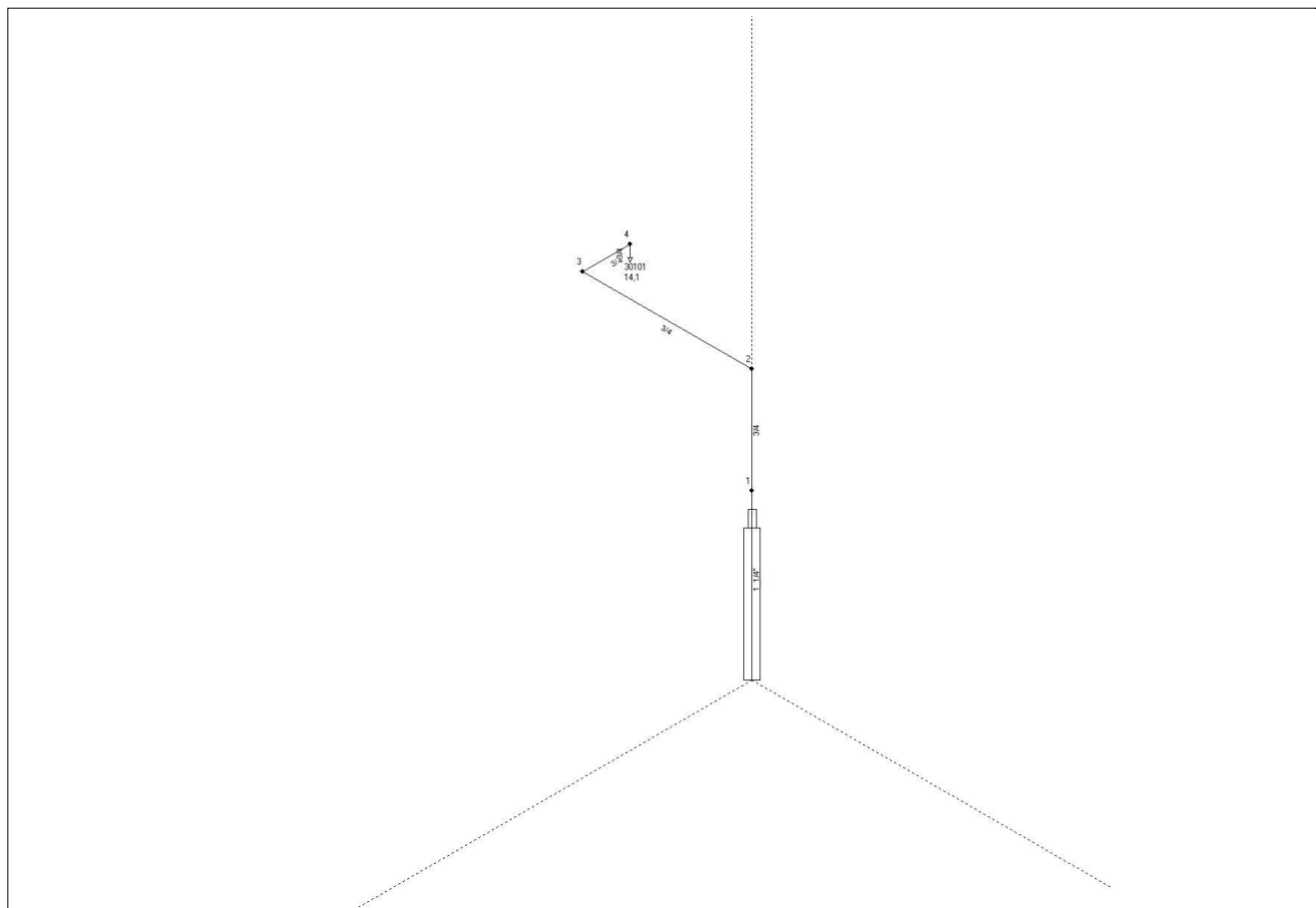




Project:	PR-3002
Project-No:	3002
Building:	Samodzielny Publiczny Zakład opieki Zdrowotnej MSWiA w Poznaniu
Object:	Pom. techniczne UPS w budynku POLIKLINIKI p.1
Contractor:	
Owner:	
Project engineer:	SZ
Date:	2023-09-07
Altitude above sealevel:	100 m
Regulation rule for calculation of FK-5-1-12 quantities:	ISO 14520-1, Edition 2000
Pipe catalogue:	Rury Logistal.rkl
Component catalogue:	Savi Technologie.arm
Nozzle catalogue:	Savi Technologie.noz





Pipesystem data:

Section-No:	Starting-node	Endnode	Length [m]	Height [m]	Pipetype	Diameter [mm] **	Fitting *	Component code	Component coefficient	Nb of containers FK-5-1-12 quantity
1	0	1	1,750	1,750	10	37,5	C	250	4,000	1,0
2	1	2	1,120	1,120	31	21,1		-	-	0,0
3	2	3	1,800	0,000	31	21,1	B	-	-	0,0
4	3	4	0,500	0,000	31	21,1	E	-	-	0,0
5	4	30101	0,050	-0,050	31	21,1	E	-	-	0,0

* C=Component, B=Bend, T=T-Piece, E=Elbow

** If a pipe diameter is equal zero see the extra table of the calculated diameters

Legend of pipetypes

Type	Pipeclass	Pipe roughness
------	-----------	----------------

10	Rury Savi	smooth
31	Logistal 2020	galvanized

Legend of components

Code	Type	Resistance coefficient
------	------	------------------------

250	Zawor HFC Savi	4,000
-----	----------------	-------

Nozzle data:

No.	Calculation zone	Diameter [mm]
-----	------------------	---------------

30101	Główna	14,1
-------	--------	------

Legend of nozzles:

Type	Number of orifices	C1	C2	C3	C4	C5	C6
------	--------------------	----	----	----	----	----	----

3 Dysza FK-5-1-12 1/2"	1	0,04976	0,25599	0,00000	0,00000	0,00000	0,00000
------------------------	---	---------	---------	---------	---------	---------	---------



Calculation zone data:

Calculation of design quantity:

Zone	Total volume [m3]	Volume of building parts [m3]	Calculated volume [m3]	Max. Over-pressure [mbar]	Design temp. [°C]	Extinguish-conc. [% Vol]	Design factor	Design conc. [% Vol]	Design quantity [kg]
1 Główna	50,4	0,0	50,4	2,000	20,0	4,3	1,30	5,6	41,59

Regulation rule for calculation of FK-5-1-12 quantities: ISO 14520-1, Edition 2000
Altitude above sealevel: 100,0 m

FK-5-1-12 storage input data:

Container volume: 50,0 l
Filling ratio: 1,100 kg/l
Filling pressure: 42,0 bar abs
Storage temperature: 20,0 °C
Supplement factor: 1,00
Minimum storage quantity: 41,59 kg
Number of containers: 1

Discharge time (input value): 8,5 s

Further information:

Design with included gas discharge time
Design with predetermined orifice diameters



Calculation results:

FK-5-1-12 storage data:

Design quantity:	41,6 kg
Supplement factor:	1,00
Minimum storage quantity:	41,6 kg
Container volume:	50,0 l
Filling ratio:	0,83 kg/l
Filling pressure:	42,0 bar abs
FK-5-1-12 -mass per container:	41,6 kg
Number of containers:	1
Actual storage quantity:	41,6 kg
Storage temperature:	20,0 °C
Starting container pressure:	42,0 bar abs

Discharge time:

Discharge time air:	0,1 s
Total gas discharge time:	0,1 s
Two-phase discharge time:	8,4 s
Total discharge time:	8,5 s

System information:

Container working pressure:	25,3 bar abs
Container working temperature:	20,0 °C
Total network volume:	3,1 l
Medium pipe content:	4,7 kg FK-5-1-12
Filling portion in pipe system:	0,11 kg FK-5-1-12 /kg FK-5-1-12 -storage

**Pipe system:**

Section-No:	Starting-node	Endnode	Pressure [bar abs]	Flowrate [kg/s]	Pipedimension Di [mm]	DN
1	0	1	24,80	4,69	37,5	1_1/4"
2	1	2	22,75	4,70	21,1	3/4
3	2	3	20,60	4,70	21,1	3/4
4	3	4	17,99	4,70	21,1	3/4
5	4	30101	15,39	4,70	21,1	3/4

**Nozzle data:**

Calculation- zone no:	Nozzle no.	Nozzle type	Number of orifices	Pipeconnection Di [mm]	DN	Orifice [mm]	FK-5-1-12 out- put [kg]
1	30101	3	1	21,1	3/4	14,1	41,7

Two-phase discharge time: 8,4 s

Calculation- zone no:	Nozzle no.	Outlet velocity [m/s]	Transport time [s]	Jetdistance [m]	Evaporation distance [m]
1	30101	31,9	1,00	8,76	4,40



Concentrations:

Calculation- zone no:	O2	Gascomposition after discharge [%]	
		FK-5-1-12	N2
1	19,7	5,5	73,8

Pressure relief opening:

Calculation- zone no:	Recommended area against overpressure		Max. flow [kg/s]
	Area [m.]	Overpressure [mbar]	
1	0,033	2,0	4,7



Component list:

Component	Number	Code	Coefficient
Zawor HFC Savi	1	250	4,000

Nozzle-type	Number	C1	C2	C3	C4	C5	C6
3	1	0,04970	0,25590	0,00000	0,00000	0,00000	0,00000

Pipe-type	Di [mm]	DN	Length [m]
10	37,50	1_1/4"	1,800
31	21,10	3/4	3,500

Number of bends (+) and elbows (-)

Bend-type	Di [mm]	DN	Number
90	21,10	3/4	1
-90	21,10	3/4	2

Number of T-distributors (in- and outdiameter)

Number	Input	90-out	90-out	0-out
--------	-------	--------	--------	-------