



Smart City with Wind Power Plant

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ABSTRACT

The aim of building a smart city is to civilize the definition life by using technology to improve the capability of services and meet resident's needs. In the smart city, maximum use is made up of ICT (Information and Communication Technology) to improve the functioning, management and supervision of variety of systems and services with an emphasis on saving energy, water, land and other natural resources and we can also reduce noise pollution, air pollution and water pollution. In this project we implant combination of five new technologies like smart irrigation system, smart parking, wind power system, automatic railway crossing gate, smart home.

Our city needs "intelligence" to become smart cities, especially, as the bigger part of the world population will live in cities by 2050. But how does this smart intelligence come about? There are many issues a smart city has to deal with in respect to its digitalization. There is need to the improve technology.

There are many advantages in promoting smart cities in terms of national benefits: creating competitiveness, promoting the business sector, improvement of living standards, proper utilization of resources, and the like. There are examples of smart cities in the world, and a lot can be learned from their experience and achievements.

Keywords: *E-vehicles, solarenergy*

INTRODUCTION

Investment in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resource, through participatory government. The most common smart city projects include smart lighting, intelligent transport systems and smart utility metering for electricity and water. These technologies and integrations are based on sensor-centered collection and analysis of data. They offer cost-effective and innovative solutions to the growing number of challenges faced by municipalities. However, despite the countless benefits of smart city projects, many challenges remain when it comes to deployment, due to unique city requirements and differing interpretations of deployment concepts. These variations can be categorized into the following dimensions:

- Technology challenges with coverage and capacity.
- Digital security.
- Legislation and policies.
- Lack of confidence or reluctance shown by citizens (lack of clarity around benefits).
- Funding and business models.
- Interoperability.
- Existing infrastructure for energy, water and transportation systems.

As city populations grow and urban sprawl proliferates, issues with economic and social progress are often magnified. These challenges not only affect a city's quality of life, but also put added stress on traditional infrastructure, increasing the need for energy-efficiency austerity and resource conservation. Smart city technology can provide city governments with a large infrastructure buffer that helps them endure and overcome these issues in the future.

LITERATUREREVIEW

Dr. K. S. Kennan, Dr. P. Devadalan and P. Deepa have proposed in (2017):- A 'SMART CITY' is an urban district that is profoundly cutting-edge regarding foundation, manageable land, correspondences and market reasonability. It is a city where data innovation is the important framework and the reason for giving fundamental administrations to occupants. There are numerous mechanical stages included, including however not restricted to mechanized sensor systems and server farms. The idea of shrewd urban communities started when the whole world was confronting one of the most noticeably awful monetary emergencies. In 2008, IBM started chip away at a 'more intelligent urban communities' idea as a feature of its Smarter Planet activity. Start of 2009, the idea had enthralled the creative ability of different countries over the globe.

YIN Chan Tao, XIONG Zhang, CEN Hui, WANG Jing Yuan, COOPER Dave and DAVID Bertrand have proposed in (2015):- An understanding of the definition of a smart city is vital to be able to understand its scope and content. As was demonstrated in Section 1, a concrete definition of a smart city is still emerging, and various definitions have been given by stakeholders from several different standpoints. It is difficult to formalize the definition, because the smartness of a city can be as simple as a single function provided to a certain group of citizens, or as complicated as an entire administration processed presenting the restructuring efforts of a government procedure.

SMART CITY WORKING

Wind Power System:-

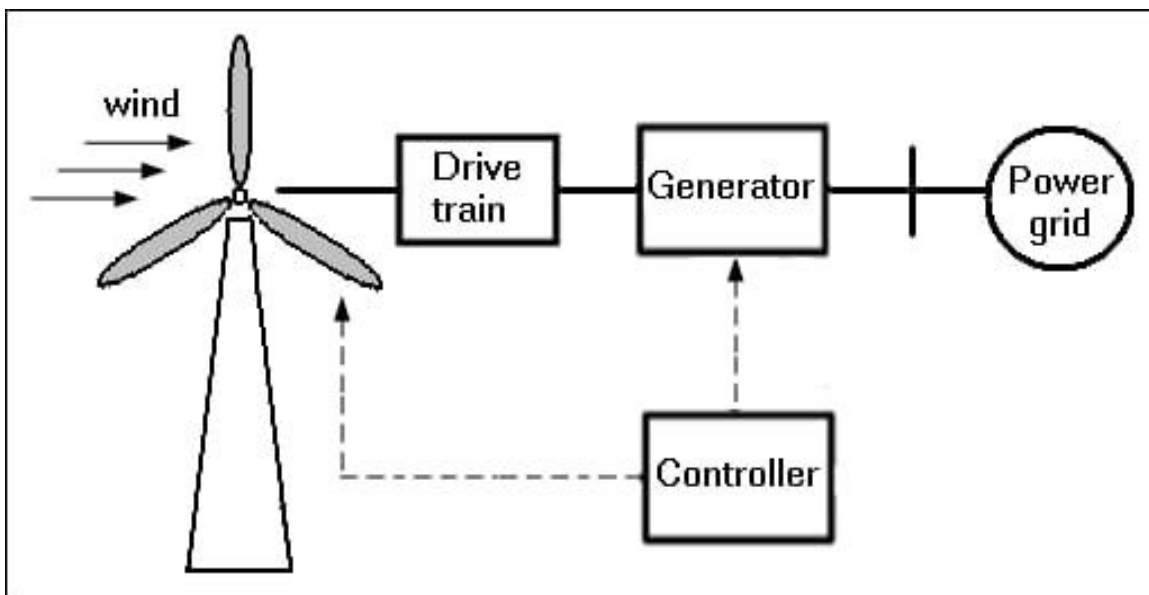


Fig. 11 of Block Diagram of Wind Power System.

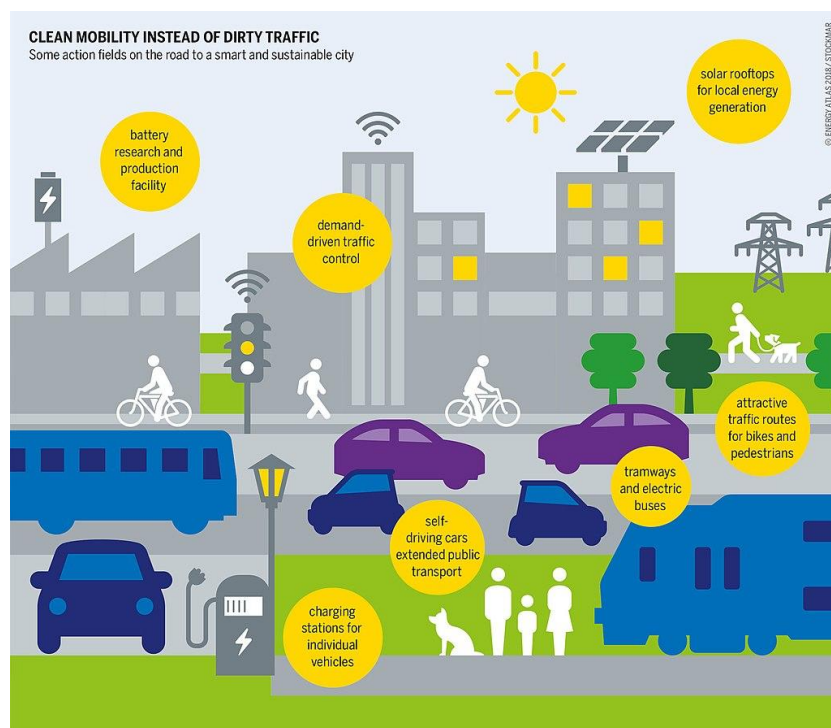
Above fig shows block diagram of wind power plant system in this system we use Drive train, Generator, Controller, power grid, etc. wind energy is the use of wind to provide mechanical power through wind turbines to turn electric generators for electrical power. Wind power is a popular sustainable, renewable source of power that has a much smaller impact on the environment compared to burning fossil fuels. Wind farms connected to many individual wind turbines, which are connected to the electric power transmission network. The wind is an intermittent energy source, which cannot be dispatched on demand. Locally, it gives variable power, which is consistent form year to year but varies greatly over shorter time scales.

There is an air turbine id large blade attached on the top of a supporting tower of sufficient height. When wind strikes on the turbine blades, the turbine rotates due to rotor blades. The shaft of the turbine is coupled with an electrical generator. The output of the generator is collected through electric power cables.

WORKINGPRINCIPLE

A smart city is a technologically modern urban area that uses different types of electronic methods, voice activation methods and sensors to collect specific data. Information gained from that data is used to manage assets, resources and services efficiently; in return, that data is used to improve operations across the city. This includes data collected from citizens, devices, buildings and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, utilities, water supply networks, waste, crime detection,^[1] information systems, schools, libraries, hospitals, and other community services.^{[2][3]} Smart cities are defined as smart both in the ways in which their governments harness technology as well as in how they monitor, analyze, plan, and govern the city.^[4]

The smart city concept integrates information and communication technology ('ICT'), and various physical devices connected to the Internet of things ('IoT') network to optimize the efficiency of city operations and services and connect to citizens.^{[5][6]} Smart city technology allows city officials to interact directly with both community and city infrastructure and to monitor what is happening in the city and how the city is evolving. ICT is used to enhance quality, performance and interactivity of urban services, to reduce costs and resource consumption and to increase contact between citizens and government.^[7] Smart city applications are developed to manage urban flows and allow for real-time responses



ADVANTAGES

- Effective decision-making based on data.
- Creation of safer communities.
- Improved urban transportation.
- Improving the environment through various systems.
- Optimization of time in hospital and public service lines.
- Evolution towards the Internet of Things (IoT).
- Implementation of new business opportunities.

Applications

- Traffic Management. It is important to control the traffic in cities otherwise there are huge traffic jams in popular places and totally empty streets otherwise.
- Air Pollution. ...
- Healthcare. ...
- Public Transport. ...
- Water Management. ...
- Waste Management. ...
- Parking. ...
- Natural Disaster Management.

RESULTS

The steps needed to achieve the desired goal of the project and successfully run it will be explained.

Collection of parts needed for the Project
Design the primary Concept
Create the model
Bluetooth module, Arduino Uno, IR sensor, servo motor to be connected
The Arduino should be programmed Installation of the Arduino software
We implant the all sensors in the hardware

CONCLUSION

The Smart City agenda entails improving the citizens' quality of life, strengthening and diversifying the economy while prioritizing environmental sustainability through adoption of smart solutions.

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