adani
Renewables

Case Study/Caselet Exercise
Wind Power Plant – Operations/Safety

Casestudy/Caselet

A Report By

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Wind Power Plant – Operations/Safety

Descripton

Wind Power generation has come a long way since it introduced in late 1800's, in terms of the components, the structure and the process of harnessing the energy. With improvement across various aspects, safety has also seen a dramatic increase, with most wind farms reporting lesser and lesser incidents. Notwithstanding this, there have been accidents that have occurred in wind generation operations.

One of the research studies that was conducted, the major reasons for Tower Collapse was identified. The data from the study is presented in the table below.

Cause of failure	Tower: s	Occurrence: %
Typhoon	29	40·8
Storm	10	14·1
Blade failure	4	5·6
Fire	4	5·6
Bolts failure/fatigue	4	5·6
Brake failure	2	2·8
Lightning	2	2·8
Faulty construction	2	2·8
Others	14	19·9

Based on the information provided in the caselet, answer the following question(s) given below

Case Study Questions

While natural calamities such as typhoons etc may be one of the key responsible factors, it still mostly remains mostly outsid the purview of the O M teams at Wind farms.

List the other non-nature related calamity factors, in the descending order of their probable occurrence at your plant ma assumptions as required

What are some of the remedial measures that you have initiated for each of these? Expalin

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Amongst the conditions listed, which are within the purview of O M, bolts failure/fatigue happens to the highest? Please draw the fish bone diagram for this? What remedial action for each of the causing factors do you recommend? Which of these have been implemented

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In the caselet, amongst the listed factors, typhoon and storm are listed as the highest ones leading to tower collapse? This would seem logical considering the height as well as the blade configuration.

What is the storm profile of the zone in which your power plant is located? Cite app data.

What is an innovative idea or suggestion that you have which can reduce the tower collapse chances during extreme weather? Explain and state the probability of its implementation

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