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| **Title:** | Small Scale Horizontal Axis Wind Turbine | | |
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| **Published Journal Name:** | Journal of Power Electronics & Power Systems (JoPEPS), STM Journals | | |
| **Type of Publication:** | Journal | | |
| **Volume:** | 4 | Issue | 3 |
| **Publisher:** | Consortium E-Learning Network Pvt. Ltd. (CELNET) | | |
| **Publication Date:** | December, 2014 | | |
| **ISSN:** | 2249–863X(online), 2321–4244(print) | | |
| **DOI:** | https://doi.org/10.37591/.v4i3.2756 | | |
| **URL:** | https://engineeringjournals.stmjournals.in/index.php/JoPEPS/article/view/2756 | | |
| **Other Related Info.:** | 26-32 | | |
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| **Abstract:** |  |
| In this work, the performance analysis of a designed small scale horizontal axis wind turbine (HAWT) has been presented and optimized by varying span length and chord length. The HAWT blades are shaped to generate maximum power from the wind at minimum cost. The blades are designed by using QBlade software and simulated in blade element method (BEM). The values of tip speed ratio and power coefficient have been obtained as 6 and 0.45 respectively. The power is 230 W and wind speed is 6 m/s at a span length 0.9 m. By increasing the span length up to 1.3 m, the power is obtained as 430 W and wind speed is taken as 6 m/s. The power is 170 Wand wind speed is 6 m/s at a chord length 0.15 m. By increasing the chord length up to 0.21 m the power is obtained as 250 W and wind speed is taken as 6 m/s. Thus a better performance of the designed HAWT has been achieved by varying span length and chord length. | |