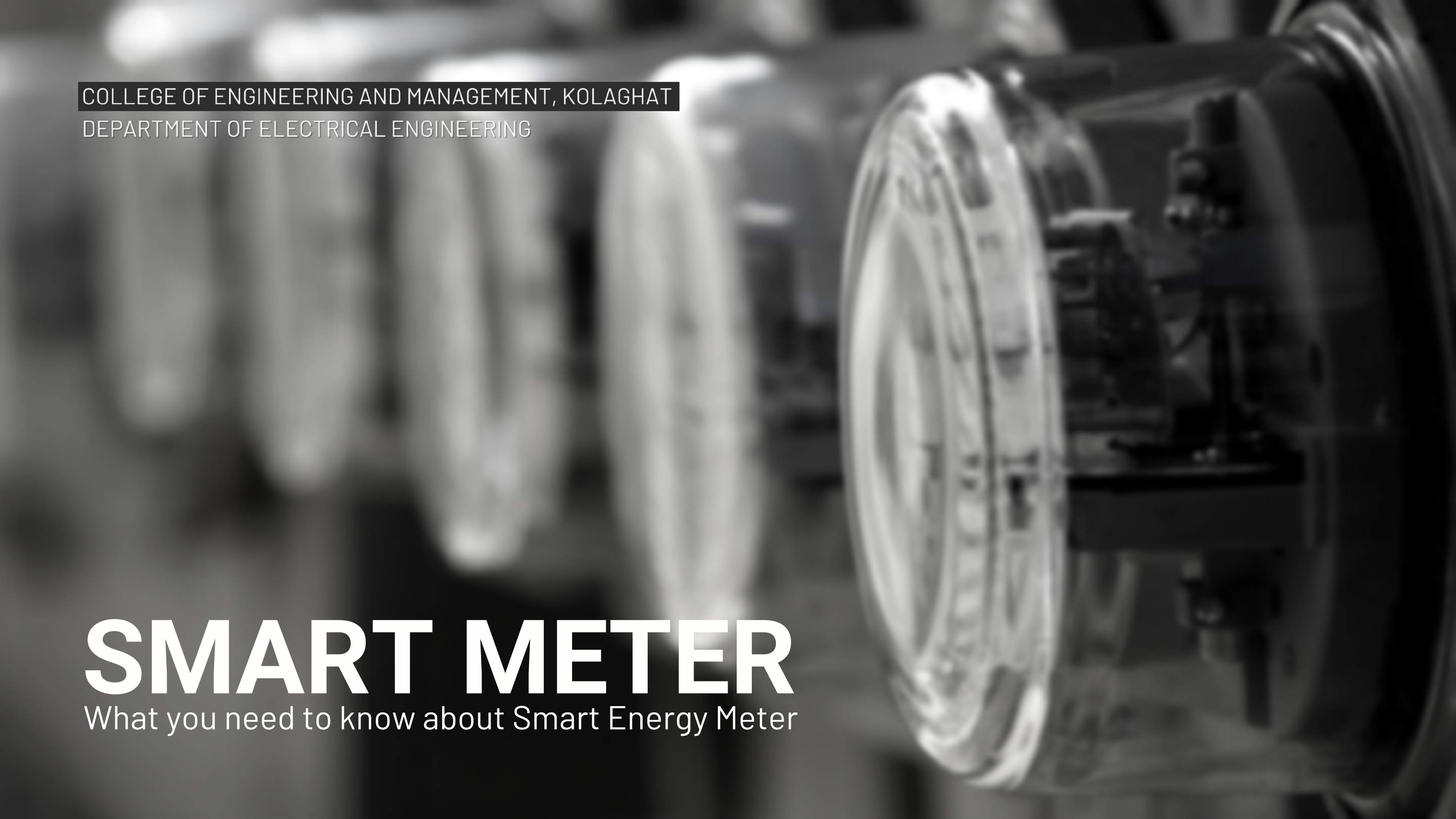
COLLEGE OF ENGINEERING AND MANAGEMENT, KOLAGHAT
DEPARTMENT OF ELECTRICAL ENGINEERING



SMART METER

What you need to know about Smart Energy Meter

SMART METER

A primer on SMART ENERGY METER

Smart Meter in a nutshell

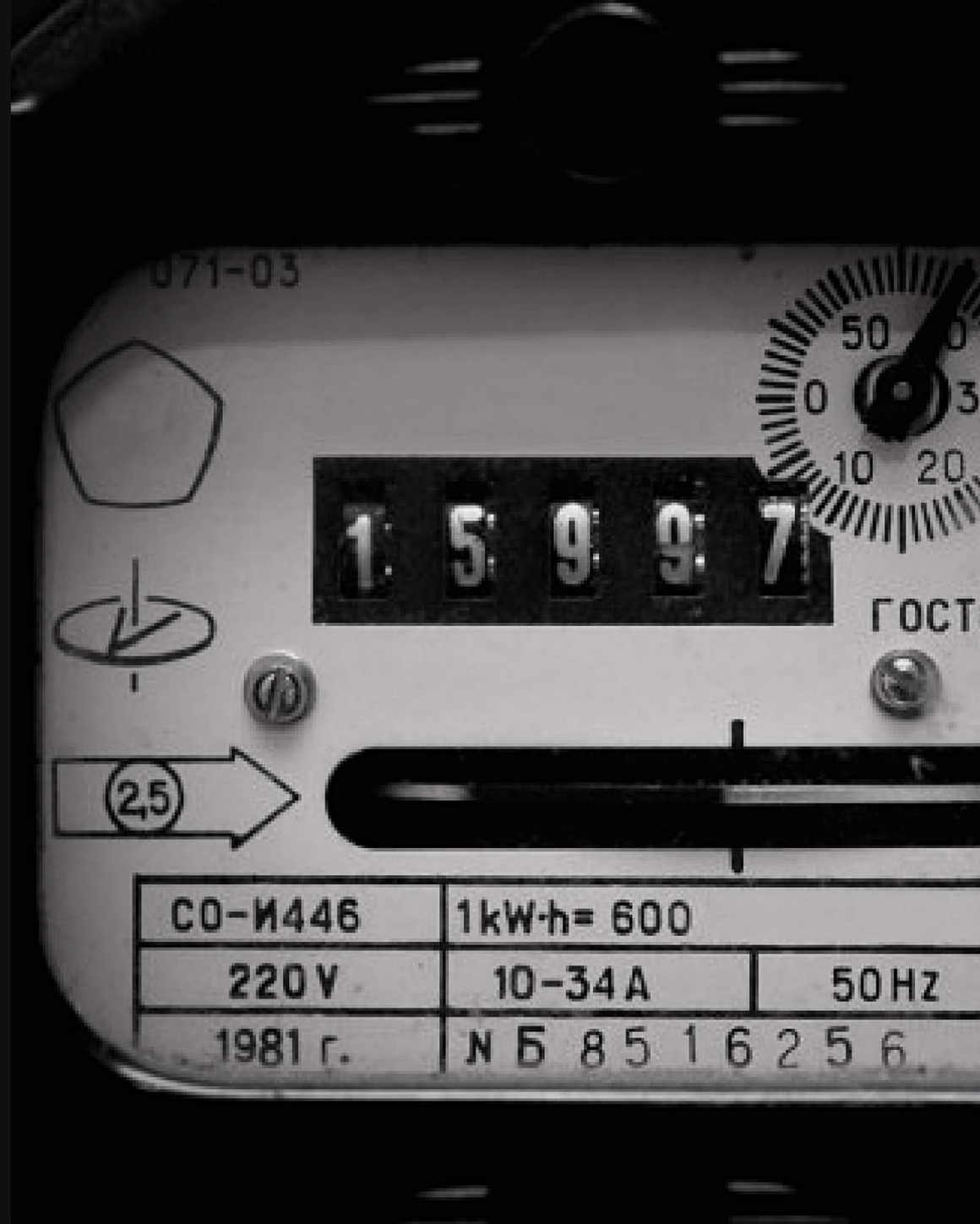
A smart meter is an electronic device that records information such as consumption of electric energy, voltage levels, current, and power factor. Smart meters communicate the information to the consumer for greater clarity of consumption behavior, and electricity suppliers for system monitoring and customer billing.

History Of Energy Meters

- In past years, the common type of energy meter was the electromechanical induction watt-hour meter. The electromechanical meters operates by counting the revolutions of a nonmagnetic, but electrically conductive, metal disc which is made to rotate at a speed proportional to the power passing through the meters. The number of revolutions is thus proportional to the energy uses.
- From previous decades, electronic meters were widely used. Electronic meter displays the energy used, on an LCD or LED display, and some can also transmit readings to remote places. In addition to measuring energy used, electronics meter that can also records other parameters that can also load and supply such as instantaneous and maximum rate of usage demands.
- Today Solid-state energy meters being used. Solid-state of energy meter has a power supply, a metering engine, a processing and communication engine (i.e. a microcontroller), and other add-modules such as RTD, LCD display, communication port/modules and so on.

History Of Energy Meters

- The metering engine is given by the voltage and current input and has a voltage reference, samples and quantizes followed by and section and yield the digitized equivalents of all the inputs. These inputs are then processed using a digital signal processor to calculate the various metering parameters such as powers, energies etc.
- The processing and communication section has the responsibility of calculating the various derived quantities from the digital values generated by the metering engine. The also has the responsibility of communication using varies protocols and interface with other add-on modules connected as slaves to it.



Before Smart Meter

Need to be present physically infront of the meter to check the data.

Less Accurate bills - estimation required

Consume more energy.

With Smart Meter

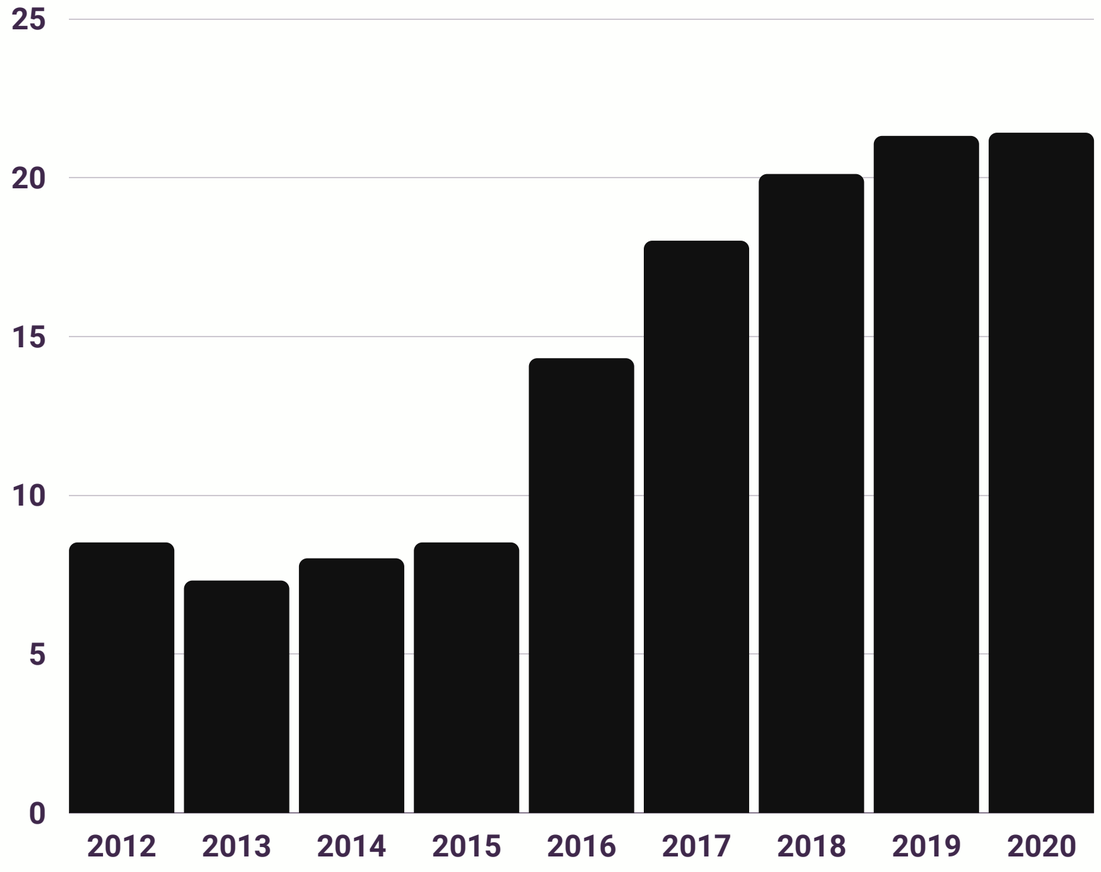
Data can be checked from anywhere via smart devices.

Accurate bills - no more estimates

Energy consumption is reduced upto 24%

What is an In-Home Display (IHD)?

This is an energy monitor you can keep on your kitchen worktop or anywhere else inside your home. It is different from the actual smart meter.
The handy In-Home Display communicates with your smart meter to show you how much energy you are using and what it’s costing you. Some can even tell you how much carbon dioxide (CO2) you’re producing.



Smart meter Technology Adoption in the World

As of January 2020

Smart Meter adoption continues to rise in more countries and cities.

Advantages

Advantages for Comsumers

Far greater and more detailed feedback regarding energy use

Ability to adjust habits in order to lower electricity bills

Reduces the number of blackouts and system-wide electricity failures

Advantages of Smart Meters for Electric Companies

Eliminates manual monthly meter readings

Monitors the electric system in real time

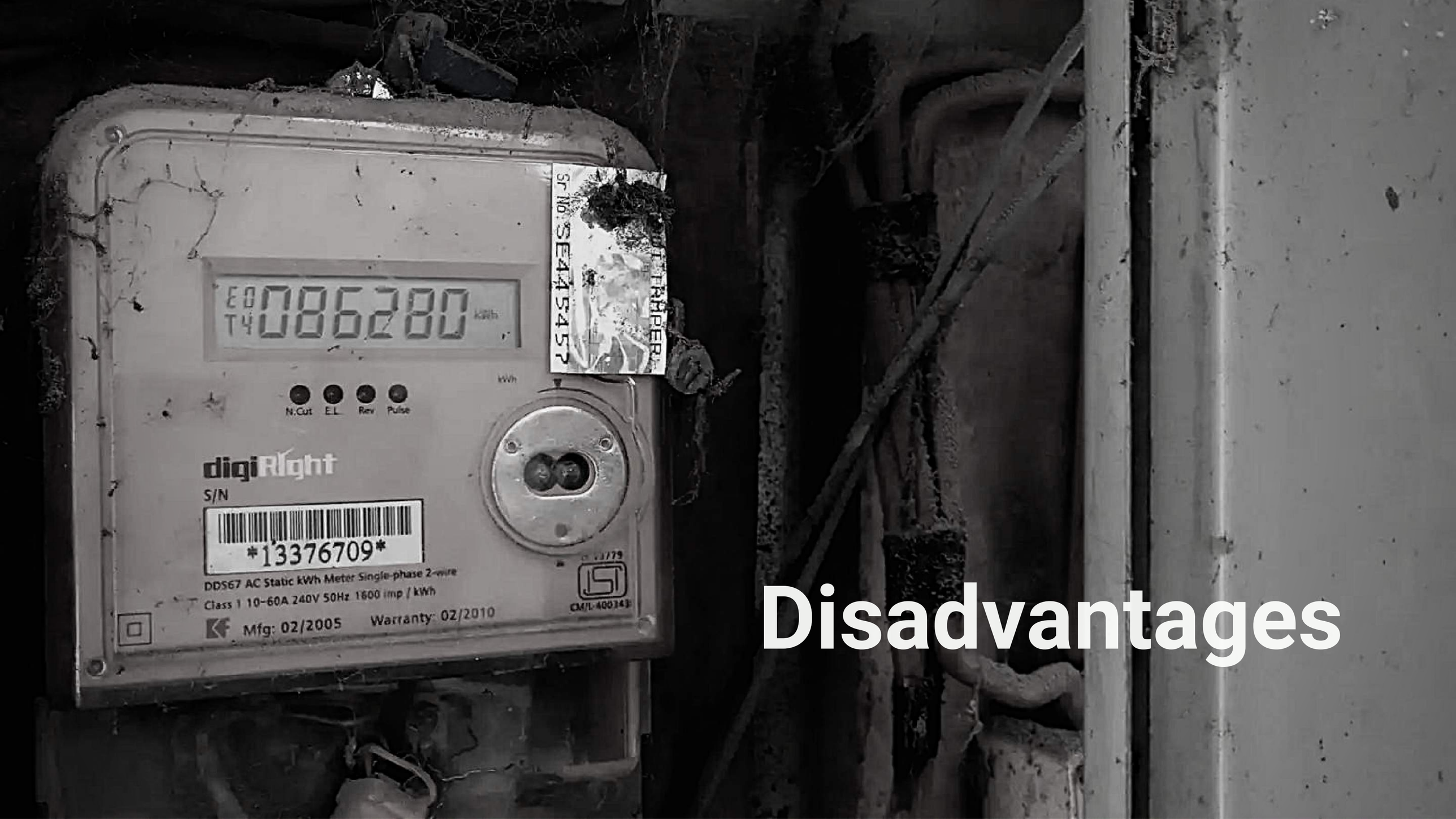
Encourages more efficient use of power resources

Provides responsive data for balancing electric loads while reducing blackouts

Enables dynamic pricing

Avoids the capital expense of building new power plants

Helps to optimize the profit with existing resources



Disadvantages

Disdvantages for Comsumers

Additional fees for the installation of the new meter

Privacy concerns for the personal data collected and how it will be used

More responsibility placed upon the consumer for maintenance

Disdvantages of Smart Meters for Electric Companies

The additional cost to train personal, develop equipment, and implement new processes for data storage

Managing public reaction and feedback concerning new meters

Making a long-term financial commitment to new hardware/software

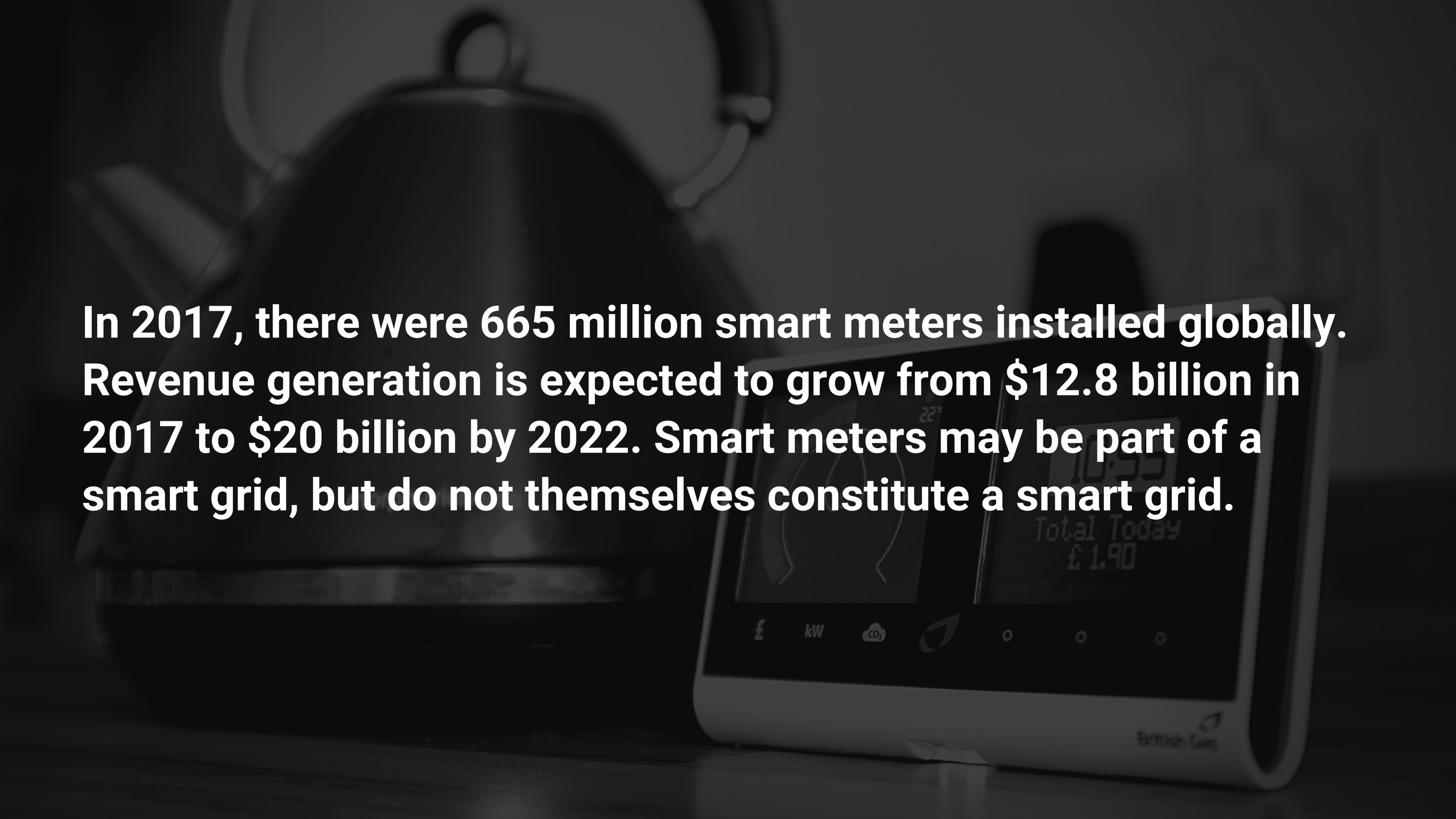
Ensuring the security and privacy of metering data

The Disadvantages Are Short Term

With new, resource-saving technology comes new challenges that will arise regarding expensive, energy-intensive data storage and the privacy issues that loom large over these domestic and commercial technologies. If consumers are not familiar with managing new energy systems on their own, they are less likely to pay close attention to the energy-saving potential of such smart meters (or how their personal data is being used).

The majority of the smart meter's disadvantages may seem short term, but such challenges will slow down the rate of adoption for these technologies in some cases, especially in rural and presently off-grid areas.

Promises to protect and value the personal data of users are crucial but unfeasible if electric companies don't place cybersecurity and technical leadership squarely in the charter of their organizations. Consumer protections are as essential to the product as the responsive features that make them useful to utility companies.



In 2017, there were 665 million smart meters installed globally. Revenue generation is expected to grow from $12.8 billion in 2017 to $20 billion by 2022. Smart meters may be part of a smart grid, but do not themselves constitute a smart grid.

Future of Smart Metering

Connecting many more meters

Streamlining smart metering

The Internet of Things enters a new phase

Revolution in the utilities industry

The development perspective of Smart Metering with Comarch

Do you have any questions?

Send it to us! We hope you learned something new.

Presented By

Ritam Giri (Roll -10701616038)

Suman Mollick (Roll -10701616014)

Kuntal Khanra (Roll -10701616046)

THANK YOU