**A SOLAR POWERED, BIOMETRIC BASED ATM FOR THE** **RURAL MASSES OF INDIA: ‘BIO-SOLAR ATM’**

Rural Populace, who constitute the major part of India’s Population, have always been the sufferers on the advent of new technology in the field of banking which makes it easier for most of the urban populace but worsens it for the rural people. They are helpless as most of them are basically unlettered and withdraw money from banks using their thumb signatures. They are unable to use ATM machines which work by the use of a card and 4 digits PIN but they are in desperate need of an ATM which is compatible with their level of understanding. In times like these where we are approaching fast towards a complete digital & cashless economy, this is an urgent requirement. Thus a prototype of the biometric based ‘BS-ATM’ is designed which is User friendly (Based on A/V touch interface) and at the same time avoids the use of cards, PIN and paper. This ATM is also energy efficient and environment friendly as it involves the use of solar energy to power it. In addition to this, various security measures have been implemented using unique logical approaches, keeping provisions for future developments.

**BENEFITS:**

* **User Friendliness:** anybody can use the‘**BS-ATM**’ as it is operated only on biometrics, already existing Adhar card QR code number and touch based interactive audio visual interfacing which uses biometric identification to identify individuals and Audio-Visual interface to guide and complete the transaction. It is designed to be operated by both the unlettered masses and those who fail to use conventional ATMs.
* **Environment Friendliness:** This ATM will be operated on solar PV power. Use of biometrics rests the use of ATM cards. At the end of every transaction, the users will be notified about their remaining balance through audio thus avoiding the use of paper receipts.
* **Very Low Running Cost:** Unlike conventional ATM machines, this machine will run in DC on Solar PV supply in both standalone and Grid connected mode, thus reducing the operating cost greatly. It uses energy efficient framework and components which reduces the power consumption of the machine at 300W peak consumption and 50W standby mode consumption.
* **Fast and Secure operation:** The main issues with conventional ATM are loss of ATM cards and lack in memorizing the PIN number, added to that both the card and the PIN can be misused by anyone and is often stolen. This behavioral authentication procedure is replaced by biometric fingerprint scan and Adhar card QR code authentication procedures which are more secure in nature.

**THE WORKING PRINCIPLE:**

1. The user enters the ATM terminal; the proximity sensors are activated.

2. The Standby mode is turned off and the ATM Notifies the user to scan his/her fingerprint(s) by an audio instruction on what to do next in local language.

3. Next, he/she will be asked to place the QR code of adhar card near the QR code scanner.

4. After QR code is scanned, The ATM finds a possible match to any registered user.

4. If match is found the ATM will guide the user to the amount through display of note images on the screen.

5. The user presses the note to indicate what amount he/she wants to withdraw. For e.g. If a user wants to withdraw Rs.2000 then he/she presses 2000 note.

6. The user confirms the amount for the transaction. On cancellation of the transaction anytime, the user just has to press the Cross Button.

7. If all processes are done correctly cash is dispensed from the machine. If the user has lower balance than the withdrawal request then the users will be notified about the remaining amount by an audio through headphones (also instructed via A/V) to maintain secrecy.



