

# Advanced Solar Power Voting Machine Enhancement Using Microcontroller

<sup>1</sup>V.Lalitha Sagari, <sup>2</sup>Y.Mounika, <sup>3</sup>V.Sandhya, <sup>4</sup>G.Srinivas, <sup>5</sup>K.Rama Krishna

<sup>1,2,3,4</sup>*B.Tech scholar, Dept of ECE, Tirumala Engineering college, jonnalagadda, Narasaraopet, A.P, India*

<sup>5</sup>*Assistant Professor, Dept of ECE, Tirumala Engineering college, jonnalagadda, Narasaraopet, A.P, India*

**Abstract:** Electronic Voting Machine is a device that is used to count ballot and record votes. When the power is off electronic voting machine is not working until the power is come back. Renewable energy based systems can be the solution to tackling such problems. In this paper Solar voting machine is designed to run the voting machine when power is off. The many problems associated with manual counting of votes that it laborious, erroneous and time consuming. This makes the entire system very inefficient. As voting is a sensitive issue, mismanagement can lead to issues as large and complicated as political unrest. The debilitating effect that political unrest can eventually lead to needs no describing. On the other hand, for a power starved nation like Bangladesh, the gap between demand and supply of electricity remains large. A good majority of the people are deprived of this basic facility. A solar powered EVM addresses all the above concerns. This paper discusses in detail the design of a solar powered EVM prototype which is efficient and allows the user a relief from the laborious act of vote collection and counting. Furthermore, it also removes the errors from the system, since it is a digital device. One of the biggest concerns of EVM is the security system which includes insider threats, network vulnerability and challenges to auditing. To limit these issues the prototype has been developed with a three stage security encryption.

**Key Words:** Electronic Voting Machine, Renewable Energy, Solar Power, Microcontroller.

## 1. INTRODUCTION

Voting is a technique for a gathering, for example, a gathering or an electorate to settle on a choice or express a conclusion, typically following exchanges, discussions or decision crusades. Law based countries choose holders of high office by voting. In a vote based system, a legislature is picked by voting in a race: a path for an electorate to choose, for example pick, among a few contender for standard. In an agent majority rule government voting is the strategy by which the electorate designates its delegates in its legislature. In an immediate majority rules system, casting a voting is the technique by the electorate straightforwardly decides, transform bills into laws, and so forth. Like a decent dominant part of the countries on the planet, Bangladesh pursues popular government, making casting a ballot a necessary piece of our regular daily existences.

Basically, not at all like the created countries following vote based system, political shakiness is one of the infections tormenting this nation, frustrating its financial advancement. Two years prior, Bangladesh's year began with political strife when the restriction party dissented, requesting free and reasonable races. Despite the fact that the aftereffects of the decisions, through voting, gave the countries its decision government party, debate encompassed the race. Therefore, the economy is as yet enduring the worst part from multiple points of view. Numerous specialists, for example, The World Bank, Bangladesh Bank and so forth. This country

has endured drawn out political emergency since its initiation. Unnecessary to specify that decision is one of the real reasons for the country's political shakiness, the casting a voting system being a fundamental piece of the races. Votes are thrown by natives by a voting framework. A voting framework comprises of a lot of principles which must be pursued for a vote to be viewed as substantial, and how voting are tallied and amassed to yield a last outcome. Distinctive voting frameworks have diverse structures for enabling the person to express his or her vote. In positioned voting framework, vote request the rundown of alternatives from most to least favored. In range voting, voters rate every alternative independently on a scale. In majority casting a ballot voters select just a single alternative, while in endorsement voting they can choose the same number of as they need.

The most normally polished framework in Bangladesh is majority voting where the voter cast their votes by denoting their decision in a bit of paper and dropping the paper in a fixed box. This leaves a large window for error. Theft of vote is yet another problems that the Bangladeshi Election Committee has to face every election, no matter of whichever scale it be. Because the system is pen and paper based, there stays a big scope for felony. The vote counting is also done manually and this allows room for human error. Due to this mismanagement, the election results are often challenged.

The machine contains a touch screen joined by a card peruser which the individual voter has in the wake of reaching the surveying officers. Notwithstanding, albeit acknowledged generally, late investigation demonstrates that the framework contains various blemishes and ought not be utilized moving along without any more enhancements. Another fascinating instrument for EVM framework is Biometric EVM in which as opposed to asking for individual recognizable pieces of proof or passwords, the framework can identify singular fingerprints, face, retina, DNA and so forth of a person for simple and advantageous check.

The destinations of biometric acknowledgment are client accommodation, better security and higher productivity. Notwithstanding, the information obtained by people bio-distinguishing proof through fingerprints and retinal sweeps may be utilized for criminal examinations or other purposed without warning which abuses the common directly of a native. Additionally, control supply of an EVM framework is an essential component that should be satisfied appropriately amid a progressing race. This is a greater concern for the most part in creating nations where control blackout is visit because of burden shedding. Without appropriate power supply to the EVM framework, information procured can't be bona fide and flawed. Keeping the flighty power supply position in numerous spots in various nations, the machines have been intended to keep running on batteries. Be that as it may, it can't be a definitive arrangement since the limit of the battery isn't boundless which can stop to give control supply to the EVM machine after a specific timeframe. As far as anyone is concerned, no sun oriented power based EVM framework has been executed to defeat the previously mentioned issue till date.

Electronic Voting Machines (EVM) have been presented in Bangladesh very as of late. It is an electronic gadget used to record vote consequently. It is a gadget in which no occasions is squandered for vote checking. Because of its learner nature a dominant part of the populace is as yet ignorant of it. As its name recommends, the casting a ballot machines are kept running on power. Bangladesh being a power starved country, can't yet ensure solid supply of power in its metropolitan urban areas. It can't further give power offices to country, remote territories. This brings in for the need of such gadget that is electronic yet does not have to depend totally on the framework organize as its capacity source.

## **2. LITERATURE SURVEY**

The E-Poll (Electronic Polling System for Remote Voting Operations) explores broadband versatile correspondences dependent on the standard for furnishing the E-Poll connect with the required

transfer speed and security. This makes it conceivable to utilize E-Poll stands anyplace, inside a private, solid and secured system. The voter-acknowledgment framework depends on a creative keen card with an inserted biometric unique finger impression peruser, which performs voter acknowledgment with outright security.

The haval presents a framework for solid electronic voting which does not rely upon continuous system associations between surveying stall and the vote-counting server. They fabricate the framework on a separated (or, all the more precisely, an irregularly associated) condition, which acts well without system availability. "Security Criteria for Electronic Voting" thinks about some essential criteria for secrecy, uprightness, accessibility, dependability, and affirmation for PC frameworks associated with electronic casting a ballot. After an appraisal of the feasibility of those criteria, it presumes that, operationally, huge numbers of the criteria are innately un-satisfiable with any significant affirmation.

Rubin recognizes the new dangers achieved by presenting the condition-of-the art innovation into the race procedure, which may not merit taking. The significant security dangers distinguished incorporate those at the voting stage – including malignant payload (assault programs, remote organization and checking toolboxes, and so on.) and conveyance instrument (worms, infections and bugs, dynamic substance downloaded naturally, and so on.) – and the interchanges framework – including (dispersed) disavowal of administration assault, DNS server assault, and so forth. The security issues in social building and in utilizing particular gadgets are likewise distinguished.

Large portions of the general population have managed online business tasks. This is as of now a piece of regular daily existence. Be that as it may, e-voting isn't in any case a straightforward strategy for vote. The development of electronic voting framework is a standout amongst the most difficult security-basic errands, in light of the prerequisite for distinguishing an exchange off between evidently clashing wellbeing necessities like protection versus review capacity. In this manner it is hard to receive conventional strategies for web based business. For instance, in electronic business there is dependably likelihood to talk with respect to the substance of tasks. Purchasers acquire receipts to demonstrate their inclusion in exchanges. E-voters, thusly, must not acquire any receipts, since this would approve voters to advance their votes.

Estonia starts the undertaking of electronic voting system. The principle center was to apply electronic voting in the races of the nearby government get together in the year 2005. In multi month of January,

a group of American security specialists unveiled the security report of Secure Electronic Registration and Voting Experiment. The Secure Electronic Registration and Voting Experiment (SERVE) framework was intended for organization in essential and regular races and enables the certified voters to vote electronically with the assistance of web. In the wake of examining the security of SERVE, the clump of security specialists suggested that the SERVE ought to be shut. They likewise reported that they don't believe that contrastingly comprised activities could be more secure than the SERVE. Their decision was that the genuine issues to achievement in electronic casting a ballot are not abilities, assets, and so forth; the reality given the present Internet and PC security innovation, electronic voting is a basically Impossible undertaking. This negating circumstance was the principle initiator of this work. By closer view, both security reports are predictable and contain honest and persuading contentions. One of the primary purposes behind two very surprising outcomes was the absence of brought together security investigation in the two reports. A portion of the contentions were very enthusiastic, being founded on specialists' emotional suppositions and "basic modules".

In information technology, biometrics mention to technologies that compute and examine human body features, as fingerprints, eye retinas and irises, voice patterns, face patterns and hand menstruation, for authentication processes. Authentication by biometric confirmation is growing common in collective and general security systems, customer electronics and point of sale applications. In security, the driving force behind biometric confirmation has been satisfaction. This biometrics is the science and technology of computing and examines the biological data of a person. An authentic and precise identification/verification technique may be designed using biometric technologies. Biometric authentication employs unique combinations of tangible physical features- fingerprint, facial features, iris voice, and hand geometry and vein patterns.

### **3. RELATED WORK**

Biometric systems are widely used technology for identification and verification purpose by pattern matching. Identification means to find a match between the input pattern and the one which is already stored in data base. For example in biometric attendance system, when a student applies his/ her finger on the biometric device for scanning, a newly generated pattern compared with the stored templates in data base to find a match. If match is found, then the person will be allowed to pass through that area. Power crisis is one of the major problems plaguing Bangladesh. Being a power starved country,

Bangladesh can't yet ensure dependable supply of power in its metropolitan urban communities. It can't further give power offices to rustic, remote regions. This normally discounts structuring gadgets like EVMs for touchy errands like vote gathering altogether or basically reliant on framework control. This brings in for the need of such gadget that is electronic yet does not have to depend completely on the lattice arrange as its capacity source. It might be referenced here that the power framework in Bangladesh, for example control age, is altogether subject to petroleum derivative based power age. Petroleum product saves are being drained worldwide and at a significantly quicker rate in this nation. The nation's legislature is presently effectively competing for maintainable choices, to be specific sustainable power sources. Sustainable assets are common assets which can be renewed with the progression of time either through organic propagation of other normally happening procedures.

Among all the renewable resources, solar is the most preferable as it is easily available in nature. In recent time the equipment associated with are accessible at a reasonable cost. However, solar is a dilute source of energy. Compared to the overall power intercepted by Earth, power received per unit area is small; maximum value is about 1000 W/m<sup>2</sup>. Hence to acquire the required quantity of power a large collector area is required. Sun based fueled power age utilizes either photograph voltaics or warmth motors, for example concentrated solar power (CSP). CSPs use focal points or mirrors and following frameworks to center a substantial zone of daylight into a bar. Photograph voltaic convert light into electric flow utilizing photovoltaic impact. Sustainable power source is a suitable method for producing vitality in Asia. For sun oriented power, South Asia has the perfect blend of both high sun oriented isolation and a high thickness of potential clients. Shoddy sun oriented power can convey power to a noteworthy piece of the sub-mainland's kin who still live off-lattice bypassing the need of establishment of costly framework lines.

The sunlight based photovoltaic innovation is the most regularly utilized innovation for the transformation of sun oriented vitality to sun based power. A sun powered cell, likewise called a photovoltaic cell is an electrical gadget that changes over the vitality of light straightforwardly into power by the photovoltaic impact. It is a type of photovoltaic cell which, when presented to light, can produce and bolster an electric flow without being appended to any outside voltage source. The task of a photovoltaic (PV) cell requires 3 essential properties:

- The assimilation of light, producing either electron-gap sets or excitation

- The detachment of charge transporters of inverse sorts.
- The different extraction of those transporters to an outer circuit. Photovoltaic cells are comprised of exceptional materials called semiconductors, for example, silicon, which is right now and most ordinarily utilized. Fundamentally, when light strikes the cell, a specific part of it is ingested inside the semi-conductor material. This implies the vitality of the ingested light is exchanged to the semi-conductor. The vitality thumps the electron free, enabling them to stream unreservedly. A run of the mill photovoltaic framework utilizes sunlight based boards, each involving various sun oriented cells which create electrical power. The power yield from a sun oriented cell relies upon the region of the cell and the effectiveness of the sun powered cell. The power yield of a sunlight based PV cell is a result of cell proficiency in rate, cell territory in square meters and sun based segregation.

#### 4. EXISTED SYSTEM

Electronic Voting Machine is a fundamental electronic machine that is utilized to store the votes instead of vote papers and boxes which were utilized in customary voting framework. It is a straightforward gadget that is worked easily by the surveying officers and the voters. It is a solitary machine with no system association, and no one can hamper with its programming and change the outcome. Remembering the erratic power supply position in numerous territories in the nation, the machines have been made to keep running on the straightforward batteries

Ongoing years, a significant number of nations has embraced E-voting in favor of their official decisions. In this area, four observational precedents are listed as following. America Government of the United States hold decision correspondingly in a few different ways, as it were, each state can pick the

appropriate method to hold races freely. Since there are a few discussions about E-casting a ballot, for example, some vote throws were not tallied, or decision framework smashed amid the Election Day. Next Japan embraced E-voting in favor of neighborhood decision in 2002, for example, city hall leader and councilor race.. at the point when the race wrapped up. the E-voting system are voters stressed over the maltreatment in voting, and they can't ensure their vote are recorded accurately. But here we introduced solar power electronic voting machine which will be used in case of power off.

#### 5. PROPOSED SYSTEM

The below figure (1) shows the architecture of proposed system. In this system we use 8051, voting machine, LCD display, Buzzer, solar panel, motor, LDR, light and battery. liquid crystal display (LCD) is a slender, level showcase gadget made up of any number of shading or monochrome pixels displayed before a light source or reflector. Every pixel comprises of a segment of fluid precious stone atoms suspended between two straightforward anodes, and two polarizing channels. Without the fluid gems between them, light going through one would be obstructed by the other. The fluid gem turns the polarization of light entering one channel to enable it to go through the other. A program must interface with the outside world utilizing information and yield gadgets that discuss specifically with an individual. A standout amongst the most widely recognized gadgets joined to a controller is a LCD show. The absolute most normal LCDs associated with the controllers are 16X1, 16x2 and 20x2 showcases. This implies 16 characters for each line by 1 line 16 characters for every line by 2 lines and 20 characters for every line by 2 lines, individually. They have a standard ASCII set of characters and numerical images.

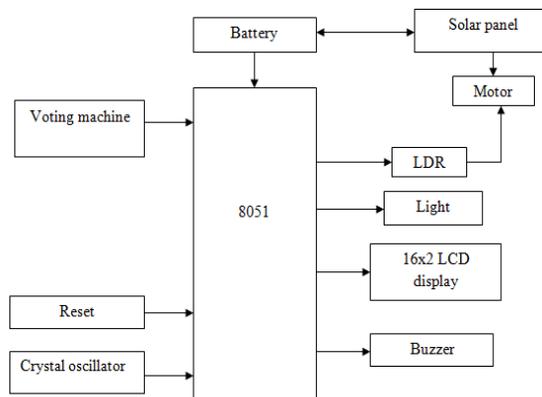


Fig. 1: PROPOSED SYSTEM

An oscillator gives a source of repetitive A.C. motion over its yield terminals without requiring any contribution (aside from a D.C. supply). The flag produced by the oscillator is normally of steady abundance. The wave shape and sufficiency are dictated by the plan of the oscillator circuit and decision of part esteems. The recurrence of the yield wave might be settled or variable, contingent upon the oscillator plan.

A Microcontroller is a VLSI IC that contains a CPU (Processor) alongside some different peripherals like Memory (RAM and ROM), I/O Ports, Timers/Counters, Communication Interface, ADC, and so forth. The Intel 8051 microcontroller is a standout amongst the most prevalent broadly useful microcontrollers being used today. Solar power is most reliable form of renewable energy available. Light dependent resistors are used to detect light and change the operation of a circuit dependent upon the light levels. A buzzer or beeper is an audio signalling device.

The circuit contains a 12V chargeable battery. A voltage regulator was connected to the circuit to maintain a constant 5V at the end of the power supply section. This battery is charged using solar power and to increase reliability is also connected to the grid supply. However, the grid supply is only a back-up source in case there is a failure in the solar powered system due to some technical errors. Control segment comprises of 2-sections keypad and LCD. The keypads are utilized for setting and secret phrase input at whatever point secret key is required. LCD is vital for survey the passwords and at whatever point creator sets them to see at whatever point any passwords are entered, to see the votes of hopefuls. Hence this system provides effective results compared to electronic voting system.

## 6. CONCLUSION

The objective of the paper is to present a structure of a solar based power Electronic Voting Machine that utilizes punch card and secret phrase insurance. A three dimension secret key insurance was utilized in different stages. Solar based power was utilized as power source in the circuit to decrease reliance on the matrix framework. This diminishes decrease the labor necessity for voting purposes. The solar panel acts as main part in whole system. The vote checking is moment, in this manner diminishing the deferral in distributing the outcome.

## REFERENCES

- [1] Prof. Sunitha patil ; Amish Bansal, Utkrash Raina, Vaibhav Pujari, Roshan Kumar, "E-Smart Voting System with Secure Data Identification Using Cryptography", 2018

- [2] Andria Rodriguez-perez, "secret suffrage in remote electronic systems", 2017 fourth international conference on edemocracy and eGoernment.
- [3] Aranganadhan. N. S, M. DhineshKumar, Praveenkumar. DSanthosh.A, "Embedded System based Voting Machine System using Wireless Technology", International journal of innovative research in electrical instrumentation and control engineering, Vol. 4, Issue 2,2016,pp.127-130
- [4] D. Krishna, "Aadhar Based Electronic Voting System and Providing Authentication" International journal of engineering and advanced technology, ISSN:2250-3676,Vol.4,Issue 2,2015,pp.237-240.
- [5] Deepak Rasaily\*Jigmee Sherpa, Yashal Dorzee Lepcha, "Design of Electronic Voting Machine using Microcontroller", International Journal of Engineering Trends and Technology, ISSN: 2231,Vol-32 issue 5,2014,pp.277-278.
- [6] Deepika, Iswarya, Rathna Prabha, Trini Xavier, "A Survey on E-Voting System Using Arduino Software" International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering (An ISO 3297: 2007 Certified Organization) Vol. 5, Issue 2, February 2013, pp.687-690.
- [7] Diponkar Paul, Sobuj Kumar Ray, "A Preview on Microcontroller Based Electronic Voting Machine", International Journal of Information and Electronics Engineering, Vol. 3,2012, pp.185-190.
- [8] B. Divya Soundarya Sai, M. Sudhakar, "Biometric System Based Electronic Voting Machine Using Arm9 Microcontroller", IOSR Journal of Electronics and Communication Engineering (IOSR-JECE) e-ISSN: 2278-2834,p- ISSN: 2278-8735.Vol.10, Issue 1,2011, pp.57-65.
- [9] Navnath Baban Belote, Sneha Revankar, "Next Generation Electronic Voting Machine", International Journal of Advanced Research in Computer and Communication Engineering Vol. 5, Issue 6,2010,pp.622-624
- [10] Mr. Soumen Ghosh, "Development of Microcontroller Based Electronic Voting Machine" IOSR Journal of Electrical and Electronics Engineering ,e-ISSN: 2278-1676,p-ISSN: 2320-3331, Vol. 9, Issue 2 ,2009,pp.1-3