

Hybrid Wind System for Generation of Constant Power Using Artificial Intelligence Technique

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Abstract: The main aim of our paper is to generate constant power by using artificial intelligence technique in the wind mills. This paper describe about the using of external motor in the Wind Mill in case of fluctuation.. The wind mill is connected to the voltage and current sensor to monitor the voltage and current values respectively. The values sensed are given to the ADC for Analog to digital conversion. The output from the ADC is given to the microcontroller. The voltage and the Current values are monitored through PC for getting the required voltage along a microcontroller which is connected. This system is used to stabilize the power from windmill using switches, so windmill might be moving in normal speed or low speed. The ultrasonic sensor is used to sense the windmill's speed by using ultrasonic rays. The power is also given to the relay which is connected to the load. If there would be an occurrence of any change in the voltage or current, the systems will operate a motor. The motor is used to operate the windmill if any changes happen with the control of the microcontroller. Everything is monitored with the help of PC.

Key words: Fuzzy logic Controller (FLC) • Bridge rectifier

INTRODUCTION

In the recent year year the wind system is fully dependant on environment. The generation of energy is low because the wind not blowing every time. The generation of energy depend on the environmental activity.

Now a days system becom hybrid by using artificial intelligence technique. The generation of energy becom high.

This system does not depend only on the environment activity.

This system not depend on blowing of wind. This paper is based on artificial intelligence techniques. Artificial intelligence technique is the intelligence of machines and robots and the branch of computer science that aims to create it. In this system we are using microcontroller to controll the full system. Microcontroller connected with ADC, UART, RELAY, etc. In this system ADC is used to conversion of analog signal to digital signal from parameter and give this signal to t he

microcontroller. In this system the parameters are current sensor, voltage sensor, ultrasonic sensor. The current sensor give the current reading, voltage sensor gives the voltage reading and the ultrasdonic sensorm gives the reading of speed of the system. Relay is connected to the between microcontroller and motor in case of fluctuation. The wind mill is connected to the voltage and current sensor to monitor the voltage and current values respectively. The values sensed are given to the ADC for Analog to digital conversion. The output from the ADC is given to the microcontroller [1]. The voltage and the Current values are monitored through PC for getting the required voltage along a microcontroller which is connected. This system is used to stabilize the power from windmill using switches, so windmill might be moving in normal speed or low speed. The ultrasonic sensor is used to sense the windmill's speed by using ultrasonic rays. The power is also given to the relay which is connected to the load. If there would be an occurrence of any change in the voltage or current, the systems will operate a motor. The motor is used to operate the windmill



Fig. 1: Typical Wind Power Generation System

Block Diagram for Proposed System

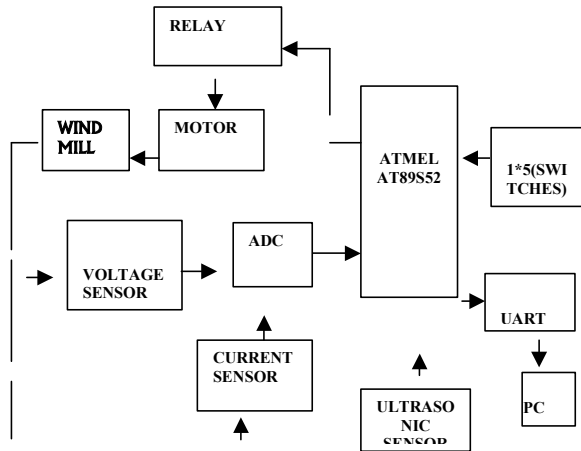


Fig. 1:

Circuit Diagram for Proposed System

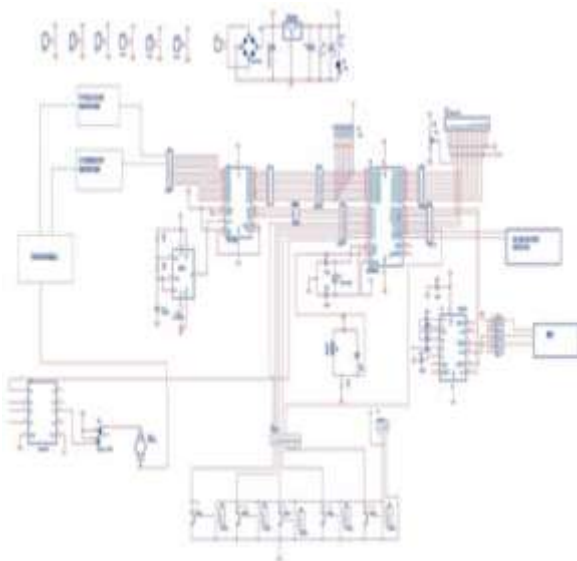


Fig. 2: Proposed system.

if any changes happen with the control of the microcontroller. Everything is monitored with the help of PC and the relay get the signal from the microcontroller and switch to the motor.

System Configuration: Fig. 2 shows the configuration of the proposed wind hybrid generation system.

This hybrid generation system is constituted by a wind power generation branch [2]. The wind power generation branch is composed of a doubly excited PM brushless machine, a three-phase rectifier. The rectifier is used to convert the ac voltage to the dc voltage so that a typical household can freely utilize electricity. The proposed wind hybrid generation system possesses the following features.

- The wind power generation branch of the hybrid generation system can independently be controlled.
- The wind hybrid generation system cannot only harness more energy from nature but also allow the wind power between day and night.
- For the wind power generation branch, the doubly excited PM brushless generator adopts the outer rotor topology, which enables the rotor to directly couple with the wind blades. Hence, it can eliminate the complicated mechanical transmission and the relevant costs. Also, since the proposed generator adopts two excitations (PMs and dc field windings), it can flexibly regulate its magnetic field distribution and consequently control the output voltage and power.
- As compared with the latest wind-PY hybrid generation systems, the proposed system offers some distinct energy-efficient merits. First, the system is simply based on parallel operation of a wind-driven induction generator, it attempts to use a three-phase rectifier and another dc/dc converter to maximize the wind power generation [3]. It is anticipated that this system can offer higher efficiency than the previous one. Third, the system is based on parallel operation of a wind-driven induction generator. This system is more practical than that in and should offer higher efficiency than that in, but it still suffers from relatively low efficiency of the induction generator and relatively complex control due to d-q-coordinate transformation. The proposed system can offer higher efficiency than other wind hybrid generation systems.

Description: The AT89S52 is a high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory in low-power. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the Industry standard 80C51 instruction set and pin out. The program memory can be reprogrammed in-system or by a conventional nonvolatile memory programmer is allowed

Pin Diagram of Atmel

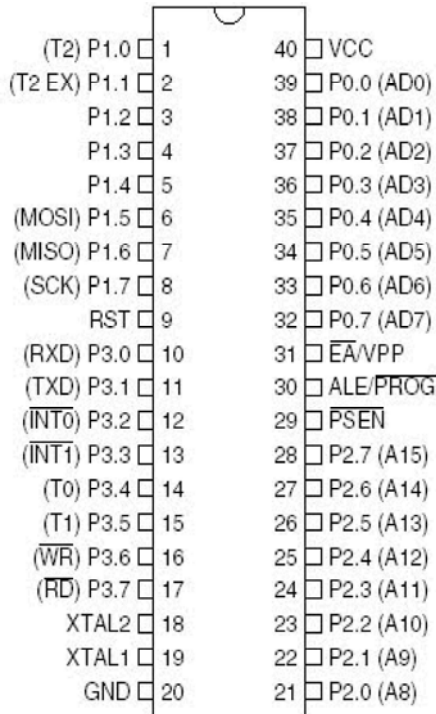


Fig. 3: Pin diagram of 89s52

by the on-chip Flash. The Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications by combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip.

The atmel AT89S52 has following special features: Flash memory of 8K, RAM 256 bytes, 32 i/o lines, two data pointers, Watchdog timer, three 16-bit timer/counters, a 6-vector two-level interrupt architecture, a full duplex serial port, clock circuitry and on-chip oscillator. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and two software selectable power saving modes are supported. To continue functioning, the Idle Mode stops the CPU while allowing the RAM, serial port, timer/counters and interrupt system. The Power-down mode saves the RAM contents but freezes the oscillator and disabling all other chip functions until the next interrupt or hardware reset [4].

Power Supply: Power supply is a reference to a electrical power source. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit. This term is most commonly applied to electrical energy supplies.

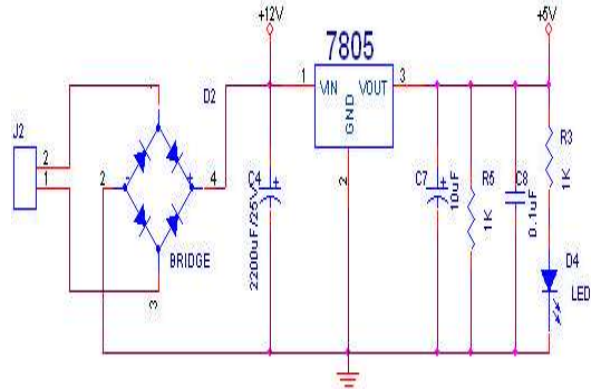


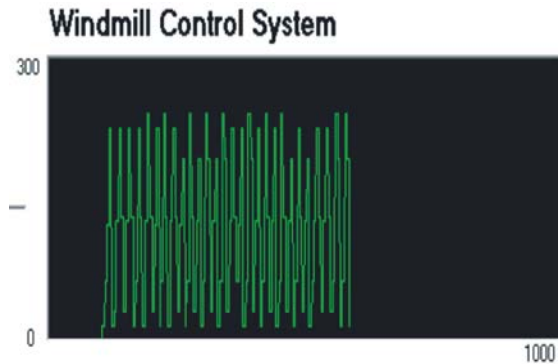
Fig. 4: Power supply

A 230v, 50Hz Single phase AC power supply is given to a step down transformer to get 12v supply. Bridge Rectifier is converting This voltage to DC voltage. This converted DC voltage is filtered by a 2200uf capacitor and then to obtain constant 5v supply the voltage regulator given to 7805. This 5v supply is given to all the components in the circuit. All the capacitors are discharged quickly by adding a RC time constant circuit. A LED is connected to ensure the power supply for indication purpose.

Hardware Kit



Speed Controlling Graph



CONCLUSION

This paper proposes and implements a A model of hybrid wind system with closed loop configuration employed with fuzzy logic technique has been developed. It shows power generation with low current ripples. By the help of this paper we can generate constant power by using the external source for rotation of wind mill during fluctuation [5].

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