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“Elektron-An AI Based Tool”

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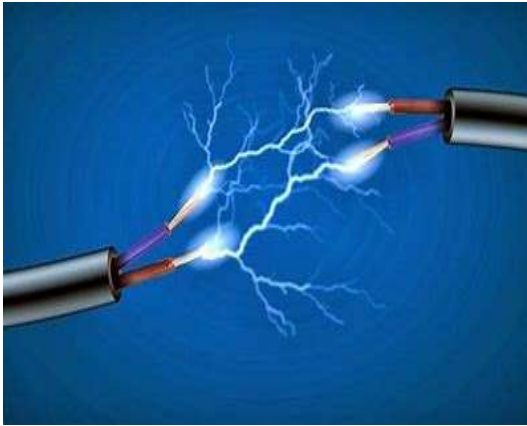
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1. Introduction

Elektron is an AI based project which takes reading of your electric meter box and notifies about the electricity consumption on your mobile phone .The Greeks first discovered electricity about 3000 years ago. Its name came from the word ‘elektron’, which means amber. Amber is the yellow, fossilized rock you find in tree sap. The Greeks found that if they rubbed amber against wool, lightweight object (such as straw or feathers) would stick to it. This form of electricity is known as “static electricity”.



Lot of people are getting benefits of electricity for many decades and will also use more in future days, the use of electricity is increasing day by day . The world is now shifting to the electrical based materials and leaving the use of fossil fuels and other non-renewable resources. From a small house to a company, everyone is trying to use electric appliances. But at the same time, one should need to take care of the electricity bill also, should minimize the unnecessary use of electricity.

A lot of works are done to save electricity. Equipment isn't meant to last forever. Like everything else, it has an expiration date, and it can begin to exhibit signs of

wear and tear that require attention. Beyond simply becoming less reliable because of system changes over the years, older equipment may not be able to safely protect personnel and other equipment as it was designed. Additionally, it cannot support the cloud or Internet of Things (IoT) connectivity required of modern facility infrastructure. However, restricted budgets and the cost of downtime from lengthy replacement processes often mean it can be difficult to secure management buy-in on necessary upgrades, which are frequently deferred until the last minute – but they don't need to be. This article will examine the benefits that can be realized through timely modernization. Halogen bulbs has been replaced by the LED bulbs , AC has been replaced by Smart Inverter AC in which no Stabilizer is used which is decreasing the electricity consumption . Good quality electrical wires has been developed which wastes less energy in the form of heat and have long life which reduces maintenance cost. These things have done good in their field but excessive use of these things also affects user budget for the electricity.

So in today's world almost in every house there is electric meter-box and people are wasting electricity unnecessarily and paying so much in electricity only. Therefore, to remind people about excess usage of electricity, we are going to develop such a tool or device along with software which can assist all the homes in saving electricity expenses. The device that we are going to develop will be based on AI and will have all the option to optimize usage of electricity in an efficient manner. The software shows the user the current usage of electricity and notifies the user if the electricity consumption exceeds the 50% and 90% of the daily usage and assisting user in using appliances smartly.

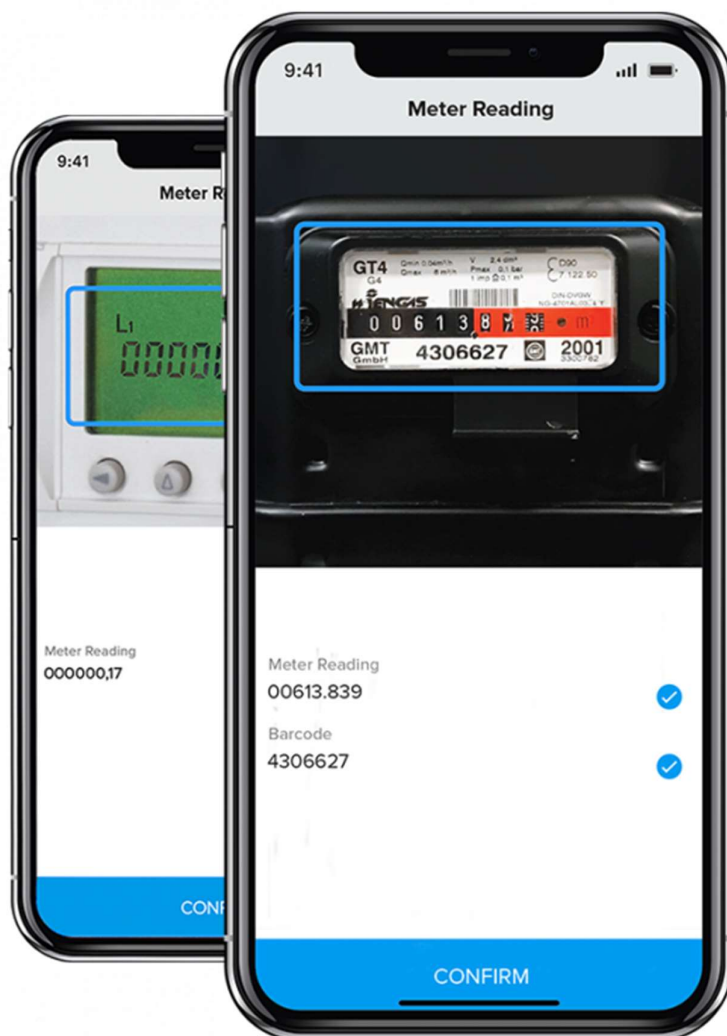
2. Existing Technology

There are few apps which reads meter and gives results and saves data. Some of them are:-

2.1 ANYLINE :- Utility Meter Reading Solutions

Anyline offers an unmatched combination of OCR technologies for utilities – from analog meters to digital, as well as barcodes, serial numbers and more. Enabling utility workers to improve their productivity and speed while eliminating data-entry-related mistakes. Integrate our SDK into your app or website so that users can capture and send meter readings in seconds. The best part? It's easy to use for both field workers and customers. Anyline provides multiple features to ensure that scan results are highly accurate and trusted by employees and customers alike. All meter values are captured, processed and stored completely offline, enabling your workforce to stay mobile and scan in the toughest conditions. This flexibility is reinforced by sophisticated machine learning models with real-world

conditioning that give Anyline the edge when it comes to scanning dirty or.



Anyline meter reading captures analog, digital, dial and digital dot matrix meter values, scanning meters from AEG, Danubia DZG, Landis + Gyr, Reimer & Seidl, Schlumberger AEG, Schlumberger Danubia, Siemens, Uher and many, many more. Our fast and secure mobile meter reading for utilities eliminates the

errors of manual data entry and reduces the time needed to capture data by 90%. The parallel scanning feature allows meter values to be read alongside barcodes and serial numbers all on one screen.



Here are some of the benefits of our AI-powered data capture solution:

- It is 20% Faster than typing
- Works in poor light conditions and offline
- Your customers can read their own meters
- Removes the errors of manual data entry
- Reduces fraud and non-technical losses
- Secure and GDPR-compliant data capture

2.2 GoCanvas meter reading app:-

With this Meter Reading (Electricity) mobile app, it is possible to monitor your electricity usage and energy consumption.

Use the energy app to track the data from your utility meter. With access to your meter data - just like the utility providers - quickly and easily track your consumption. With a little research and knowledge you can also determine which appliances are the heavy usage culprits.

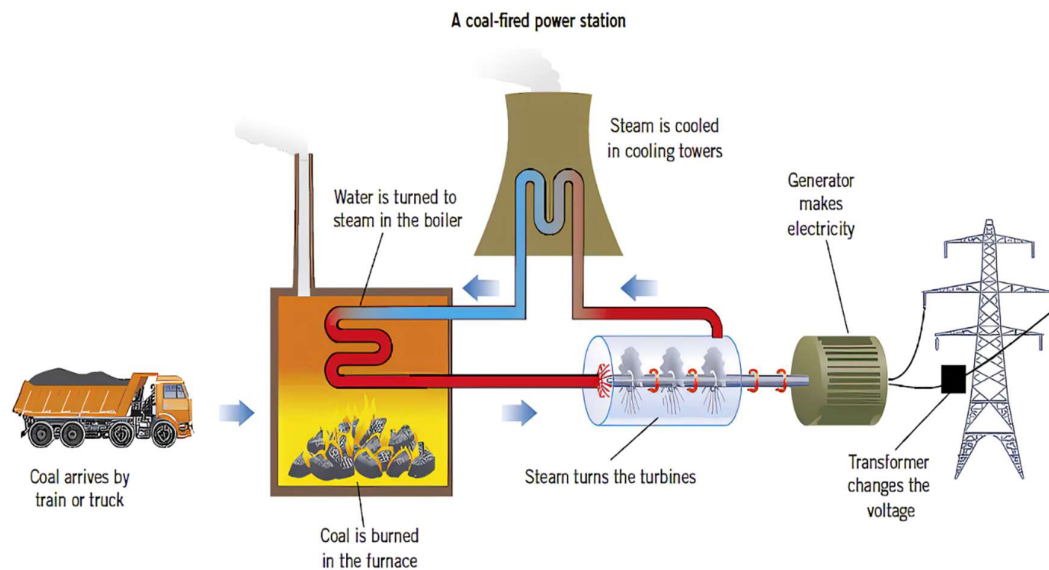
Don't wait until your bill arrives and the energy supplier, that already read your meter, surprises you with the bill. With this app you have access to real-time data allowing you to stay on top of your energy.

The electricity meter checklist also includes safety hazard checks, such as making sure that all windows are locked. Be your own meter reader.

Save the information safely and securely to your GoCanvas account. Access the data anytime, anywhere to compare energy usage over the months. Go digital with this GoCanvas electric meter app today!.

3. Problem Statement

Saving electricity is very good but every person in the world is not following that .most of the people are wasting electricity thinking electricity is generating without harming nature .but it not that much true , most of the rich countries like as Dubai ,Qatar, Maharastra state of India are generating electricity by coal, first thry mine coal which results in air pollution and after that they used to fire coal which is also resulting in pollution, making of hydroprojects disturbs aquatic ecosystem so when it will come to saving electricity people used take electricity saving so seriously and start turning off electrical appliances in a way where people itself can't get pleasure of the electrical appliances even after spending money on buying that appliances and on maintenance



Problems regarding electricity crisis : People should face many problems due to load shedding which is a result of electricity shortages. The study investigated the consequences of electricity shortage on daily routines and overall performance of common people. Data has been collected through video

recorded interviews and written comment-based interviews using a social network of “Face Book” as suggested by QSR-International (2012). Sample includes students, housewives, professional workers and businessmen. The study identified 22 different results of electricity shortage in daily routines of people in Pakistan. Sleeplessness, incompleteness of tasks, use of alternative resources and inefficient learning have been found to be the more critical results of electricity shortage. Furthermore, these consequences of electricity shortage can be divided into social and psychological problems. It is concluded that the shortage of electricity has changed the lives of people irrespective of their professions. Also the increase in the price of the electricity is seen.

MAHARASTRA: COAL SHORTAGE CAUSING ELECTRICITY CRISIS IN 12 STATES



The Maharashtra Energy Minister said there was no load-shedding in the state for the past five to six days due to this micro-level planning and the power deficit stood at 15 per cent.

As many as 12 states are facing electricity issues due to shortage of coal in Maharashtra, state Energy Minister Nitin Raut said on Tuesday. Raut also said that his department was working to mitigate the shortfall with micro-level planning. Speaking to reporters, the Maharashtra Energy Minister said there was no load-shedding in the state for the past five to six days due to this micro-level planning and the power deficit stood at 15 per cent. He added that state-run Mahagenco has set a target to generate 8000 MW electricity, while thermal power plants in the coastal region operate on imported coal, the ban on the import of which was recently lifted by the Centre.

"The state government has issued tenders to import one lakh metric tonnes of coal. Coal shortage is also due to lack of rakes (trains). We require 37 rakes per day, while we get only 26. Each rake can transport 4,000 metric tonnes of coal," Raut further said. Raut also met Chhattisgarh Chief Minister Bhupesh Baghel in Raipur and discussed the necessary clearances required for a coal block allotted to the neighbouring state. According to reports, Maharashtra State Power Generation Company Ltd (MAHAGENCO) has been allotted Gare Palma sector-2 coal block in Chhattisgarh's Raigarh for which it has been seeking necessary approvals to start mining.

So we need to save electricity so that only we can save ourself from pollution, and for that our App will be much helpful.

4. Elektron Objective

The Objectives of introducing Elektron are :-

Energy optimization means maximizing the way you use energy in your home environment. This goes beyond simply using less energy and should include expanding energy efficiency (and savings) in the spaces you are already in. This can help improve the performance of your system by not overusing it.

There are many reasons why homeowners should consider optimizing their energy use, from the clear environmental and financial benefits of cutting energy use to potential improvements in mental and physical health. In fact, energy optimization has become one of the common features that prospective homeowners look for when purchasing a home.

Whether your motivations for energy conservation are economic, environmental, or personal, the benefits of energy efficiency will have something to offer for everyone. Here are the top eight reasons why energy efficiency is important for your home and why it is important to optimize energy use:

4.1. Protect the environment



Energy efficiency is a great way to reduce your carbon footprint. Homes were responsible for 19 percent of national greenhouse gas emissions in 2016, and implementing energy efficiency measures in your home can significantly reduce your emissions contribution. The typical household can reduce its energy use (and by extension its greenhouse gas emissions) by 25 to 30 percent by

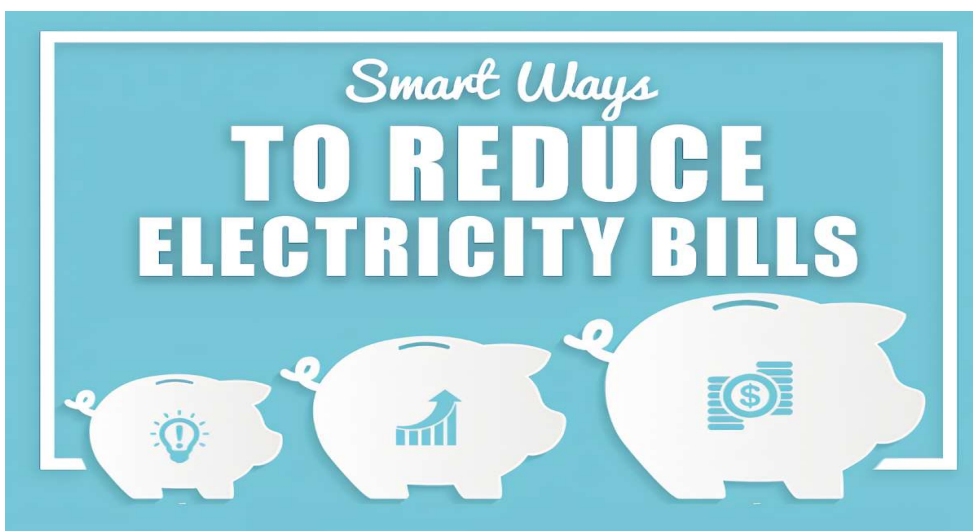
investing in more efficient energy consumption.



4.2. Significantly reduce your utility bills



As a homeowner, energy costs can make up a significant portion of your recurring monthly expenses. With energy efficient appliances and home upgrades, the U.S. Department of Energy estimates that you can save anywhere from five to 30 percent on your utility bills. Energy efficient appliances consume less energy throughout their service lives without sacrificing quality, and are an excellent way to save on your energy expenditures.



4.3. Earn a great return on your investment



Energy efficient purchases should not be viewed as an expense, but as an investment with utility savings that add up over the service life of the product. Savings can offset the initial price premium on energy efficient options, and offer a significant return in comparison to conventional, non-efficient alternatives. Furthermore, the return you pocket through savings will only increase over time as energy prices continue to rise in the United States.



4.4. Increase your property value



In the real estate market, energy efficient homes frequently sell for a higher price than standard homes with comparable features. Every project that increases your home's energy efficiency adds a fraction of its cost to the final selling price. In addition, private residences with green certifications have been proven to sell at a premium compared to similar homes in the area. Coming with expectations of reduced utility bills and fewer repair bills, energy efficiency is an attractive feature in any home

4.5. Enhance your quality of life



By optimizing your energy use, you can increase the comfort of living in your home and, in many cases, see notable health benefits. When you conduct energy efficient measures, your home will be warmer, drier, and properly ventilated, which lowers the risk of illnesses and mold growth. Energy efficiency also prevents the buildup of indoor pollutants, a major concern in areas with high radon emissions. In fact, the financial benefits of energy-efficient buildings yield a benefit-cost ratio of over 4 to 1, and 75 percent of those benefits can be attributed to health advantages.

4.6. Energy savings tips help you easily cut costs



Energy expenses are often thought of as a fixed cost of owning a home or business, with reductions only possible through pricey renovations. However, you can easily reduce your utility bills through simple energy conservation behaviors or small energy efficient purchases. Programmable thermostats, advanced power strips, and energy efficient lighting can decrease your energy expenses with almost no effort on your part.



Energy
saving

4.7. Earn incremental returns on energy efficiency investments



Energy efficiency measures, no matter how small, are capable of generating utility savings over their service lives. However, your savings are usually proportionate to the cost of the energy efficient upgrade – replacing light bulbs will only cost a few dollars, but will deliver marginal savings, while upgrading your attic insulation can save hundreds of dollars in heating and cooling bills. Upgrades can range from simply plugging in a smart power strips to an HVAC system overhaul. How little or how much you choose to invest in energy efficiency is completely up to you.



4.8. Insulate yourself from rising electricity prices



Utility residential electricity rates fluctuate seasonally and annually, but have risen steadily in the last decade. This trend is likely to continue into the future. In addition to cutting monthly electricity bills now, conducting energy efficiency improvements on your home helps to insulate you from the financial impact of unpredictable sharp energy price increases that could happen in the Years to come.



4.9. Providing easy control to the user

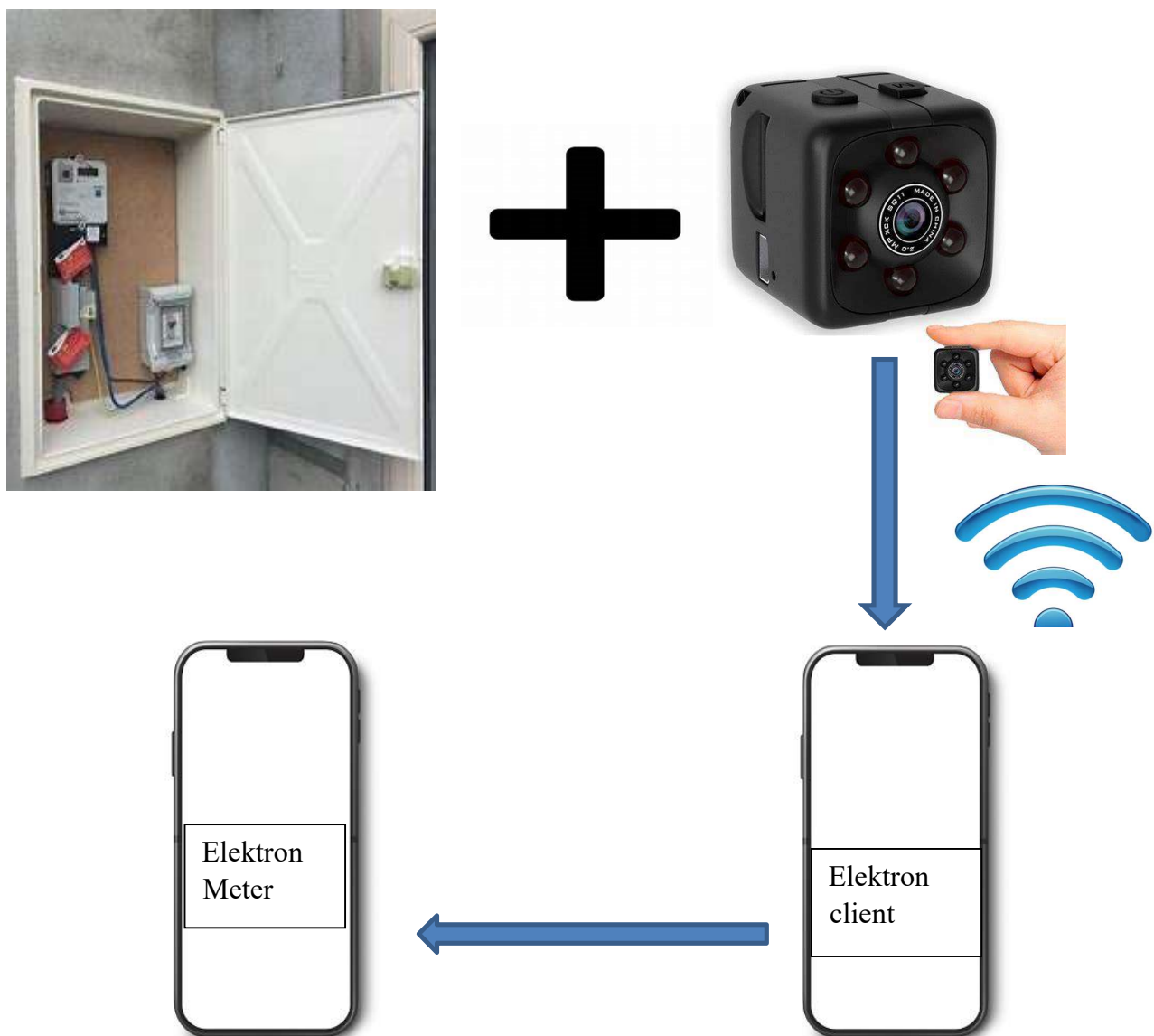
User are getting easy access for saving money,environment and for being handsome citizen.

EASY CONTROL

5. Hardware and software tools:-

In this technology, First of all user need to attach a small wireless wifi camera infront of the meter box which keeps reading meter box without leaving much space and after that user must need to download the Elektron client app and Elektron meter app in mobile phone . And after that user need to open Elektron client and connect the camera and after that user need to open Elektron meter and need to select the number of appliances along with type and voltage and need to categorize the appliances into necessary use and additional use ,suppose in a room there is 1 LED bulb and 1 Tube light so user can categorize LED bulb into necessary use and Tube light into additional use and also user can schedule the timing for using appliances ,also the electricity budget for specific time like as 1

month or some weeks and according to that electricity budget for 1 day will be calculated and will be displayed on the mobile screen . And the camera outside of the meter-box will keep observing unit rise in meter and will be sending that data to the app . By that data the app will keep displaying the total electricity consumed and if the electricity consumption increases above 50% of the daily consumption ,notification will be sent on the mobile phone if continuing of the same rate upto night will exceed the daily budget then notification to turn off additional appliances will be sent along with the list of the additional appliances

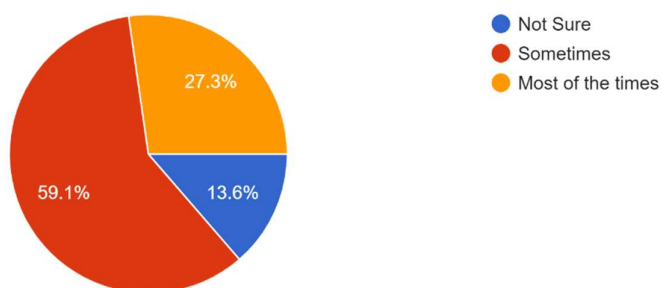


6. Literature Survey

We have conducted a survey to know the people about their electricity usage and also to know how much access amount they are paying for electricity. During survey we have asked these below questions.

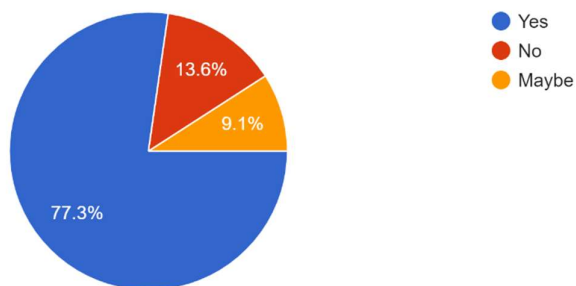
Is electricity bill going above your excepted monthly budget?

22 responses



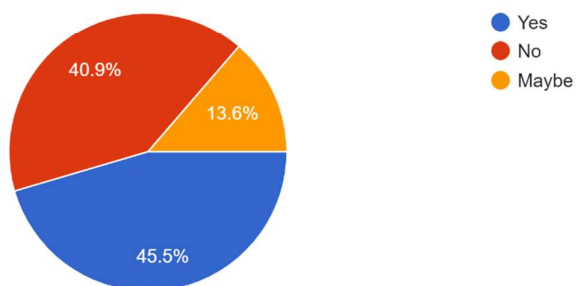
Do you want to set a monthly budget for electricity?

22 responses



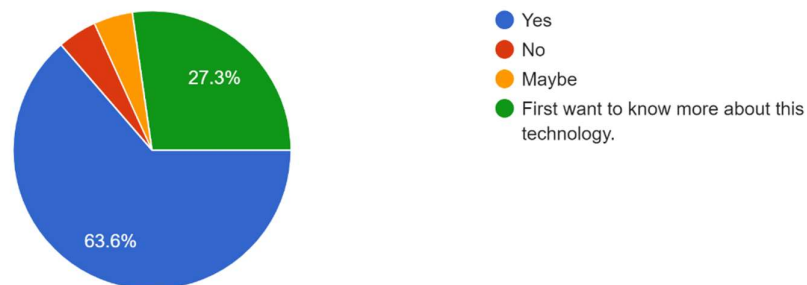
Are you facing load shedding problem?

22 responses



We are developing a technology which will display the electricity consumption with time on your mobile phone and help you in saving money, If you get the opportunity to use our technology?

22 responses



7. Conclusion:-

Using this technology, a common person can save money in short term view and can help to the environment in long term view. It can help in saving electricity which leads to save in money. From the above literature survey, we can say that most of the people about more than 50% are paying more amount in electricity.

In order to avoid wastage of electricity and also to save unnecessary cost of electricity, this technology is to be developed. We are soon going to work on this project and ensure people that we will help in the best way we can through our idea on elektron using AI.

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