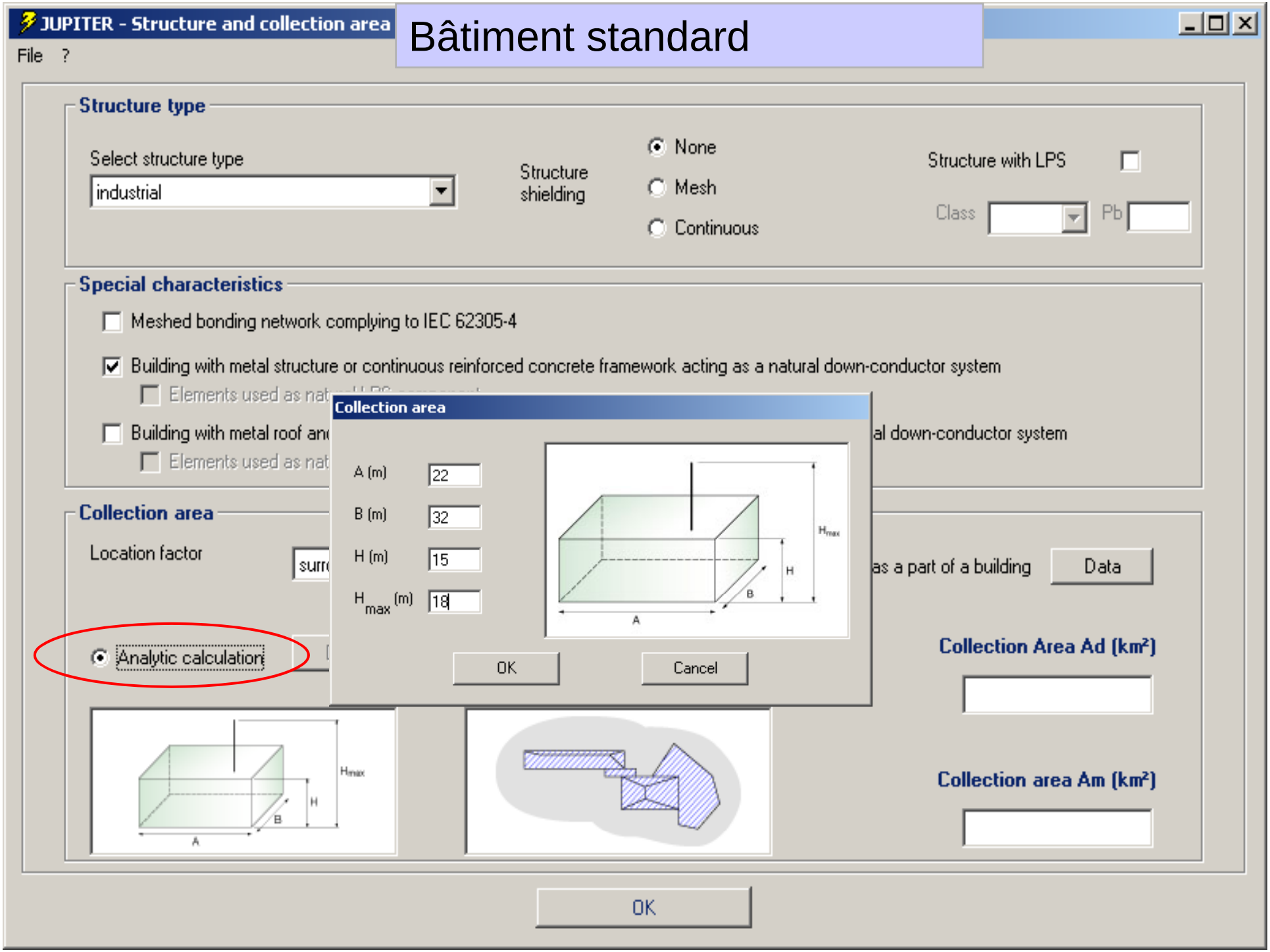
Jupiter 2.0 et 2.2

Spécificités

- Version 2.0 : basée sur l'édition 1 (2006) de la norme EN 62305-2
- Version 2.2 : basée sur l'édition 2 (2010 IEC 2012 CENELEC) de la norme EN 62305-2

- Ecran “Structure” :
  - Possibilité d’utiliser les dimensions d’un bâtiment standard ayant une forme de parallélépipède avec une possible tour, comme précédemment
  - Ou utilisation des véritables dimensions de la structure avec un outil de design simple et intégré

Bâtiment standard



Bâtiment avec dimensions réelles

JUPITER - Structure and co

File ?

Structure type

Select structure type: industrial

Structure shielding: None / Mesh / Continuous

Structure with LPS

Class

Pb

Special characteristics

- Meshed bonding network complying to IEC 62305-4
- Building with metal structure or continuous reinforced concrete framework acting as a natural down-conductor system
  - Elements used as natural LPS component.
- Building with metal roof and structure or continuous reinforced concrete framework acting as a natural down-conductor system
  - Elements used as natural LPS component.

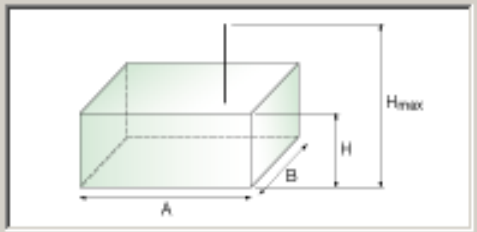
Collection area

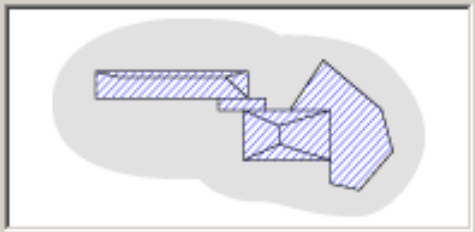
Location factor: surrounded by smaller objects

Structure as a part of a building: Data

Analytic calculation: Data

Graphic calculation: Draw, Calculation



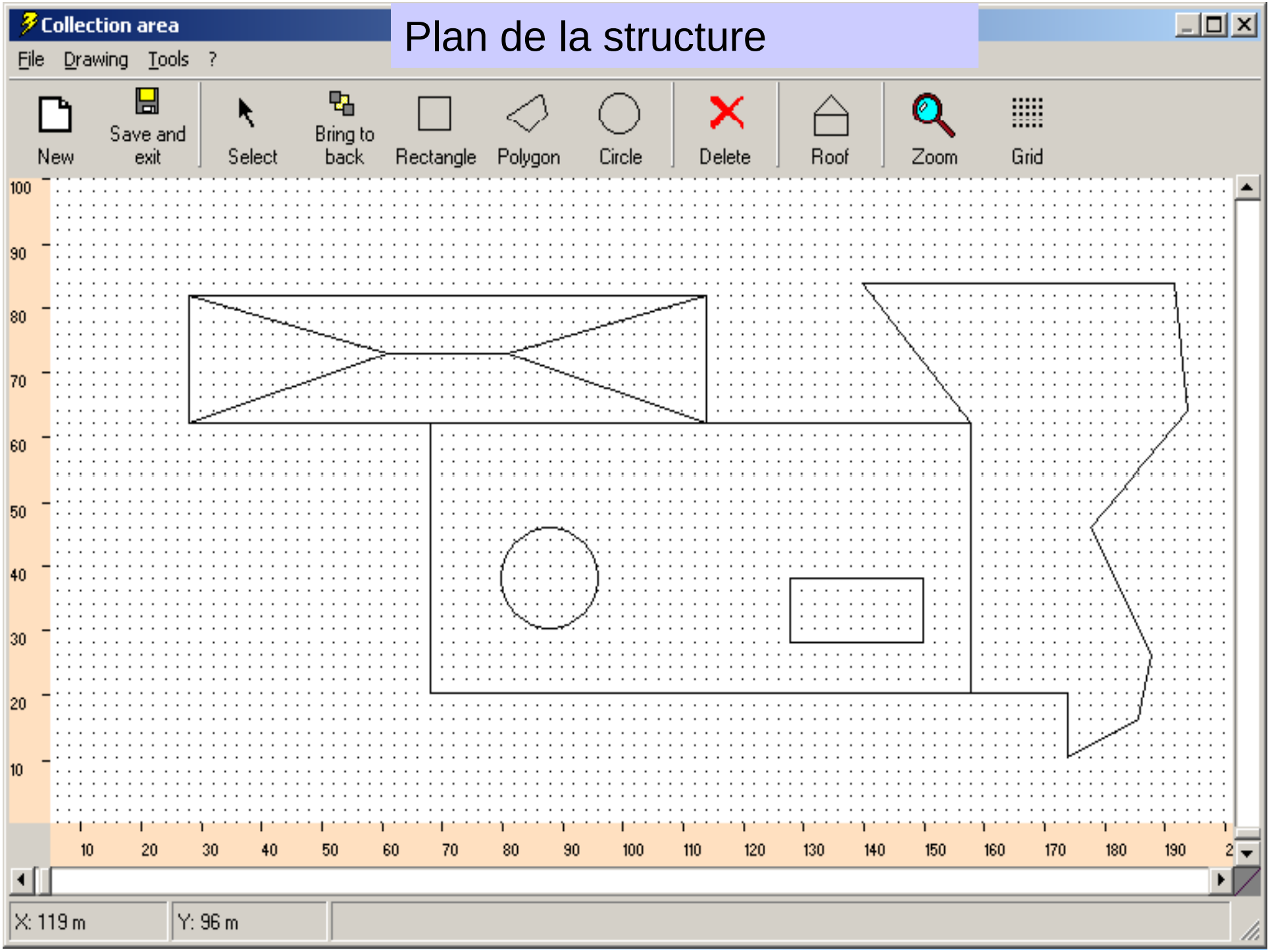


Collection Area Ad (km²)

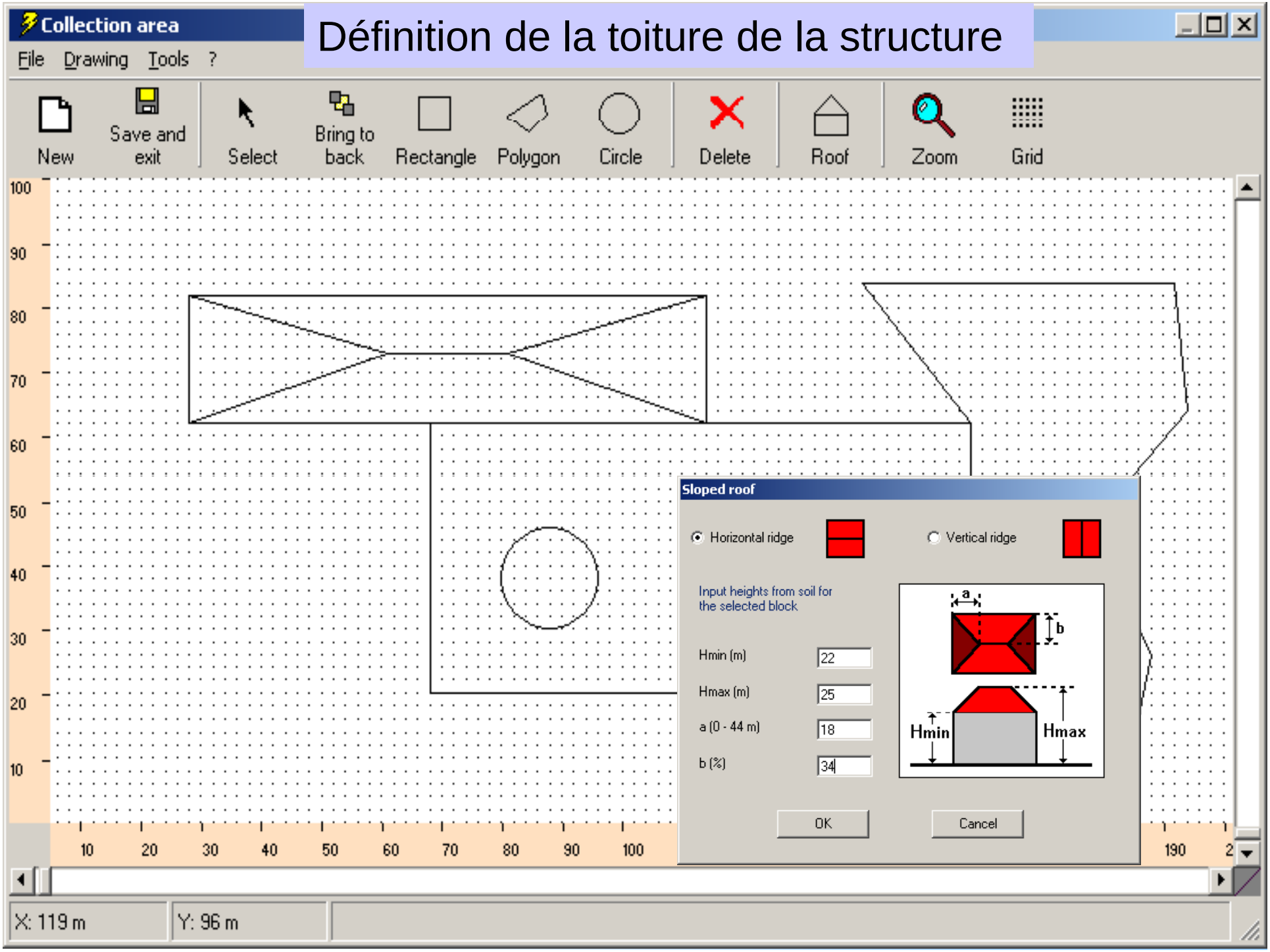
Collection area Am (km²)

OK

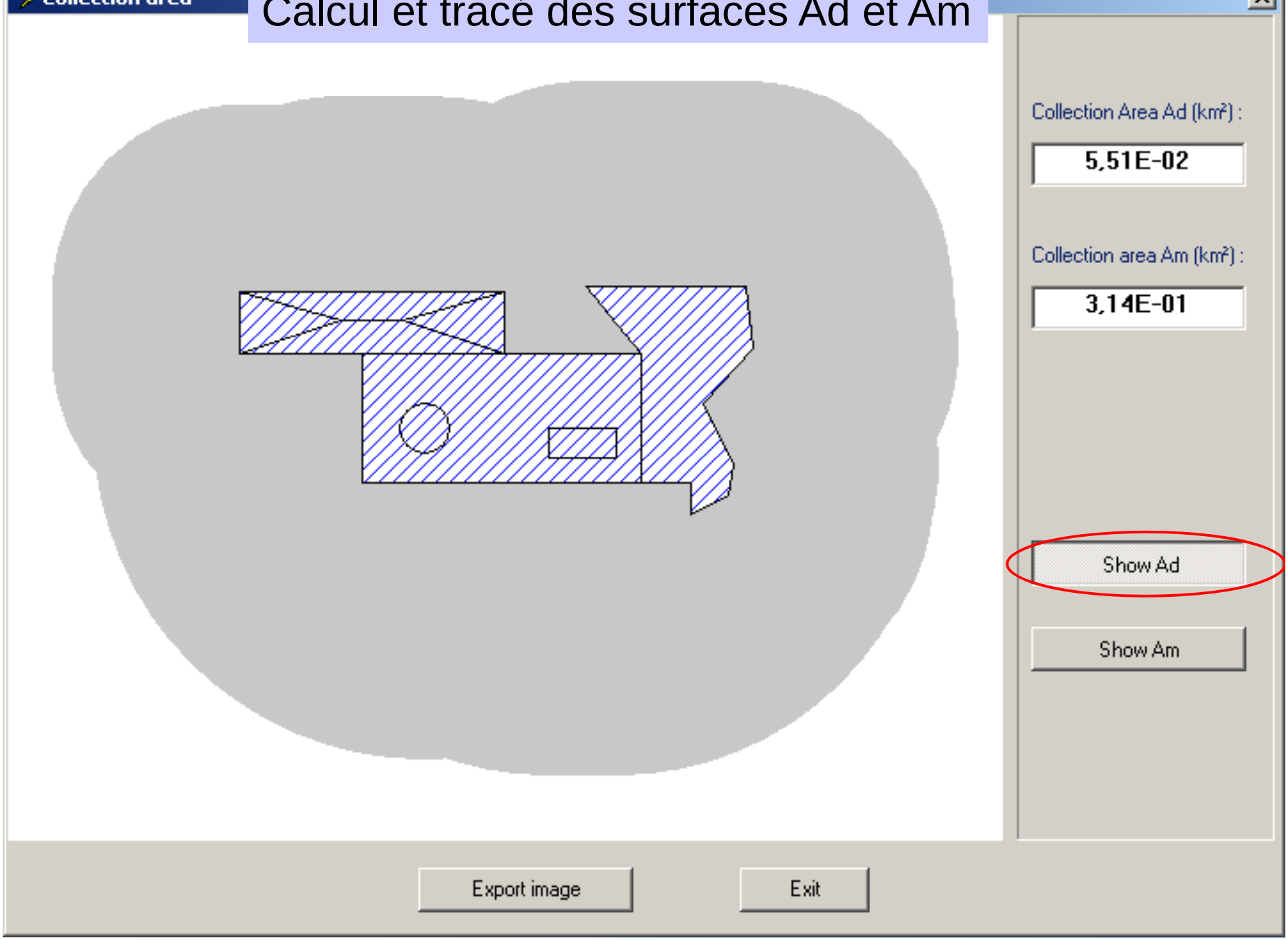
Plan de la structure



Définition de la toiture de la structure



Calcul et tracé des surfaces Ad et Am



- Ecran “Lignes” :
  - Possibilité d’utiliser les lignes standard (aérienne, souterraine, HTA, BT ou data), comme précédemment
  - Ou description des lignes réelles (aéro-soutteraine, avec transformateur en ligne …)

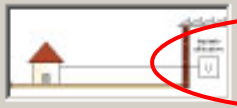
Lignes standard

JUPITER - Connected li

File ?

Line name

Power aerial



Standard line

Custom line

Select line type: power - aerial

Connected lines

N.	Name
L1	Power aerial
L2	Power mixed
L3	Telecom

New

Delete

Change

Building

Adjacent structure

A (m) 10

B (m) 15

H (m) 8

Location factor: isolated

Characteristics of the connected line

Length (m) 780

Height above ground (m) 6

Shielding: none

Shield not bonded to eqp. bar to whom equip. is connected

Location factor: surrounded by higher objects

Environmental factor: suburban (h < 10 m)

SPD at line entrance: none

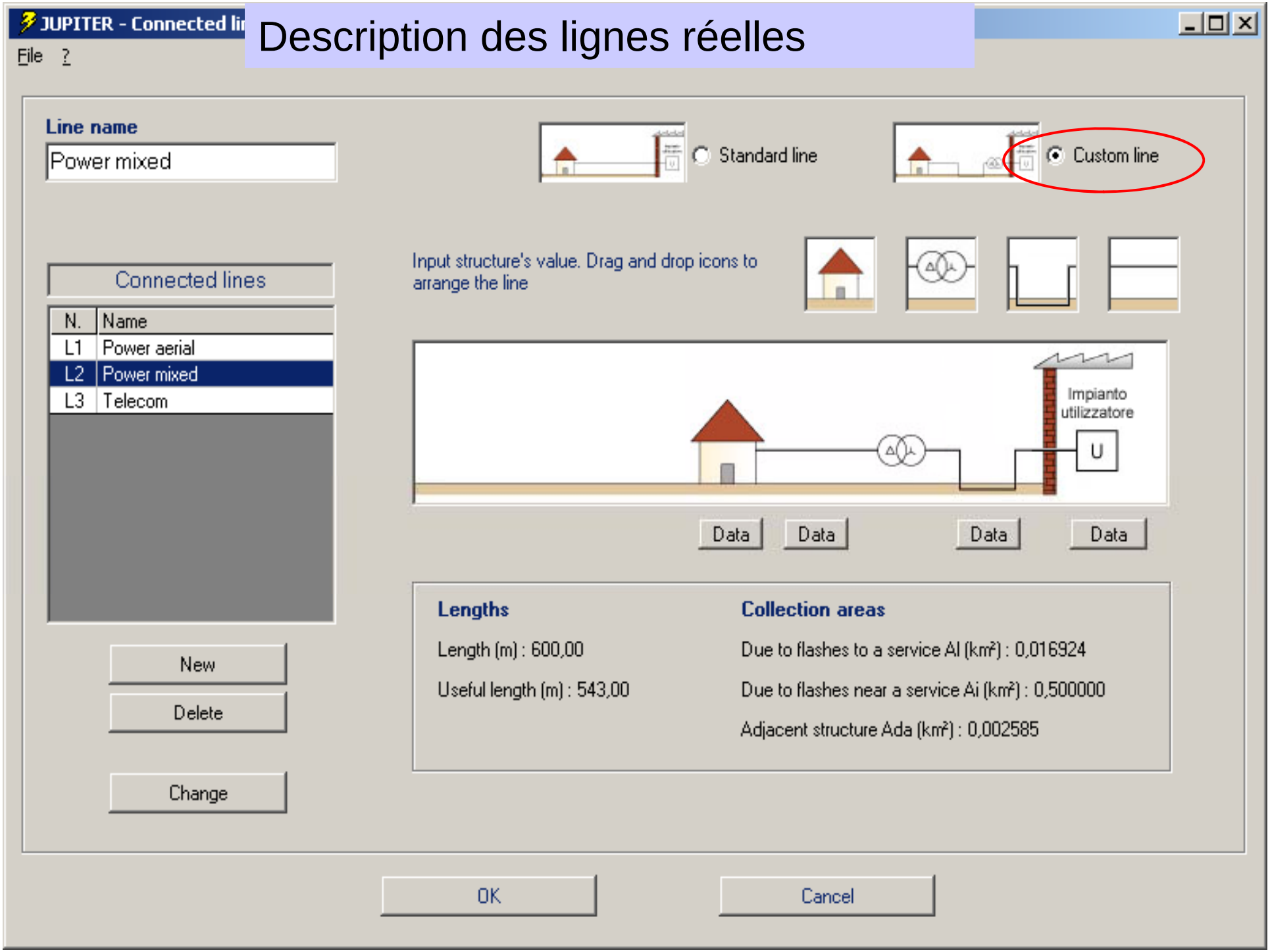
Pspd 1

Help

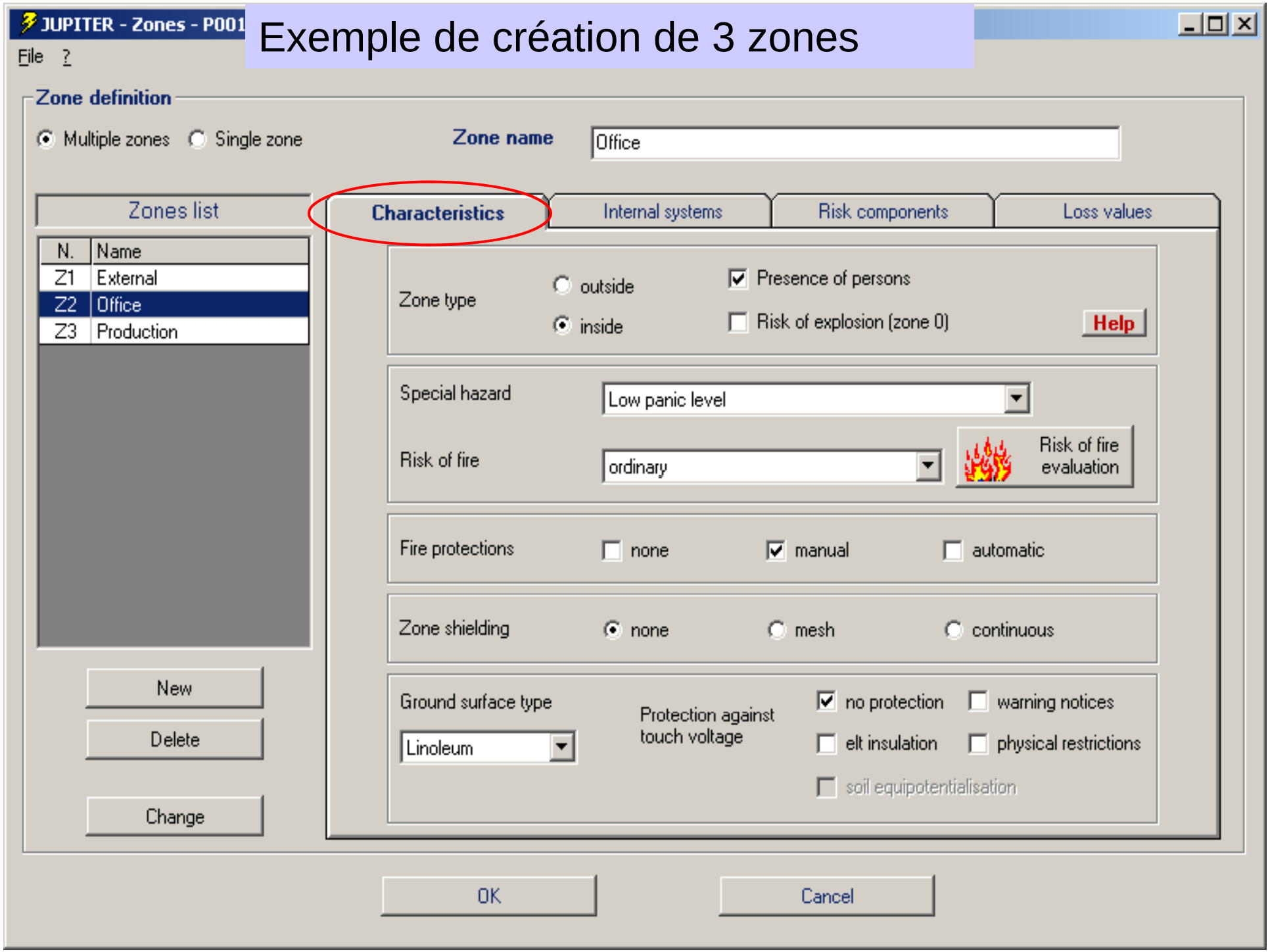
OK

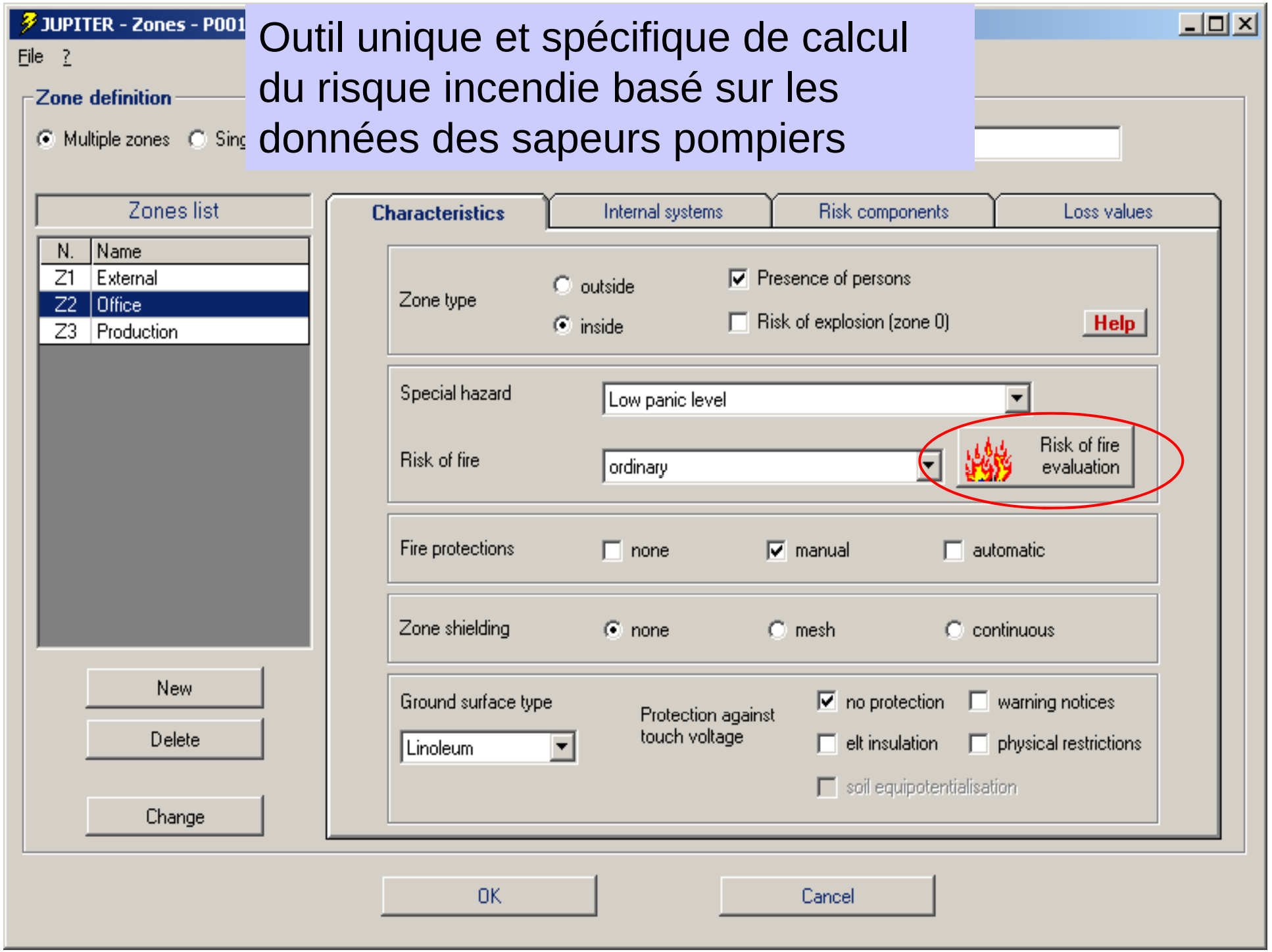
Cancel

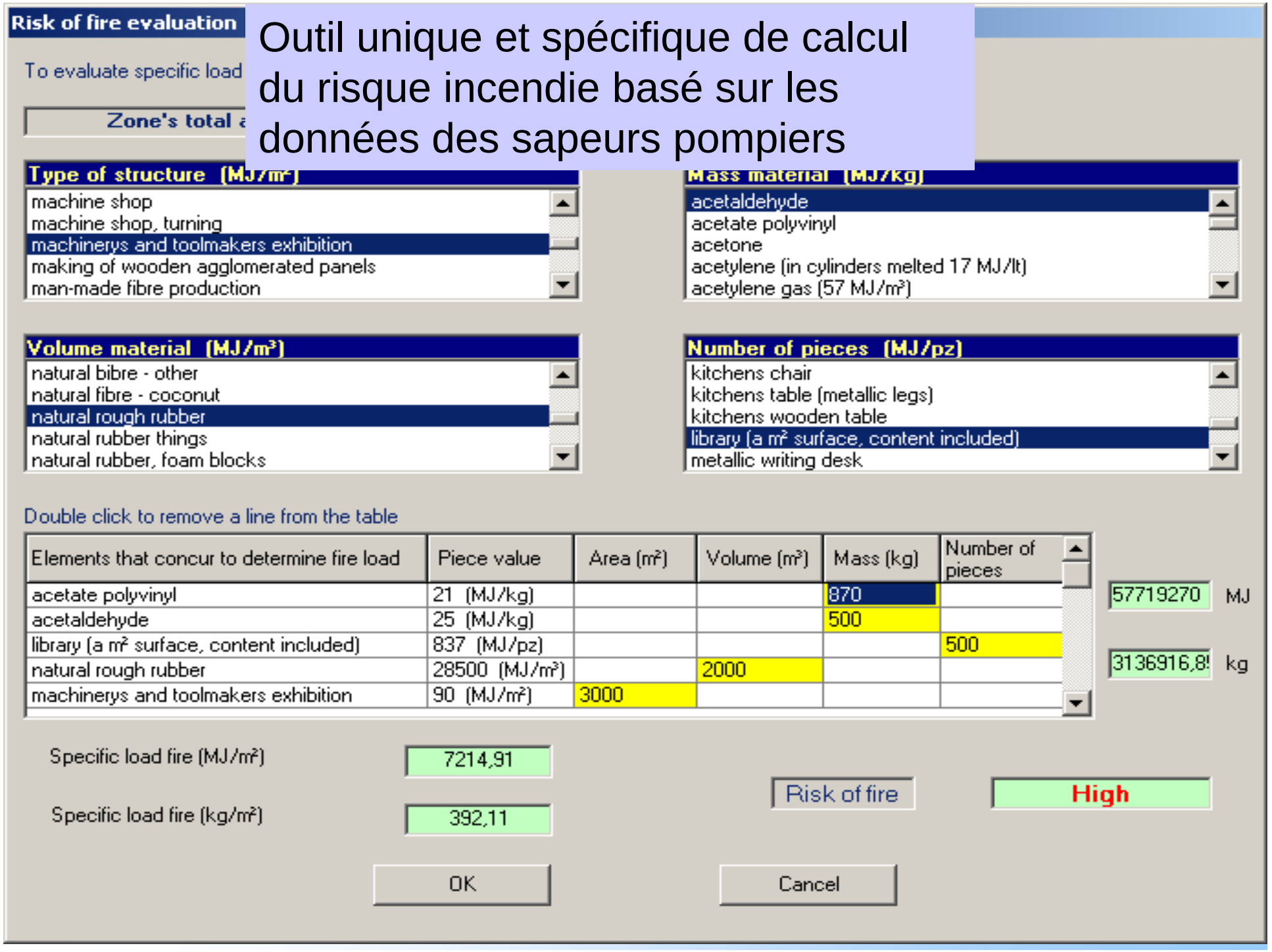
Description des lignes réelles

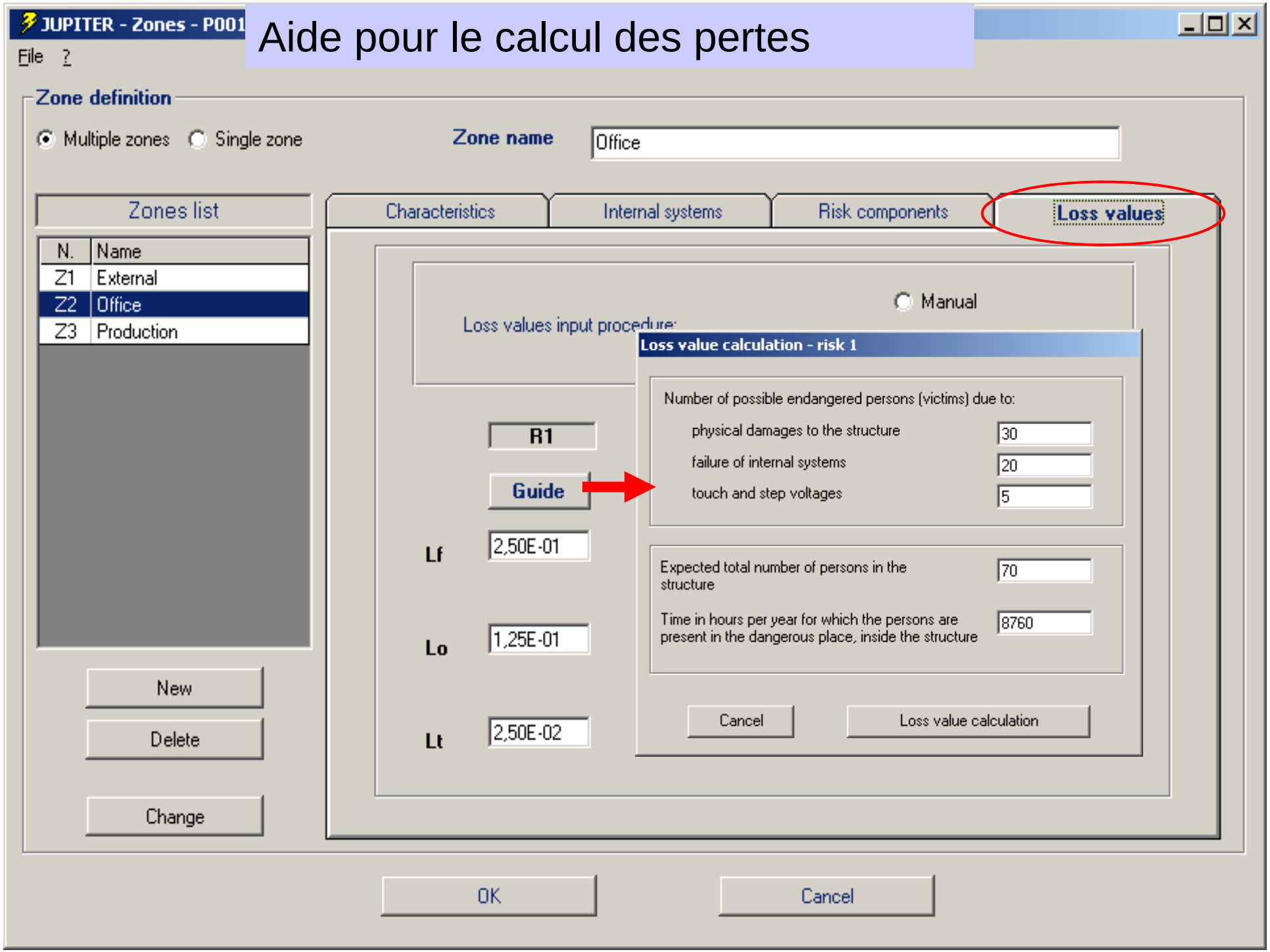


- Ecran “Zones” :
  - Traitement simplifié des zones multiples

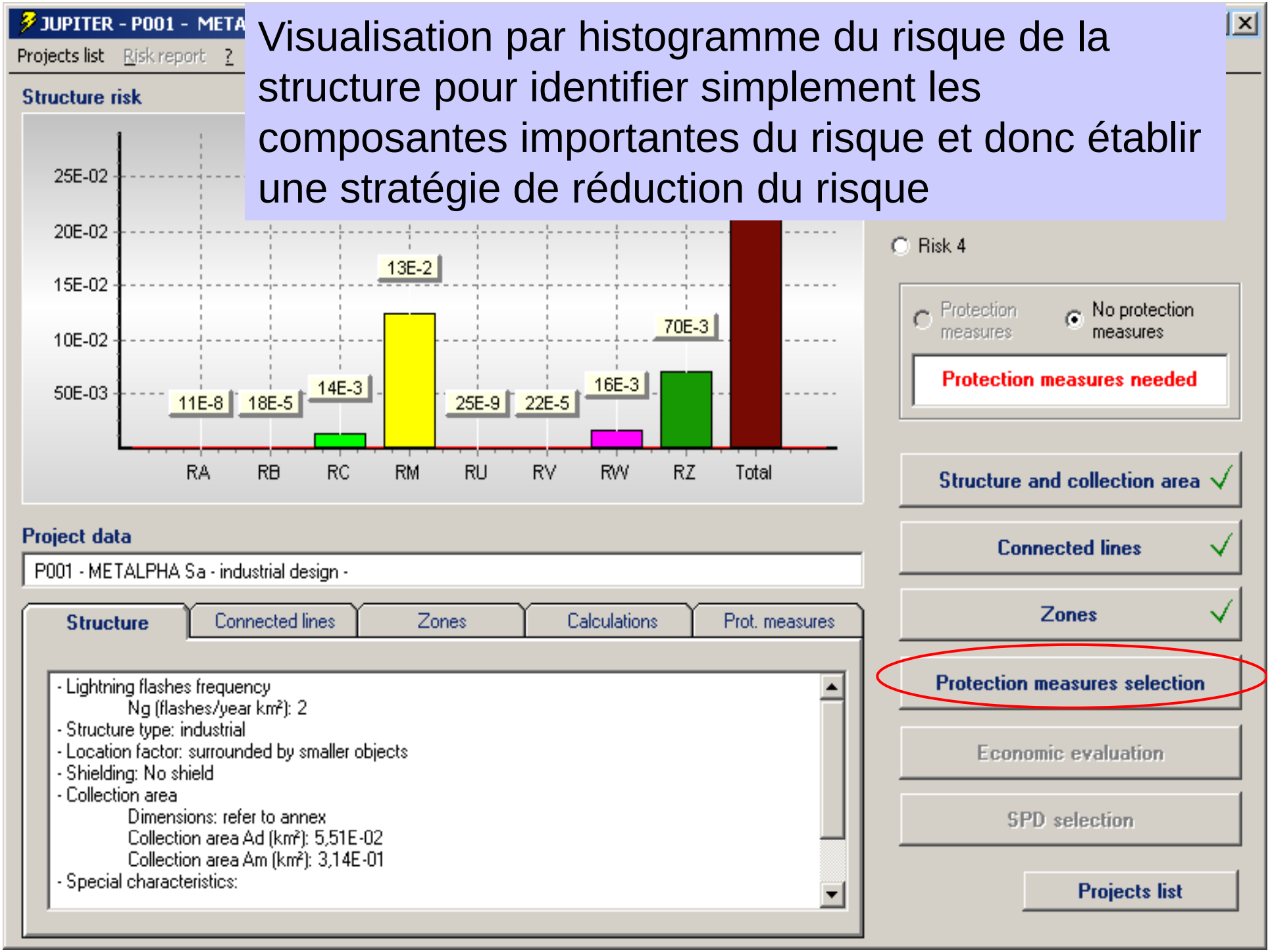

JUPITER - Zones - P001
Exemple de création de 3 zones
File ?
Zone definition
Multiple zones
Single zone
Zone name
Office
Zones list
N.
Name
Z1
External
Z2
Office
Z3
Production
New
Delete
Change
Characteristics
Internal systems
Risk components
Loss values
Zone type
outside
inside
Presence of persons
Risk of explosion (zone 0)
Help
Special hazard
Low panic level
Risk of fire
ordinary
Risk of fire evaluation
Fire protections
none
manual
automatic
Zone shielding
none
mesh
continuous
Ground surface type
Linoleum
Protection against touch voltage
no protection
warning notices
elt insulation
physical restrictions
soil equipotentialisation
OK
Cancel


JUPITER - Zones - P001
File ?
Zone definition
Multiple zones
Sing
Outil unique et spécifique de calcul du risque incendie basé sur les données des sapeurs pompiers
Zones list
N.
Name
Z1
External
Z2
Office
Z3
Production
New
Delete
Change
Characteristics
Internal systems
Risk components
Loss values
Zone type
outside
inside
Presence of persons
Risk of explosion (zone 0)
Help
Special hazard
Low panic level
Risk of fire
ordinary
Risk of fire evaluation
Fire protections
none
manual
automatic
Zone shielding
none
mesh
continuous
Ground surface type
Linoleum
Protection against touch voltage
no protection
warning notices
elt insulation
physical restrictions
soil equipotentialisation
OK
Cancel

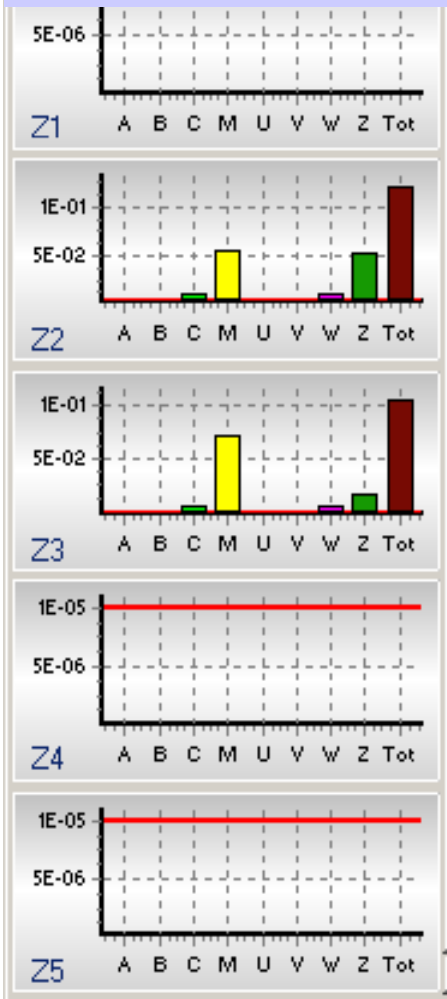

Risk of fire evaluation
To evaluate specific load
Zone's total a
Outil unique et spécifique de calcul du risque incendie basé sur les données des sapeurs pompiers
Type of structure (MJ/m²)
machine shop
machine shop, turning
machinerys and toolmakers exhibition
making of wooden agglomerated panels
man-made fibre production
Mass material (MJ/kg)
acetaldehyde
acetate polyvinyl
acetone
acetylene (in cylinders melted 17 MJ/lt)
acetylene gas (57 MJ/m³)
Volume material (MJ/m³)
natural bibre - other
natural fibre - coconut
natural rough rubber
natural rubber things
natural rubber, foam blocks
Number of pieces (MJ/pz)
kitchens chair
kitchens table (metallic legs)
kitchens wooden table
library (a m² surface, content included)
metallic writing desk
Double click to remove a line from the table
Elements that concur to determine fire load
Piece value
Area (m²)
Volume (m³)
Mass (kg)
Number of pieces
acetate polyvinyl 21 (MJ/kg) 870
acetaldehyde 25 (MJ/kg) 500
library (a m² surface, content included) 837 (MJ/pz) 500
natural rough rubber 28500 (MJ/m³) 2000
machinerys and toolmakers exhibition 90 (MJ/m²) 3000
57719270 MJ
3136916,8 kg
Specific load fire (MJ/m²)
7214,91
Specific load fire (kg/m²)
392,11
Risk of fire
High
OK
Cancel


JUPITER - Zones - P001
File ?
Aide pour le calcul des pertes
Zone definition
Multiple zones
Single zone
Zone name
Office
Zones list
N.
Name
Z1
External
Z2
Office
Z3
Production
Characteristics
Internal systems
Risk components
Loss values
Manual
Loss values input procedure:
Loss value calculation - risk 1
Number of possible endangered persons (victims) due to:
physical damages to the structure
30
failure of internal systems
20
touch and step voltages
5
R1
Guide
Lf
2,50E-01
Lo
1,25E-01
Lt
2,50E-02
Expected total number of persons in the structure
70
Time in hours per year for which the persons are present in the dangerous place, inside the structure
8760
Cancel
Loss value calculation
New
Delete
Change
OK
Cancel

Visualisation par histogramme du risque de la structure pour identifier simplement les composantes importantes du risque et donc établir une stratégie de réduction du risque



Visualisation par histogramme du risque de chaque zone complété par un tableau avec code couleur (rouge : pas protégé, vert protégé) pour identifier simplement les composantes importantes du risque et donc établir une stratégie de réduction du risque adaptée à chaque zone



M	0,00E+00	5,37E-02	7,16E-02			1,25E-01
U	0,00E+00	1,82E-08	7,16E-09			2,54E-08
V	0,00E+00	1,82E-04	4,30E-05			2,25E-04
W	0,00E+00	9,08E-03	7,16E-03			1,62E-02
Z	0,00E+00	5,24E-02	1,80E-02			7,04E-02
Total	**1,10E-07**	**1,22E-01**	**1,04E-01**			**2,26E-01**

Internal systems: Z2

Name	U	V	W	Z
Power office	4,74E-09	4,74E-05	2,37E-03	3,84E-02
Telecom office	1,34E-08	1,34E-04	6,71E-03	1,40E-02

Selected protection measures

Show risk
- Without protection
- With protection

Remove protection

Risk composition

Risk parameters

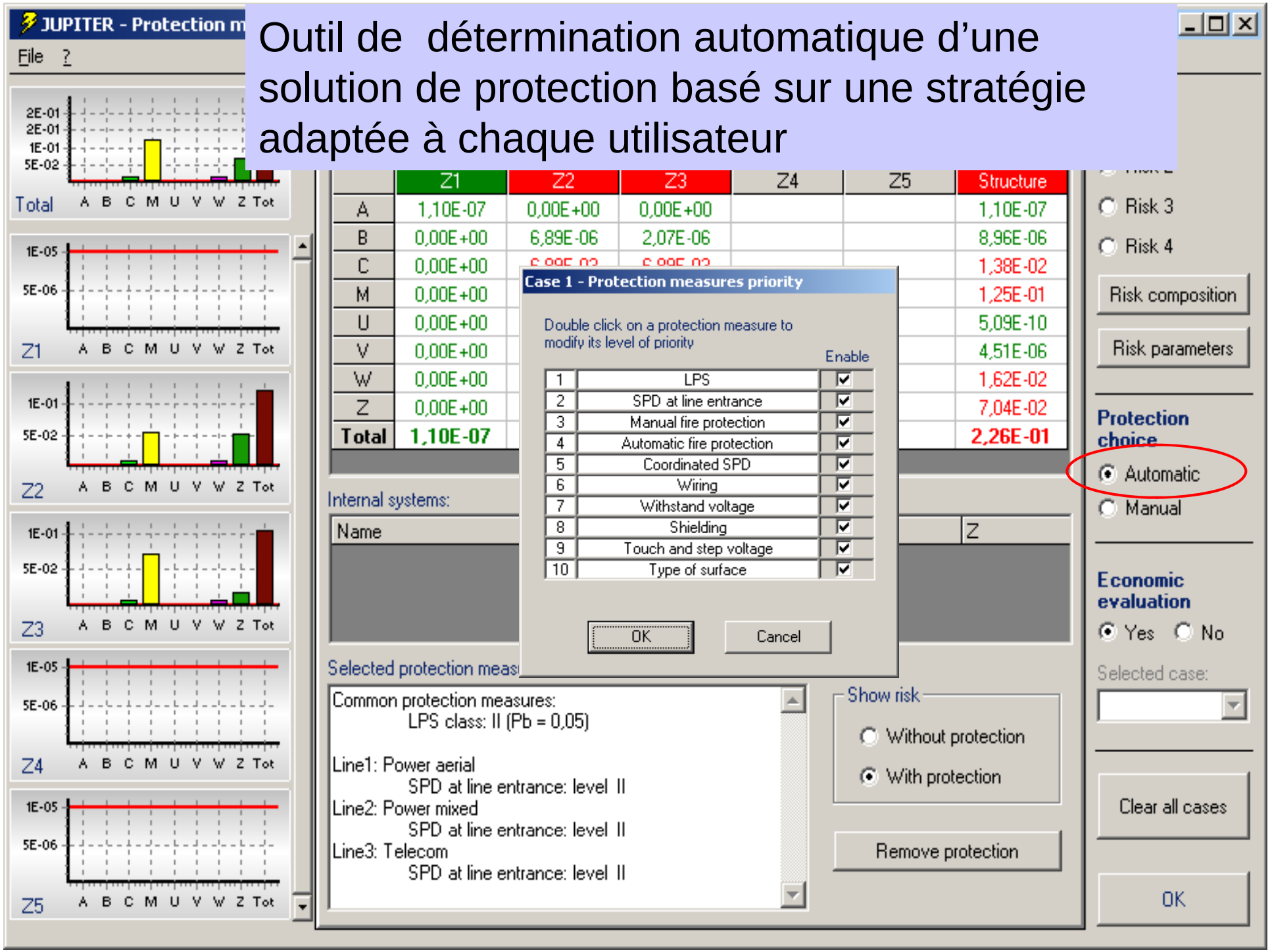
Protection choice
- Automatic
- Manual

Economic evaluation
- Yes
- No

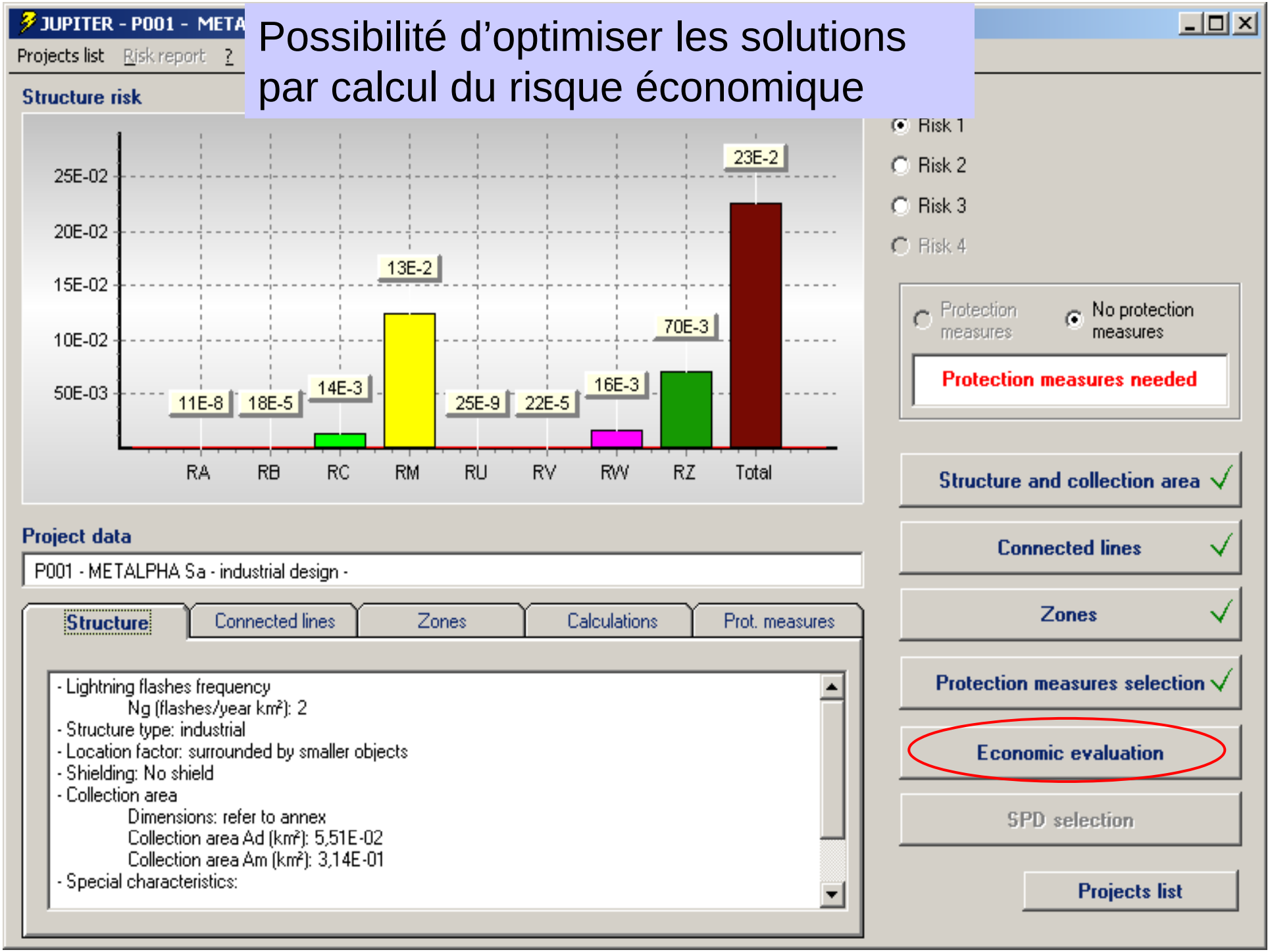
Selected case:

Clear all cases

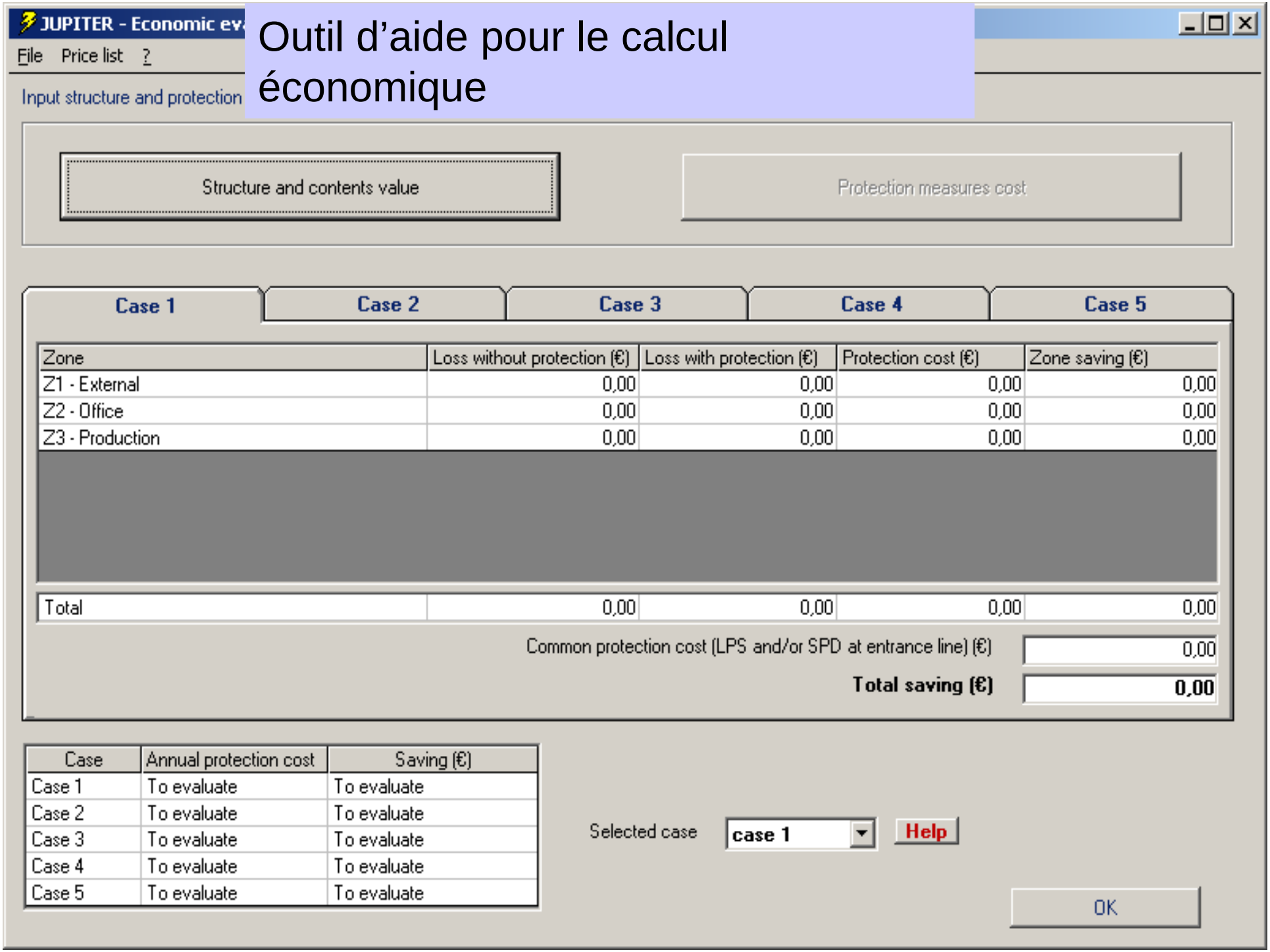
OK

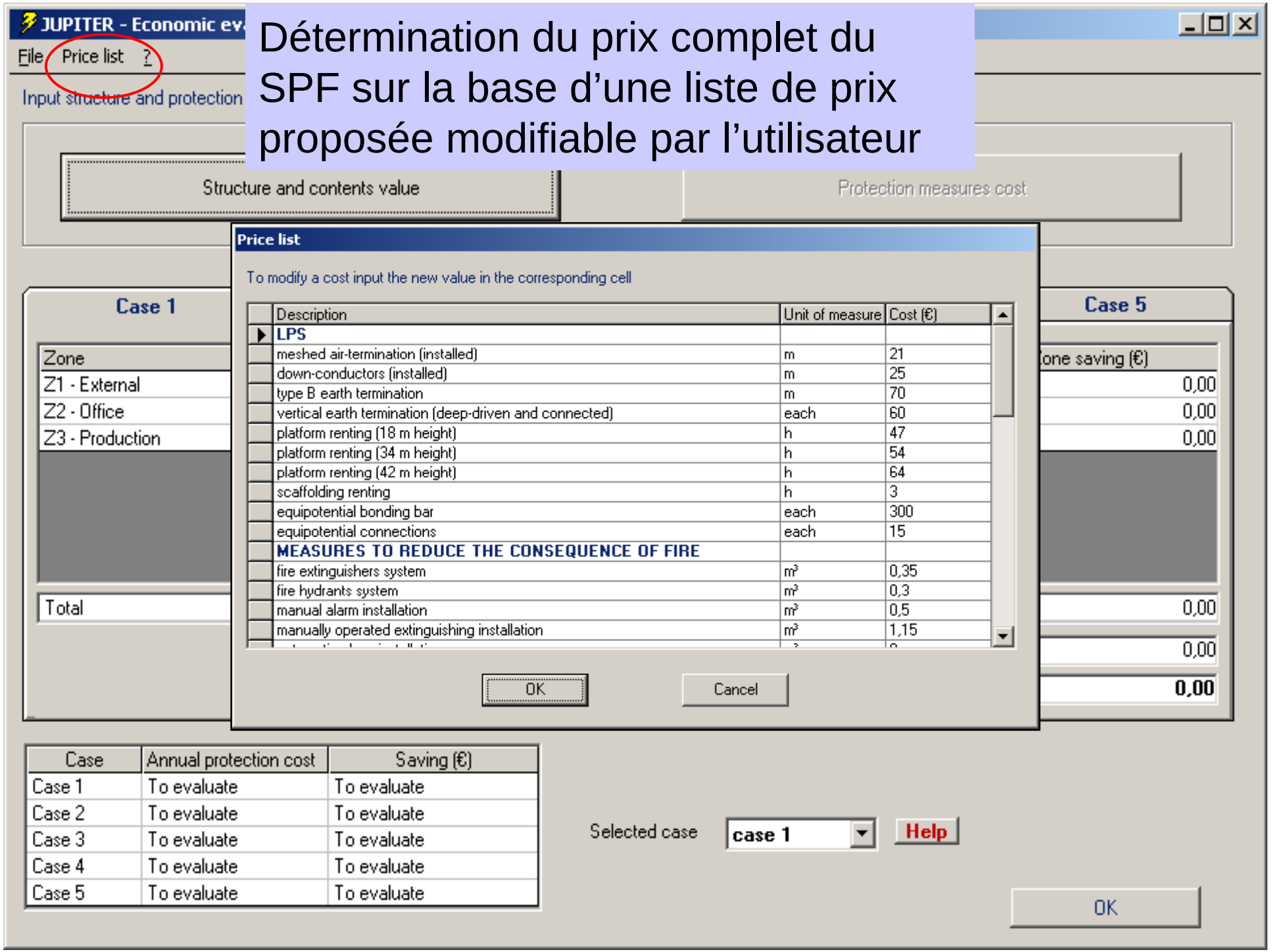

JUPITER - Protection m
File ?
Outil de détermination automatique d'une solution de protection basé sur une stratégie adaptée à chaque utilisateur
Total
Z1
Z2
Z3
Z4
Z5
A B C M U V W Z Tot
Z1 Z2 Z3 Z4 Z5 Structure
A 1,10E-07 0,00E+00 0,00E+00 1,10E-07
B 0,00E+00 6,89E-06 2,07E-06 8,96E-06
C 0,00E+00 1,38E-02
M 0,00E+00 1,25E-01
U 0,00E+00 5,09E-10
V 0,00E+00 4,51E-06
W 0,00E+00 1,62E-02
Z 0,00E+00 7,04E-02
Total 1,10E-07 2,26E-01
Case 1 - Protection measures priority
Double click on a protection measure to modify its level of priority
Enable
1 LPS
2 SPD at line entrance
3 Manual fire protection
4 Automatic fire protection
5 Coordinated SPD
6 Wiring
7 Withstand voltage
8 Shielding
9 Touch and step voltage
10 Type of surface
OK
Cancel
Internal systems:
Name
Z
Selected protection meas
Common protection measures:
LPS class: II (Pb = 0,05)
Line1: Power aerial
SPD at line entrance: level II
Line2: Power mixed
SPD at line entrance: level II
Line3: Telecom
SPD at line entrance: level II
Show risk
Without protection
With protection
Remove protection
Risk 3
Risk 4
Risk composition
Risk parameters
Protection choice
Automatic
Manual
Economic evaluation
Yes No
Selected case:
Clear all cases
OK

Possibilité d'optimiser les solutions par calcul du risque économique



Outil d'aide pour le calcul économique





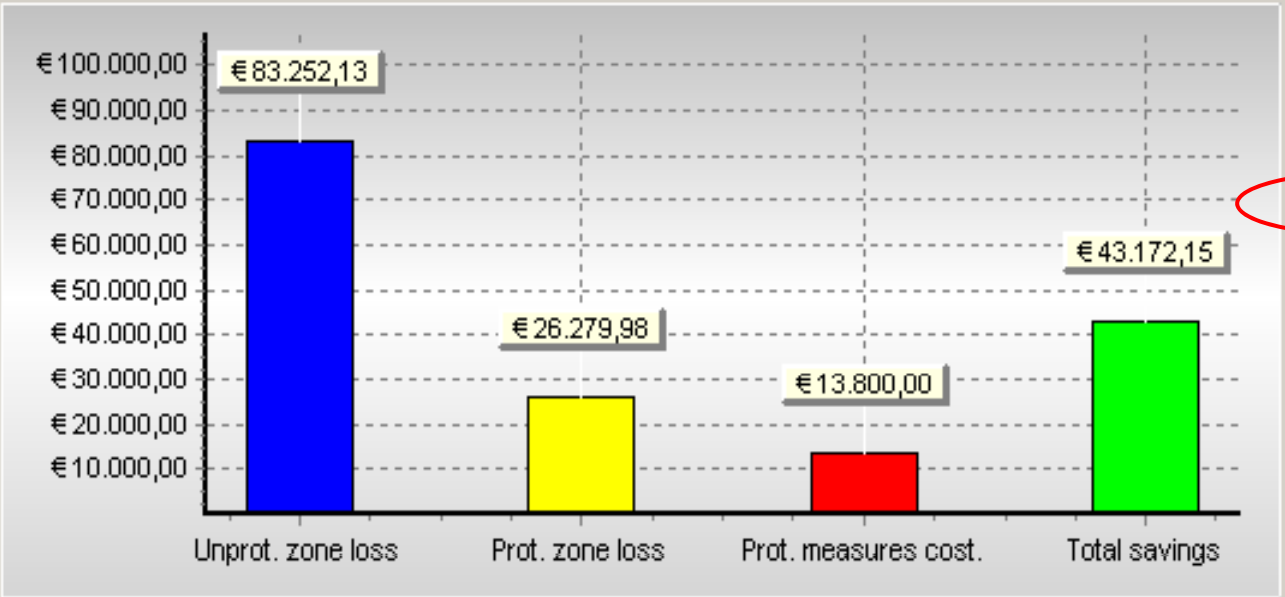
Détermination du prix complet du SPF sur la base d'une liste de prix proposée modifiable par l'utilisateur

Détermination de la solution la plus économique

JUPITER - P001 - META

Projects list Risk report ?

Economic evaluation



- Risk 1
- Risk 2
- Risk 3
- Risk 4

- Protection measures
- No protection measures

Protection is cost effective

Project data

P001 - METALPHA Sa - industrial design -

Structure | Connected lines | Zones | Calculations | Prot. measures

- Lightning flashes frequency
  - Ng (flashes/year km²): 2
- Structure type: industrial
- Location factor: surrounded by smaller objects
- Shielding: No shield
- Collection area
  - Dimensions: refer to annex
  - Collection area Ad (km²): 5,51E-02
  - Collection area Am (km²): 3,14E-01
- Special characteristics:

Structure and collection area ✓

Connected lines ✓

Zones ✓

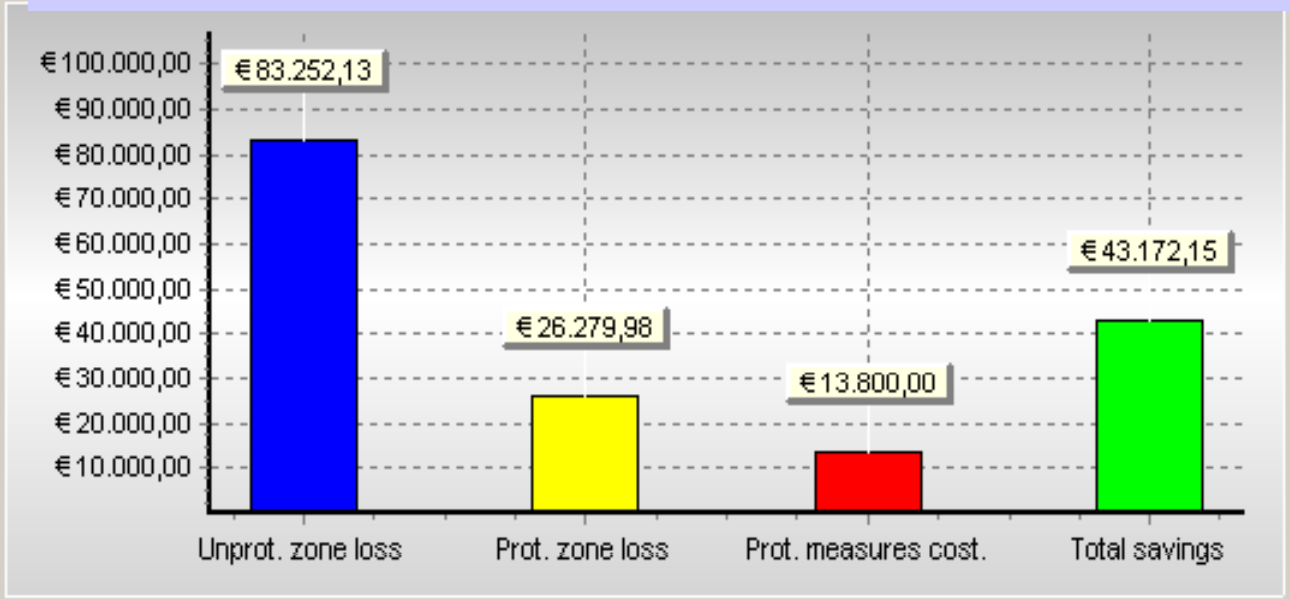
Protection measures selection ✓

Economic evaluation ✓

SPD selection

Projects list

Outil additionnel: choix des parafoudres selon EN 62305-4 (possibilité d'utiliser cet outil sans faire le calcul de risque)



Risk 1
Risk 2
Risk 3
Risk 4

Protection measures
No protection measures

Protection is cost effective

Structure and collection area ✓
Connected lines ✓
Zones ✓
Protection measures selection ✓
Economic evaluation ✓
SPD selection
Projects list

Project data

P001 - METALPHA Sa - industrial design -

Structure | Connected lines | Zones | Calculations | Prot. measures

- Lightning flashes frequency
  Ng (flashes/year km²): 2
- Structure type: industrial
- Location factor: surrounded by smaller objects
- Shielding: No shield
- Collection area
  Dimensions: refer to annex
  Collection area Ad (km²): 5,51E-02
  Collection area Am (km²): 3,14E-01
- Special characteristics:

Première étape : définition de l'installation électrique

SPD selection - P001 -

File SPD archive ?

Lines list | Selection and installation of SPD

Electrical system : TN

Power system : 3F + N

Line to neutral voltage (V) : 230

Power is supplied by a transformer HV/LV with earth electrode in common with the building ? Yes No Help

Safety coefficient for equipment : 0,9

Is the line that supplies the installation shielded ? Yes No

Section (mm^2) : 10

Material : Cu

The connected line is : a cable insulated from the soil or in air

a cable with the screen in contact with the soil

Distance between the structure and the closest earthing point of the screen (m) : 60 Help

Input minimum impulse withstand voltage of installed equipments (V) : 2500

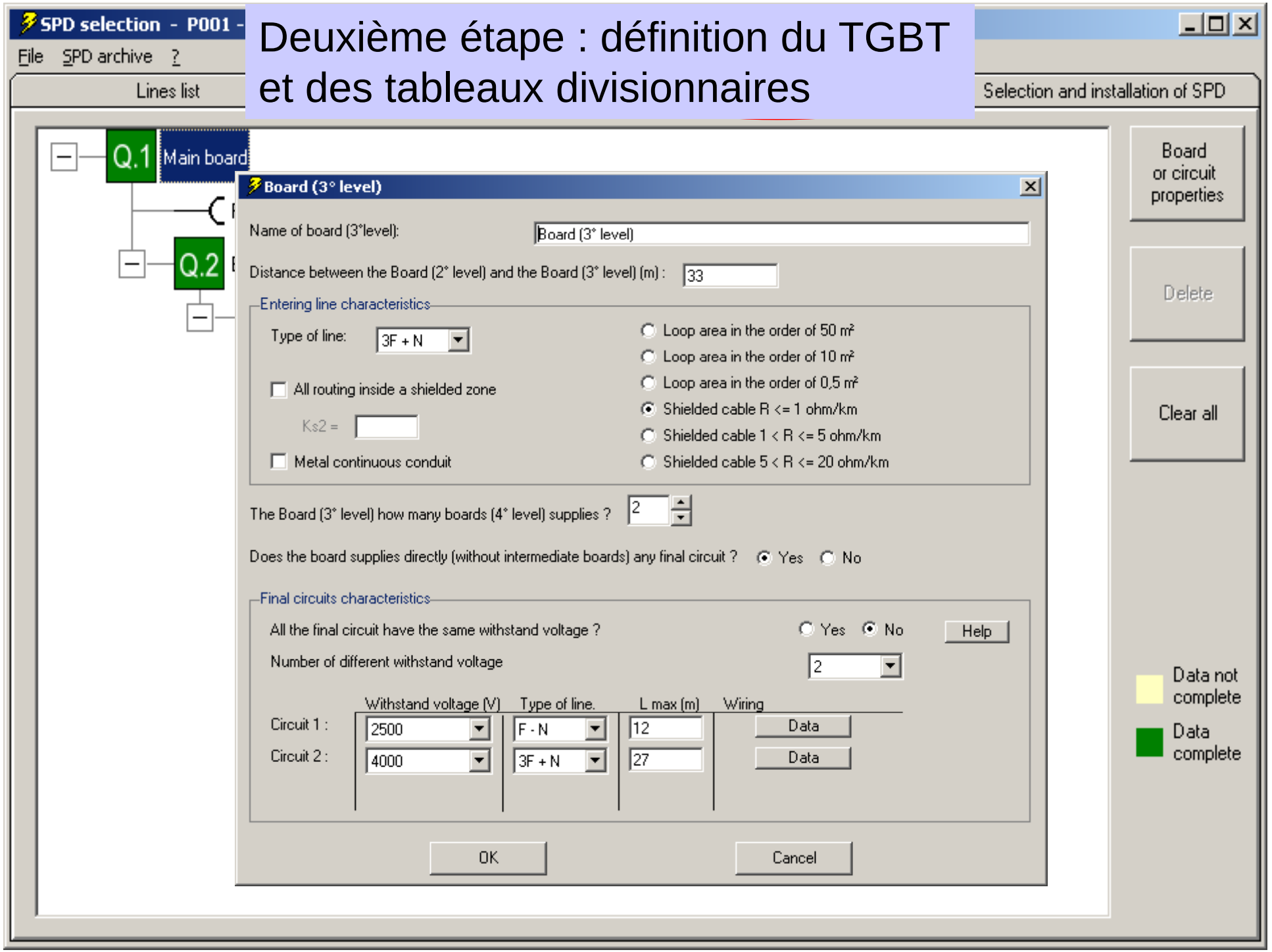
Conductor section (mm^2) :

Current I_{cond} that flows in each line conductor (kA) : 5,68

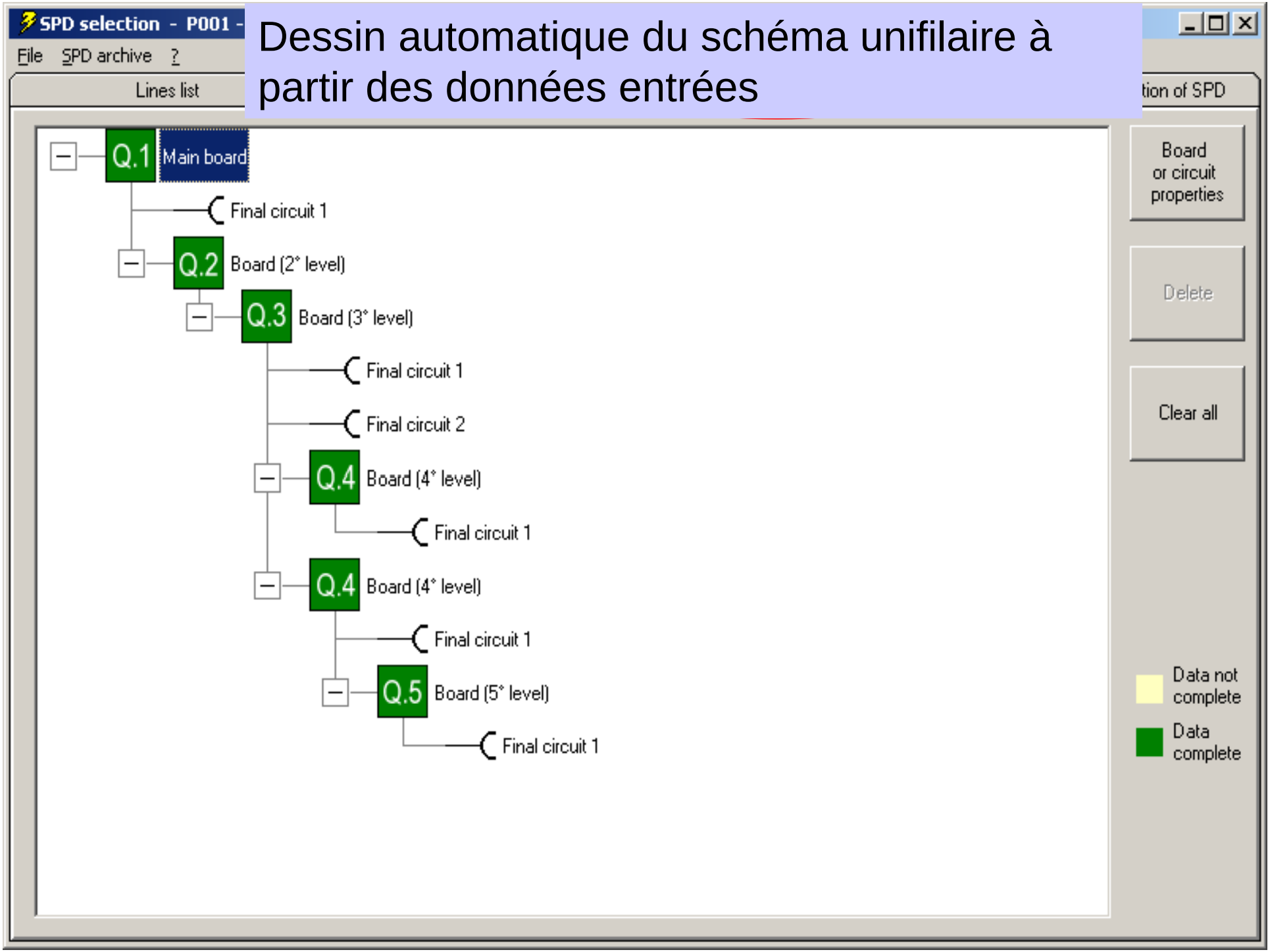
Information about internal systems supplied by the line for which coordinated SPD has been selected

Zone	Name	Wiring	Uw (kV)	SPD level	ks2
Z3	Power production	Loop area in the order of 50 m²	2,5	III	1,0

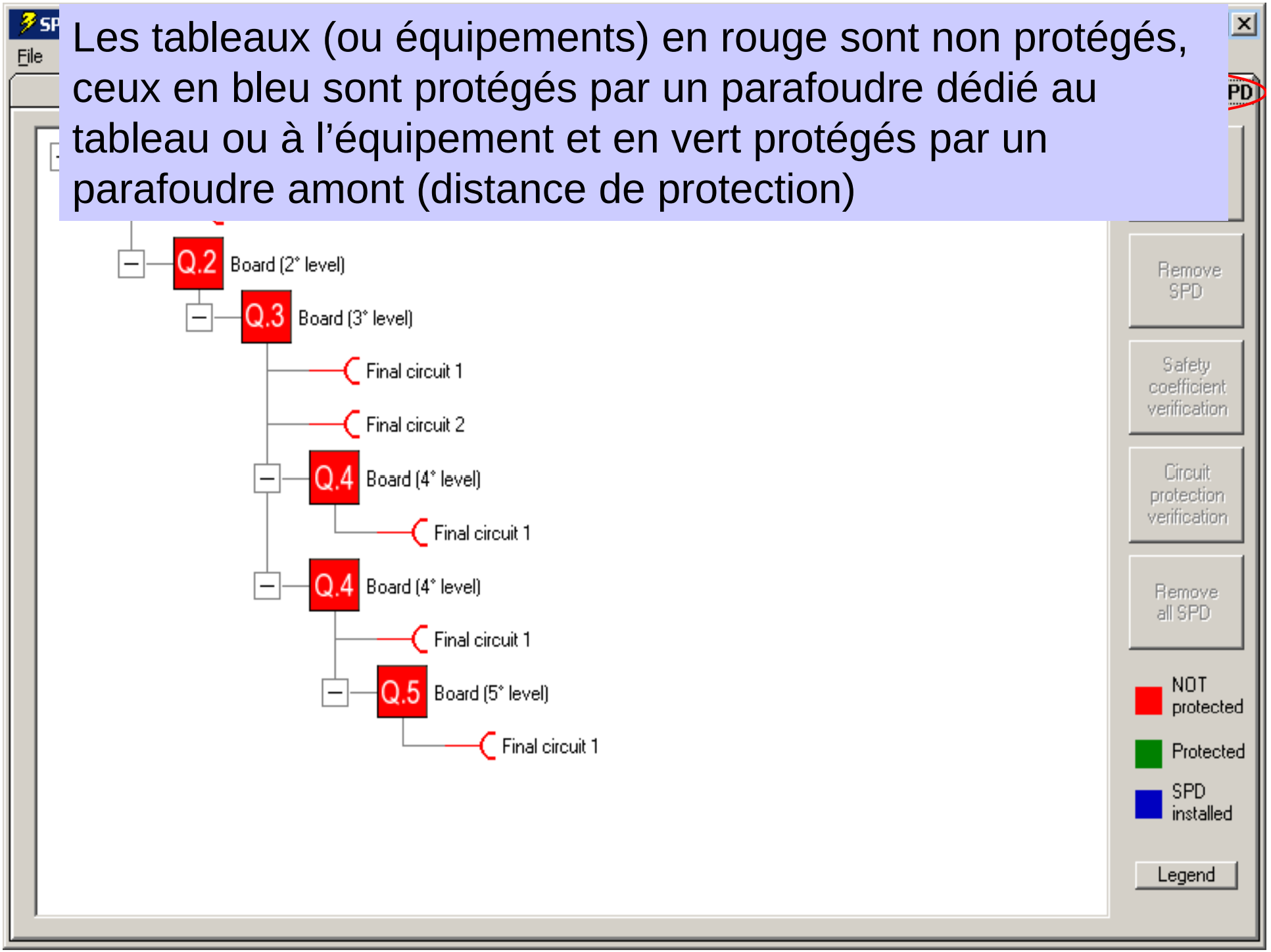
OK


SPD selection - P001 -
File SPD archive ?
Lines list
Selection and installation of SPD
Deuxième étape : définition du TGBT et des tableaux divisionnaires
Q.1 Main board
Q.2
Board (3° level)
Name of board (3°level): Board (3° level)
Distance between the Board (2° level) and the Board (3° level) (m) : 33
Entering line characteristics
Type of line: 3F + N
All routing inside a shielded zone
Ks2 =
Metal continuous conduit
Loop area in the order of 50 m²
Loop area in the order of 10 m²
Loop area in the order of 0,5 m²
Shielded cable R <= 1 ohm/km
Shielded cable 1 < R <= 5 ohm/km
Shielded cable 5 < R <= 20 ohm/km
The Board (3° level) how many boards (4° level) supplies ? 2
Does the board supplies directly (without intermediate boards) any final circuit ? Yes No
Final circuits characteristics
All the final circuit have the same withstand voltage ? Yes No Help
Number of different withstand voltage 2
Withstand voltage (V) Type of line. L max (m) Wiring
Circuit 1 : 2500 F - N 12 Data
Circuit 2 : 4000 3F + N 27 Data
OK
Cancel
Board or circuit properties
Delete
Clear all
Data not complete
Data complete

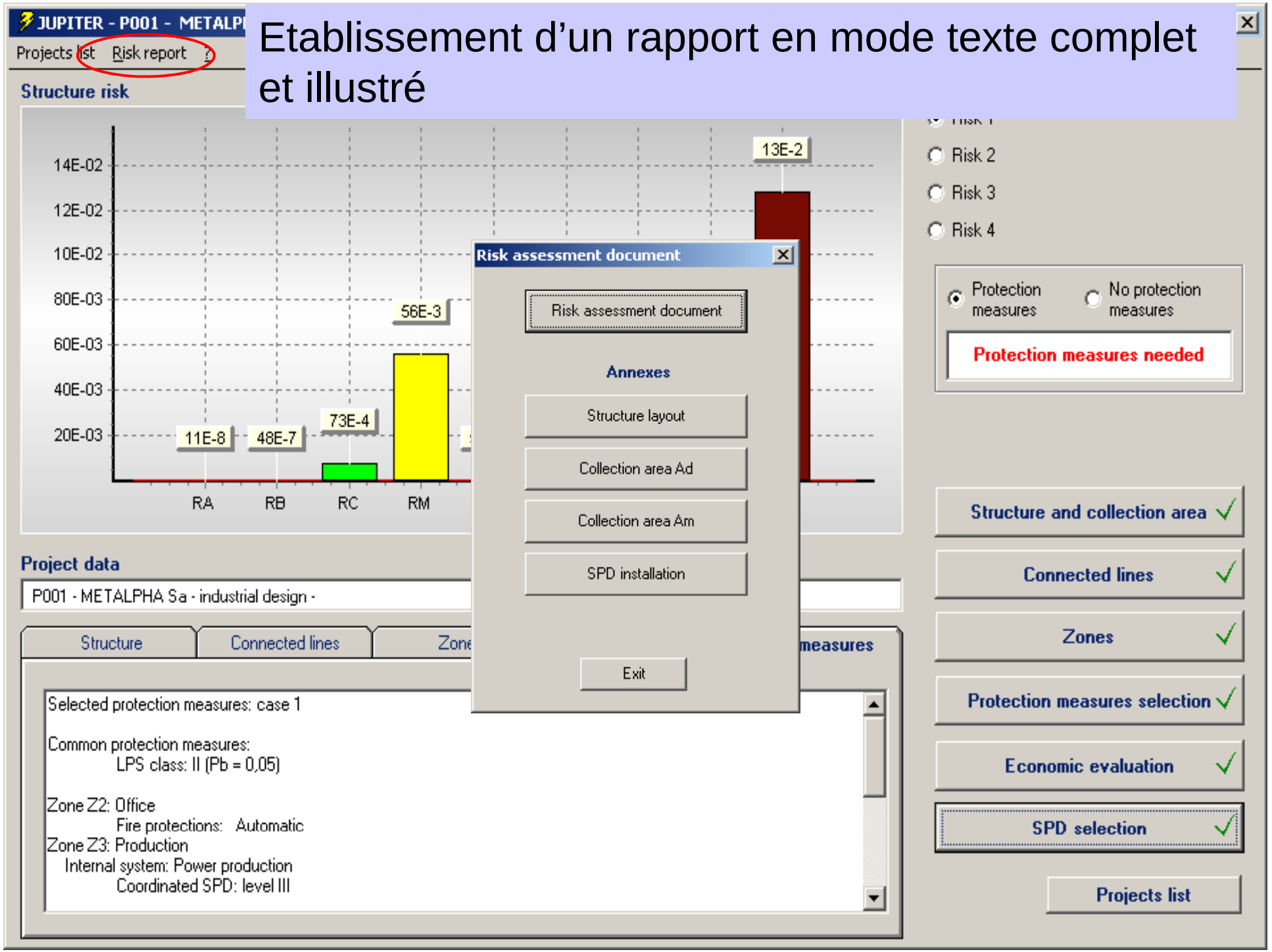
Dessin automatique du schéma unifilaire à partir des données entrées



Les tableaux (ou équipements) en rouge sont non protégés, ceux en bleu sont protégés par un parafoudre dédié au tableau ou à l'équipement et en vert protégés par un parafoudre amont (distance de protection)



Etablissement d’un rapport en mode texte complet et illustré



Etablissement d'un rapport en mode texte complet et illustré