

# RECENT TRENDS IN ELECTRICAL ENGINEERING

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## ABSTRACT:

A relatively new offshoot of electrical-engineering science, electronic engineering is being projected rapidly into a multitude of uses in communication, research, industrial control; large-scale electric power transmission, using electron tubes as rectifiers and inverters, now seems to be feasible. A few of the many applications are described in this article to show the remarkable versatility of the electron and the devices used to control it

In this paper we will discuss about some of these trends that take place in the electrical engineering sector. These trends can either be very advanced technologies or conventional ones but relatively improved. These trends are all similar in one very special factor and that is that they are all beneficial to every sector of the industry including global climate, cost, technological advancement, and most importantly the society of us humans.

**KEYWORDS:** Recent Trends, Electrical Engineering, Technology, Gadgets, Elon Musk.

## INTRODUCTION:

These days there are vast strides being taken to introduce trends in the large of electrical engineering. It is has to point the exact number since it is just too big. Yet there are many trends being set or planned to be set in the near future.

A trend towards greener products and processes. A trend towards higher efficiency in power devices and power conversion. A trend toward faster, better, and cheaper processors, memory, and I/O devices, and a consequent trend towards smarter products with more functions performed or controlled by software.

## GREEN TECHNOLOGY:

Once you collect energy, converting it for use in the electrical system is an essential next step. A new power converter developed in the Department of Electrical Engineering at the University of Arkansas will now make it easier for users of renewable energy to shunt excess energy into the power grid. This has the potential to make rooftop solar initiatives much easier and to further incentivize home owners to pursue energy efficient technology.

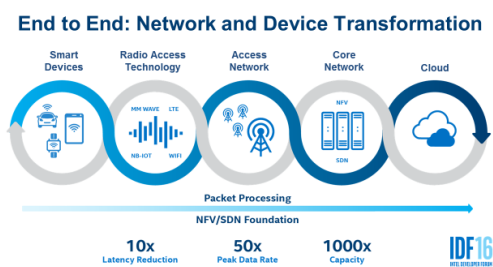
Technology has joined the green market with a few enhancements. Cloud's become a part of the environmental trend. It offers facility management wireless control and accessibility for building services and information management. Over the next two years, these systems will support 57% of new commercial buildings, 56% of retrofit projects, and 52% of schools and hospitals. Contractors and developers are partnering to share best practices. Decisions on products and procedures are taking shape. The past and current evidence of green building

efficiencies are fuelling tomorrow's growth. The value-added data will continue to lower costs, conserve energy, and fulfill the market demands. The combination of built-in paybacks are expected to accelerate in 2017. The need for smarter systems to sustain the environment will prompt further automated developments.



## 5G COMMUNICATIONS:

5G signifies a generational transformation that will profoundly impact businesses and consumers globally. It promises an experience that many consumers are hungry for: faster data, shorter network response times (lower latency), instant access anywhere and everywhere, and the capacity for billions of devices.



## ELECTRIC VEHICLES:

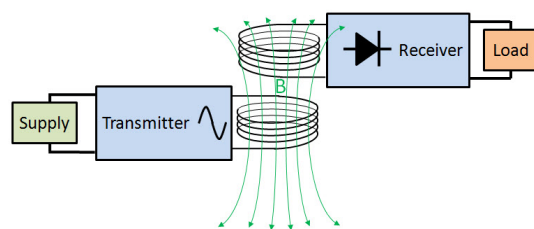
Ten years ago, a fully-mechanical coupling between the steering wheel and the front wheels was common. However, the explosion of drive-by-wire technology, combined with government

mandates toward fully electric power trains, has changed this trend and it impacts more than just the automotive industry.



## WIRELESS POWER:

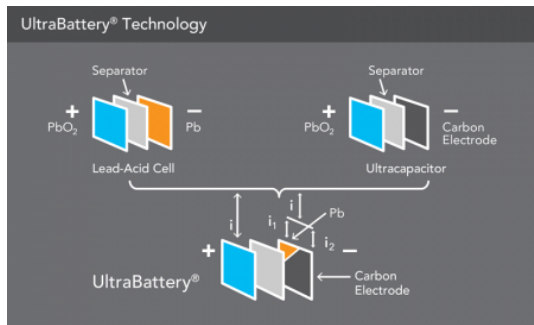
One alternative to batteries, especially for small Internet of Things (IoT) devices, is wireless charging. This option is already familiar to many smart phone owners, who no longer have to worry about the charging port being damaged through wear and tear. Now, the challenge for engineers is to extend the range and capacity, so that a greater variety of devices can be powered this way. Electric cars will soon have wireless charging as standard. Instead of large charging docks, which are subject to vandalism, drivers can simply park on a charging spot without needing to plug in. Soon, it may even be possible to charge your electric vehicle while it's moving.



## BATTERY TECHNOLOGY:

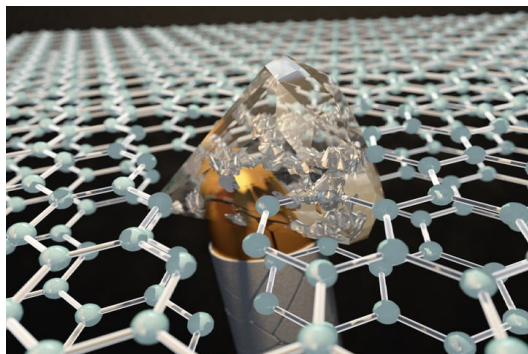
One of the deepest structural problems in the national grid is that electricity is so difficult to store at scale. It's a problem that becomes even more pressing as the world moves to renewable power sources, such as wind and solar. These sources produce power when the wind blows or the sun shines,

but that's not necessarily when demand is at its highest.



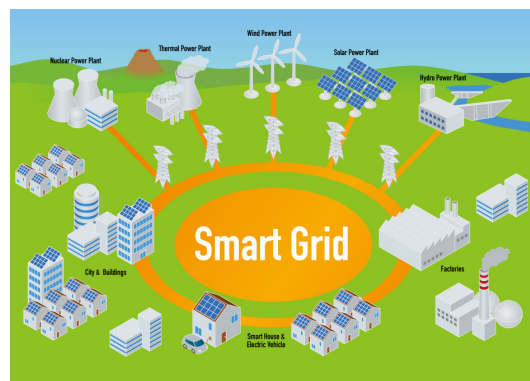
## GRAPHENE:

As electrical engineers reach the performance constraints caused by the fundamental properties of matter, advances in materials science become essential. Graphene is perhaps the most important recent innovation. Graphene consists of a single layer of carbon atoms one million times thinner than paper. It's so thin that it is actually considered two-dimensional. Graphene's unique characteristics make it the strongest known material on Earth. It can stretch by 20%, making it as pliable as rubber. It will provide immense gains in battery life for portable devices and is uniquely well-suited for wearable technology that collects biometric information from the user. In short, it may be essential to the future of electrical engineering.



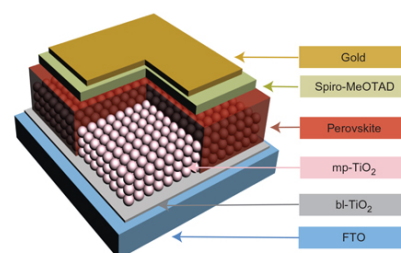
## SMART GRIDS:

The nature of electricity usage is changing dramatically, especially on a consumer level. In the past, consumers relied on their local power company to provide electricity for a few dozen devices in static locations. Now, consumers have an increasing number of options to generate their own power (the surplus of which they can sell), coinciding with a vast number of power-hungry devices, including fully electric cars.



## HIGH EFFICIENCY PHOTOVOLTAIC CELLS:

One of the enduring challenges of modern electrical engineering is to find an implementation of photovoltaic technology that is efficient, effective under varying operating conditions, and highly resistant to damage – while not being cost prohibitive. Different engineering approaches have been used to raise collection and distribution efficiency, though perovskite based cells have recently captured the most attention at major research facilities.



## **NANO-WIRE BATTERIES:**

Lithium ion will probably continue to be the battery technology in your pocket for the next decade, but even with that technology there is room for improvement. One of the big issues is durability a standard lithium-ion battery simply stops working after a few thousand charges. There has been a recent breakthrough, however, in nano wire batteries. Using gold nano wires encased in an electrolyte gel, these batteries can be recharged an incredible 200,000 times without any loss in functionality or capacity. Getting this technology into production is another matter. The researcher behind it doesn't expect to see mass-market nano-wire batteries for at least three years, but it promises to transform power storage.

much more interesting. From medicine to sports, from agriculture to science, these recent trends have its feet in all sectors of the industry.



## **CONCLUSION:**

In conclusion to this paper, I would like to say that it is really exciting to see such vast breakthroughs in terms of electrical engineering sectors. Whether it is tiny improvement or a major breakthrough in technology, the trends that this sector seems to be taking is very encouraging.

The trends these days are seemingly cheaper, more cost effective, more efficient, more widely available and so