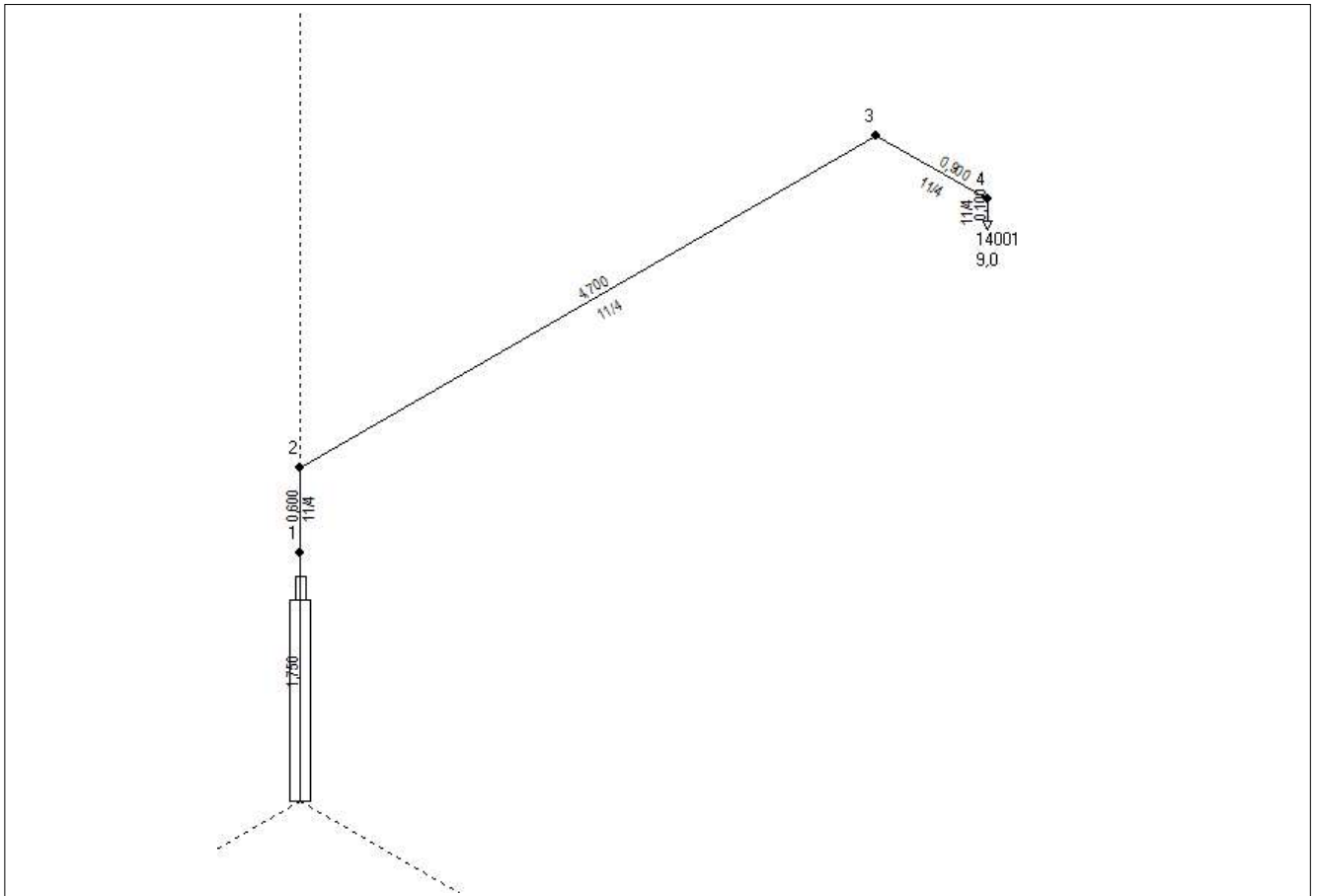




Project:
Project-No: YST-01-16-XX
Building:
Object: AR-GE LABORATUVAR
Contractor: YST A.Ş.
Owner:
Project engineer:
Date: 19.09.2016
Altitude above sealevel: 0 m
Regulation rule for calculation of HFC227ea quantities: ISO 14520-1, Edition 2000

Pipe catalogue: 227ea_CX 03072007.rkl
Component catalogue: 227ea_25052007.arm
Nozzle catalogue: 227ea_25052007.noz





Pipesystem data:

Section-No:	Starting-node	Endnode	Length [m]	Height [m]	Pipetype	Diameter [mm]	Fitting *	Component code	Component coefficient	Nb of containers HFC227ea quantity
1	0	1	1,750	1,750	10	49,0	C	333	5,700	1
2	1	2	0,600	0,600	10	35,9		-	-	
3	2	3	4,700	0,000	10	35,9	E	-	-	
4	3	4	0,900	0,000	10	35,9	E	-	-	
5	4	14001	0,100	-0,100	10	35,9	E	-	-	47.3

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

Legend of pipetypes

Type	Pipeclass	Pipe roughness
10	sch 40	smooth

Legend of components

Code	Type	Resistance coefficient
333	Valve VS33F+Deep Tube (33 mm)+FRF33	5,700



Calculation zone data:

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 Ana hacim	75,9	0,0	75,9	1,000	20,0	6,1	1,30	7,9	47,43

Regulation rule for calculation of HFC227ea quantities: ISO 14520-1, Edition 2000
Altitude above sealevel: 0,0 m

Further information:

Design with predetermined orifice diameters



Calculation results:

HFC227ea storage data:

Design quantity:	47,4 kg
Supplement factor:	1,00
Minimum storage quantity:	47,4 kg
Container volume:	52,0 l
Filling ratio:	0,91 kg/l
Filling pressure:	25,0 bar abs
HFC227ea -mass per container:	47,4 kg
Number of containers:	1
Actual storage quantity:	47,4 kg
Storage temperature:	20,0 °C
Starting container pressure:	25,0 bar abs

Discharge time:

Discharge time air:	0,2 s
Total gas discharge time:	0,2 s
Two-phase discharge time:	10,3 s
Total discharge time:	10,5 s

System information:

Container working pressure:	10,7 bar abs
Container working temperature:	17,4 °C
Total network volume:	9,8 l
Medium pipe content:	7,8 kg HFC227ea
Filling portion in pipe system:	0,16 kg HFC227ea /kg HFC227ea -storage

**Pipe system:**

Section- No:	Starting- node	Endnode	Pressure [bar abs]	Flowrate [kg/s]	Pipedimension Di [mm]	DN
1	0	1	10,34	4,38	49,0 *	--
2	1	2	10,23	4,37	35,9	11/4
3	2	3	9,86	4,37	35,9	11/4
4	3	4	9,56	4,37	35,9	11/4
5	4	14001	9,27	4,37	35,9	11/4

* 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]	HFC227ea out- put [kg]
1	14001	1	4	35,9	11/4	9,0	47,3



Concentrations:

Calculation- zone no:	O2	Gascomposition after discharge [%]	
		HFC227ea	N2
1	19,3	7,9	72,0

Pressure relief opening:

Calculation- zone no:	Recommended area against overpressure		Max. flow [kg/s]
	Area [m ²]	Overpressure [mbar]	
1	0,077	1,0	



Component list:

Component	Number	Code	Coefficient
Valve VS33F+Deep Tub	1	333	5,700

Nozzle-type	Number
BUCEFA	1

Pipe-type	Di [mm]	DN	Length [m]
10	49,00	--	1,800
10	35,90	11/4	6,300

Number of bends (+) and elbows (-)

Bend-type	Di [mm]	DN	Number
-90	35,90	11/4	3

Number of T-distributors (in- and outdiameter)

Number	Input	90-out	90-out	0-out
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