

Jet Fire

Workspace: 72438-1RiempFSRU-2R

Study: Riempimento FSRU-ME7

Equipment Item: 2Ra Compressore BOG HD

72438-1RiempFSRU-2R\Riempimento FSRU-ME7\2Ra Compressore BOG HD

Material	GAS NATURALE	
East	0	m
North	0	m

Scenario (Leak) : 75mm

72438-1RiempFSRU-2R\Riempimento FSRU-ME7\2Ra Compressore BOG HD\75mm

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	12,5	m
Release angle from horizontal	0	deg

Jet Fire Parameters

Jet fire method	Cone model
Wind orientation about the z-axis (anti-clockwise from the East)	0 deg
Rotation about the z-axis (anti-clockwise from the east)	0 deg
Rate modification factor	3

Calculated inputs

Mass flow rate	1,36865	kg/s
Temperature after atmospheric expansion	-134,871	degC
Liquid fraction	0	fraction
Velocity after atmospheric expansion (input)	300	m/s
Rainout fraction time averaged	0	fraction

OUTPUT DATA

Flame emissive power	126,304	kW/m ²
Fraction of emissivity	0,150286	fraction
Jet velocity	300	m/s
Flame length	15,6776	m
Frustum length	12,6761	m
Frustum base width	0,787933	m
Frustum tip width	2,88076	m
Frustum lift-off distance	3,09502	m
Flame length in still air	19,1436	m
Hole to flame angle	15,7367	deg
Expanded diameter	0,0596378	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]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m ²]
3	0	0,0237522	-1,38321	865.119	6,96304	8,59562	10,9983	17,9614	188,029
5	0,000174704	0,039587	0,360367	1.709.491	Not reached	Not reached		n/a	n/a
7	0,02405	0,0554218	1,50883	2.677.313	Not reached	Not reached		n/a	n/a
12,5	6,52536	0,0989676	3,48789	5.800.162	Not reached	Not reached		n/a	n/a
37,5	98,7381	0,296903	7,23773	25.094.924	Not reached	Not reached		n/a	n/a

Radiation v Distance Results

INPUT DATA

Maximum distance	30,5921	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	2,00251	0
0,624328	2,14471	0
1,24866	2,28852	0
1,87298	2,43211	0



2,49731	2,57347	0
3,12164	2,71062	0
3,74597	2,84161	0
4,3703	2,96469	0
4,99462	3,08142	0
5,61895	3,24426	0
6,24328	3,4328	0
6,86761	3,60776	0
7,49194	3,76974	1,0523E-08
8,11627	3,9115	2,16032E-08
8,74059	4,03069	3,83361E-08
9,36492	4,12543	5,93412E-08
9,98925	4,19426	8,07049E-08
10,6136	4,23622	9,69567E-08
11,2379	4,2508	1,0327E-07
11,8622	4,23803	9,77205E-08
12,4866	4,19843	8,22013E-08
13,1109	4,13309	6,1432E-08
13,7352	4,0454	4,10712E-08
14,3595	3,93377	2,40983E-08
14,9839	3,80231	1,246E-08
15,6082	3,65292	0
16,2325	3,49144	0
16,8569	3,31961	0
17,4812	3,14066	0
18,1055	2,95774	0
18,7298	2,80989	0
19,3542	2,66946	0
19,9785	2,56448	0
20,6028	2,45826	0
21,2272	2,35183	0
21,8515	2,24611	0
22,4758	2,14193	0
23,1001	2,03994	0
23,7245	1,93943	0



24,3488	1,84358	0
24,9731	1,75122	0
25,5975	1,66258	0
26,2218	1,57781	0
26,8461	1,49697	0
27,4704	1,42009	0
28,0948	1,34712	0
28,7191	1,278	0
29,3434	1,21263	0
29,9677	1,15086	0
30,5921	1,09258	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	12,5	m
Release angle from horizontal	0	deg

Jet Fire Parameters

Jet fire method	Cone model	
Wind orientation about the z-axis (anti-clockwise from the East)	0	deg
Rotation about the z-axis (anti-clockwise from the east)	0	deg
Rate modification factor	3	

Calculated inputs

Mass flow rate	1,36865	kg/s
Temperature after atmospheric expansion	-134,871	degC
Liquid fraction	0	fraction
Velocity after atmospheric expansion (input)	300	m/s
Rainout fraction time averaged	0	fraction

OUTPUT DATA

Flame emissive power	116,788	kW/m2
Fraction of emissivity	0,140725	fraction

Jet velocity	300	m/s
Flame length	17,4398	m
Frustum length	14,3746	m
Frustum base width	0,787933	m
Frustum tip width	2,55809	m
Frustum lift-off distance	3,09502	m
Flame length in still air	19,1436	m
Hole to flame angle	8,76973	deg
Expanded diameter	0,0596378	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) ^{ProbitN.s}]	Ellipse half-length [m]	Ellipse half-width [m]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m ²]
3	0	0,0256876	-1,38321	865.119	7,16872	8,64498	11,7398	18,9085	194,695
5	0,000174704	0,0428127	0,360367	1.709.491	Not reached	Not reached		n/a	n/a
7	0,02405	0,0599377	1,50883	2.677.313	Not reached	Not reached		n/a	n/a



12,5	6,52536	0,1070 32	3,487 89	5.800.162	Not reach ed	Not reach ed		n/a	n/a
37,5	98,7381	0,3210 95	7,237 73	25.094.924	Not reach ed	Not reach ed		n/a	n/a

Radiation v Distance Results

INPUT DATA

Maximum distance	34,6031	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	1,9043	0
0,706185	2,0499	0
1,41237	2,19682	0
2,11856	2,34269	0
2,82474	2,48506	0
3,53093	2,62157	0
4,23711	2,7684	0
4,9433	2,99608	0
5,64948	3,23068	0
6,35567	3,44748	0
7,06185	3,64133	0
7,76804	3,82437	1,39537E-08
8,47422	3,98558	3,09547E-08
9,18041	4,12199	5,84241E-08
9,88659	4,23102	9,47905E-08
10,5928	4,31042	1,33173E-07
11,299	4,35835	1,62715E-07
12,0051	4,3734	1,73151E-07



12,7113	4,3547	1,60272E-07
13,4175	4,30206	1,28552E-07
14,1237	4,22174	9,10402E-08
14,8299	4,09821	5,24283E-08
15,5361	3,95094	2,61978E-08
16,2423	3,77764	1,09652E-08
16,9484	3,58255	0
17,6546	3,37056	0
18,3608	3,14695	0
19,067	2,96241	0
19,7732	2,82315	0
20,4794	2,69427	0
21,1856	2,56154	0
21,8917	2,42707	0
22,5979	2,29276	0
23,3041	2,16028	0
24,0103	2,02852	0
24,7165	1,90418	0
25,4227	1,78491	0
26,1289	1,67128	0
26,835	1,56365	0
27,5412	1,46222	0
28,2474	1,367	0
28,9536	1,27793	0
29,6598	1,19483	0
30,366	1,11747	0
31,0722	1,04558	0
31,7783	0,978854	0
32,4845	0,916982	0
33,1907	0,859642	0
33,8969	0,806522	0
34,6031	0,757316	0

