DETAILED PROJECT REPORT (DPR) FOR 2 MW WIND PROJECT AT KANJIKODE, KERALA

BY

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Prepared by

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(Joint venture of ICICI, IDBI, IFCI, SIPCOT, TIIC, SIDCO and Banks)

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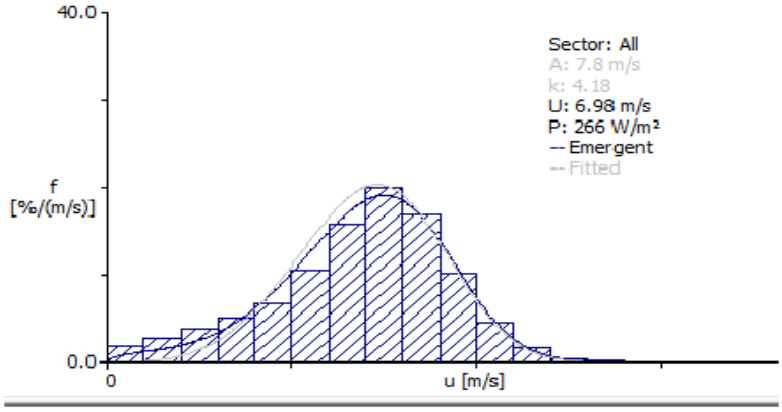
1.4 SITE VISIT

ITCOT Team comprising of the following officials had visited the project site at Kanjikode on 16th & 17th November 2017.

1. Shri Ramesh Damodaran, Executive Director (Projects), ITCOT Consultancy and Services Limited,
2. Shri Dr. S. Gomathinayagam, Former Director General of National Institute of Wind Energy (NIWE).
3. Shri P. Kamalakannan, Senior Project Manager, ITCOT consultancy and services Limited.

ITCOT team had discussion with AVSK officials, Dr. Sasi K Kottayail who done micrositing report, Mr. A.K Raveendran, Dy. Chief Engineer, KSEB, Palakkad.

Wind speed frequency distribution

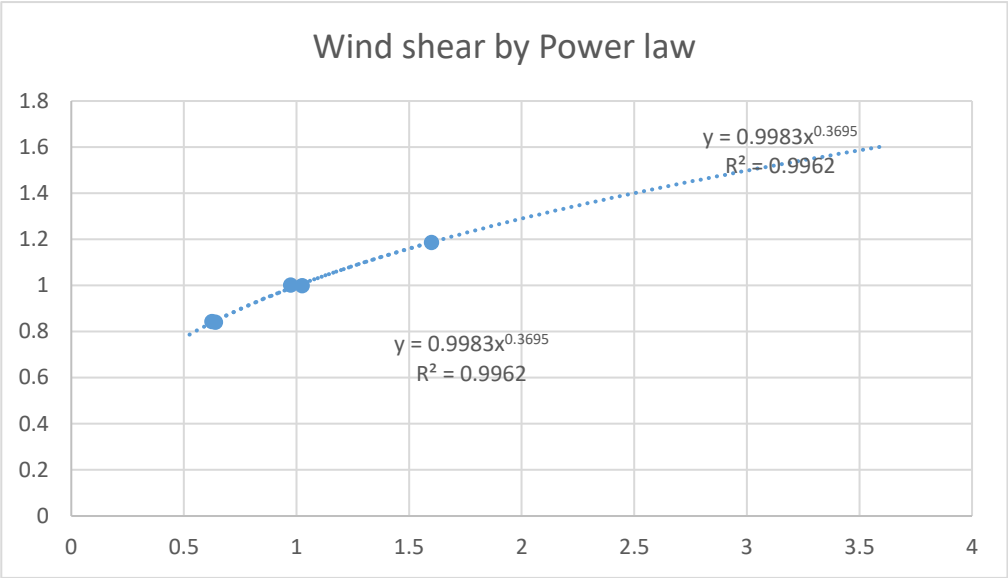


SUMMARY OF WIND DATA

	80
A	7.8 m/s
K	4.18
U	6.98 m/s
P	266 W/m^2

Where [A*: Weibull Scale Parameter,K: Weibull Shape Parameter
U: Wind Speed,P: Wind Power Density]

The annual hourly average (based on 10minute sample records) is estimated as 6.9m/s at 80m, 5.8m/s at 50m, 4.3m/s at 20m and the fitted power law provides a wind shear value of 0.3695, which is clearly depicting the inspected complex terrain, even though the measurement mast is not at the factory premises , it forms part of the same wind fetch area



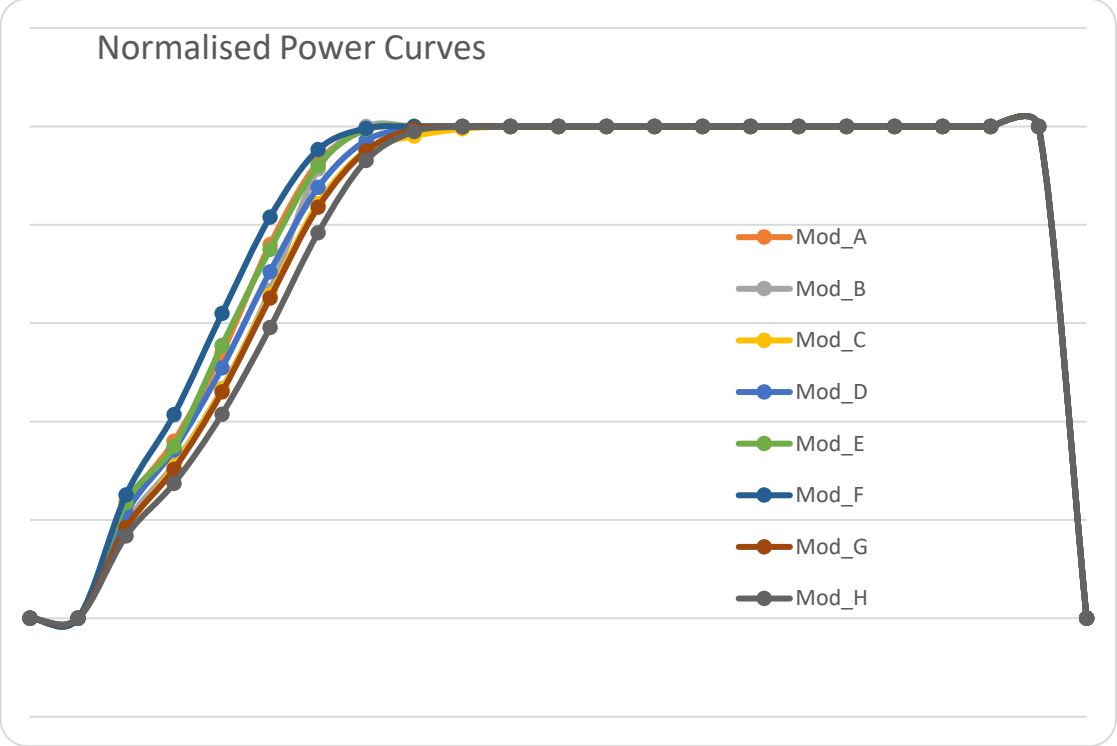
which defines the terrain roughness conditions.

The turbulence intensities at the three levels (std. deviation/mean) 20m,50m,&80m respectively are 24%, 17%, and 13%. Lower turbulence at 80m level and a narrow wind directional sector throughout the year has unique advantage of higher generation from wind with the modern WTGs having hub-heights over 80m.

Fig Wind shear from power law fitted annual averages (0.3695) – complex terrain

$\left(\frac{u_2}{u_1}\right)=\left(\frac{h_2}{h_1}\right)^{\nu}$ with " u" as wind velocity at level "h " in multilevel measurement

The eight machines are named as A,B,C,D,E,F,G,H and normalized power curves of these eight machines are given below



The estimated generation (Million Units/MW) of eight machines at T2 is as follows

Machine	A	B	C	D	E	F	G	H

MU/MW	3.008	2.931	2.517	3.051	3.511	3.554	2.485	2.256