

# Jet Fire

## Workspace: 72341-2FSRURegas

### Study: FSRU in rigassificazione

### Equipment Item: 9R Compressore BOG LD

72341-2FSRURegas\FSRU in rigassificazione\9R Compressore BOG LD

Material	<b>GAS NATURALE</b>	
East	0	m
North	0	m

### Scenario (Leak) : 75mm

72341-2FSRURegas\FSRU in rigassificazione\9R Compressore BOG LD\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	
Crosswind angle	0	deg
Rate modification factor	3	

#### Calculated inputs

Mass flow rate	3,96329	kg/s
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Temperature after atmospheric expansion	21,2178	degC
Liquid fraction	0	fraction
Velocity after atmospheric expansion (input)	<b>300</b>	m/s
Rainout fraction time averaged	<b>0</b>	fraction

## OUTPUT DATA

Flame emissive power	174,341	kW/m2
Fraction of emissivity	0,188542	fraction
Jet velocity	300	m/s
Flame length	23,7583	m
Frustum length	18,7331	m
Frustum base width	1,62024	m
Frustum tip width	4,88387	m
Frustum lift-off distance	5,26678	m
Flame length in still air	30,6174	m
Hole to flame angle	19,6932	deg
Expanded diameter	0,154527	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	9,77671	s
Height of interest	<b>1,7</b>	m

### OUTPUT DATA

#### Radiation intensity

Incident radiation	Lethality [%]	View factor	Probit	Dose [(W/m2)^ProbitN.s]	Ellipse half-	Ellipse half-	Ellipse centre downw	Effect downwind	Ellipse area
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on [kW/ m2]					length [m]	width [m]	ind distance [m]	distance [m]	[m2]
3	0	0,0172 077	- 3,215 47	422.901	20,58 8	25,10 51	18,6442	39,2322	1623, 78
5	0	0,0286 794	- 1,471 9	835.660	14,59 37	17,17 05	16,8758	31,4695	787,2 23
7	5,1021 E-06	0,0401 512	- 0,323 436	1.308.766	10,32 78	11,96 87	16,3001	26,6279	388,3 33
12,5	0,0412 402	0,0716 986	1,655 63	2.835.326	Not reach ed	Not reach ed		n/a	n/a
37,5	65,743 2	0,2150 96	5,405 46	12.267.293	Not reach ed	Not reach ed		n/a	n/a

## Radiation v Distance Results

### INPUT DATA

Maximum distance	45,8085	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/m2]	Lethality level [fraction]
0	3,83689	0
0,934867	4,29014	0
1,86973	4,78185	0
2,8046	5,27766	0
3,73947	5,77349	0
4,67433	6,25345	0
5,6092	6,70163	2,22882E-08

6,54407	7,10423	6,72473E-08
7,47893	7,45138	1,61238E-07
8,4138	7,84202	3,99835E-07
9,34867	8,4972	1,56858E-06
10,2835	9,13055	5,02015E-06
11,2184	9,68569	1,24958E-05
12,1533	10,2066	2,71725E-05
13,0881	10,5363	4,28971E-05
14,023	10,8257	6,27493E-05
14,9579	11,023	8,0494E-05
15,8927	11,1283	9,16277E-05
16,8276	11,1421	9,31825E-05
17,7625	11,0659	8,48731E-05
18,6973	10,902	6,91611E-05
19,6322	10,6545	5,02163E-05
20,5671	10,3287	3,2278E-05
21,5019	9,95011	1,87018E-05
22,4368	9,47514	8,93846E-06
23,3717	8,9682	3,77566E-06
24,3065	8,42431	1,35919E-06
25,2414	7,8568	4,13208E-07
26,1763	7,27888	1,05294E-07
27,1111	6,7029	2,23702E-08
28,046	6,20125	0
28,9809	5,78117	0
29,9157	5,4821	0
30,8506	5,19062	0
31,7855	4,90375	0
32,7203	4,62428	0
33,6552	4,35437	0
34,5901	4,09562	0
35,5249	3,8456	0
36,4598	3,61289	0
37,3947	3,39325	0
38,3295	3,18671	0



39,2644	2,99305	0
40,1993	2,81188	0
41,1341	2,64272	0
42,069	2,48497	0
43,0039	2,33804	0
43,9387	2,20126	0
44,8736	2,074	0
45,8085	1,95561	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	
Crosswind angle	0	deg
Rate modification factor	3	

### Calculated inputs

Mass flow rate	3,96329	kg/s
Temperature after atmospheric expansion	21,2178	degC
Liquid fraction	0	fraction
Velocity after atmospheric expansion (input)	300	m/s
Rainout fraction time averaged	0	fraction

### OUTPUT DATA

Flame emissive power	165,811	kW/m2
Fraction of emissivity	0,180173	fraction
Jet velocity	300	m/s
Flame length	26,423	m
Frustum length	21,2269	m

Frustum base width	1,62024	m
Frustum tip width	4,28886	m
Frustum lift-off distance	5,26678	m
Flame length in still air	30,6174	m
Hole to flame angle	10,4963	deg
Expanded diameter	0,154527	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	9,77671	s
Height of interest	<b>1,7</b>	m

### OUTPUT DATA

#### Radiation intensity

Incident radiation [kW/m <sup>2</sup> ]	Lethality [%]	View factor	Probit	Dose [(W/m <sup>2</sup> ) <sup>Probit</sup> ]	Ellipse half-length [m]	Ellipse half-width [m]	Ellipse centre downwind distance [m]	Effect downwind distance [m]	Ellipse area [m <sup>2</sup> ]
3	0	0,0180929	-3,21547	422.901	21,3804	25,2027	19,1009	40,4813	1692,83
5	0	0,0301548	-1,4719	835.660	15,8423	17,5016	18,1335	33,9758	871,057
7	5,1021E-06	0,0422168	-0,323436	1.308.766	11,3498	12,6513	17,4774	28,8272	451,1
12,5	0,0412402	0,0753871	1,65563	2.835.326	Not reached	Not reached		n/a	n/a

37,5	65,743	0,2261	5,405	12.267.293	Not	Not	n/a	n/a
	2	61	46		reach	reach		
					ed	ed		

## Radiation v Distance Results

### INPUT DATA

Maximum distance	52,277	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/m2]	Lethality level [fraction]
0	3,91027	0
1,06688	4,41156	0
2,13375	4,92431	0
3,20063	5,44379	0
4,26751	5,94933	0
5,33438	6,41912	9,6225E-09
6,40126	6,83385	3,24007E-08
7,46814	7,57053	2,14432E-07
8,53502	8,42415	1,35875E-06
9,60189	9,21276	5,7803E-06
10,6688	9,92704	1,80688E-05
11,7356	10,5536	4,39097E-05
12,8025	11,0876	8,71795E-05
13,8694	11,5268	0,000146759
14,9363	11,8692	0,000214922
16,0032	12,1125	0,000278429
17,07	12,2534	0,000322035
18,1369	12,287	0,000333272
19,2038	12,2077	0,000307304
20,2707	12,0101	0,00024997



21,3375	11,6909	0,00017665
22,4044	11,2507	0,000106236
23,4713	10,6952	5,29792E-05
24,5382	10,0365	2,12496E-05
25,605	9,29391	6,62955E-06
26,6719	8,49289	1,55545E-06
27,7388	7,66281	2,66088E-07
28,8057	7,01304	5,28335E-08
29,8726	6,60874	1,70159E-08
30,9394	6,19554	0
32,0063	5,77548	0
33,0732	5,35865	0
34,1401	4,94009	0
35,2069	4,55706	0
36,2738	4,19461	0
37,3407	3,85814	0
38,4076	3,54203	0
39,4744	3,25134	0
40,5413	2,98537	0
41,6082	2,74287	0
42,6751	2,52236	0
43,742	2,32216	0
44,8088	2,14057	0
45,8757	1,97593	0
46,9426	1,82664	0
48,0095	1,69121	0
49,0763	1,56827	0
50,1432	1,45655	0
51,2101	1,35491	0
52,277	1,26234	0

