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Recent Progress and Development of Wind Energy Potential in Malaysia: A Review

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Abstract: With the rapid growth of fossil fuel price and subsequent consideration of exhausting non-renewable energy sources, the attention of engineers, designers and researchers has focuses in promoting pollution free energy sources. Malaysia has abundant of renewable energy sources such as hydro, solar, tidal, biomass and wind. But, for the fact that the country lies entirely in equatorial region, the annual mean wind speed ranges from 2.0m/s-8.983 m/s, respectively. This paper focuses on recent review on wind energy progress and development in Malaysia. The basic concept of wind speed distribution and spatial models applied in Malaysia is discussed. In addition, an overview on the country energy policies, wind speed variation, power and energy in wind are also presented.

Key words: Malaysia · Renewable energy · Wind Speed · Power density · Energy density · Weibull · Spatial wind mapping

INTRODUCTION

Malaysia is a developing country located in Southeast Asia which comprise of Peninsular, Sabah and Sarawak, having geographical coordinates of 2°30' N, in the north latitude and 112°30' E in east longitude [1]. The country has numerous offshore islands scattered along the coast, a mountainous spine running from the Thai border towards the south, while the interior of east Malaysia is also generally mountainous. With this topography and the availability of heavy rainfall, there exist many rivers in the country. Being in the tropics and situated entirely in the equatorial zone, the weather is generally hot and humid with the daily average temperature of 26°C and relative humidity ranging from 80 - 90 percent, except in the highlands [2, 3].

The wind that blow across the country is influenced by the monsoon seasons namely Northwest monsoon which starts from approximately November until April while Southwest monsoon occurs from June to September. However the inter seasonal monsoon occurs in October and May [3]. For a long time fossil fuel such as oil, gas and natural gas are the main source of energy that satisfies the consumer electrical energy demand [3].

But today many countries recognized that the current energy trends are not suitable, this is due to the fact that the fossils inside the earth are decreasing since it was discovered and utilised.

The harmful effect by the release of pollutants are naturally present in fossil fuel structures which leads to are greenhouse gas accumulation, acidification, air pollution, water pollution, damage to land surface and ground-level ozone [3, 4].

Thus as a results of this and increase of global energy demand the renewable energy is an ideal solution to overcomes the problems, reducing dependency in energy from fossil fuel by renewable energy in Malaysia has just started. Wind energy is renewable source of energy and is almost the fastest growing energy resources in the world due to its clean character and free availability [5, 6].

Among the renewable energy sources in Malaysia, wind energy has most prospects in the near future, but the availability of wind a resource varies depending on the location [7].

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