

CASE STUDY

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CFD ANALYSIS FOR RASGAS QUARTERS (ALPHA) PLATFORMS CHALLENGES

Computational Fluid Dynamics study for the Living Quarters Platform helipad of RasGas Alpha installation in Qatari waters was carried out in order to assess the impact of air turbulence on helicopter operations.

Several CFD simulations of wind flow over the helideck were performed for 16 equally spaced wind directions at wind speed of 25 m/s. In order to assess the helideck wind environment, the standard deviation of the vertical wind speed above the landing area was extracted at several elevations.

ENGINEERING SOLUTION

The results were compared with the criterion specified in CAP 437 standard and they stated that the standard deviation of the vertical wind speed above the helideck should not exceed 1.75 m/s.

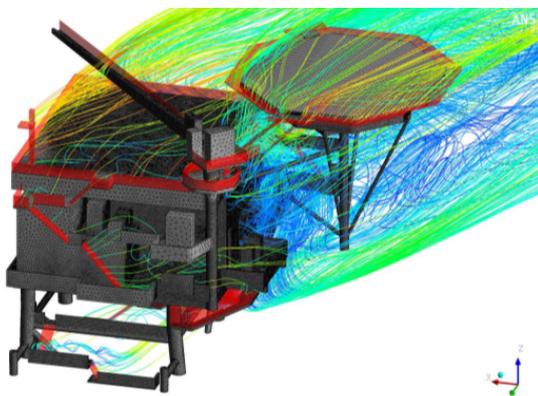


Figure 2. Streamlines of the flow over the helideck

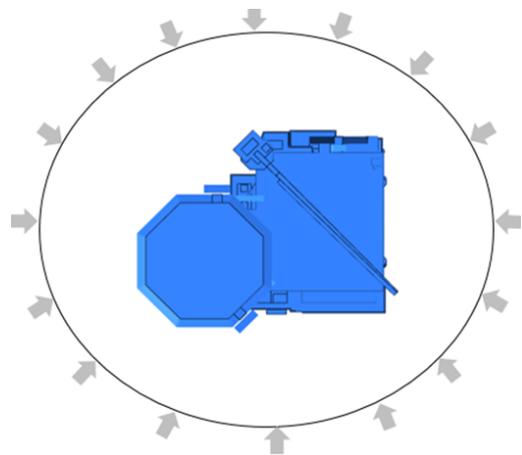


Figure 1. Simplified Helideck's geometry

		Wind Angle (°)																
		0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	
Height above helideck (m)	3.7	1.88	2.97	2.77	1.98	1.86	1.43	1.53	1.54	1.47	1.41	1.40	1.40	1.41	1.41	1.46	1.45	
	5	1.55	2.54	2.16	1.71	1.69	1.39	1.46	1.47	1.41	1.37	1.36	1.36	1.37	1.39	1.40	1.39	
	10	1.35	1.51	1.41	1.38	1.45	1.33	1.36	1.37	1.35	1.33	1.32	1.31	1.32	1.33	1.34	1.34	
	15	1.32	1.36	1.33	1.33	1.36	1.31	1.32	1.33	1.32	1.31	1.30	1.30	1.31	1.31	1.31	1.31	1.32
	20	1.32	1.32	1.32	1.32	1.33	1.31	1.31	1.32	1.31	1.31	1.31	1.30	1.31	1.31	1.31	1.31	1.31
	25	1.32	1.32	1.32	1.32	1.32	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
	30	1.32	1.32	1.32	1.32	1.32	1.31	1.31	1.31	1.32	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
	34	1.31	1.32	1.32	1.32	1.32	1.31	1.31	1.31	1.32	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31

Figure 3. Maximum of the standard deviation of the vertical airflow velocity (m/s)