Innovative Green Technologies

Green technology, or “Green tech,” refers to using science and technology to create products and services that are environmentally friendly. It encompasses everything from renewable energy sources like wind and solar power to innovative waste management methods, water purification, and even eco-friendly transportation options. Green technology combines various materials, designs, and techniques to create solutions that foster sustainable development, conserve natural resources, and minimize environmental damage.



**1. Solar Energy:**

Solar energy has many benefits for the environment**and is a renewable source that can be harvested in many different ways. The most popular of those are solar panels.Solar panels can be of 2 different categories:**

**Thermal solar panels** are very simple, they have a tube running inside the panel and covering the entire surface. The tube and the interior of the panel are painted a black color to absorb more of the solar radiation, while the cover is kept transparent to allow the sun to shine directly inside and create a greenhouse effect. When the sun shines, the water running inside the pipe gets hot and is stored in a thermal tank waiting to be used.

**Photovoltaic (PV) solar panels** are more complex and, thanks to the properties of the materials they are built with, they can convert solar radiation directly into electricity, without the need for any moving part.**Solar panels can be recycled** (mandatory in the EU) recovering about 90% of the materials used for their construction. However, solar panel recycling is not so common around the world yet, so, unfortunately, some of those materials are still going to waste in unregulated markets.

1. **Electric Vehicles:**

Electric Vehicles as a green innovative technology are a crucial step towards reducing greenhouse gas emissions and mitigating climate change. Traditional internal combustion engine vehicles are a significant contributor to air pollution and climate change, and offer a cleaner and more sustainable alternative. There are some innovative features and technologies that make Electric Vehicles an attractive green solution. Advances in battery technology have made Electric Vehicles more efficient and affordable. Lithium-ion batteries, in particular, have improved energy density, reduced costs, and increased lifespan. Electric motors are highly efficient, with some models achieving efficiency rates of over 90%. They also have fewer moving parts than traditional engines, reducing maintenance needs. Regenerative braking captures kinetic energy and converts it back into electrical energy, increasing the vehicle's overall efficiency and reducing brake wear.

1. ****Water purification:****

**Water is abundant on our planet, however 3% of the water good for drinking. This makes drinking water a very scarce and precious resource that governments and international organizations, such as the United Nations, are striving to preserve. Water scarcity is a growing problem all over the world.** Using a home-based water purifier for an off the grid system or to filter tap water is the most sustainable drinking water solution for households. But on a larger scale and when starting the process from dirty water, the currently available technologies for water purification use quite a lot of energy and are not very sustainable.**One of the most promising and cutting-edge green technologies for water purification was recently published by nature and it is based on***protein nanofibrillars***. Reduced waste because it is possible to use diary and agricultural industry byproducts, or even food waste to create the protein nanofibrils.**

1. **BIOGAS:**

**Biogas is eco-friendly methane produced from natural and renewable sources.** Biogas is produced by *anaerobic digestion*, a process during which organic waste is decomposed by microorganisms in the absence of oxygen.Turning your household’s organic waste into clean [biogas](https://en.wikipedia.org/wiki/Biogas" \l ":~:text=Biogas is a mixture of,is a renewable energy source." \t "https://sustainability-success.com/green-technology-examples/_blank) for your home is possible. However, at the moment this technology is mainly used on farms, where they have more organic waste to deal with.The technology can be quite interesting also for off-grid homes.**This amazing green technology example is reducing the methane emissions normally generated from organic waste.**Turning waste into renewable energy for your home or business and producing a nutrient-rich fertilizer that can be used to grow food and other plants.

### **Plant-based protection for fresh produce:**



**Nearly half of the fresh fruit and vegetable produce is wasted every year, this is a huge problem for sustainability**, but thanks to plant-based food protection technologies this reality may be about to change. **This protective material is made of a blend based on fruit and vegetables’ peel, and seeds to create a special protective layer that can be applied to fresh produce to increase its natural shelf life.** The benefits of this plant-based protection for fruit and vegetables are **increased shelf life** by reducing oxidation and keeping moisture in. It’s made with materials that we usually eat in our diet. **This amazing green technology example allows us to reduce food waste**: one of the things that make us feel somehow guilty as soon as we learn how much of it is wasted along the supply chain (that is up to 45% of it).

**Conclusion:**

Considering the state of our environment, green technology is necessary to ensure environmental sustainability, economic efficiency, and social well-being. With it, we can reduce greenhouse gas emissions, which are the main drivers of climate change. **The green technology and sustainability sectors are also one of the fastest-growing employment and consulting areas. With increasing opportunities in the sustainable applications of Industry 4.0, green technology is much more than a passing trend!**