

Jet Fire

Workspace: 72341-1RiempimFSRU

Study: Riempimento FSRU-ME4

Equipment Item: 1H Sistema BOG

72341-1RiempimFSRU\Riempimento FSRU-ME4\1H Sistema BOG

Material	GAS NATURALE	
East	0	m
North	0	m

Scenario (User defined source) : 350mm-Q0,1

72341-1RiempimFSRU\Riempimento FSRU-ME4\1H Sistema BOG\350mm-Q0,1

Weather: Category 2/F

Wind speed [m/s]	2
Pasquill stability	F stable - night with moderate clouds and light/moderate wind
Atmospheric temperature [degC]	25
Relative humidity [fraction]	0,75
Solar radiation flux [kW/m2]	0,5

Jet fire model results

INPUT DATA

Scenario

Elevation	25	m
Release angle from horizontal	0	deg

Jet Fire Parameters

Jet fire method	Cone model	
Crosswind angle	0	deg
Rate modification factor	3	

Calculated inputs

Mass flow rate	0,1	kg/s
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Temperature after atmospheric expansion	10,3696	degC
Liquid fraction	0	fraction
Velocity after atmospheric expansion (input)	250,297	m/s
Rainout fraction time averaged	0	fraction

OUTPUT DATA

Flame emissive power	43,9295	kW/m2
Fraction of emissivity	0,0624634	fraction
Jet velocity	250,297	m/s
Flame length	5,29748	m
Frustum length	4,54472	m
Frustum base width	0,140372	m
Frustum tip width	0,77801	m
Frustum lift-off distance	0,764161	m
Flame length in still air	6,30528	m
Hole to flame angle	10,7085	deg
Expanded diameter	0,0263688	m
Plane angular rotation	0	deg

Radiation Intensity Ellipse Results

INPUT DATA

For ellipses 'observer direction' refers to whether inclination is 'fixed' or 'variable'. Orientation is always variable.

Observer direction	Variable	
Exposure duration	20	s
Height of interest	1,7	m

OUTPUT DATA

Radiation intensity

Incident radiati	Lethality [%]	View factor	Probit	Dose [(W/m2)^ProbitN.s]	Ellipse half-	Ellipse half-	Effect downwind	Ellipse area
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on [kW/m ²]					length [m]	width [m]	distance [m]	[m ²]
3	0	0,06829 12	- 1,3832 1	865.119	Not reach ed	Not reach ed	n/a	n/a
5	0,000174 704	0,11381 9	0,3603 67	1.709.491	Not reach ed	Not reach ed	n/a	n/a
7	0,02405	0,15934 6	1,5088 3	2.677.313	Not reach ed	Not reach ed	n/a	n/a
12,5	6,52536	0,28454 7	3,4878 9	5.800.162	Not reach ed	Not reach ed	n/a	n/a
37,5	98,7381	0,85364	7,2377 3	25.094.924	Not reach ed	Not reach ed	n/a	n/a

Radiation v Distance Results

INPUT DATA

Maximum distance	10,4595	m
Observer type radiation modelling flag	Planar	
Observer direction	Variable	
Height of interest	1,7	m

OUTPUT DATA

Downwind distance [m]	Maximum incident radiation [kW/m ²]	Lethality level [fraction]
0	0,0381107	0
0,213459	0,0382816	0
0,426917	0,0384443	0
0,640376	0,0385986	0
0,853835	0,0387444	0
1,06729	0,0388815	0
1,28075	0,0390098	0

1,49421	0,0391291	0
1,70767	0,0392393	0
1,92113	0,0393403	0
2,13459	0,039432	0
2,34805	0,0395143	0
2,5615	0,0395871	0
2,77496	0,0396504	0
2,98842	0,039704	0
3,20188	0,0397479	0
3,41534	0,0397821	0
3,6288	0,0398308	0
3,84226	0,0398846	0
4,05572	0,0399253	0
4,26917	0,039953	0
4,48263	0,0399675	0
4,69609	0,039969	0
4,90955	0,0399574	0
5,12301	0,0399328	0
5,33647	0,0398973	0
5,54993	0,0398496	0
5,76339	0,039789	0
5,97684	0,0397158	0
6,1903	0,0396301	0
6,40376	0,039532	0
6,61722	0,0394217	0
6,83068	0,0392994	0
7,04414	0,0391653	0
7,2576	0,0390195	0
7,47106	0,0388624	0
7,68451	0,0386942	0
7,89797	0,0385151	0
8,11143	0,0383276	0
8,32489	0,0381537	0
8,53835	0,0379722	0
8,75181	0,0377833	0



8,96527	0,0375873	0
9,17873	0,0373843	0
9,39218	0,0371746	0
9,60564	0,0369585	0
9,8191	0,036744	0
10,0326	0,0365875	0
10,246	0,0364244	0
10,4595	0,0362549	0

Weather: Category 5/D

Wind speed [m/s]	5
Pasquill stability	D neutral - little sun and high wind or overcast/windy night
Atmospheric temperature [degC]	25
Relative humidity [fraction]	0,75
Solar radiation flux [kW/m2]	0,5

Jet fire model results

INPUT DATA

Scenario

Elevation	25	m
Release angle from horizontal	0	deg

Jet Fire Parameters

Jet fire method	Cone model	
Crosswind angle	0	deg
Rate modification factor	3	

Calculated inputs

Mass flow rate	0,1	kg/s
Temperature after atmospheric expansion	10,3696	degC
Liquid fraction	0	fraction
Velocity after atmospheric expansion (input)	250,297	m/s
Rainout fraction time averaged	0	fraction

OUTPUT DATA

Flame emissive power	39,5016	kW/m2
Fraction of emissivity	0,0518203	fraction
Jet velocity	250,297	m/s
Flame length	5,8914	m
Frustum length	5,13032	m

Frustum base width	0,140372	m
Frustum tip width	0,627146	m
Frustum lift-off distance	0,764161	m
Flame length in still air	6,30528	m
Hole to flame angle	5,51194	deg
Expanded diameter	0,0263688	m
Plane angular rotation	0	deg

Radiation Intensity Ellipse Results

INPUT DATA

For ellipses 'observer direction' refers to whether inclination is 'fixed' or 'variable'. Orientation is always variable.

Observer direction	Variable	
Exposure duration	20	s
Height of interest	1,7	m

OUTPUT DATA

Radiation intensity

Incident radiation [kW/m ²]	Lethality [%]	View factor	Probit	Dose [(W/m ²) ^{Probit} N.s]	Ellipse half-length [m]	Ellipse half-width [m]	Effect downwind distance [m]	Ellipse area [m ²]
3	0	0,0759463	-1,38321	865.119	Not reached	Not reached	n/a	n/a
5	0,000174704	0,126577	0,360367	1.709.491	Not reached	Not reached	n/a	n/a
7	0,02405	0,177208	1,50883	2.677.313	Not reached	Not reached	n/a	n/a
12,5	6,52536	0,316443	3,48789	5.800.162	Not reached	Not reached	n/a	n/a

37,5	98,7381	0,949329	7,23773	25.094.924	Not reached	Not reached	n/a	n/a
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Radiation v Distance Results

INPUT DATA

Maximum distance	11,7415	m
Observer type radiation modelling flag	Planar	
Observer direction	Variable	
Height of interest	1,7	m

OUTPUT DATA

Downwind distance [m]	Maximum incident radiation [kW/m ²]	Lethality level [fraction]
0	0,0327941	0
0,239623	0,0329548	0
0,479245	0,0331067	0
0,718868	0,0332494	0
0,958491	0,0333829	0
1,19811	0,0335069	0
1,43774	0,0336212	0
1,67736	0,0337257	0
1,91698	0,0338225	0
2,1566	0,0339509	0
2,39623	0,0340658	0
2,63585	0,034167	0
2,87547	0,0342544	0
3,11509	0,0343289	0
3,35472	0,0343909	0
3,59434	0,0344386	0
3,83396	0,0344719	0
4,07358	0,0344909	0
4,31321	0,0344955	0
4,55283	0,0344857	0

4,79245	0,0344615	0
5,03208	0,034423	0
5,2717	0,0343703	0
5,51132	0,0343035	0
5,75094	0,0342227	0
5,99057	0,0341281	0
6,23019	0,0340199	0
6,46981	0,0338983	0
6,70943	0,0337635	0
6,94906	0,0336157	0
7,18868	0,0334729	0
7,4283	0,0333323	0
7,66792	0,0331826	0
7,90755	0,0330239	0
8,14717	0,0328564	0
8,38679	0,0327285	0
8,62641	0,0325962	0
8,86604	0,0324554	0
9,10566	0,0323065	0
9,34528	0,0321496	0
9,58491	0,031985	0
9,82453	0,0318129	0
10,0642	0,0316335	0
10,3038	0,0314471	0
10,5434	0,031254	0
10,783	0,0310543	0
11,0226	0,0308485	0
11,2623	0,0306366	0
11,5019	0,030419	0
11,7415	0,030196	0

