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SMART ENERGY GRID WITH THE IMPLEMENTATION OF BLOCKCHAIN TECHNOLOGY

DESCRIPTION:

We have developed a peer to peer energy transmission system with implementation of block chain in the smart energy grid. Renewable energies such as solar or wind power, are also part of the Smart Grid. The goal is to promote local energy production, and then avoid the energy transport loses over long distances. Our goal is to provide power to buildings and homes from micro-grids set by the supplier. The client i.e. people who require power will request the supplier and pay through online transactions secured by block chain, so that power theft is avoided. The power is delivered instantly to the client from the supplier by switching on the specific client's network by IoT. The power generated is completely from renewable sources so as to lower the burden on the decreasing non-renewable energy in the country. The client will get uninterrupted power supply at peak hours.

WHY WE CHOSE THIS TRACK?

Open Innovation ~ We wanted to find an alternative network for the fast depleting fossil fuels, thus producing a system to supply power to each society from micro grids set up in THAT society. Cheaper and effective!

UNIQUENESS AND PRACTICALITY OF THE PROJECT:

As the fossil fuels are fast depleting, the project is highly practical and would be very useful in the near future. Delivering power on request instantly is something new what we thought and hasn't been implemented yet in any country worldwide. The age old problem of power theft has been abolished due to centralized network and block chain technology. We have also developed an application to maintain the transaction history and details of power received and delivered by client and supplier respectively. The storage of power generated from the resources, which is erratic in nature, cannot be stored in a battery, so we updated to 'Pumped thermal electricity storage'. We developed a website that collects the login information of clients and displays the currently available suppliers ready to deliver power. The most deserving client (if there are 2 clients requesting for power at the same time) will receive the power. Deserving client is chosen either by the choice of first-come-first-served basis or emergency. We prepared a temporary database for storing the clients information and when the client pays the supplier, the supplier makes the power line of the client active through ESP8266. The network is centralized, so specific client's network can be activated. The feedback is sent to the supplier about the power

used, and as soon as the power reaches the limit of how much the client has paid, the power line is deactivated. The payment is made by block chain tech, so power theft is avoided. We implemented a centralized RING network for each society connecting each building separately. We came with block chain to eradicate the issue of power theft, as soon the money is transferred; the power is transferred to the blocks developed for the user. The power is transferred only after the payment is done and appropriate amount of power is only delivered. Say 50 watt is the requested amount, and after the consumption of 50 watt is noted from the client's wattmeter, the power delivery is stopped. Every transaction is secure and power request is done by an app, so the customer is at utmost comfort.

FUTURE SCOPE/BUSINESS MODEL:

Though the initial cost is a bit higher and requires a bigger area for implementation, break-even can be achieved in a period of 2 years as the generation is free (renewable - solar). If every other town or society sets up a micro grid, this will become a huge hit as dependency on government reduces.

The initial setup of the system which might include a solar farm, will require a large space for the farm as well as to store the energy generated by the farm. Each building will require a separate private network from the generating area. The setting up of solar farm will require around 12 lakhs for generating aggregate power of 80MW. The network cost is about 2 lakhs, including labour cost as it is set inside a society/village/town. Though the initial cost is a bit higher and requires a bigger area for implementation, break-even can be achieved in a period of 2 years, if we charge Rs. 2.50/unit and the generation is free (renewable - solar). If every other town or society sets up a micro grid, this will become a huge hit as dependency on government reduces.

HOW TO COMPETE WITH THE CURRENT COMPETITORS:

The only competition to our project is the power supply by government using fossil fuels and in the near future we can see our project being partnered by the government and developing a joint business. At present, micro grid is not yet popular, so we’re almost new in the market. The government charges around Rs. 3/unit and we can guarantee to produce power cheaper than that.