PROCEEDING

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Preface

We feel thankful to Allah for the blessing so that the book of proceeding of National Seminar completely compiled in relating to the 8th National Convention of Indonesian Association of Technological and Vocational Education (APTEKINDO) and 19th Indonesian Congress of FT/FPTK-JPTK 3 - 6 August 2016 in State University of Medan.

The main objectives of the seminar is to improve the capability in vocational technology in theme: **The role of educational technology and vocational in Asean Economic Community (AEC)** which is adopted from the researches in order to upgrade the graduates to be International standard so that the output of LPTK-PTK be able to compete in AEC. Therefore, the National seminar, convention and workshop of Indonesian LPTK-PTK may emerge the thoughts how to strength the role of LPTK to improve the quality of the vocational teachers in Indonesia.

Hopefully this proceeding book will be useful to develop technology, art, and culture. This book also can be as a reference to intensify the National development.

The committee would express our gratitude to all participants and stakeholders in supporting the National seminar, convention and workshop of Indonesian LPTK-PTK

Medan, 6 August 2016
Chairman,

Prof. Dr. Abdul Hamid K, M.Pd.
NIP. 195802221981031001

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Janter Pangaduan Simanjuntak, State University of Medan

EI-05-033 BUILDING PLAN OF WIND POWER PLANTS MICRO TURBINE FOR RESIDENTIAL HOUSE IN LOW WIND VELOCITY AREA

Sepannur Bandri, Padang Institute Of Technology

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Louisa Kandoli, Djoko Kustono, Eddy Sutadji, & Rina Rifqie Mariana, State University of Manado

EI-05-036 MEDIA DEVELOPMENT BASED LEARNING INTERACTIVE MULTIMEDIA SKILLS SUBJECT CRAFTS

Dina Ampera & Efnarayi Artania Siagian, State University of Medan

EI-05-037 AUTOMATED-KNOWLEDGE MANAGEMENT SYSTEM MODEL IN VOCATIONAL EDUCATION FOR ENHANCING LEARNING CAPACITY

Yeni Anistyasari & Rina Harimurti, State University of Surabaya

EI-05-025

PERFORMANCE MULTI BLADE WINDMILL PLANITER TRANSMISSION SYSTEM USING DIFFERENTIAL FOR ELECTRICAL ENERGY CONVERSION

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ABSTRACT : *Exploiting the potential of wind energy as a free energy in coastal areas through the development multiblade windmill gear transmission system using differential planiter thereby increasing the revolutionary energy. With the completion of energy storage and inverter equipment on a model windmill gear transmission differential planiter developed, it is able to generate electricity for the needs of the home industry. The draft through a combination of exploratory and design approach to engineering and energy development through the windmill to the area that has the potential of wind energy (coastal or V notch / slit hills). Multi-blade windmills were developed with planiter differential gear transmission system produces a good performance with the performance of the electric power generated estimated 1500 watts. This condition can be achieved at an average wind speed of 2.35 m / sec so as to drive a generator/alternator electricity. Round generator / alternator average of 201.3 rpm and allows the electrical energy and is supplied to the charging / battery with an average of 3 to 5 volts. Contiue battery will drain the electrical energy converted from electric voltage 12 Volt to 220 Volt through an inverter. So this voltage can be used to overcome the electrical energy needs for one day. The condition of the battery / battery at 11.5 Volt position continues to receive a continuous supply of electrical energy during the wheel spin. In the coastal areas which have the potential of wind energy can sufficiently so that the application of these windmills can meet the needs of electrical energy that is both simple and applicable.*
Keywords: *Windmills , Transmission Planiter , wind energy , energy revolutionary*

I. INTRODUCTION

Demand for electricity in Indonesia is increasing and is an integral part of society needs at this time everyday. Media Indonesia (2007) International Energy Outlook released the report issued by the US Energy Information Agency said world energy demand will reach twice the current needs, along with advances in technology and information. The coastal area as the area of alternative energy sources (reservoir of energy) has not been touched by many to be developed, such as building and creating fields of wind energy (wind field) through the utilization of which comes from wind energy. Based on data from LIPI, the wind potential on the west coast of the island of Sumatra (including West Sumatra) that are in the range of 2.5 to 4.0 m / sec with a power capacity of up to 10 kW. While the reserve capacity, wind power in Indonesia was 9,290 MW and its production is 1.1 MW (Kompas 2012). Only in this case the development required a transmission system and additional equipment to make it as energy generating units of small scale wind power a more optimal. For that, we need a solution through the development of power generation systems that are affordability by the community. In this case the dimasud is on the technical aspects of construction and development, so that people can learn to be independent and make facilities understated power generation systems and efficient. The use of transmission gears planiter to gain and improve the revolutionary energy as well as the addition of a storage container (energy storage) and to raise the voltage inverter technology is one solution to consider. Utilization planitary gear train system has not found its application for the conversion of wind energy in Indonesia. Though this transmission system can increase the speed ratio is higher than the other circuits. The most important point in its development is situated on the

production technology of the blades of the windmill and the problems of the transmission system or the conversion of energy from the motion of the wind into mechanical energy. Yet found a satisfactory transmission system, the wind turbine industry were mostly firm and mindmill in various European countries such as Britain and Denmark continued to conduct studies in the development of wind power technology. Figures 1 and 2 show the prospects for progress transmissi round forms in question, where the series is a kind of transmission gears planiter are quite popular, efficient and effective.

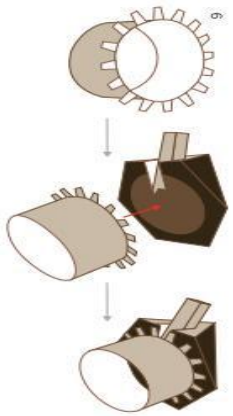

Figure 1. Transmission rounds on traditional windmill

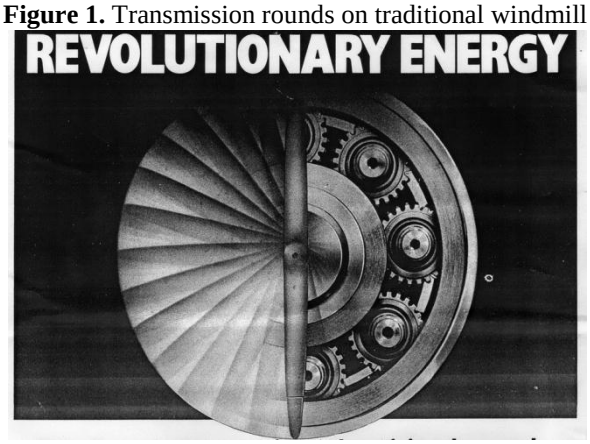

Figure 2. Transmission Round on Windmills (Modern wind turbines)

Relation to the development of wind power technology planiter circuit system (Figure 3) , can have a number of types / forms the basis of the circuit , such as planitary ring gear train . If a model like this circuit was designed and chosen as part of the gearboxes system, it can be determined number of rounds and the purpose of installation increase or decrease the rotation of the input shaft or output .

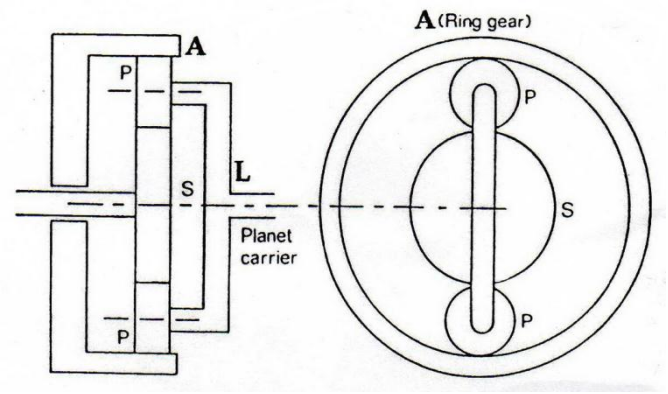

Figure 3. System schematic Planitary

The wind was blowing will bring some energy , which depends on speed and wide frontal field trajectory. Most modern wind power installations are currently used to generate electricity by converting the energy revolution (revolutionary energy) into electrical energy by means of a generator . As for the energy that can be converted into electrical energy can be determined by the formula , (ME 417) :

$$P = \tfrac{1}{2} \rho A V^3 \eta \qquad (1)$$

Theoretically , according Guorieres (1982) of the energy or kinetic energy of the wind can be harnessed intercession mill can also be determined by the formula :

$$P = 0{,}15 \ D^2 \ V^3 \qquad (2)$$

Based on the report of Creative Science & Research (2004) with the use of accumulator 12 volt DC voltage into AC voltage can be increased 115 volts , through the inverter equipment , thus providing frequency and voltage (115 volts AC x 60 hz) and ready to be used for various purposes . The electric power is generated depends on the choice of power inverter equipment capacity desired , but theoretically can be calculated by the formula:

$$P = E . I \quad watt \qquad (3)$$

II. METHODS

In general, the approach taken in this research is the investigation and survey, conducted covering aspects: engineering design and engineering in the development and manufacture of windmill simple inverter completeness. Keberwujudan windmill design system generator, includes a windmill (windmil), axle and transmission system model of epicyclic train, tail steering, the body of the mill, along with the installation of transmission components other energy, such as the alternator, regulator, accumulator, power inverter, instrumentation and panels the completeness of the system. In addition to the aspects relating to the size of the diameter of the rotor wheel, transmission shaft, power capacity is raised, and the transmission shaft rotation ratio needed rounds. Assembly and installation on the simple tower-purpose windmill performance test performance. Testing the performance of windmills is a circuit in order to determine the performance of power systems. Performance and the performance of windmills are built has great potential in addressing the problem of shortage of electricity by utilizing wind potential.

Geographically the development of windmills that will be applied , restricted to the placement generating plant, namely coastal areas or other areas with large wind potential . The election of the coastal areas due to the coastal area has the potential of wind potential and high wind speeds. Measurement of variable magnitude of electric power generated by the windmill shaft rotation , and the voltage is raised. Observations on a periodic basis is a control against the possibility of change in the plant construction , such as windmill blades, tail steering, tower construction , and so on. These changes occurred primarily because of the influence of climatology (wind and weather deteriorated)

II. RESULTS AND DISCUSSION

In the performance test wind turbine has been completed engineered obtained some information . The windmill (Figure 4) as a development model windmill has wind energy conversion system that can give out put the outcome in the form of electrical energy generated from the generator through the transmission system planiter gear differential. In an effort to improve the energy changes by utilizing the potential of wind power to become permanent.

Performance windmill which drives a generator is obtained from the gusts of wind that moves with an average speed of 2.35 m / sec measured using the anemometer. While the generator shaft rotation at an average of 201.3 rpm. Generator at low rotation condition < 300 Rpm still allowing energy-generating electricity and supplied for charging the battery / battery with an average of 3 to 5 volts. Thus the batteries will continuously drain the electrical energy to be converted from electrical voltage 12 Volt to 220 Volt to the inverter. Electrical system input and output built in a panel for easy control. So that this voltage can be used to address the needs of electrical energy. In this case attempted to revive some of the lamps (60 watt and 40 watt) with duration of use for 1 hour and the condition of the battery / battery is still at 11.5 Volt position (Figure 5). In tabulating the performance measurement output performance windmills as shown in Table 1. Figure 6 shows a graph of measurement results show the performance of the windmill.

Figure 4. Windmills are generated and applied in one of the areas around the coast

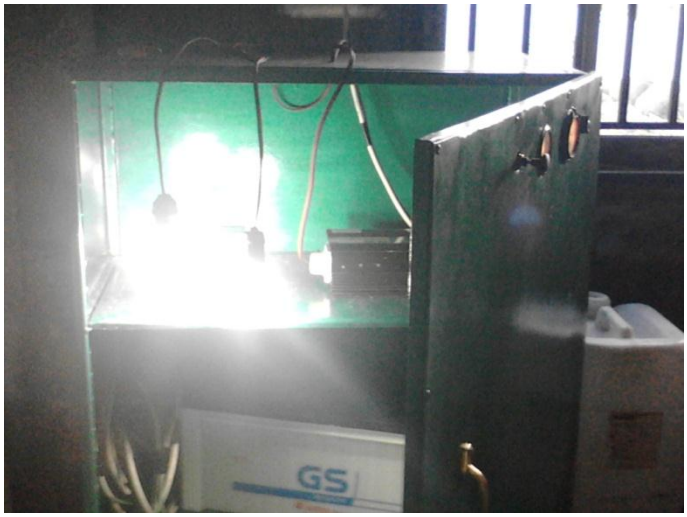

Figure 5. Outcomes Performance Test Electric Current

Table 1.Output performance measurement results show Windmills

Measurement Data Collection	Wind velocity (m/detik)	Round Shaft Generator (Rpm)	Generator output (Volt)
1	1,9	120	3,2
2	2,3	130	3,7
3	2,5	260	4,1
4	2,7	295	4,8
Average	**2,35**	**201,3**	**3,95**

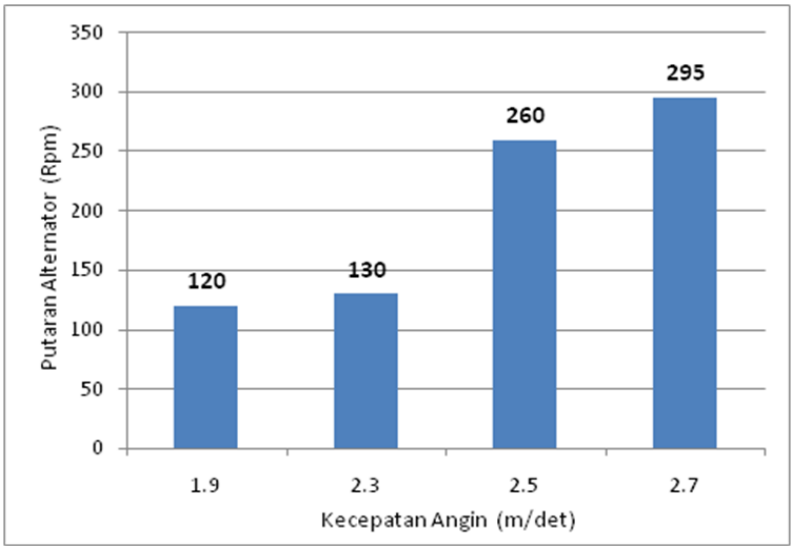

Figure 6. Wind speed chart with a development round Alternator

III. CONCLUSION

From this study we can conclude that while the round wheel is able to drive a generator to produce electricity. The wind energy can move the windmill with differential transmission system. It can be seen that the wheel has the ability to perform well when used as a source of energy using wind energy. The average wind speed of 2.35 m / sec measured using the anemometer is able to drive a generator to produce electrical energy. Where the generator lap average of 201.3 rpm and still allow the electrical energy and supplied for charging the battery / battery with an average of 3 to 5 volts. The battery will drain kontiue electrical energy converted from electric voltage 12 Volt to 220 Volt via inverter. So that this voltage can be used to address the needs of electrical energy and can turn on a few pieces of incandescent bulbs (60 watt and 40 watt) with duration of use for 1 hour. The condition of the battery / battery at 11.5 Volt position continues to receive a continuous supply of electrical energy during the spinning wheel. Advanced workmanship of this research is still very much to be done is to see the extent to which the potential for coastal areas that could be developed as a source of energy generation.

BIBLIOGRAPHY

Albany University. (2004). *Creative Science & Research*, www FuellessPower.Com

Bonus Info. (1999). *The wind turbine:component and operation*, Bonus Energy A/S Fabriksvef, 4, Box 170 733 Brande, Web WWW,bonus.dk

Gourierer. (1982). *Wind Power Plants, Theory and Design*, Pergamon Press Ltd, Headington Hill Hall-Oxford 08W, England

Media Indonesia. 2007. Terbit Edisi 8 April 2009

Patton, W.J. (1997). *Kynematics*, Reston Publishing Company, Virginia-USA.

Peeters,E. (2003). *Design of a new axial flux permanent magnet for wind power application*, Proceeding of the Europian wind energy comference, Madrid'

Yan Nugroho Saleh. (1983). Wikipedia, diakses tanggal 20 Januari 2013.