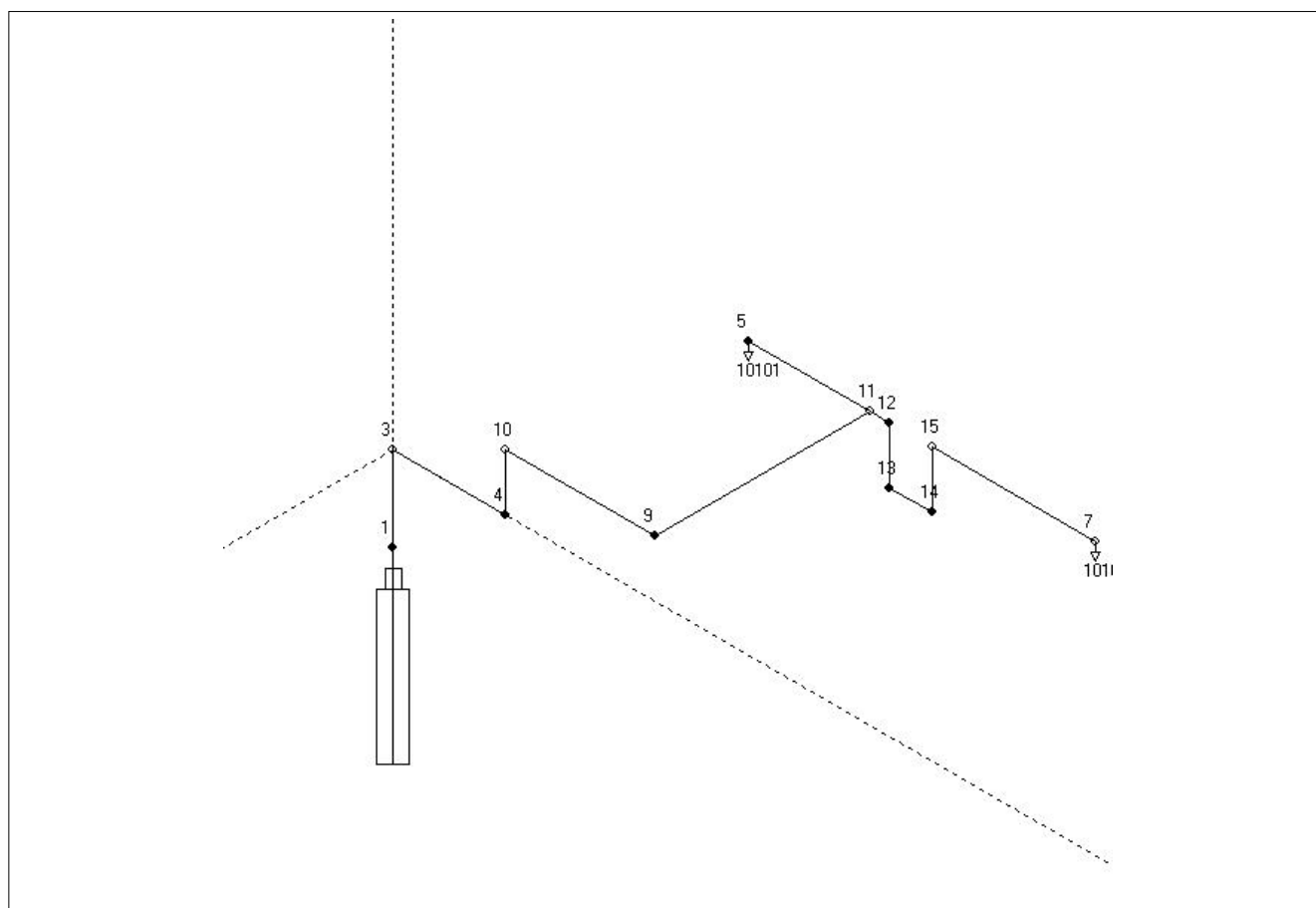


Project:	Politechnika
Project-No:	
Building:	
Object:	
Contractor:	
Owner:	Gureco
Project engineer:	
Date:	05/04/2022
Altitude above sealevel:	1 m
Regulation rule for calculation of FK-5-1-12 quantities:	ISO 14520-1, Edition 2000

Pipe catalogue:	PIPES_19-00.rkl
Component catalogue:	RGSMAM-NC1230_VdS_19-00.arm
Nozzle catalogue:	FEDR-NC1230_VdS_19-00.noz



**Pipesystem data:**

Section-No:	Starting-node	Endnode	Length [m]	Height [m]	Pipetype	Diameter [mm] **	Fitting *	Component code	coefficient	Nb of containers FK-5-1-12 quantity
1	3	4	1,200	0,000	11	53,1	E	-	-	0,0
2	11	5	1,300	0,000	11	27,3	T-90°	-	-	0,0
3	7	10102	0,100	-0,100	11	27,3	E	-	-	0,0
4	5	10101	0,100	-0,100	11	27,3	E	-	-	0,0
5	0	1	0,100	0,100	12	48,0	C	551	3,430	1,0
6	1	3	0,900	0,900	11	53,1		-	-	0,0
7	15	7	1,750	0,000	11	27,3	E	-	-	0,0
8	10	9	1,600	0,000	11	53,1	E	-	-	0,0
9	4	10	0,600	0,600	11	53,1	E	-	-	0,0
10	9	11	2,300	0,000	11	53,1	E	-	-	0,0
11	11	12	0,200	0,000	11	27,3	T-90°	-	-	0,0
12	12	13	0,600	-0,600	11	27,3	E	-	-	0,0
13	13	14	0,450	0,000	11	27,3	E	-	-	0,0
14	14	15	0,600	0,600	11	27,3	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
11	EN-10255 M	galvanized
12	EN-10255 M	hose

Legend of components

Code	Type	Resistance coefficient
551	RGS-MAM-50 valve + hose (modular). D=48mm	3,430

Nozzle data:

No.	Calculation zone	Diameter [mm]
10101	room	15,0
10102	room	15,0

Legend of nozzles:

Type	Number of orifices	C1	C2	C3	C4	C5	C6
1 FEDR	1	0,00014	0,70424	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 room	128,0	0,0	128,0	2,000	20,0	5,9	1,00	5,9	111,64

Regulation rule for calculation of FK-5-1-12 quantities: ISO 14520-1, Edition 2000

Calczone no. 1: (Design safety factor not regulation conform!)

Altitude above sealevel: 1,0 m

FK-5-1-12 storage input data:

Container volume:	127,0 l
Filling ratio:	1,000 kg/l
Filling pressure:	25,0 bar abs
Storage temperature:	20,0 °C
Supplement factor:	1,00
Minimum storage quantity:	111,64 kg
Number of containers:	1

Discharge time (input value): 10,0 s

Further information:

Design with predetermined orifice diameters



Calculation results:

FK-5-1-12 storage data:

Design quantity:	111,6 kg
Supplement factor:	1,00
Minimum storage quantity:	111,6 kg
Container volume:	127,0 l
Filling ratio:	0,88 kg/l
Filling pressure:	25,0 bar abs
FK-5-1-12 -mass per container:	111,6 kg
Number of containers:	1
Actual storage quantity:	111,6 kg
Storage temperature:	20,0 °C
Starting container pressure:	25,0 bar abs

Discharge time:

Discharge time air:	0,3 s
Total gas discharge time:	0,6 s
Two-phase discharge time:	9,6 s
Total discharge time:	10,2 s

System information:

Container working pressure:	13,2 bar abs
Container working temperature:	20,0 °C
Total network volume:	17,2 l
Medium pipe content:	26,6 kg FK-5-1-12
Filling portion in pipe system:	0,24 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	3	4	12,48	11,03	53,1	2
2	11	5	11,40	5,71	27,3	1
3	7	10102	7,26	5,37	27,3	1
4	5	10101	10,62	5,71	27,3	1
5	0	1	12,80	11,03	48,0 *	--
6	1	3	12,65	11,03	53,1	2
7	15	7	8,14	5,37	27,3	1
8	10	9	12,02	11,08	53,1	2
9	4	10	12,22	11,08	53,1	2
10	9	11	11,82	11,08	53,1	2
11	11	12	11,64	5,37	27,3	1
12	12	13	10,90	5,37	27,3	1
13	13	14	10,05	5,37	27,3	1
14	14	15	9,03	5,37	27,3	1

* Attention! This pipe dimension is not in the pipe catalogue!

**Nozzle data:**

Calculation-zone no:	Nozzle no.	Nozzle type	Number of orifices	Pipeconnection Di [mm]	DN	Orifice [mm]	FK-5-1-12 output [kg]
1	10101	1	1	27,3	1	15,0	57,8
1	10102	1	1	27,3	1	15,0	54,4

Two-phase discharge time: 9,6 s

MAXIMUM TRANSPORT TIME DIFF. BETWEEN NOZZLES: 10102./ 10101. IS 0.32 S

Calculation-zone no:	Nozzle no.	Outlet velocity [m/s]	Transport time [s]	Jetdistance [m]
1	10101	22,8	1,92	7,31
1	10102	22,0	2,24	7,13

**Concentrations:**

Calculation- zone no:	O2	Gascomposition after discharge [%]	
		FK-5-1-12	N2
1	19,7	5,8	73,6

Pressure relief opening:

Calculation- zone no:	Recommended area against overpressure		Max. flow [kg/s]
	Area [m²]	Overpressure [mbar]	
1	0,078	2,0	

**Component list:**

Component	Number	Code	Coefficient
RGS-MAM-50 valve + h	1	551	3,400

Nozzle-type	Number	C1	C2	C3	C4	C5	C6
1	2	0,00010	0,70400	0,00000	0,00000	0,00000	0,00000

Pipe-type	Di [mm]	DN	Length [m]
11	53,10	2	6,600
11	27,30	1	5,200
12	48,00	--	0,100

Number of bends (+) and elbows (-)

Bend-type	Di [mm]	DN	Number
-90	53,10	2	4
-90	27,30	1	6

Number of T-distributors (in- and outdiameter)

Number	Input	90-out	90-out	0-out
1	53,1	27,3	27,3	0,0