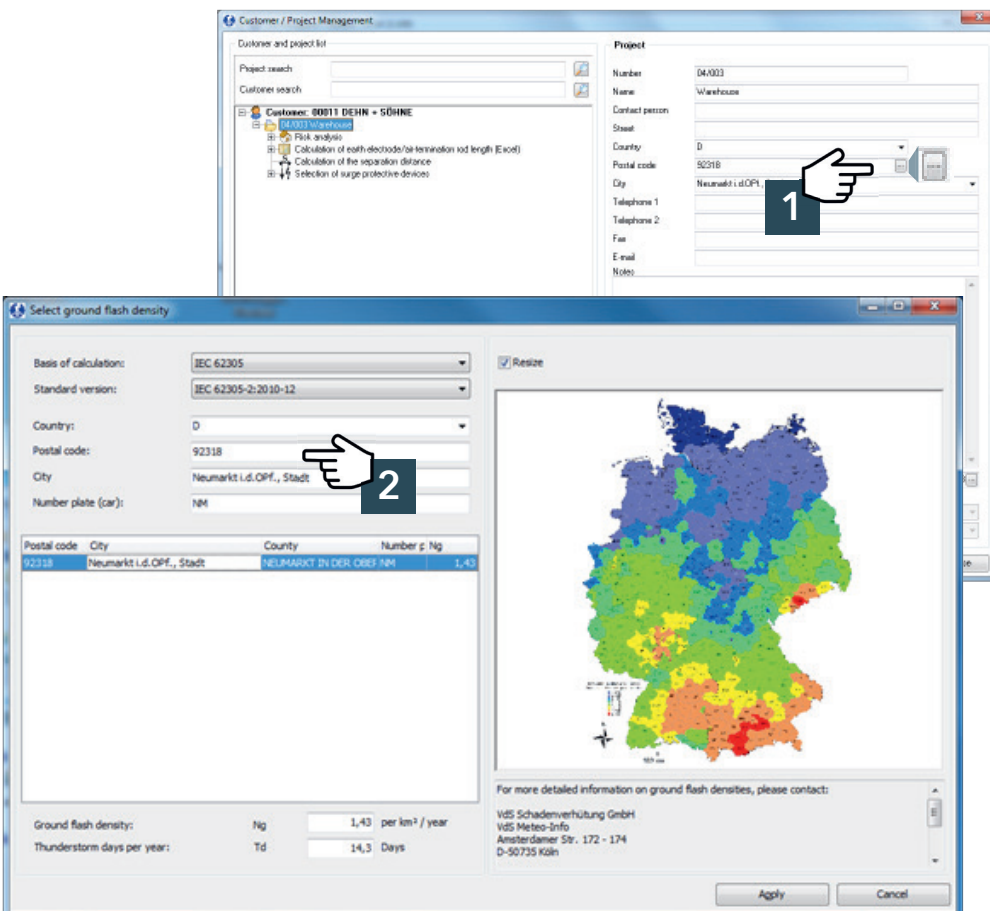


1 Highlight a customer

2 Create a project

3 Enter project data

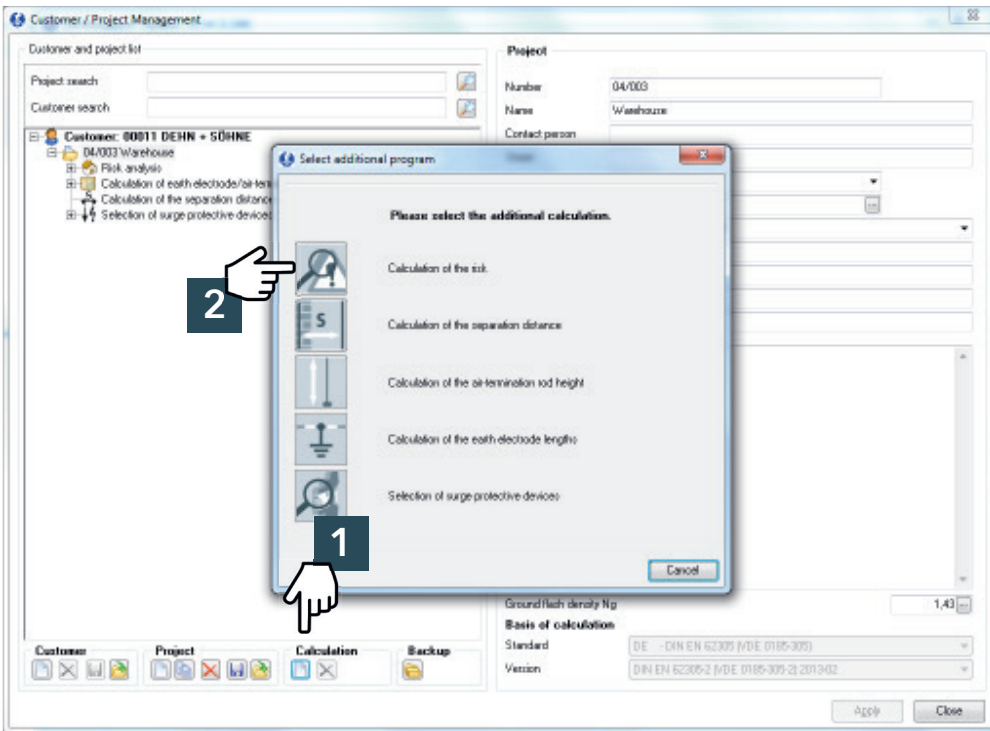
## Selecting the ground flash density



1 Open menu

2 Enter postal code

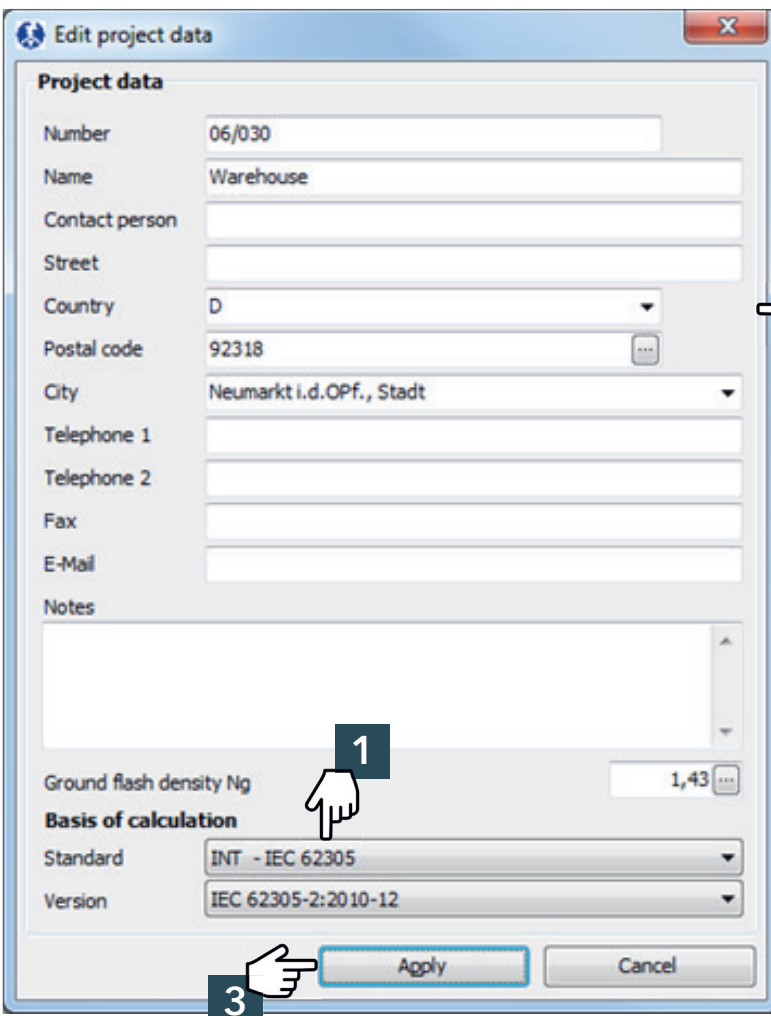
## Selecting a calculation



1 Calculation

2 Risk calculation

## Edit project data

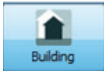


1 Select a basis of calculation

2 Enter project data

3 Apply

## Selection of the risks to be considered



The screenshot shows the DEHN Risk Tool interface. The 'Building/basic data' section is active, displaying parameters like 'Thunderstorm days per year' (Td: 14 Days) and 'Ground flash density' (Ng: 1,43 per km<sup>2</sup> / year). Three structure types are shown: 'Simple structure', 'Building with high point', and 'Complex structure'. A dialog box titled 'Please select the risks to be considered.' is overlaid, listing four risk categories with checkboxes and associated values:

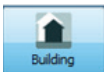
Risk Category	Value
<input checked="" type="checkbox"/> R1: Risk of loss of human life	1,00E-05
<input type="checkbox"/> R2: Risk of loss of service to the public	1,00E-03
<input type="checkbox"/> R3: Risk of loss of cultural heritage	1,00E-04
<input checked="" type="checkbox"/> R4: Risk of loss of economic value	1,00E-03

Numbered callouts indicate: 1. Select the risks to be considered (pointing to the checkboxes); 2. Apply (pointing to the 'Apply' button).

1 Select the risks to be considered

2 Apply

## Edit objects



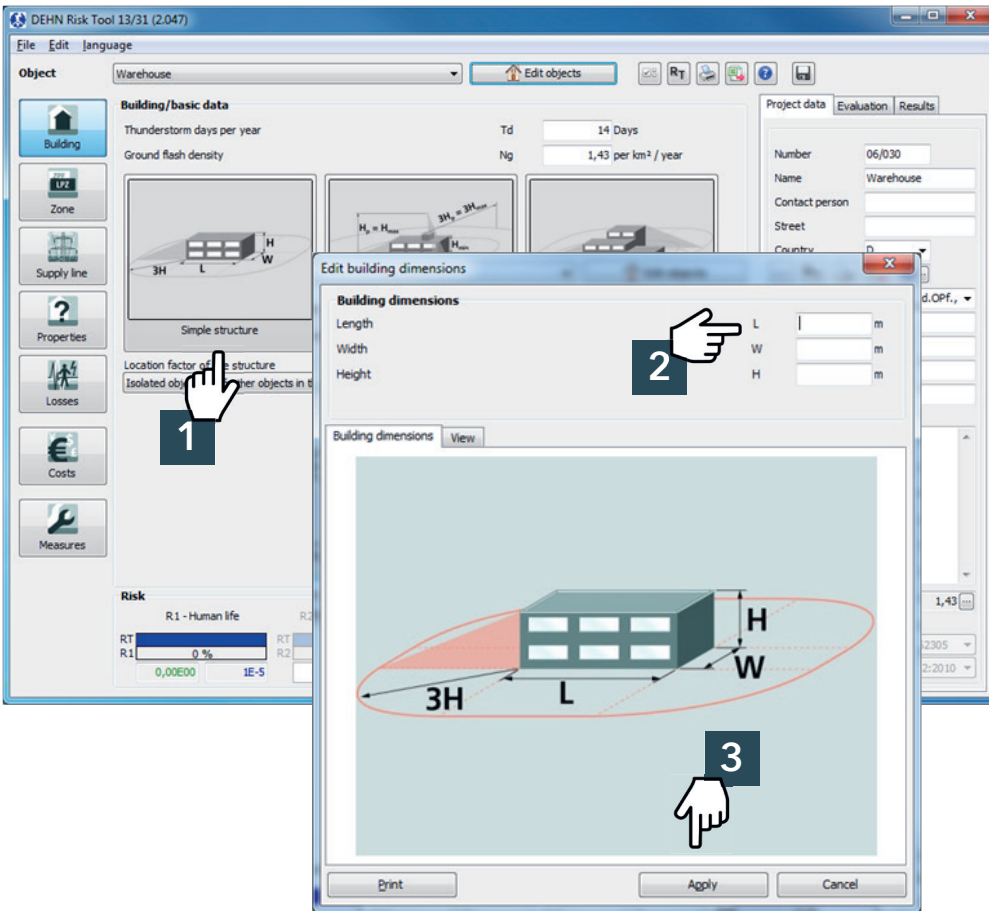
The screenshot shows the DEHN Risk Tool interface with the 'Edit objects' dialog box open. The dialog box has a list of objects, with 'Warehouse' selected. The 'Apply' button is highlighted. Numbered callouts indicate: 1. Edit object (pointing to the 'Edit objects' button in the main window); 2. Enter the name of the object (pointing to the 'Warehouse' text in the list); 3. Apply (pointing to the 'Apply' button in the dialog box).

1 Edit object

2 Enter the name of the object

3 Apply

## Edit building dimensions

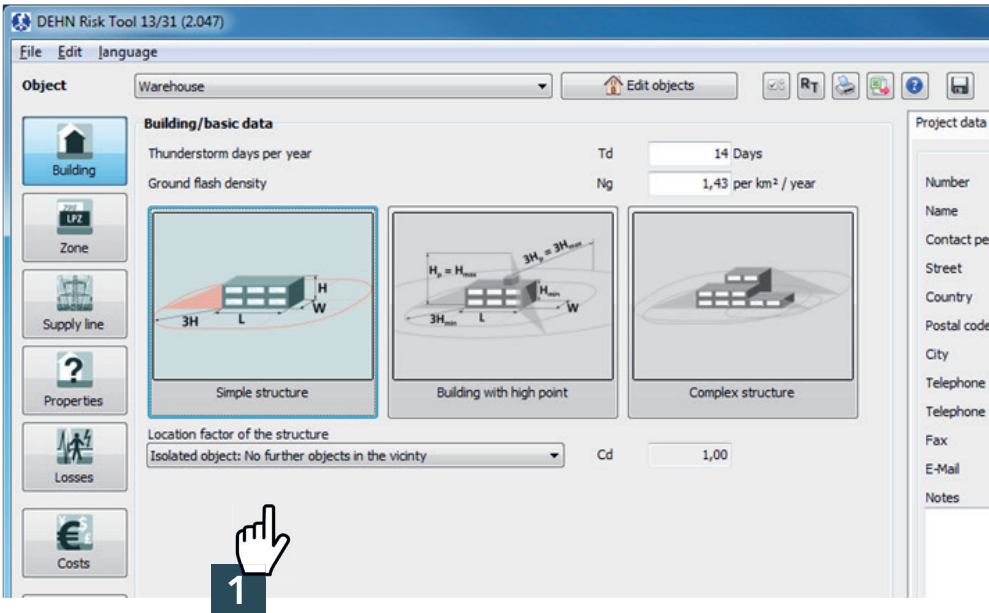
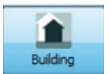


1 Select the building type

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

Conductor: System connected

System connected

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

Project data: 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  $N_g$ : 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

Conductor: System connected

Characteristics of internal systems

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

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):  $U_w \leq 1,0$  kV,  $U_w$  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

Project data: 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  $N_g$ : 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 >= 100 kOhm rt 1E-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

R1 0% 0,00E00 1E-5 R2 0% 0,00E00 0,001 R3 0% 0,00E00 0,0001 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 KS1W

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

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



1 Select a type of loss

2 Select factors for losses in the zone

# Costs



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  
R 8,71E-06 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



Object: Warehouse

Type of risk: R4 - Economic value

With protection/target state

Costs

Measure	Cost
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