ABSTRACT

STATIC AND DYNAMIC ANALYSIS AND LIFE ESTIMATION OF WIND TURBINE BLADE

1. INTRODUCTION

As the economy of the country grows, its energy requirement also grows. With the proclaimed need for reducing the dependence on fossil fuels because of environmental reasons, the burning of fossil fuels affects the environment by releasing greenhouse gases, hence the alternative methods of generating power are needed. Therefore, the renewable sources of energy are used for power generation and which is not only to meet the demand of power but also being environmentally friendly. One of these renewable sources of energy is wind. Wind energy is an important part of the global and easily available source for the power generation. Over the past fifteen years, the wind industry has successfully reduced the cost of wind-produced electricity. During the last decades wind farms have been built all over the world. Since the average wind speed rise due to the global climate change, gaining electric power out of wind energy became excessively interesting.

Electricity shortages are common and over 40% of the population has no access to modern energy services. India's electricity demand is projected to more than triple between 2005 and 2030. India had another record year of new wind energy installations between January and December 2011, installing more than 3 GW of new capacity for the first. As of September 2014, renewable energy accounted for 12.45 percent of total installed capacity, up from 2 percent in 1995. Wind power accounts for about 70 percent of this installed capacity. Despite major capacity additions over recent decades, power supply struggles to keep up with demand. Under the New Policies Scenario of the World energy outlook (2011), total power capacity in India would reach 779 GW in 2035. From the above it is clear that the next few years could see significant increase in wind farm activities.