



INFORME DE CÁLCULO HIDRÁULICO

Nombre del proyecto
Diseñador
Localización
Descripción

PARÁMETROS DEL MATERIAL

Tipo de material
Concentración de diseño [%]:
Tiempo de descarga [s]:

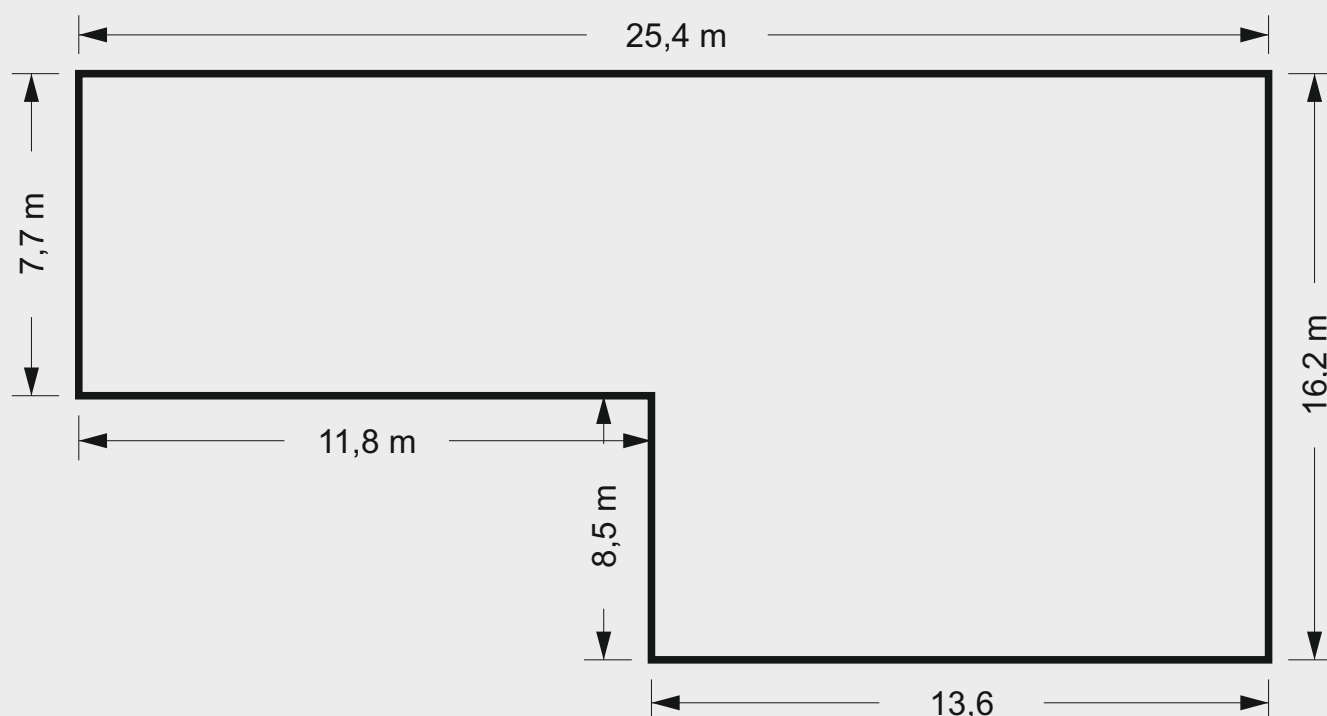
Clase A
7,9
10

PARÁMETROS DE LA SALA

Volumen de la sala [m^3]:
Superficie de la sala [m^2]:
Altitud [m]:
Temperatura [$^{\circ}\text{C}$]:
Superficie de aberturas [m^2]:
Resistencia estructural admisible [kPa]:

600
200
0
20
0
1.2

VISTA EN PLANTA DE LA SALA



CANTIDAD DE HFC-227 ea

Cantidad mínima de diseño [kg]:

Gas residual en tubería [kg]:

Capacidad de las botellas [L]:

Gas residual en las botellas [L]:

Número de botellas:

Densidad de llenado [kg/m³]:

Concentración de diseño [%]:

1
0
80
0
1
0
7,9

PARÁMETROS DE LAS TUBERÍAS

Sch40

Nº tubería	Nudo inicio	Nudo final	Long [m]	Ø [mm]	Long equiv. [m]	Elev. [m]	Caudal [kg/s]	P. entrada [Bar]	P. salida [Bar]
7	7	19	1,9	40	2,62	0	11,6	18,38	18,07
8	0	8	2,1	32	0	0	6,96	20,33	20,21
9	9	8	2	65	0	0	34,79	20,08	20,21
10	10	9	3,5	65	0	0	34,79	19,86	20,08
11	12	10	1,6	65	2,01	0	34,79	19,63	19,86
12	11	12	0,5	50	4,09	0	17,39	19,43	19,63
13	13	12	0,5	50	4,09	0	17,39	19,43	19,63
14	14	13	1,2	50	3,36	0	17,39	19,23	19,43
15	15	14	1,4	50	3,36	0	17,39	19,02	19,23
16	11	16	5	50	3,36	0	17,39	19,43	19,08
17	17	2	1,6	40	3,42	0	5,8	18,82	18,73
18	18	15	3,6	40	1,07	0	11,6	18,71	19,02
19	16	17	2,4	50	3,36	0	17,39	19,08	18,82
20	17	7	5,54	40	1,07	0	11,6	18,82	18,38
21	19	4	4	40	2,65	0	5,8	18,07	17,95
22	19	3	4	40	2,65	0	5,8	18,07	17,95
23	20	18	6,94	40	2,62	0	11,6	18,07	18,71
24	5	21	4	40	2,65	0	5,8	17,63	17,75
25	21	6	4	40	2,65	0	5,8	17,75	17,63
26	20	21	1,9	40	2,62	0	11,6	18,07	17,75
27	15	1	1,4	40	3,42	0	5,8	19,02	18,93

PARÁMETROS DE LOS DIFUSORES

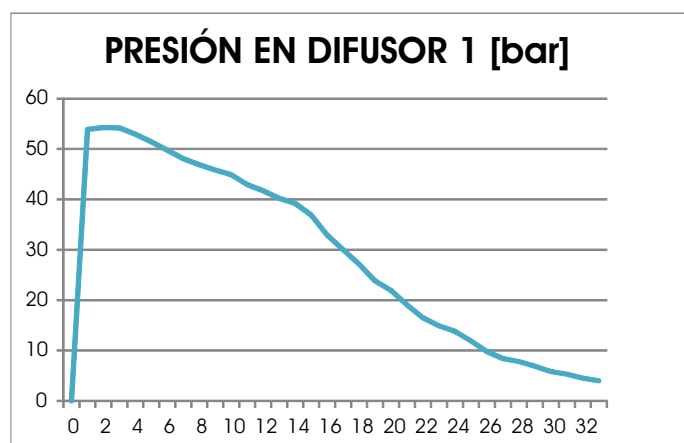
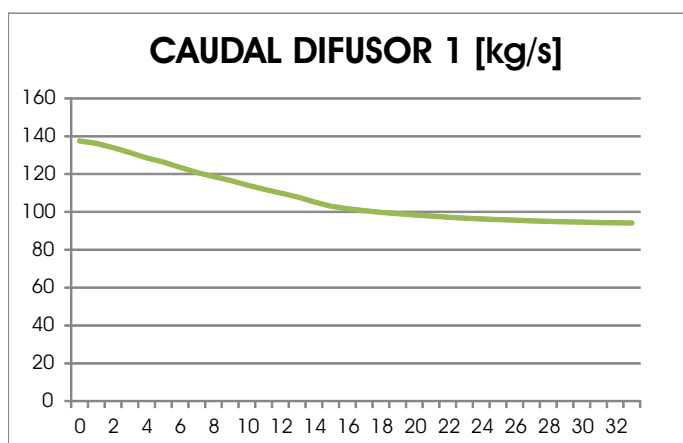
Nº Difusor	Presión difusor [Bar]	Caudal [kg/s]	Area orificio equiv. [cm ²]	Referencia Difusor
1	18,93	5,80	1,43	NG-DIF-HFC-1 1/2-360
2	18,73	5,80	1,44	NG-DIF-HFC-1 1/2-360
3	17,95	5,80	1,49	NG-DIF-HFC-1 1/2-360
4	17,95	5,80	1,49	NG-DIF-HFC-1 1/2-360
5	17,63	5,80	1,51	NG-DIF-HFC-1 1/2-360
6	17,63	5,80	1,51	NG-DIF-HFC-1 1/2-360

DELAY ENTRE DIFUSORES

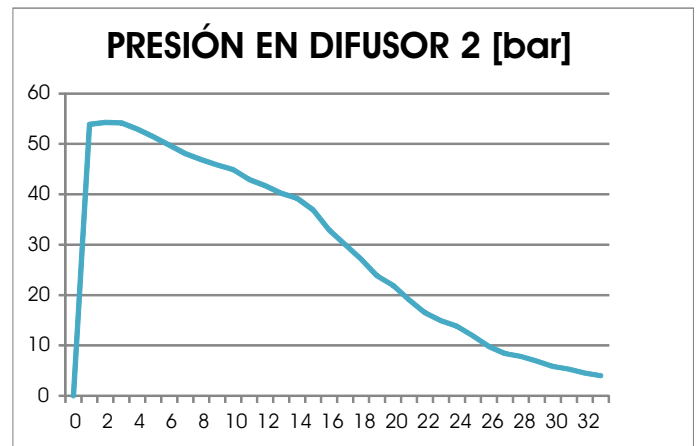
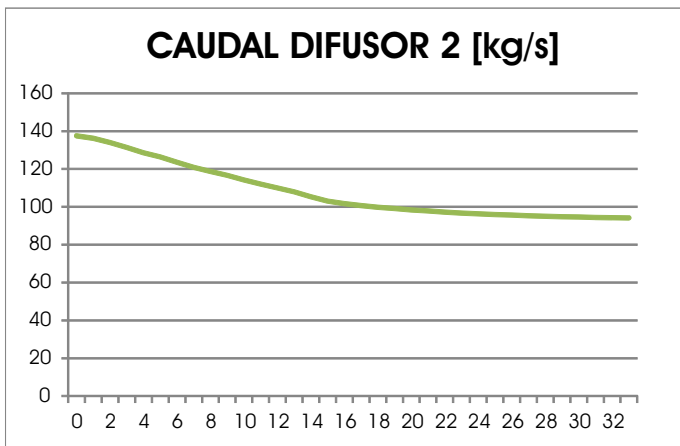
Nº Difusor	Velocidad descarga [m/s]	Tiempo [s]	Distancia [m]
1	19,30	1,30	7,6
2	19,30	1,19	3,4
3	19,30	1,17	3,2
4	19,30	1,23	4,8
5	19,30	1,15	2,8
6	19,30	1,26	6,2

CURVAS DE CAUDAL Y PRESIÓN

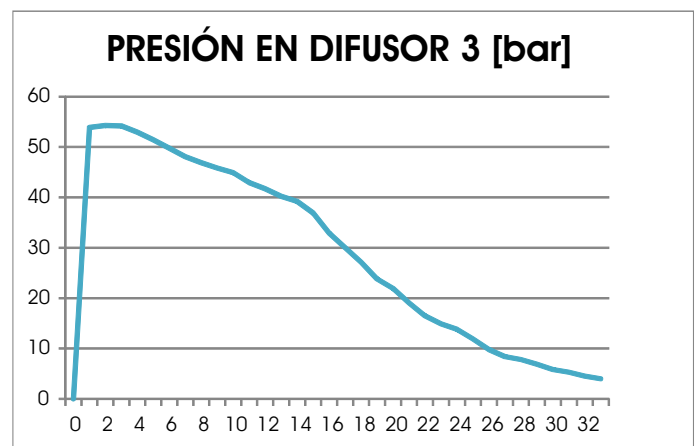
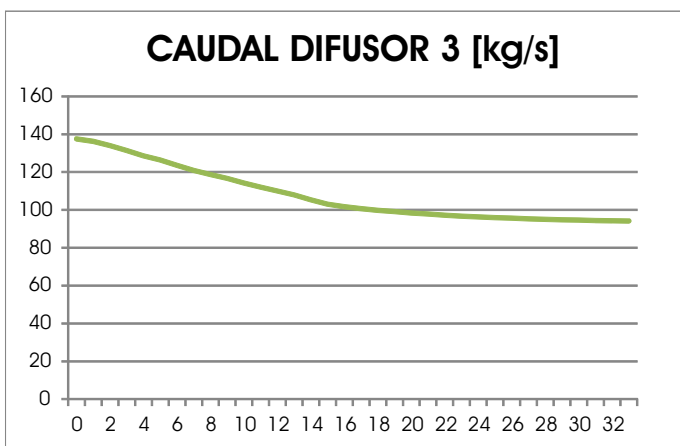
• DIFUSOR 1



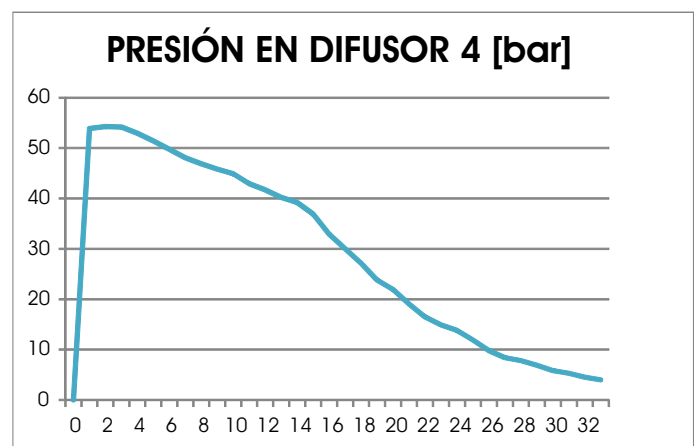
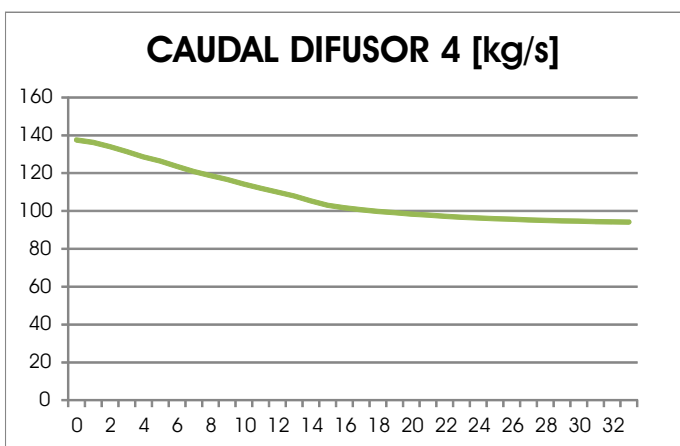
• DIFUSOR 2



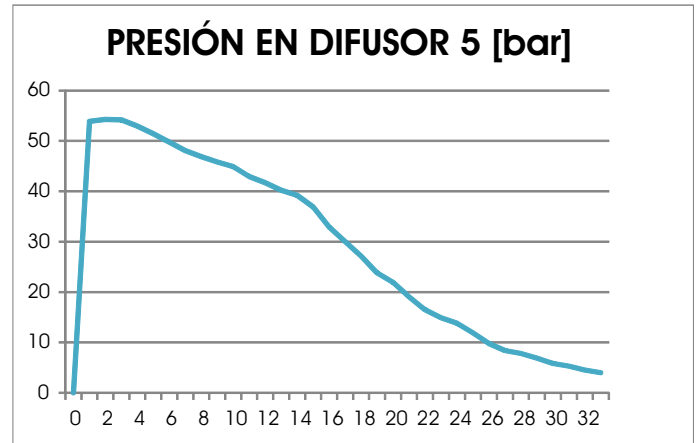
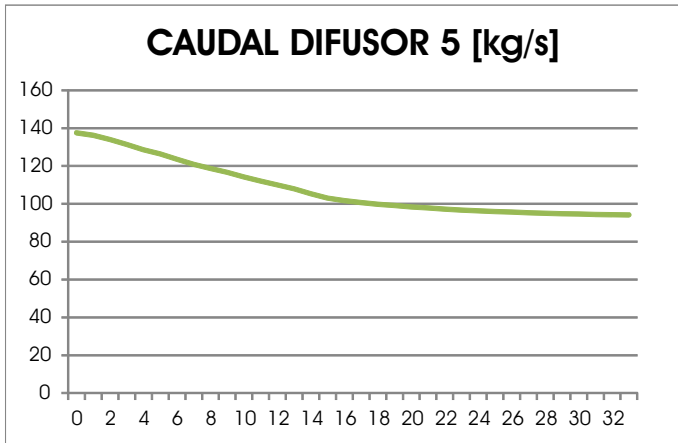
• DIFUSOR 3



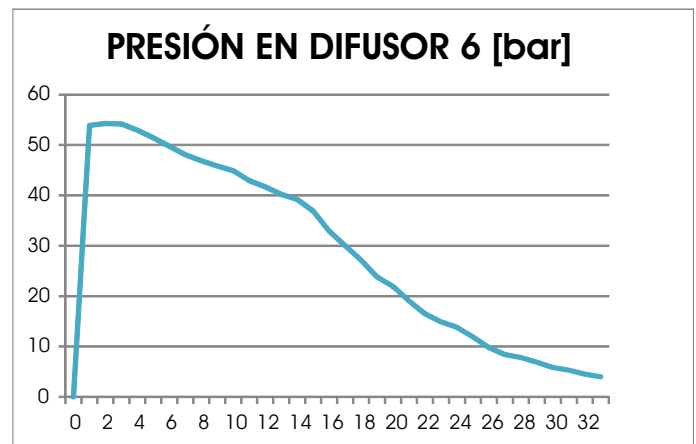
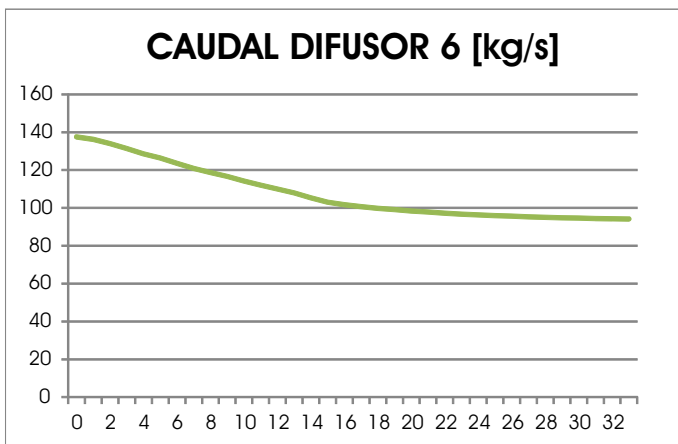
• DIFUSOR 4



• DIFUSOR 5



• DIFUSOR 6



PARÁMETROS DE ALIVIO DE PRESIÓN

Área abertura alivio de presión [m²]

0,12

COMPOSICIÓN AIRE TRAS DESCARGA

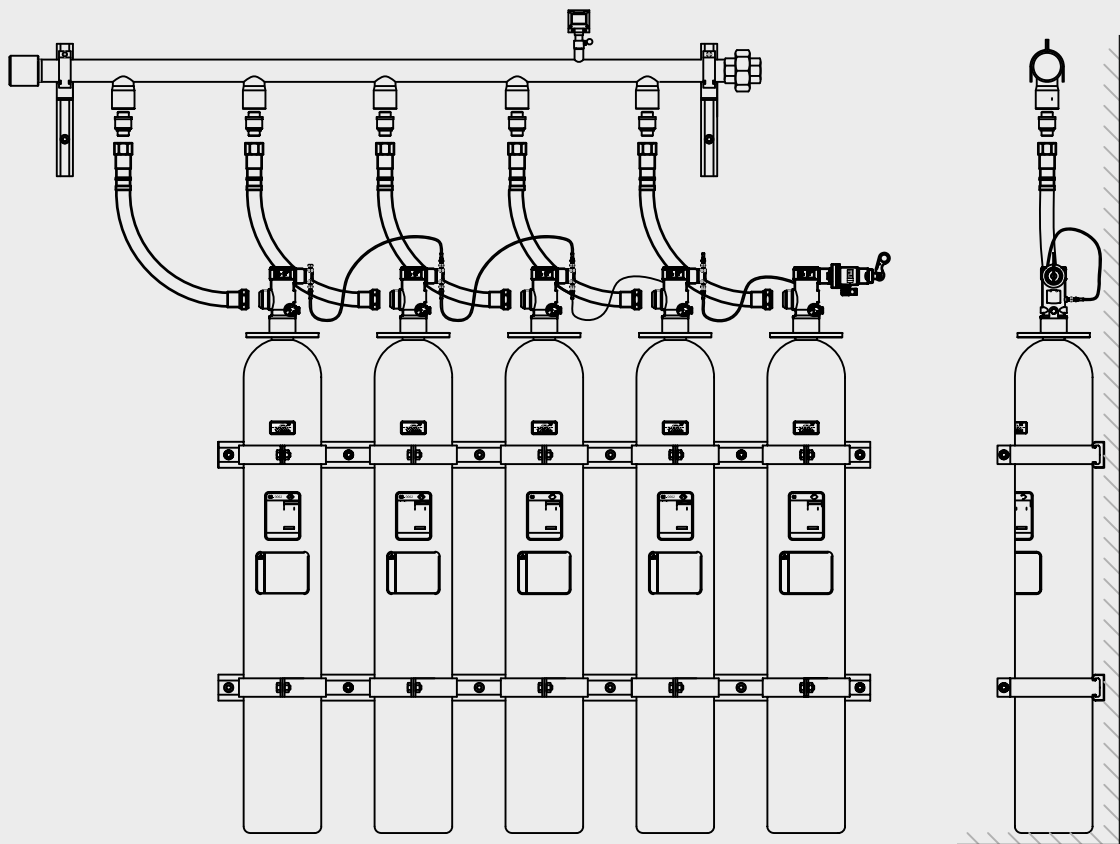
O₂ [%]:
HFC227ea [%]:
N₂ [%]:

19,2
7,9
71,9

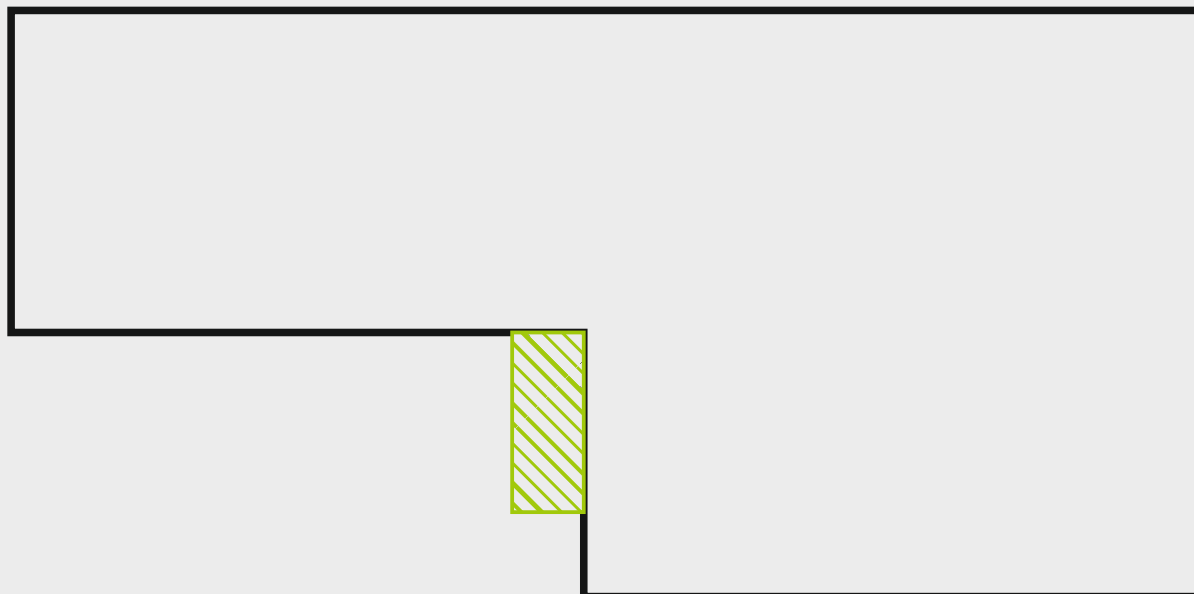
DESGLOSE DE COMPONENTES

TUBO	Tipo	Dimensiones	Metros	Ref
	Sch40	DN 32	10,2	Sch4032
	Sch40	DN 40	26,3	Sch4040
	Sch40	DN 50	4,8	Sch4050
	Sch40	DN 65	7,1	Sch4065
CODOS	Tipo	Dimensiones	UD	Ref
	Roscado	DN 40	3	ThE-40
	Roscado	DN 50	4	ThE-50
	Roscado	DN 65	1	ThE-65
TES	Tipo	Dimensiones	UD	Ref
	Roscado	40x40	4	ThT-4040
	Roscado	50x40	4	ThT-5040
	Roscado	65x50	2	ThT-6550

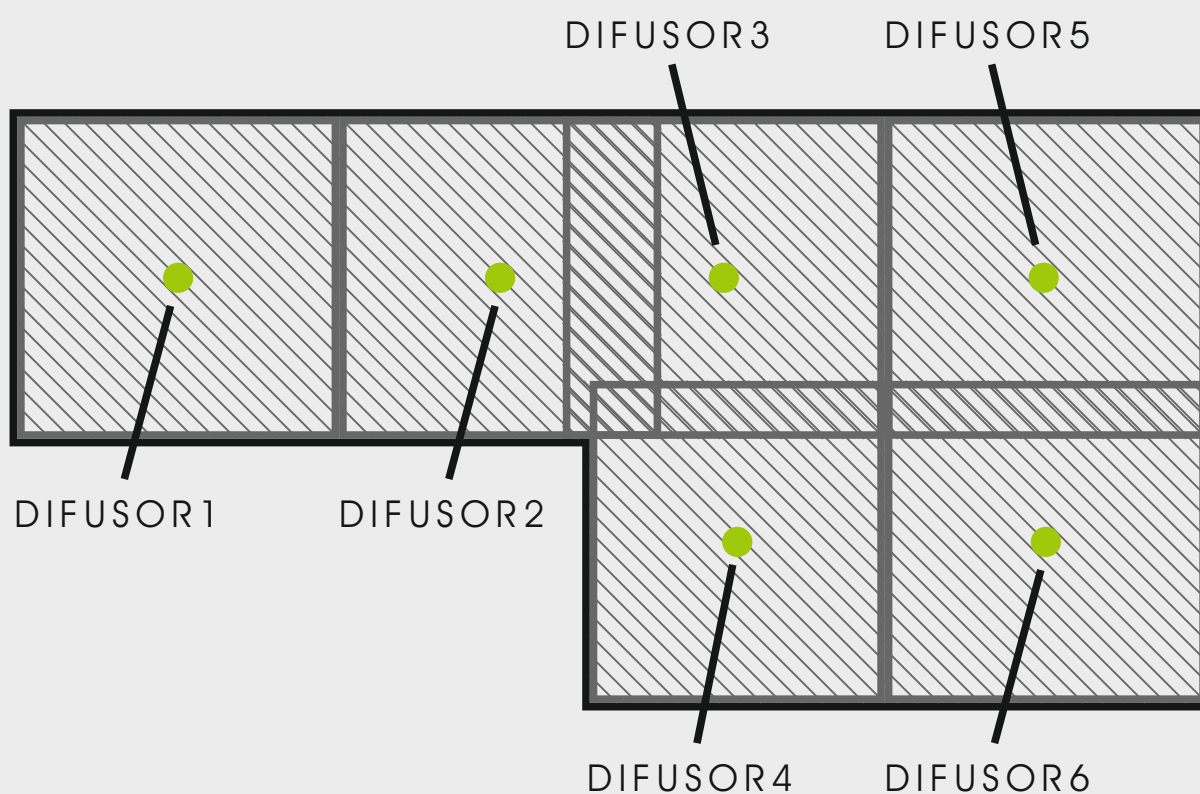
PLANO MONTAJE BATERÍA



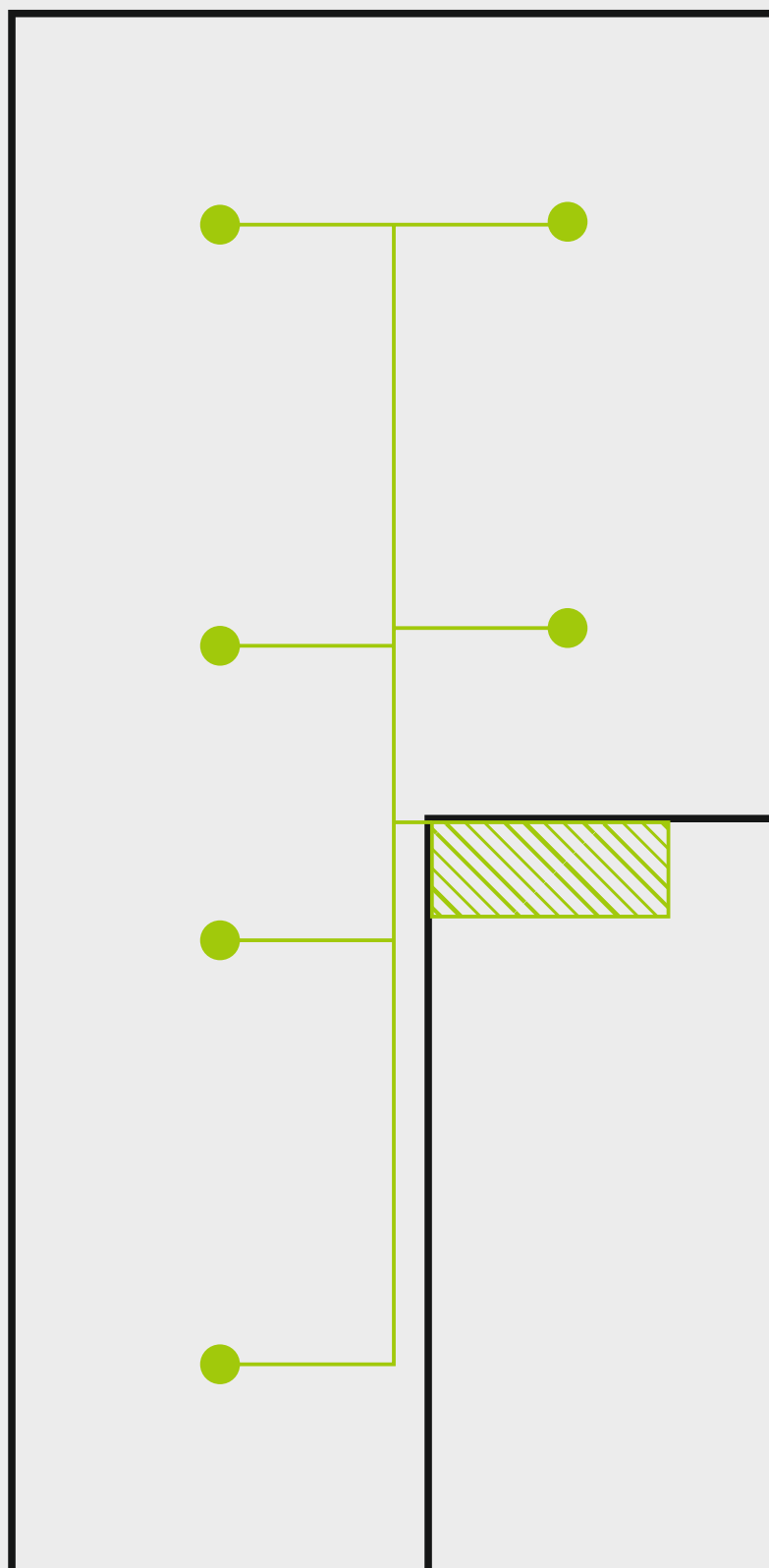
UBICACIÓN RECOMENDADA BATERÍA



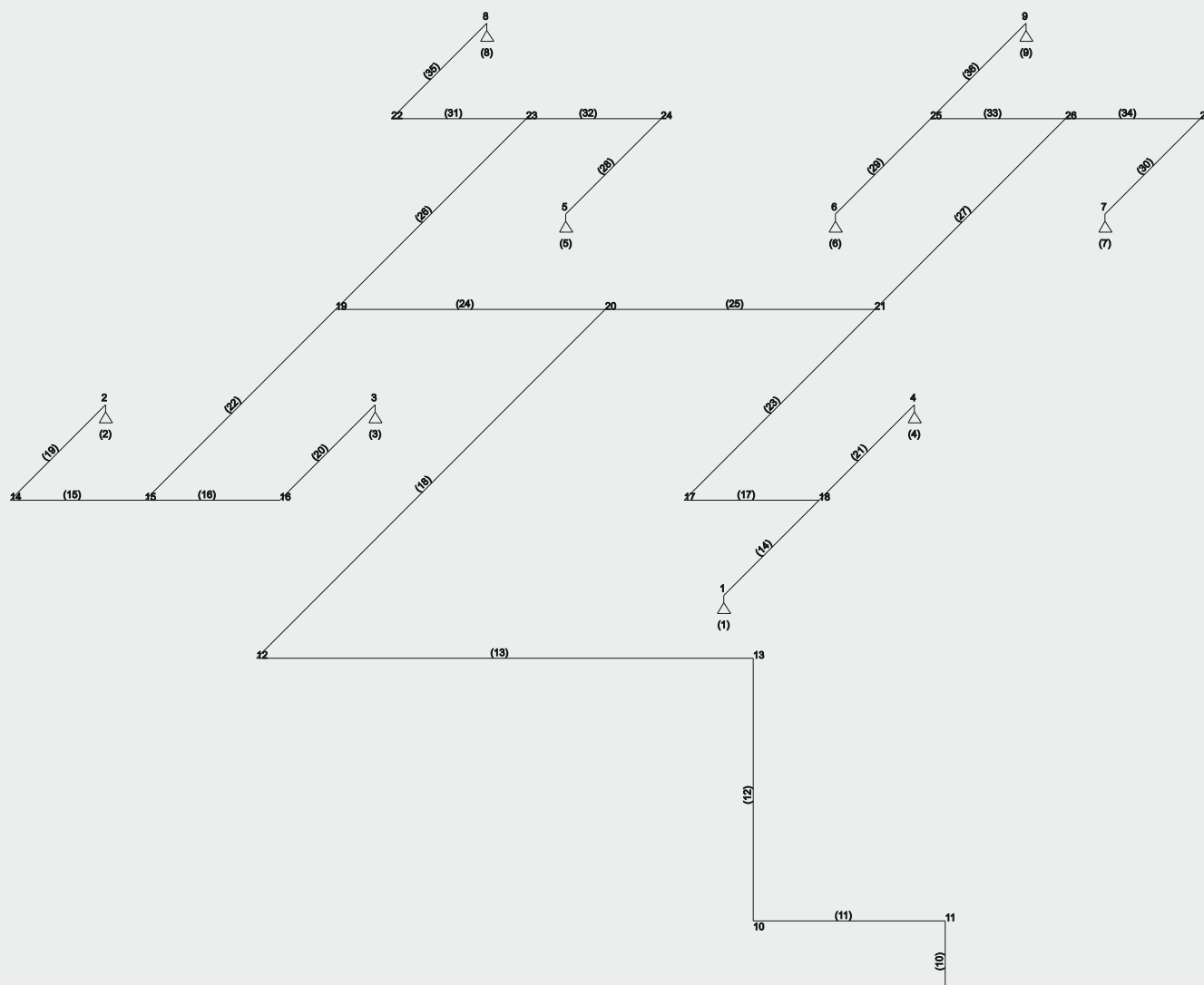
PLANO COBERTURA DIFUSORES



PLANO DE IMPLANTACIÓN DEL SISTEMA



VISTA ISOMÉTRICA DEL SISTEMA



According to the calculations
The calculation is based on EN 15004 --Standard on Clean Agent Fire Extinguishing Systems

Total Flooding Quantity,

$$m = \left(\frac{c}{100 - c} \right) \frac{V}{S}$$

where:

m = agent mass requirements [lb (kg)]

V = net volume of hazard, calculated as the gross volume minus the volume of fixed structures impervious to clean agent vapor [ft³ (m³)]

S = specific volume of the superheated agent vapor at 1 atmosphere and the temperature, t [ft³/lb (m³/kg)]

$$S = 0.1269 + 0.000513t$$

where t = temperature [°C]

c = agent design concentration [volume percent]