

Analyzing Platform Motion Impacts on Floating Offshore Wind Turbines Using Blade Element Momentum Theory

Shivaani Sivaraman

SUPPORTING INFORMATION.

1. Python Computer Program created for Simulation of data to compute Turbine Performance (Turbine Power Output and Thrust)



Python Code for simulation of Turbine Power and Thurst.pdf

2. Computer Simulated data output for Turbine Performance used in analysis.

Table S1. Computer Simulated data of Turbine Performance used in analysis – Turbine Average Power in Watts										
Surge Motion Magnitude (meters)	1	2	3	4	5	6	7	8	9	10
VoltumUS-0.00700 hz	14582730	14583361	14584369	14585840	14587478	14589351	14591637	14594085	14596930	14600096
WindCrete-0.01221 hz	14583156	14584957	14587864	14591553	14596072	14601646	14608276	14615810	14624000	14633050
ActiveFloat-0.00600 hz	14582680	14583161	14583940	14584967	14586437	14587862	14589572	14591569	14593694	14596090
OO-Star-0.00540 hz	14582636	14583004	14583611	14584430	14585558	14586833	14588096	14589625	14591389	14593237

Table S2. Computer Simulated data of Turbine Performance used in analysis – Power Amplitude in Watts										
Surge Motion Magnitude (meters)	1	2	3	4	5	6	7	8	9	10
VoltumUS-0.00700 hz	172720	345465	518192	691498	864655	1037118	1209379	1380706	1552478	1723784
WindCrete-0.01221 hz	301276	602546	904756	1205342	1504528	1803280	2101891	2399362	2695739	2993545
ActiveFloat-0.00600 hz	150522	301079	451596	602153	753191	904167	1054443	1204560	1353808	1503553
OO-Star-0.00540 hz	133245	266521	399765	533026	666867	799998	933710	1066723	1199606	1331661

Table S3. Computer Simulated data of Turbine Performance used in analysis – Average Thrust in Newtons

Surge Motion Magnitude (meters)	1	2	3	4	5	6	7	8	9	10
VoltumUS- 0.00700 hz	2204389	2204364	2204320	2204196	2204097	2204012	2203883	2203752	2203582	2203388
WindCrete- 0.01221 hz	2204372	2204289	2204079	2203886	2203631	2203284	2202803	2202224	2201611	2200947
ActiveFloat- 0.00600 hz	2204391	2204372	2204339	2204290	2204148	2204085	2203999	2203888	2203773	2203633
OO-Star- 0.00540 hz	2204391	2204377	2204351	2204313	2204214	2204114	2204067	2203989	2203888	2203788

Table S4. Computer Simulated data of Turbine Performance used in analysis – Thrust Amplitude in Newtons

Surge Motion Magnitude (meters)	1	2	3	4	5	6	7	8	9	10
VoltumUS- 0.00700 hz	12030	24059	36088	47941	59813	71848	83882	95966	107982	119976
WindCrete- 0.01221 hz	20983	41965	62612	83600	104626	125548	146153	167065	188053	208864
ActiveFloat- 0.00600 hz	10484	20969	31450	41937	52244	62570	73058	83545	94085	104558
OO-Star- 0.00540 hz	9281	18563	27840	37122	46224	55509	64632	73915	83199	92536