

ΜΕΛΕΤΗ ΑΝΤΙΚΕΡΑΥΝΙΚΗΣ ΠΡΟΣΤΑΣΙΑΣ

που συντάχθηκε σύμφωνα με τον ΕΛΟΤ ΕΝ 62305-2:2010

Εργοδότης : ΔΗΜΟΣ ΠΗΝΕΙΟΥ

Έργο : ΚΑΤΑΣΚΕΥΗ ΠΡΟΣΘΗΚΗΣ Α' ΝΗΠΙΑΓΩΓΕΙΟΥ ΓΑΣΤΟΥΝΗΣ, ΔΗΜΟΥ ΠΗΝΕΙΟΥ

Θέση : ΓΑΣΤΟΥΝΗ, ΔΗΜΟΥ ΠΗΝΕΙΟΥ

Ημερομηνία : ΔΕΚΕΜΒΡΙΟΣ 2025

Μελετητές : ΔΙΕΥΘΥΝΣΗ ΤΕΧΝΙΚΩΝ ΥΠΗΡΕΣΙΩΝ & ΠΕΡΙΒΑΛΛΟΝΤΟΣ ΔΗΜΟΥ ΠΗΝΕΙΟΥ

Παρατηρήσεις :

ΓΑΣΤΟΥΝΗ 23/ 12 /2025

Ο ΣΥΝΤΑΞΑΣ

ΦΩΤΗΣ ΧΑΤΖΟΠΟΥΛΟΣ
ΗΛΕΚΤΡΟΛΟΓΟΣ ΜΗΧΑΝΙΚΟΣ

ΘΕΩΡΗΘΗΚΕ
Η ΠΡΟΪΣΤΑΜΕΝΗ Δ/ΝΣΗΣ

ΝΙΚΟΛΕΤΤΑ ΚΟΚΚΑΛΙΑΡΗ
ΠΟΛΙΤΙΚΟΣ ΜΗΧΑΝΙΚΟΣ, M.Sc.
ΜΕ ΒΑΘΜΟ Α'



RESULTS OF RISK MANAGEMENT ASSESSMENT

Schedule 1: Final

1. Design of Lightning Protection System (LPS)

- o No LPS System

● class of LPS : IV

- o class of LPS : III
- o class of LPS : II
- o class of LPS : I
- o class of LPS : I and additionally having a continuous metal or reinforced concrete framework acting as a natural down conductor system
- o class of LPS : I and additionally having a metal roof with a complete protection against lightning strikes and a continuous metal or reinforced concrete framework acting as a natural down conductor system

2. Design of Surge Protective Device (SPD) system

- o No coordinated SPD system

● SPD system designed for LPL : III- IV (LPL : Lightning Protection Level)

- o SPD system designed for LPL : II
- o SPD system designed for LPL : I
- o SPD system designed for LPL : I and are used SPDs with better characteristics (higher nominal current, Lower protective level Up etc)

3. Protection measures against dangerous touch and step voltages

● No protection measures

- o Warning notices (near the LPS conductor)
- o Electrical Insulation (e.g. at least 3mm cross-linked polyethylene) of exposed parts (e.g. down conductors)
- o Effective soil equipotentialization
- o Physical restrictions (e.g. around down conductors)
- o Building framework used as a down conductor system

4. Protection measures to entering lines due to dangerous touch voltages to living beings

● No protection measures

- o Electrical insulation (the external wiring system with the internal wiring system e.g with transformer)
- o Physical restrictions

5. Protection measures to reduce the consequences of fire

- o No provisions

● One of the following provisions: extinguishers, fixed manually operated extinguishing installations, automatic alarm installations, hydrantants, fire compartments, escape routes

- o One of the following provisions: fixed manually operated extinguishing installations, automatic alarm installations (Only if protected against overvoltages and other damages and if firemen can arrive in less than 10min)

With the above protection measures all calculated risks are lower than tolerable (*10E-6)

Type of loss	Tolerable risk (R tolerable)	Calculated risk (R calculated)
L1: Loss of human life	10	1,1
L2: Loss of service to the public	1000	0
L3: Loss of cultural heritage	100	0
L4: Economic loss	1000	13,6

Structure characteristics

Selected type of building: School

All data in the following pages are from the final schedule

Environment and global structure characteristics

Input parameter	Comment	Symbol	Value	Reference
Ground flash density	1/km ² /year	N_G	2,5	Equation (A.1)
Structure dimensions	m x m x m	L x W x H	18x18x5	
Structure location factor	Surrounded by objects or trees of the same height or smaller	C_D	0,5	Table A.1
Equipotential bonding	SPD system designed for LPL : III- IV (LPL : Lightning Protection Level)	P_{EB}	0,05	Table B.7
Lightning protection system (LPS)	class of LPS : IV	P_B	0,2	Table B.2
External spatial shield	Screening effectiveness	k_{s1}	0	Equation (B.6)

It is assumed that the whole structure is one zone. If the structure consists of only a part of a building, the dimensions of structure may be used in evaluation of AD provided that the following conditions are fulfilled:

1. the structure is a separated vertical part of a building
2. the whole building does not have a risk of explosion
3. propagation of fire between the structure and other parts of the whole building is avoided by means of walls with resistance to fire of 120min
4. propagation of overvoltages along common lines, if any, is avoided by means of SPDs installed at the entrance point of such lines in the structure

Services characteristics

Power supply service characteristics

Input parameter	Comment	Symbol	Value	Reference
Line length	(m)	L_{line}	20	
Installation factor	Buried	C_i	0,5	Table A.2
Linetype factor	Low Voltage	C_t	1	Table A.3
Environmental factor	Urban	C_e	0,1	Table A.4
Line shielding	Line shielded	C_{LD}	1	Table B.4
		C_{Li}	0,3	
Adjacent structure	m x m x m	$L_j \times W_j \times H_j$	0x0x0	
Location factor	Isolated	C_{dj}	0	Table A.1
Withstand voltage (KV)	Internal systems	U_W	1,5	
	Resulting parameters	k_{s4}	0,67	Equation (B.7)
		P_{LD}	1	Table B.8
		P_{Li}	0,6	Table B.9

It is assumed that the shield resistance of a buried High Voltage (HV) line is between 1 Ohm/km and 5 Ohm/km

Telecommunication service characteristics

Input parameter	Comment	Symbol	Value	Reference
Line length	(m)	L_{line}	1000	
Installation factor	Buried	C_i	0,5	Table A.2
Linetype factor	Low voltage	C_t	1	Table A.3
Environmental factor	Urban	C_e	0,1	Table A.4
Line shielding	Line shielded	C_{LD}	1	Table B.4
		C_{Li}	0,3	
Adjacent structure	m x m x m	$L_j \times W_j \times H_j$		
Location factor	No adjacent structure	C_{dj}	0	Table A.1
Withstand voltage (KV)	Internal systems	U_W	1,5	
	Resulting parameters	k_{s4}	0,67	Equation (B.7)
		P_{LD}	1	Table B.8
		P_{Li}	0,5	Table B.9

It is assumed that the shield resistance of the line is 5 Ohm/km

Services characteristics

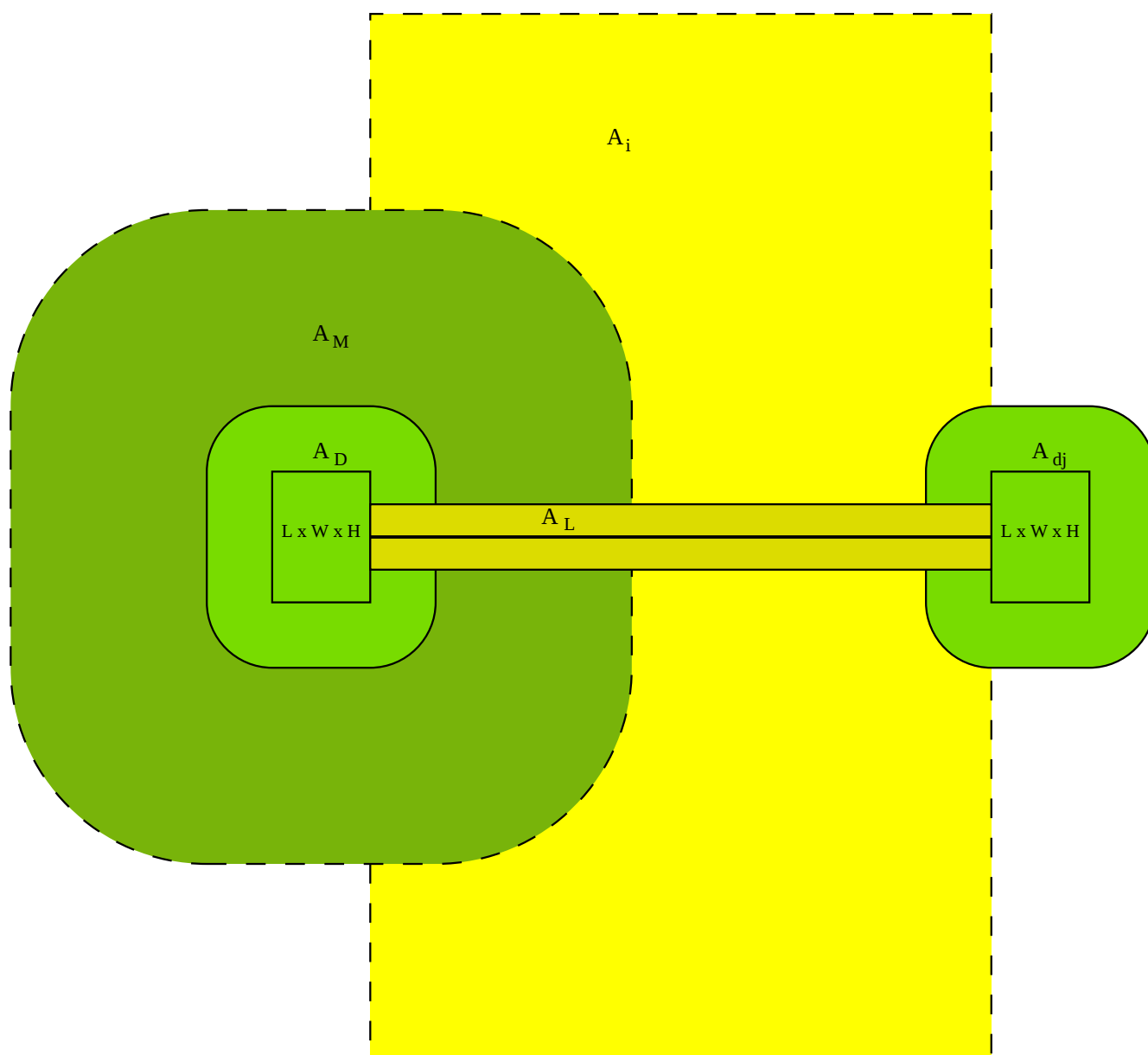
Data1 service characteristics

Input parameter	Comment	Symbol	Value	Reference
Line length	(m)	L_{line}	1000	
Installation factor	Buried	C_i	0,5	Table A.2
Linetype factor	Low voltage	C_t	1	Table A.3
Environmental factor	Urban	C_e	0,1	Table A.4
Line shielding	Line shielded	C_{LD}	1	Table B.4
		C_{Li}	0,3	
Adjacent structure	m x m x m	$L_j \times W_j \times H_j$		
Location factor	No adjacent structure	C_{dj}	0	Table A.1
Withstand voltage (KV)	Internal systems	U_W	1,5	
	Resulting parameters	k_{s4}	0,67	Equation (B.7)
		P_{LD}	1	Table B.8
		P_{Li}	0,5	Table B.9

It is assumed that the shield resistance of the line is 5 Ohm/km

There is no Data service

General drawings of building collection areas



Structure

Adjacent structure

Valid factors

Factors valid for zone (inside building)

Input parameter		Comment	Symbol	Value	Reference
Type of floor		Agricultural, concrete	r_t	0,01	Table C.3
Protection against shock (flash to structure)		No protection measures	P_{TA}	1	Table B.1
Protection against shock (flash to line)		No protection measures	P_{TU}	1	Table B.6
Risk of fire		Ordinary risk of fire	r_f	0,01	Table C.5
Fire protection		One of the following provisions: extinguishers, fixed manually operated extinguishing installations, automatic alarm installations, hydrantants, fire compartments, escape routes	r_p	0,5	Table C.4
Internal spatial shield		Screening effectiveness	k_{s2}	0	Equation (B.6)
SPD		SPD system designed for LPL : III- IV (LPL : Lightning Protection Level)	P_{SPD}	0,05	Table B.3
Power supply	Internal wiring	Unshielded cable	k_{s3}	1	Table B.5
T/C service	Internal wiring	Unshielded cable, precaution to avoid large loops	k_{s3}	0,2	Table B.5
Data service	Internal wiring	Unshielded cable, precaution to avoid large loops	k_{s3}	0,2	Table B.5
Gas service	Internal wiring	Unshielded cable	k_{s3}	0	Table B.5

It is assumed that there are no warning notices near the entering lines

Type of loss

Input parameter	Comment	Symbol	Value	Reference
L1: Loss of human life	Special hazard	h_z	5	Table C.6
	D1: due to touch & step voltage	L_T	0,01	Annex 2
	D2: due to physical damage	L_f	0,1	
	D3: due to failure of internal systems	L_o	0	
L2: Loss of service	D2: due to physical damage	L_f	0	Annex 2
	D3: due to failure of internal systems	L_o	0	
L3: Cultural heritage loss	D2: due to physical damage	L_f	0	Annex 2
L4: Economic loss	D2: due to physical damage	L_f	0,2	Annex 2
	D3: due to failure of internal systems	L_o	0,001	

It is assumed that the number of persons that are present in the structure are the total persons that are present in the zone, so $n_z/n_t=1$

The ratio ca/ct have not been taken into account and have been replaced by the value 1 because it has been used a representative value for the tolerable risk R4

Calculation of relevant quantities

Collection areas of structure and lines

	Symbol	Result m ²	Equation reference	Equation
Structure	A _D	2110,9	(A.2)	$=L W+2 (3 H)(L+W)+\pi (3 H)^2$
	A _M	821398,2	(A.7)	$=2 \cdot 500 (L W)+\pi 500^2$
Power line	A _{Dj}		(A.2)	$=L W+2 (3 H)(L+W)+\pi (3 H)^2$
	A _L	800	(A.9)	$=40 L$
	A _i	80000	(A.11)	$=4000 L$
T/C line	A _{Dj}		(A.2)	$=L W+2 (3 H)(L+W)+\pi (3 H)^2$
	A _L	40000	(A.9)	$=40 L$
	A _i	4000000	(A.11)	$=4000 L$
Data line	A _{Dj}		(A.2)	$=L W+2 (3 H)(L+W)+\pi (3 H)^2$
	A _L	40000	(A.9)	$=40 L$
	A _i	4000000	(A.11)	$=4000 L$
Gas line	A _{Dj}		(A.2)	$=L W+2 (3 H)(L+W)+\pi (3 H)^2$
	A _L		(A.9)	$=40 L$
	A _i		(A.11)	$=4000 L$

Expected anual number of dangerous events

	Symbol	Result m ²	Equation reference	Equation
Structure	N _D	0	(A.4)	$=N_g A_D C_d 10^{-6}$
	N _M	2,05	(A.6)	$=N_g A_M 10^{-6}$
Power line	N _{Dj}	0	(A.5)	$=N_g A_{Dj} C_{dj} C_t 10^{-6}$
	N _L	0	(A.8)	$=N_g A_L C_i C_e C_t 10^{-6}$
	N _i	0,01	(A.10)	$=N_g A_i C_i C_e C_t 10^{-6}$
T/C line	N _{Dj}	0	(A.5)	$=N_g A_{Dj} C_{dj} C_t 10^{-6}$
	N _L	0,01	(A.8)	$=N_g A_L C_i C_e C_t 10^{-6}$
	N _i	0,5	(A.10)	$=N_g A_i C_i C_e C_t 10^{-6}$
Data line	N _{Dj}	0	(A.5)	$=N_g A_{Dj} C_{dj} C_t 10^{-6}$
	N _L	0,01	(A.8)	$=N_g A_L C_i C_e C_t 10^{-6}$
	N _i	0,5	(A.10)	$=N_g A_i C_i C_e C_t 10^{-6}$
Gas line	N _{Dj}	0	(A.5)	$=N_g A_{Dj} C_{dj} C_t 10^{-6}$
	N _L	0	(A.8)	$=N_g A_L C_i C_e C_t 10^{-6}$
	N _i	0	(A.10)	$=N_g A_i C_i C_e C_t 10^{-6}$

Amount of Loss

Type of damage	Symbol	L1	L2	L3	L4
D1: people	$L_A = L_U$	0,000042	0	0	0
D2: Physical damage	$L_B = L_V$	0,001042	0	0	0,005
D3: Failure of internal systems	$L_C = L_M = L_W = L_Z$	0	0	0	0,001

Probabilities of damage

Flash	Symbol	Equation	Values			
to structure	P_A	$= P_{TA} P_B$	0,2			
	P_B		0,2			
	P_C	$= P_{SPD} C_{LD}$	0,14			
near structure	P_M	$= P_{SPD} P_{MS}$	0			
			Power	Telecom	Data1	Data2
to line	P_U	$= P_{TU} P_{EB} P_{LD} C_{LD}$	0,05	0,05	0,05	0
	P_V	$= P_{EB} P_{LD} C_{LD}$	0,05	0,05	0,05	0
	P_W	$= P_{SPD} P_{LD} C_{LD}$	0,05	0,05	0,05	0
near line	P_Z	$= P_{SPD} P_{Li} C_{Li}$	0,01	0,01	0,01	0

Risk components

Risks calculation

Type of damage	Symbol	Equation	L1 $R1 \times 10^6$	L2 $R2 \times 10^6$	L3 $R3 \times 10^6$	L4 $R4 \times 10^6$
D1: people	R_A	$= N_D P_A L_A$	0,02	0	0	0
	R_U	$= \text{Sum}[(N_{Li} + N_{Dji}) P_{Ui} L_{Ui}]$	0,02	0	0	0
D2: Physical damage	R_B	$= N_D P_B L_B$	0,55	0	0	2,64
	R_V	$= \text{Sum}[(N_{Li} + N_{Dji}) P_{Vi} L_{Vi}]$	0,53	0	0	2,53
D3: Failure of internal systems	R_C	$= N_D P_C L_C$	0	0	0	0,38
	R_M	$= N_M P_M L_M$	0	0	0	0
	R_W	$= \text{Sum}[(N_{Li} + N_{Dji}) P_{Wi} L_{Wi}]$	0	0	0	0,51
	R_Z	$= \text{Sum}[N_{ji} P_{Zi} L_{Zi}]$	0	0	0	7,59
Total	R		1,12	0	0	13,63
Tolerable	R_T		10	1000	100	1000

ANNEX 1 : TABLES (FROM IEC 62305-2: 2010)

Table A.1: Structure location factor Cd

Type of damage	Cd
Structure surrounded by higher objects	0.25
Structure surrounded by objects of the same height or similar	0.5
Isolated structure : no other object in the vicinity	1
Isolated structure on a hilltop or a knoll	2

Table A.2: Line installation factor Ci

Routing	Ci
Aerial	1
Buried	0.5
Buried cables running entirely within a meshed earth termination (5.2 of IEC 62305-4:2010)	0.01

Table A.3: Line type factor Ct

Installation	Ct
LV power, telecommunication or data line	1
HV power (with HV/LV transformer)	0.2

Table A.4: Line environment factor Ce

Environment	Ce
Rural	1
Suburban	0.5
Urban	0.1
Urban with tall buildings (higher than 20m)	0.01

Table B.1: Values of probability P_{TA} that a flash to a structure will cause shock to living beings due to dangerous touch and step voltages

Additional protection measures	P_{TA}
No protection measures	1
Warning notices	0.1
Electrical Insulation (e.g. at least 3mm cross-linked polyethylene) of exposed parts (e.g. down conductors)	0.01
Effective soil equipotentialization	0.01
Physical restrictions or building framework used as a down conductor system	0

Table B.2: Values of probability P_B depending on the protection measures to reduce physical damage

Additional protection measures	Class of LPS	P_B
Structure not protected by LPS	-	1
Structure protected by LPS	IV	0.2
	III	0.1
	II	0.05
	I	0.02
Structure with an air termination system conforming to LPS I and a continuous metal or reinforced concrete framework acting as a natural down conductor system		0.01
Structure with a metal roof and an air termination system possibly including natural components, with complete protection of any roof installations against direct lightning strikes and a continuous metal or reinforced concrete framework acting as a natural down conductor system		0.001

Table B.3: Value of probability P_{SPD} as a function of LPL for which SPDs are designed

LPL	P_{SPD}
No coordinated SPD system	1
III-IV	0.05
II	0.02
I	0.01
The values of P_{SPD} may be reduced for SPDs having better characteristics (higher nominal current I_n , lower protective level U_p etc) compared with the requirements defined for LPL I at the relevant installation locations (see table A.3 of IEC 62305-1:2010 for information on lightning current probabilities, and Annex E of IEC 62305-1:2010 and Annex D of IEC62305-4:2010 for lightning current sharing). The same annexes may be used for spds having higher probabilities P_{SPD}	0.001 to 0.0005

Table B.4: Values of factors C_{LD} and C_{LI} depending on shielding, grounding and isolation conditions

External linetype	Connection at entrance	C_{LD}	C_{LI}
Aerial line unshielded	Undefined	1	1
Buried line unshielded	Undefined	1	1
Multi grounded neutral power line	None	1	0.2
Shielded buried line (power or TLC)	Shield not bonded to the same bonding bar as equipment	1	0.3
Shielded aerial line (power or TLC)	Shield not bonded to the same bonding bar as equipment	1	0
Shielded buried line (power or TLC)	Shield bonded to the same bonding bar as equipment	1	0
Lightning protective cable or wiring in lightning protective cable ducts, metallic conduit, or metallic tubes	Shield bonded to the same bonding bar as equipment	0	0
(No external line)	No connection to external lines (stand-alone systems)	0	0
Any type	Isolating interface according to IEC 62305-4	0	0

Table B.5: Value of factor k_{S3} depending on internal wiring

Type of internal wiring	k_{S3}
Unshielded cable - no routing precautions in order to avoid loops	1
Unshielded cable - routing precautions in order to avoid large loops	0.2
Unshielded cable - routing precautions in order to avoid loops	0.01
Shielded cables and cables running in metal conduits	0.0001

Table B.6: Values of probability P_{TU} that a flash to an entering line will cause shock to living beings due to dangerous touch voltages

Protection measures	P_{TU}
No protection measures	1
Warning notices	0.1
Electrical Insulation	0.01
Physical restrictions	0

Table B.7: Value of probability P_{EB} as a function of LPL for which SPDs are designed

LPL	P_{EB}
No SPD	1
III-IV	0.05
II	0.02
I	0.01
The values of P_{EB} may be reduced for SPDs having better characteristics (higher nominal current I_n , lower protective level U_p etc) compared with the requirements defined for LPL I at the relevant installation locations (see table A.3 of IEC 62305-1:2010 for information on lightning current probabilities, and Annex E of IEC 62305-1:2010 and Annex D of IEC62305-4:2010 for lightning current sharing). The same annexes may be used for spds having higher probabilities P_{EB}	0.005 to 0.001

Table B.8: Values of the probability P_{LD} of the cable screen and the impulse withstand voltage U_w of the equipment

Line type	Routing, shielding and bonding conditions		Withstand voltage U_w in KV				
			1	1.5	2.5	4	6
Power lines or telecom lines	Aerial or buried line, unshielded or shielded whose shield is not bonded to the same bonding bar as equipment		1	1	1	1	1
	Shielded aerial or buried whose shield bonded to the same bonding bar as equipment	5 Ohm/km < R_s < 20 Ohm/km	1	1	0.95	0.9	0.8
		1 Ohm/km < R_s < 5 Ohm/km	0.9	0.8	0.6	0.3	0.1
		R_s < 1 Ohm/km	0.6	0.4	0.2	0.04	0.02

Table B.9: Values of the probability P_{LI} depending on the line type and the impulse withstand voltage U_w of the equipment

Line type	Withstand voltage U_w in KV				
	1	1.5	2.5	4	6
Power lines	1	0.6	0.3	0.16	0.1
TLC lines	1	0.5	0.2	0.08	0.04

Table C.3: Reduction factor r_t as a function of the type of surface of soil or floor

Type of surface	Contact resistance (kOhm)	r_t
Agricultural, concrete	<1	0.01
Marble, ceramic	1 to 10	0.001
Gravel, moquette, carpets	10 to 100	0.0001
Asphalt, linoleum, wood	>100	0.00001

Table C.4: Reduction factor r_p as a function of provisions taken to reduce the consequences of fire

Provisions	r_p
No provisions	1
One of the following provisions: extinguishers, fixed manually operated extinguishing installations, automatic alarm installations, hydrantants, fire compartments, escape routes	0.5
One of the following provisions: fixed manually operated extinguishing installations, automatic alarm installations (Only if protected against overvoltages and other damages and if firemen can arrive in less than 10min)	0.2

Table C.5: Reduction factor r_f as a function of the type of surface of soil or floor

Risk	Amount of risk	r_f
Explosion	Zones 0,20 and solid explosive	1
	Zones 1, 21	0.1
	Zones 2, 22	0.001
Fire	High	0.1
	Ordinary	0.01
	Low	0.001
Explosion or fire	None	0

Notes for risk of fire

Structures with a high risk of fire may be assumed to be structures made of combustible materials or structures with a specific fire load larger than 800 MJ/m²

Structures with an ordinary risk of fire may be assumed to be structures with a specific fire load between 800 MJ/m² and 400 MJ/m²

Structures with a low risk of fire may be assumed to be structures with a specific fire load less than 400 MJ/m², or structures containing only a small amount of combustible material

Table C.6: Factor h_z increasing the relative amount of loss in presence of a special hazard

Kind of special hazard	h_z
No special hazard	1
Low level of panic (e.g. a structure limited to two floors and the number of persons not greater than 100)	2
Average level of panic (e.g. structures designed for cultural or sport events with a number of participants between 100 and 1000 persons)	5
Difficulty of evacuation (e.g. structures with immobile persons, hospitals)	5
High level of panic (e.g. structures designed for cultural or sport events with a number of participants - greater than 1000 persons)	10

ANNEX 2 : TYPES OF BUILDINGS

Types of buildings and typical mean values of loss Lx

Type of building		Lt1	Lt4	Lf1	Lf4	Lo1	Lo4
Building with risk of explosion	Fuel station (risk of explosion)	0,01	0	0,1	1	0,01	0,1
	Explosive industry	0,01	0	0,1	1	0,01	0,1
	Tank with explosive content	0,01	0	0,1	1	0,01	0,1
	Other building with risk of explosion	0,01	0	0,1	1	0,01	0,1
	Hospital	0,01	0	0,1	0,5	0	0,01
	Hotel	0,01	0	0,1	0,2	0	0,01
	School	0,01	0	0,1	0,2	0	0,001
	Office building	0,01	0	0,1	0,2	0	0,01
	Large house	0,01	0	0,05	0,2	0	0,01
Civil building	Block of flats	0,01	0	0,05	0,2	0	0,01
	Small house	0,01	0	0,01	0,1	0	0,001
	Small structure (lodging)	0,01	0	0,01	0,1	0	0,0001
Public entertainment	Mall	0,01	0	0,05	0,2	0	0,01
	Theater	0,01	0	0,05	0,2	0	0,01
	Concert hall	0,01	0	0,05	0,2	0	0,01
	Cultural events hall	0,01	0	0,05	0,2	0	0,001
	Sport events hall	0,01	0	0,05	0,2	0	0,001
	Exhibition hall	0,01	0	0,05	0,2	0	0,001
	Ski center	0,01	0	0,05	0,2	0	0,001
	Camping	0,01	0	0,05	0,2	0	0,001
	Stadium	0,01	0	0,05	0,2	0	0,001
Religious building	Religious building	0,01	0	0,05	0,2	0	0,001
Museum	Museum	0,01	0	0,05	0,5	0	0,001
	Gallery	0,01	0	0,05	0,5	0	0,001
Industrial building	Industrial building	0,01	0	0,02	0,5	0	0,01
	Power plant	0,01	0	0,02	0,5	0	0,01
	PV plant	0,01	0	0,02	0,5	0	0,01
	Substation building	0,01	0	0,02	0,5	0	0,01
	Wind farm	0,01	0	0,02	0,5	0	0,01
	Tank with no explosive content	0,01	0	0,02	0,5	0	0,01
	Warehouse (high value material)	0,01	0	0,01	0,5	0	0,01
	TV-radio station	0,01	0	0,02	0,2	0	0,01
	Logistics warehouse (low value material)	0,01	0	0,01	0,1	0	0,001
Commercial	Bank	0,01	0	0,02	0,2	0	0,01
	Airport building	0,01	0	0,02	0,2	0	0,01
	Port building	0,01	0	0,02	0,2	0	0,01
	Marine	0,01	0	0,02	0,2	0	0,01
	Railway station	0,01	0	0,02	0,2	0	0,01
	Prison	0,01	0	0,1	0,2	0	0,001
Livestock housing	Livestock housing	0,01	0,01	0,1	0,5	0	0,0001
	Animals farm	0,01	0,01	0,1	0,5	0	0,0001

The above parameters are from the tables C.2, C.8, C.9 and C.12 of EN 62305-2 standard