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Pollution in Various Festivals in India and Creating Awareness to People

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Abstract

The purpose of this paper is to study the origin and celebration of lot of festival in India as well as outside India and to assess the impact of all festival on environment and indispensability of eco-friendly Ganesh festival, durga festival, diwali festival in India. The celebration of all festival has changed in terms of its scale as well as involvement of the people. About 80 per cent of India's 1.1 billion populations are Hindus. In recent years, their religious festivals and customs have come under increasing scrutiny as public awareness of environmental issues grows. The activities of the all festival cause the concerns in terms of water pollution, air pollution and noise pollution (1-6).

Introduction

Noise disturbance is the disturbing or excessive noise that may harm the activity or balance of human or animal life. The source of most outdoor noise worldwide is mainly caused by machines and transportation system, motor vehicles, aircraft, and trains Outdoor noise is summarized by the word environmental noise. Poor urban planning may give rise to noise pollution, since side-by-side industrial and residential buildings can result in noise pollution in the residential areas. Documented problems associated with urban noise go back as far as Ancient Rome.

Outdoor noise can be caused by machines, construction activities, and music performances, especially in some workplaces. Noise induced hearing loss can be caused by outside (e.g. trains) or inside (e.g. music) noise. High noise levels can contribute to cardiovascular effects in humans and an increased incidence of coronary artery disease. In animals, noise can increase the risk of death by altering predator or prey detection and avoidance, interfere with reproduction and navigation, and contribute to permanent hearing loss Noise is an unwanted sound that may cause some psychological and physical stress to human beings exposed

this was to make our whole life into a celebration.

The Importance of festivals

It is a important day for children. The children calculate each and every day, some use reverse counting. It brings happiness in family, society, etc.But it is blamed for environment bad health. Taking examples of Indian festival:-Holi and Diwali. Diwali is being blamed for air pollution by people who care about environment. Similarly Holi blamed for water Pollution. It is we for our enjoyment have put all blames on festival. We changed the traditional way of celebrating festival. Looking back into history Diwali was never celebrated by burning crackers and Holi was never celebrated by wasting a lot of water. Traditional way was simple. People at that time were concerned about environment and they made the environment sick. So if we have to improve the environment health we should start following traditional way of celebrating festival and tc day's environment bad health will recover soon and this implies on festival. The rest will bypass them because with anything that they think is not serious, they are unable to show involvement and dedication towards that. That is the whole problem.(7-9).

1) **Effects of Fireworks in Diwali -** Unfortunately, every year, the quantum of air and noise pollution caused due to the bursting of firecrackers increases on Diwali. Firecrackers release pollutants such as sulphur dioxide, carbon dioxide, carbon monoxide etc in the air, which causes ailments like asthma and bronchitis. Not only the elderly and patients in hospitals, but animals and birds are also affected due to air and noise pollution. Though various schools and organizations organized demonstrations prior to Diwali to educate the masses on a pollution-free festival, their efforts have been futile. As per directions of the Supreme Court, bursting of sound-emitting firecrackers has been banned between 10pm to 6am. However, shockingly, the direction was openly flouted as firecrackers were burst throughout the night. This caused excessive noise and air pollution. On the receiving end of this menace were the elderly and patients in hospitals. Post Diwali, the roads are littered with the remnants of fireworks. The deluge of garbage, including empty bottles used to light off rockets, on every nook and corner of the city is a worrying sign.

Effects of Diwali on Environment due to large scale of bursting firecrackers during this festival it releases harmful gases and toxic substances into the atmosphere, loud noises from loudspeakers and firecrackers, dry waste causing health problems for children, patients and senior citizens.

2) **Effects of Fireworks on Environment (from light to darkness) Air Pollution**

On this auspicious occasion unknowingly harmful gases and toxic substances released to environment by bursting fireworks such as Barium, Cadmium, Sodium, Mercury, Nitrate and Nitrite. These are called as Air pollutants. Also RSPM level goes high as small particles emitted by bursting of fireworks. RSPM means Respirable Suspended Particulate Material. Also need of electricity goes high in this period. To overcome shortage of electricity majorly electricity generated by using diesel, Coal etc. That also causes air pollution.

piness. This leads to Air pollution, as harmful gases and toxic substances like Barium, Cadmium, Sodium, Mercury, Nitrate and Nitrite are released into atmosphere. Also, respirable suspended particulate matter (RSPM) level goes high in this season as small particles are released into the environment by these firecrackers. Learn More about Ambient air Quality monitoring Increase in consumerism during the festival increases traffic congestion which in turn increases air pollutants, which are released into the atmosphere by vehicles. The celebration of Ganpati festivals lead to increase in the level of harmful gases in atmosphere like Sulphur dioxides (SO2), Carbon Monoxides (CO), etc.

Effects of Ganapati Festival - Ganesh Chaturthi is a widely celebrated Hindu festival in India in honor of god Ganpati or Ganesha. It was introduced by Mr. Bhausaheb Laxman Javale in 1892 in Pune to unite people. It falls in Bhadrapada as per Hindu calendar and anywhere between months of August to September as per Gregorian calendar. In this Article we are going to see Effects of Ganpati Festival on Environment and the most appropriate Eco Sensitive solutions for traditional crème.

Water Pollution during Ganpati Visarjan - In recent years, we have seen increased awareness about water pollution caused by visarjan i.e. immersion of Ganesh Idols in lakes, rivers and Sea which are made out of Plaster of Paris (PoP) i.e. calcium sulphate hemi –hydrate. It takes several months to totally dissolve Ganesh Idols made up of PoP into water. Also, colors used in decoration of idols contain harmful chemicals containing mercury, lead which leaks into water as idol dissolves. It increases acid content, Total Dissolved solids (TDS) and Heavy metals in water. It kills aquatic plants and marine life, damaging ecosystem under water. Along with Ganesh idols people dump other accessories like thermocol, plastics, etc. as well adding to the level of water pollution.

Noise Pollution during Ganesh Festival Devotees celebrate - The prestigious festival with all possible means of loud music like listening to bhajjans, kirtans and songs using massive speakers. During Anant Chaturdashi, which is the final day of the auspicious Ganesh festival, we witness heavy traffic on the roads, which leads to an increase in Air (particles from vehicles) and Noise (excessive honking) pollution. All the above points add up and increase Noise pollution way beyond the permissible level of 55 bB (day) and 45 dB (night) stated by the pollution control board. Senior citizens and children are directly affected by these as in certain cases the noise level can even reach 110dB.

Plaster of Paris Idols of Ganesh Immersing or visarjan - The idol into tanks which are created by government instead of immersing, it into natural bodies. Using of natural clay (Shadu) idol i.e. Eco-friendly Ganpati idols and immersing it into bucket of water at home, as it takes several hours to totally dissolve in water. Immersing 'Betel Nut' into water which symbolizes Ganpati into water and reusing same Idol of Ganesh. Also permanent idol made up of Metal such as copper, brass can be used for every year. If some is using PoP idol then it can be reused and spread the word that from next year idol made up of natural clay can be used.

What are the needs and importance of the bad effects of festivals on the environment

The current scenario of the world is that due to excessive & over-exploited use of resources we are in a situation of worst pollution conditions. We are facing problems due to pollution in every field be it Air, Water, Noise or any other. All this is having already affecting the environment adversely. Some of the festivals nowadays have become special days or events of adding to the already deteriorating condition of the environment. Like Diwali celebration adds up to air and noise pollution enormously. Similarly, the 'Visarjan' festivals add up to water pollution greatly. Moreover, by killing innocent animals on the name of sacrifice be it in any religion, we are affecting the ecological balance by disturbing the Biodiversity. There are many other instances as well. Therefore, we should first analyze the bad effects of our 'actions' in celebrating the festivals so that we may avoid unnecessary and hazardous practices that adversely affect the environment. The festivals can be celebrated in other (alternate) ways as well. We should carefully choose our actions so that we may be able to provide a 'livable' planet 'Earth' to our future generations.

Conclusion

Hinduism is the world's oldest religion often referred to as the mother of all religion. It has branched off into myriad local variants and many sects, creeds and castes along with their respective customs, traditions, mythologies, cultures and mode of worship. Today each city, town The most famous types of fairs in the world are world's fair, state fair, Trade fair, Art fair, Street fair, Agricultural show, Auto fair, Traveling carnival, Religious fairs, cultural fairs etc. However, the needs or rural as well as urban people concerning entertainment for about, children, males, females of rural and urban areas, such as cradles, marry –go-round, magic shows, Drama and dancing parties, cart races, Animal fights, wrestling bouts, various Exhibitions, shop selling bangles, fashion goods, cloths, toys, balloons, sweet meats and eatables, shop of photographs are also found in the fair. 208 India is a land of often bewildering diversity. Most of these festivals are common to most part of India however they may be known by different names in different parts of the country. Different cultures also mean that different rituals are followed. This celebration of the festivals in our custom always attracts the pilgrims or devotees. The importance of such festivals are An ode to society, Glorifying our culture, to develop artistic effect among the society, Economic boom, Business promotion, and People take the opportunity to do spring cleaning of houses and surroundings is the main functions of the celebration of fairs and festivals. All the villages and towns have the temple of God and Goddesses. Fairs and festivals are mostly related to the deity of that region and different religious activities are held annually to Hindu calendar. In this worship there are activities of communal fasting, community meal after fasting, dance, singing, folk drama, outdoor games, devotional songs, Keertan, in such people take part actively and enthusiastically. This is a social gathering of community. The dates and durations of the fairs and festivals are fixed.

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A Scientific Approach towards Social Media

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Abstract

Social Media is the produce of science and technology. It encompasses most of the fields via Educational, social, industrial, economical, political and cultural aspects. It has become a part of everyone's life. Even children from KG have at least a little knowledge about how to handle smart phone a digital device. Social media is defined as a relationship that exists between network and people. A very common and widely used example of social media would be internet, whatsapp, and blog writing. It is a means of exchanging ideas, feelings, personal information, pictures and videos. It can be used for educational purposes with scientific approach.

Introduction and Discussion

Here we are discussing on scientific approach towards social media. When a number of computers and terminal equipment are to be connected together to form an integrated system, a well understood standard method of communication and physical interconnection should be established. Let we define it as the use of software technology to ease human life. It is a network used with a scientific device either as a smart phone, Lap Top, Tab or a Personal Computer. For instance Whatsapp, Twitter, E Mail and communication on Internet. Since school education, it is heard that science is the boon or curse for human beings. However, without scientific approach no nation can be attained progress, health, peace and prosperity. After computer revolution, the speed of the development increases. while speaking in relation to India , the country achieve tremendous development in different fields ranging from agriculture, space, hygiene, medicine, trade and commerce, tourism, transportation, infrastructure and communication. The development in these fields builds the nation and nation's economy. In order to achieve perfection we must require a scientific and logical approach towards every task.

As far as we are concerning to teaching profession. We are very close to the changes whatever happened in the society. Since we are being in contact with the teenagers and youth, we know their talent and feelings. The aims and aspirations of the youth very high and they are very sensitive to adapt every change. It is said that Technology is a vital part of success equation. Therefore, it is our duty to provide them the right choice. However, an adaptive method to criticize everything is technical and scientific. The social workers blames on the technology that technology destroys the social and cultural patterns. The focus is on social media. They thought that social media has negative impact on society and youth. Using social media is nothing but simply a waste of time. The educationist and parents are worrying about the exposure of social media ruins the life of teenagers, school going children and college students. Nevertheless, our experiences told different stories. We have been teaching Physics to the college students. When we discussed the topics such as Mechanics, Nuclear Physics, Semiconductors, Photoelectric effect and Quantum Mechanics student found it difficult to understand. However, when we allowed students to use

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NANOTECHNOLOGY APPLICATIONS: Current and future Nanotechnology applications Nanomaterials, Nano-electronic Nano-medecine and bio nanotechnology applications

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Abstract

Currently, nanotechnology is described as revolutionary discipline in terms of its possible impact on industrial applications. Nanotechnology offers potential solutions to many problems using emerging nanotechniques. Depending on the strong interdisciplinary character of nanotechnology there are many research fields and several potential applications that involve nanotechnology. In this section we provide a brief overview about some nanotechnology and nanoscience current developments. Obviously it can't provide an exhaustive report of the developments in nanoscience and nanotechnologies in all scientific and engineering fields. We are going to consider three main categories (broad nanotechnology categories).

Key words –nano-wire, carbon tubes nano-powder

Introduction

- Nanomaterials;
- Nano-electronic (information and communication technology);
- Nano-medecine and bio nanotechnology.

We can define nanomaterials as those which have nanostructure components with at (less than 100nm). Materials with one dimension in the nanoscale are layers, such as a thin films or surface coatings. Materials that are nanoscale in two dimensions are nanowires and nanotubes. Materials that are nanoscale in three dimensions are particles quantum dots (tiny particles of semiconductor materials). Nanocrystalline materials, made up of nanometer-sized grains, also fall into this category. Two principal factors cause the properties of nanomaterials to differ significantly from other materials: increased relative surface area, and quantum effects. These factors can change or enhance properties such as reactivity, strength and electrical properties, optical characteristics. Nanomaterials and Nanotechnology applications

Nanomaterials in one dimension –
In this category belong nanomaterials such as thin films and engineered surfaces. This type of nanomaterials can't be really considered as a new material considering that have been developed and used for decades in fields such as electronic device manufacture, chemistry and engineering.

Nanomaterials in two dimensions-
Two dimensional nanomaterials such as tubes and wires. Inorganic nanotubes see nano-natural a typical example of inorganic nanotubes example. Halloysite nanotubes are hollow tubes with high aspect ratios that are tens to hundreds of nanometers (billionths of a meter) in diameter, with lengths typically ranging from about 500 nanometers to over 1.2 microns (millionths of a meter).
Carbon nanotubes see carbon nanotubes section of nanocompositech.com

Nanowires

Nanowires are ultrafine wires or linear arrays of dots, formed by self-assembly. They can be made from a wide range of materials. Semiconductor nanowires made of silicon, gallium nitride and indium phosphate have demonstrated remarkable optical, electronic and magnetic characteristics.

Nano scale in three dimensions –

Nanoparticles are often defined as particles of less than 100nm in diameter. Fullerenes (carbon 60): Spherical molecule formed of hexagonal carbon structure recently discovered1986.

Dendrimers- are spherical polymeric molecules, formed through a nanoscale hierarchical self-assembly process.(trivial definition: 3d polymer),Quantum dots: for an exhaustive treatment of a subject see quantum dots companies with more white papers about quantum dots and their applications.

We shortly list a number of applications considering current and future application of nanomaterials previous scheduled.

Cosmetics applications of nanoparticles- (e.g sunscreen lotions: ray absorbs properties)

Nanocomposites materials- nanoparticles silicate nanolayer (clay nanocomposites) and nanotubes can be used as reinforced filler not only to increase mechanical properties of nanocomposites but also to impart new properties (optical, electronic etc.).

Nanocoatings-surface coating with nanometer thickness of nanomaterials can be used to improve properties like wear and scratch-resistant, optoelectronics, hydrophobic properties.

Hard cutting tools-current cutting tools (e.g mill machine tools) are made using a sort of metal nanocomposites such as tungsten carbide, tantalum carbide and titanium carbide that have more wear and erosion-resistant, and last longer than their conventional (large-grained) materials.

More performed paint using nanoparticles to improve paint properties.

Fuel cells-could use nano-engineered membranes to catalytic processes for improve efficiency of small-scale fuel cells.

Displays- new class of display using carbon nanotubes as emission device for the next generation of monitor and television (FED field-emission displays).

Using nanotechnology based knowledge may be producing more efficient, lightweight, high-energy density batteries.

Nanoparticles can be used as fuel additivities and catalytic more efficient materials.

Other feasible nanotechnology applications

Nanospheres in lubrificants technology like a sort of nano balls bearing Nanoscale magnetic materials in data storage device. Nanostructure membranes for water purification.Nanoelectronic (information and communication technology).In some sense, electronic miniaturization has been the true driving force for nanotechnology research and applications. The main aim in this area is understand nanoscale rules and mechanism in order to implement new ICT systems more economic, little and reliable. It's a sure thing that silicon era is on the way up. Only nanotechnology can radically change ICT systems in order to continue to follow Moore's law. Nanotechnologies are therefore expected to enable the production of smaller, cheaper devices with increasing efficiency.

Nanotechnology applications in nanoelectronic area

The Current nanotechnology applications concern

- **Computer chips;**
- **Information storage;**
- **Sensors;**

Bio-nanotechnology and Nano-medecine

Bio-nanotechnology is concerned with biological nanostructures and is a strong interdisciplinary matter (chemical, biological and the physical sciences.) Biological systems are the most perfect nanosystems one can image. Bimolecular structures possess highly specific morphology and functions and somehow nanotechnologist must study there in depth in order to understand general nanotechnology aspects.

Nanotechnology applications in bio-nanotechnology and Nano-medecine

Bio nanotechnology is a new research that may product great break through in applications in the field of medicine such as disease diagnosis, drug delivery and molecular imaging that has been already intensively researched.

Current and particularly future applications regard

Electronics information and communication technology

In this area, "smart" molecules may be integrated into devices for specific ICT applications, in order to obtain a protein based transistor. For this and other type of nanotech application will be important understand the fundamental electronic properties of bio molecules in particular the mechanisms by which electronic charge is transferred between them and metals semiconductors and novel nanoelectronic properties of Carbon Nato Tubes.

Drug delivery systems

One of the most potential applications of nanotechnology might be related to gene and drug delivery system on order to improve therapy efficacy. The challenge is devise nanoparticles capable of targeting specific diseased cells, which contains both therapeutic agents that are released into the cell and an on-board sensor that regulates the release. As related approach already in use is that of polymer based drug delivery systems but the functionalities previous outlined are obviously more powerful.

Medical Imaging for diagnosis

Nanotechnologies already use quantum dots or synthetic chromospheres to selected molecules (e.g proteins) for intracellular imaging. Also incorporation of naturally fluorescent proteins has been experimented which, with optical techniques allow intracellular biochemical processes to be investigated directly.

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27. Renewable and Non-Renewable Energies for Sustainable Development

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Abstract

Various energy resources have been in use from many years ago. The problems regarding energy resources are arise due to wrong methods of their utilization. There is an urgent need for transition from petroleum based energy systems to one based on renewable energy resources to decrease dependence on depleting reserves of fossil fuels. Every human activity is related with consumption of energy. Energy is the most important factor in the development of a country. Today every country draws its energy needs from variety of sources. There are two types of energy sources: Conventional or non renewable and non conventional or renewable energy sources. A non renewable energy sources includes fossil fuels (coal, oil and gas), nuclear energy etc. Today, the world is progressing at a fast rate with the use of non renewable energy sources. Also the fossil fuel resources are fast depleting and they may come to an end within next few years. These sources have created the problem of environmental pollution. On the other hand, the renewable energy sources are available in large amount and are pollution free. So it's time to switch on to the renewable energy sources. This paper deals with some of the renewable energy and non-renewable resources, their advantages and disadvantages.

Keywords: Renewable energy sources, non renewable energy sources, solar,

Renewable and Non-Renewable Resources

They are two different kinds of sources of energy and other useful phenomena. Renewable resources are often contrasted with non-renewable resources, with people frequently debating the relative benefits of each. But what are renewable and non-renewable resources.

Renewable resources- are resources that do not run out when we use them. A good example is solar energy. When we harness the power of the sun's rays by means of solar panels affixed to our roof, we do not deplete the sun. The sun does not 'run out'; no matter how much

solar energy we use. By contrast, non-renewable resources are resources that will run out as we use them. One example is oil. There is only a certain amount of oil on the planet. Oil takes millions of years to form, so, the more oil that we use; the less oil there will be left. This is one key reason why people are currently looking for renewable alternatives to non-renewable sources of energy such as oil. The practice of recycling can turn what we once thought were non-renewable resources into renewable ones. One good example here is water. It might be argued that there is only a certain amount of fresh water in the world, for example, and when we use up all of the water in a nearby reservoir or lake, and then we have no water left for our community. However, water treatment plants enable us to 'recycle' our waste water, by cleansing and sterilizing it ready for us to drink and wash in once more.

Renewable Vs. Non-Renewable Resources

There are plenty of comparisons and contrasts that can be made between renewable and non-renewable resources. Below, you will find 7 such comparisons.

1. **Types of resources**-Renewable and non-renewable resources both come from nature. However, they are both broadly different types of resources. Non-renewable resources, for example, tend to be resources that are classed as 'fossil fuels': oil, coal, natural gas and so on. Renewable resources tend to be freely available resources such as wind and solar energy.
2. **Environmental impact**-Harnessing renewable resources tends to be better for the environment. Non-renewable resources such as fossil fuels produce vast amounts of greenhouse gasses when they are burnt and this contributes to acid rain, climate change and other ecologically harmful effects. By contrast, wind and solar energy do not produce these dangerous gases.
3. **The balance between renewable and non-renewable resources**-Some renewable resources are in danger of becoming non-renewable, unless they are managed properly. One example is wood. Trees naturally grow and replenish themselves, seeding new trees every year. In theory, then, wood ought to be a renewable resource. However, if humans cut down too many trees, forests will struggle to renew themselves. This once renewable resource will become non-renewable.
4. **Convenience**-Depending on where you live, it may be more convenient to use one type of resource. For example, people who live beside windy coast lines may find that wind power is the cheapest and most convenient source of energy for them. People who live in hot countries, moreover, may find that they can generate abundant energy from solar

panels. However, people in other geographical locations may find it much cheaper and more convenient to use biomass or fossil fuels as their primary source of energy.

5. **The need for renewable resources**-By their very definition, non-renewable resources will run out one day. That means that it is essential to find a way for humanity to get all of its energy, water and other needs from renewable resources right now. It is crucial that we take measures to ensure that future generations will not end up in dire need due to our over-consumption of resources in the present.
6. **In the abstract**-Renewable and non-renewable resources can be thought of in a more abstract sense as well. For example, it might be said that ideas and creativity and renewable resources. Using our creativity and sharing our ideas does not deplete either our creativity or our stock of ideas. In fact, it often increases it! It is frequently the case that the more that we use our creativity and the more that we share our ideas, the more creativity and ideas we have to go round. Love is another example of a 'resource' that does not get depleted (and in fact can be said to increase) the more that it is used. The idea of a 'resource' does not need to be a materialistic one.
7. **Taking steps to secure renewable resources**-There are many things that we can all do right now to reduce our dependence on non-renewable resources. We can switch to solar or wind energy, or simply reduce the amount of fossil fuels that we burn by driving and flying less and using less energy around the home. Campaigning with others to ask for change at a political level is another powerful way to help to reduce humanity's need for, and use of, non-renewable resources. And, we can all start recycling, using less water and walking or cycling to work (or taking public transport) rather than driving. It is much easier to make such changes than you might think, and if big companies choose to change as well, the world will be a much cleaner, greener and sustainable living space for us all.

Advantages of Non-Conventional Sources of Energy

Cheaper and Renewable

Most of the Non-conventional Power resources are cheaper and renewable as compared to the conventional sources. Scarcity of Fossil Fuels,The overall limitation and scarcity of fossil fuels has given rise to the urgent need for exploiting alternative energy sources. Rural Energy Needs, Locally available non-conventional and renewable power resources can meet localized rural energy needs with minimum transportional cost. Inexhaustible and Environment friendly, Power from Non-conventional and Renewable is a must in order to reduce carbon

dioxide (CO_2) emissions of the coal-based power plants. It is inexhaustible in nature and environment friendly.

Conclusion

This analysis of the differences between renewable and non-renewable resources has highlighted some key facts. For example, it has demonstrated that renewable resources are much more preferable to non-renewable resources, for many reasons. Renewable resources are better for the environment and better for future generations as well. These points all derive from the definition of renewable and non-renewable resources. It is precisely because renewable resources can be renewed that they are preferable to non-renewable resources. Another thing that it is important to take into account is the fact that some renewable resources are in danger of becoming non-renewable if we do not use them in a sustainable fashion. It is important for all of us to take good care of our planet – and one central way of doing so is being careful about the type and amount of resources that we use.

Renewable Energy Sources: Meaning, Advantages and Disadvantages

Meaning of renewable energy sources

Renewable energy sources are sources of energy that are not used up when they are used. So, no matter how much people use them, they will not be depleted. Renewable energy sources are automatically replenished by nature, i.e, sun's rays, water, tides, wind, air, etc. The abundant supply of renewable energy sources, contrasts with the limited supply non-renewable sources of energy, and which are used up when their energy is used. If not replenished, non-renewable sources of energy will eventually run out completely. However, there is no need to replenish renewable energy sources, and no need to worry that they will run out either. Some examples of renewable energy sources will help to illuminate things even further. Solar energy is a key example of a renewable energy resource. No matter how many solar panels we use to harness the sun's rays, we will not deplete the sun. The sun does not start to run out just because we are making use of its energy. Thus, it is a renewable energy source. Wind power is another example of a renewable energy source, for similar reasons: the act of us harnessing wind energy does not deplete the wind. But, are renewable energy sources a good thing or a bad thing? Below, you will be able to read about the main advantages and disadvantages of renewable energy.

Advantages of renewable energy sources

There are many advantages of renewable energy sources. As you will see below, many of these advantages revolve around the fact that they are an environmentally friendly option that

can be used well into the future. Green energy – environment friendly-Unlike fossil fuels (which are non renewable energy sources and which release harmful substances such as CO_2 and CO when burned), renewable energy sources have a very low impact on the environment. In fact, most of them are positively environmentally friendly. Sustainable energy – limitless supply, because, crucially, they do not run out, renewable energy sources are sustainable. This makes them viable for use well into the future. Low operating cost, once they have been set up, renewable energy apparatus such as wind farms and solar panels, are very cost effective to use and operate. As such, they are nice and cheap sources of energy. Can be integrated into daily life,Renewable energy sources can be harnessed in a way that does not disrupt daily iife. For example, cows can graze in the same field as wind turbines are at work, and solar panels can be placed on the roof of a family home to create a handy energy source. Able to be stored, many people do not realize this but renewable energy sources can be stored. For example, solar energy can be stored in solar panels so that it can be used even during cloudy weather or during the winter. Renewable energy sources are not as unreliable as one might think,

Disadvantages of renewable energy sources.-Unfortunately, there are also several potential disadvantages of renewable energy sources. In order to conduct a balanced evaluation of these types of energy sources, these disadvantages need to be taken into account alongside the advantages. Below, you will find a list of the key disadvantages.

1. Expensive to set up – high initial cost-Though once they are up and running they are usually very cost effective, solar panels and wind farms (as well as other renewable energy generators such as hydroelectric dams) can be costly to install. Not suitable for all climates, Solar energy generators are not suitable for very cold or dark climates, whilst wind energy generators are not suitable for parts of the world where there is not very much wind. So, not all communities throughout the world can use all type of renewable energy sources and this somewhat limits the use of this type of energy, considered on an international scale. Difficult to transport, Whilst coal or wood can simply be loaded up onto a truck and taken to wherever it needs to go, the renewable energy that is generated from (for instance) a solar panel cannot be transported so easily. This is something that may change in the future. For example, it is already possible to store the energy generated from the sun's rays in specialized cells (which may be thought of as kind of portable batteries).Not the most efficient energy sources, Fossil fuels such as coal and oil offer more energy per unit that many renewable sources of energy. This means that renewable sources of energy are not always energy efficient, and one will need to generate a lot more energy to heat a home from a renewable source compared to a non renewable source. Again,

with new technologies, this may well change for the better in the future. Reliant on certain technologies, Renewable energy sources can often only be harnessed with the use of specialized technologies. For example, solar energy is captured in photovoltaic cells. At the moment, not all communities throughout the world have access to these technologies, or to the know how that enables them to be created and harnessed.

Conclusion

As non-renewable energy sources start to run out, and as the world faces the threat of substantial climate change it is imperative that we switch over to using more sustainable, greener sources of energy. Renewable energy sources such as solar energy, wind energy, wave energy and so on seem to provide a sustainable and ecologically friendly solution to our future energy needs. As can be seen from the above, there are a few disadvantages at the moment to using renewable energy resources. However, it is important to note that they are very much outweighed by the advantages of using these energy sources. In addition, with the advent of new technologies, and the development of existing ones, it is highly likely that in the future humans will be able to find simple solutions to these issues. What about you? Are there any ways in which you could switch over to using more energy from renewable sources? It may be easier than you think.

Solar Energy- Meaning, Advantages and Disadvantages

What is Solar Energy?

'Solar' just means 'from the sun'. And so, solar energy is energy that comes from the sun. Solar energy is a way of harnessing the energy in the sun's rays and using it for all sorts of things, from generating electricity in our homes to powering the pumps in a swimming pool.Solar derived energy is often also called photovoltaic energy, or 'pv' energy for short. This is because special cells or panels known as 'photovoltaic cells' are used to trap solar energy and turn it into electricity. You may know these cells by their more common name of 'solar panels'.

Advantages of Solar energy

Environmentally friendly Solar panels do not release CO_2 into the atmosphere like fossil fuels do, and they do not involve the huge risks of nuclear power. This makes them one of the most environmentally friendly energy sources around. All natural harness the power of nature, Cost effective. Once installed, solar panels cost very little to run. Compact. You can add solar panels to your roof without having to install a whole load of bulky equipment. No smells. No smoke or smells are generated from this energy source: just pure, clean energy. Storage not everyone knows this, but solar energy can be stored in the solar panels so that you can use solar

energy even when it is not sunny outside, perfect for sunny climates. If you live in a country with strong sun, solar energy is perfect for you, Innovative, is part of a great technological innovation. Easy to use, once installed, it is very easy to use solar energy just turn your appliances, light switches and so on, on and off as you would do normally.

Disadvantages of Solar energy-

Not suitable for winter. On cloudy days or in the winter, you solar panels will not be able to harness so much energy. Very visible, some people feel that solar panels look unsightly on their roof. Installation costs. Some people find the costs of installing solar panels somewhat prohibitive. Maintenance. Solar panels need to be kept clean so that the sun's rays can reach them. Some people would rather not have to go to the effort of checking and cleaning the panels every couple of weeks or so. Not suitable for very heavy-duty energy. Most solar generators are perfect for homes, swimming pools and small businesses. They are not always enough to meet the energy needs of larger buildings like factories. Just a fad, some people see solar energy as just a passing fad. For this reason, they wonder whether they should buy in to this energy source as their main source of energy. Inefficient Solar panels can sometimes be quite inefficient at generating energy. Positioning Solar panels need to be positioned so that they have the best sun exposure – working out the best position for them can take some effort. Other forms of green energy are available. Hydroelectric power or biomass could be better at meeting our energy needs in an environmentally friendly way. For example, if you live on a windy coastal area hydroelectric or wind power may well be a much smart choice than solar power.

Conclusion

Solar energy is a green and surprisingly powerful source of energy that is particularly good for people and businesses that live in regions of the world with strong, regular sunshine. Fossil fuels, on the other hand, pollute our planet and they will not last forever. Thus, finding eco-friendly energy sources is imperative if we want to be able to meet our energy needs and care for our planet at the same time.

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19. Utilization of Solar Energy from Generation to Generation - A Review

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Abstract

This review paper represents, the basic need of modern civilization is energy and its production from fossil fuels causes hazardous effect on the environment. This motivates to use the clean energy sources. Solar energy has best potential to fulfill the energy demand in future. Sunlight is not only the most plentiful energy resource on earth, but it is also one of the most versatile, abundantly available and free of cost throughout on the planet, converting readily to electricity, fuel and heat without emitting pollutant elements. The time line of solar energy research shows the development of photovoltaic technology. The way of conversion of sun energy into electrical energy divides the photovoltaic technology into different generations.This review paper also comprises peace full, traditional and scientific use of solar energy.

Keywords –Solar energy, Traditional use of solar energy, PV solar cell

Introduction

The energy plays the most crucial role in the modern human civilization. Mankind uses the fossil fuels as energy source from millions of years. Presently, most of the energy demand (upto 90%) is fulfilled from the fossil fuels in the form of coal, natural gases, petroleum product etc. The burning of theses fuels emits the gases like CO_2, CH_4, NO_x, sulphur etc. and remains their residuals in an environment. These gases are also known as greenhouse gases. The green house gases traps the infra-red radiation within the earth's atmosphere, thereby increasing the "global" atmospheric temperature (approximately 4°C of earth temperature will increase in this century) [1-3]. During the past few decades, all nations have become extremely concerned with the effect of global warming. The emission of these gases depends on the use of the fossil fuels and cut down the dependency on fossil fuels is one solution to reduce effect of global warming.

Dependency on renewable energy sources in power sector is a need of the universe, since fossil fuel resources are rapidly depleting and responsible to emission of greenhouse gases. The transformation of energy policies is not individual government effort but world-wide political issue. The several nations have been transfer their energy policies; towards utilization of clean energy sources instead of use of fossil fuels.

Clean energy sources will play vital role in the future which includes: wind, geothermal, biomass, tidal and hydroelectric etc. out of these none of the technology is scalable to fulfil future energy demands. Only solar energy is having potential to fulfil the energy demand in future. For a scale, consider; sun provides 130TW energy daily. Current global energy consumption occurs at the rate of 13.5TW, projected to rise to 40.8TW in 2050. Today, in just one hour, the sun provides enough power to supply our energy needs for an entire year which is available free of cost. In the universe and particularly country like India, an average intensity of solar received is 200 MW/km (megawatt per square kilometer) with 250-325 sunny days in year [4]. Hence, solar energy is having capacity to fulfill the energy demand of urban civilization without harming the environment.

If we can make the solar energy as targets of day-to-day consumption of energy in various forms.At least 60 per cent of our energy requirement shall come from solar energy sources. This will stop us of becoming over dependents on gulf countries for petroleum, fuel and obviously this will diminish the cost of war.

Discussion

Traditional history of solar energy

Before we thought about the scientific use of solar energy we continued to use solar energy without giving an appropriate scientific term. Depending on the language and culture we call this solar energy in different terms but certainly people around the world used solar energy even to –day with less or large quantity depending on availability of sun rays during the day time.

Before the development of leather industry and leather tanning process, people by and large used the sun rays to heat the hide to produce sun dried hide to manufacture leather goods. In the desert of Arab where water is scarce, leather bag made out of sun dried hide was the only container for carrying water from distant places. In Africa, during in their tribal rivalry, the tribes used to use shield made out of sun dried hide. Similarly, there can be several examples which can be given in respect of leather industry and such hide still being used as raw material in many of the places where technology of tanning could not reach.

In spite of development of paper technology handmade paper remained as one of the most sought after product in the market, whether it is in interior Arunachal Pradesh or in developed Bombay. The drying technology for this industry continued to be sun dried methods and this is largely believed that sun dried paper to have certain better quality perhaps due to slow process of drying or perhaps due to exposure to ultra to slow process of drying or perhaps due to exposure to ultra violet ray. In our domestic front except certain countries like U.S.A., Canada etc. where automatic driers have reached home, in all other countries we still dry our clothing under the sun. It is largely believed that keeping the cloth under the sun kills the germs since sun rays has got disincentive effects. It is also believed that pickles do not get spoil if they are kept under the sun intermittently.

Above all we got our food from plant either directly or indirectly and the nutrition that we get from our food is due to sun rays since the same is prepared by the plant with the help of sun rays only. We all know regarding the traditional use of solar energy but it has become so much part of our life that we do not bother to identify the same. If we give a little more thinking perhaps it will not difficult for us to identify such things and if we think of writing the volumes can be little. Since this book is proposed with the objective of scientific application of solar energy there is no need to write about the traditional use further, leaving the same for the thinking process for the readers to carry on the rest of the duty.

History of Photovoltaic Systems

In 1839, Edmund Becquerel a French physicist has discovered photoelectric effect. This discovery motivates to the scientist all over the world to make an efficient energy device that will convert maximum sun energy into electricity. The photovoltaic device having potential to convert sunlight into electrical potential by a sequence of events: the absorption of light, generation of charge carriers (electrons and holes) and the transport of charge carriers to electrodes.

Types of Solar Cells

The photovoltaic (PV) cells generate electric power under illumination of natural or simulated sunlight. The human being develops such devices for the generation of energy; these devices can be categories into different types on the basis of stepwise development [10].

First Generation Solar Cells

The basic building block of first generation (1G) solar cells technology is Silicon; either single crystalline Silicon (s-Si) or multi-crystalline Silicon (mc-Si). The conventional PV cell modules are built by 200-250 micron thick crystalline Silicon wafer and majority of the cost

utilize to extraction crystalline Silicon from sand, then to purify and finally the doping of phosphorous and boron to make p-type and n-type Silicon. The 1G PV cells are operated on the simple p-n junction diode principle were electron-hole charge generated under illumination of a light and its separation occurs in a p-n junction: i.e. at the interface of p-type and n-type semiconductor generates a built-in potential. At the junction itself, a depletion region free of mobile carriers is formed, in which the electric field is present. The commercial production of 1G solar cell modules started since 1963 and now about 90% of global PV cells market is concerned by 1G solar cell. The efficiency of 1G ranges from 14% to 19%.

Second Generation Solar Cells

Second generation (2G) of PV cells market is based on; to remove the unnecessary material production cost to obtain pure Silicon and search alternative to crystalline Silicon. 2G PV cellsare fabricated by single junction devices; keeping in mind that to reduce the processing cost of material; while maintaining the efficiencies of 1G PV. 2G solar cells are fabricated by amorphous-Silicon (a-Si), CuInSe (CIS), $CuIn(Ga)Se_2$ (CIGS), CdTe/CdS and polycrystalline Silicon (p-Si) deposited on low-cost substrates such as glass, polymers and metals. 2G PV cells technologies is based on efficient light trapping properties of CdTe, CIS, CIGS and a-Si than c-Si or mc-Si, also the thickness of absorbing materials ranges in 1-10 micron, hence responsible to reduce the production cost of the PV devices. Meanwhile 2G technology has been received much attention in the last few years, due to their imperative parameters such as, it requires less semiconducting material to fabricate the PV modules, can be synthesized on flexible substrate and light weight structures. The 2G technology can be categories into three types as follows.

A) **Amorphous Silicon PV cells:** The PV cells constructed with a-Si showsefficiency range from 4% to 8%. The PV cells of a-Si are advantages because it can be deposited on comparatively low cost large area substrates or even flexible substrate, but the major drawback is reduction in power output with time.

B) **Cadmium telluride PV cells:** These types of solar cells are cheapest in thin film PV technology and having efficiency 16%. But toxicity of cadmium and availability of tellurium are the major problems with these types of solar cells; hence limits its use.

C) **CIS and CIGS PV cells :** These types of solar cells are most successful in PV industries and have been commercialized by many companies. (e.g. Wurth Solar, Solibro, Miasole, Nanosolar, Shellsolar, Avancis, Solar Frontier and Honda Soltec). Currently, CIS and CIGS PV cells efficiency ranges from 7% to 16%.

Third Generation Solar Cells

Now a day's, third generation (3G) solar cell technology is an emerging technology and still in research phase. The 3G PV solar cell includes nanostructured solar cells (i.e. organic photovoltaic (OPV), dye-sensitized cell (DSSC), ETA solar cell, quantum dot sensitize solar cell (QDSSC) and organic-inorganic hybrid solar cell etc.) While, these cells working on same p-n junction solar cell phenomenon but having separately photoengraved and charge carriers that will helps tofaster recombination in devices and this will ultimately increase the efficiencies of the cell. These types of PV cells are far behind, when compared with the efficiency point of view to the conventional PV cell have number of advantages over 1G and 2G PV cells. It is consider that 3G solar cells are potential to overcome the Shockely-Queisser limit of 31-41% power efficiency of the single band gap material solar cell devices.

A. Dye sensitized solar cells (DSSC)

In 1991, Professor Michael Gratzel at EPFL in Switzerland first demonstrated the DSSC efficiently by using TiO_2 and ruthenium metal dyes and with 11% efficiency. This is the mildstone in 3G PV research. DSSC were synthesized between two glass substrates in sandwich type structure, but thereafter it was also reported on flexible substrates. The DSSC works on photoelectrochemical(PEC) principle. In DSSC high surface area TiO_2 plays dual role 1) act as window layer for visible light; which further absorbed by dye molecules and 2) receives photo generated electron from the dye molecules and holes are passed to the other side of the dye. Then the circuit is completed by redox couple in electrolyte, which can be liquid or solid. The last 20 years research and development effort lead to develop commercial devices by Dyesol, EPFL, G24i, Mitsubishi and Peccell. DSSC has many advantages over conventional PV cells as it is colorful, low processing cost and can be synthesized on flexible substrates. However, the major disadvantage is that dyes in these cells can be degrade under heat and UV light, furthermore solvent evaporation is difficult to avoid due to improper sealing.

B. Organic photovoltaic (OPV) solar cells

This is one of the alternative technology immerging in recent years than the conventional PV cells. The solar cells are constructed by using organic or polymer materials. Organic cells are constructed on variety of substrates irrespective of their shape and size and by low cost synthesis technique (i.e. printing and coating). OPV cells are lightweight; flexible which makes them ideal for mobile applications. Furthermore, it will be fitted on a variety of uneven surfaces. This makes them useful for portable applications. The leading developers in OPV technology industries such as Konarka and Plextronics are developed and make it commercially available in the market.

C. Nanostructured solar cells

Now days, nanostructured PV cells are immerging as an alternative to conventional Silicon solar cell technology. These types of devicestructures are under research and development and which arerely on use of composite/heterostructure materials such as quantum dots/wires, quantum wells, ETA solar cells, inorganic organic hybrid structures etc.These solar cells are working on the similar principle that of DSSC. Nanostructured wide band gap metal oxide (MO) plays dual role in device structure; first to provide high surface area for the growth of a light absorber materials in layer structure, also absorbs UV part of incident light which may harm the absorber layer and second, receives the photo-generated electron from the absorber materials and finally execution of circuit completion by redox couple either organic or inorganic materials like liquid or solid. These are most advantageous PV cell technology in future, because; 1) to overcome the Shockely-Queisser limit of 31-41% power efficiency of conventional technology, 2) the inorganic light absorber materials are more stable, cheaper, colorful and tune their prperties according to their size and shape, 3) the devices can be synthesized by low cost wet chemical deposition techniques which may reduce the processing cost.

Conclusion

In last few decades, the research in PV technologies have been concentrated onto search a new efficient device; that can be convert maximum sunlight into electricity. The outcome of these efforts is focusing us to transformed interest towards utilization ofnanocrystalline materials for solar cell application;due to their unique structural, optical and electrical properties depending on their size and shape. Application of these features in photovoltaic device has led to develop novel solar cell structure. DSSC is one of the devices investigated much in last few decades and consider asan alternative to conventional solar cell. These devices are working on PEC principle, but have their own limitations; those forces to search new photovoltaic materials and devices. The nanostructured solar cellis working on the similar principle of DSSC. This overcomes the problems of DSSC and replace unstable dye layer by stable inorganic metal chalcogenides nanoparticles layer in the device structure.

As a consequence of the problems faced by the DSSC, the ETA solar cell structure has potential to overcome it. The ETA solar cell structure was developed in the late 1990's and use the concepts from both DSSC and thin film solar cells. The foundation of nanostructured solar cells concept is the establishment of a layerheterostructure between large internal surface area of wide band gap MO and extremely thin film absorber layer consisting of nanoparticles of a

narrow band gap metal chalcogenides in the solar cell to improve light harvesting and stability as compared to DSSC.

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Use of Nanotechnology for Disaster relief and development cooperation

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Abstract-

The number of areas in which nano technology is applied is steadily increasing due to their unique role as cross-sectional techno logy. In the last few years, the versatile opport unities of nanotechnology predominantly received recognition in the areas of improved efficiency, resource conservation and more sustainable production mechanisms. However, a number of improved and innovative solutions in the areas of Disaster Relief and Development Cooperation are now also on the market.

Introduction-

Nanotechnology has played a critical role in ensuring that the technological advances of the last few years have not only resulted in more robust materials, but that they have also enabled and sped up the miniaturization of wireless information systems and sensors exist with regard to the improvement of technical equipment and rescue vehicles. This develop ment in particular is of great relevance to both the security forces and rescue units in Disaster Relief, as well as for fire brigades and other organizations. In the case of the former, nano technology enables specific technological improvements and innovations in the key areas of protective equipment, communications and navigation systems. While for the latter, clear benefits in the area of Development Cooperation which – like Disaster Relief – is often confronted with demands and scenarios that are hard to predict, solutions for nanotechnology in developing countries can offer interesting perspectives for medical care, water treatment, agriculture and food, as well as rural infrastructure development in developing countries. A publication from the Hessian Ministry of Economics, Transport, Urban and Regional Development, aims to inform managers and staff working in Emergency Response services and Development Cooperation as well as related institutions about the innovation potential of nanotechnology for their respective fields of work, and to highlight areas of overlap. also addresses companies and industry representatives that are already operating in this area or are interested in tapping in to this market.

The document identifies five nano technology disciplines for disaster relief and development cooperation:

1) Intelligent surfaces

Many end users know of nanotechnology because of the so-called lotus-effect. For example, this application makes surfaces less susceptible to pollution, which in turn leads to a reduction in the use of water, energy and detergents. What is less well known is the diverse potential for improving the characteri stics of surfaces, in terms of disinfection, conductivity, changing their color or making them resistant to radiation. In the case of marine paints nano coatings can now prevent the adhesion of barnacles. As a result, the use of highly toxic biocides can be avoided, and up to 30 % may be saved in fuel usage. For aircraft, paints are currently being tested that are able to indicate hairline cracks in the fuselage, wings

or tail unit by changing color, thereby contributing to increased safety.

2) Improved processes

Intelligent surfaces and new materials enable better processes. Nanotechnology offers great potential for finding technological answers to key questions of the 21st Century. More specifically, nanotechnology opens up opportunities in the area of process optimization and already delivers solutions for a more efficient and effective use of resources and raw materials. In the field of energy and tele communications, the potential is considered to be high as well.

3) New materials

Nanoscale materials or materials that have been treated with nanotechnology can deliver great potential for efficiency. If used in technical systems, they allow an extension of life due to the reduction of the material-specific wear and tear of traditional materials such as metal, plastics and ceramics. In addition, intelligent materials – so-called smart materials – such as hybrid or composite materials enable entirely new products. The breadth of applications in this area is enormous and the potential for development is far from exhausted. Applications range from electrospun wound dressings with in-built drug depots, to skyscrapers built with nano scale building materials, where the benefits of nanotechnology can be seen in a number of ways, ranging from shell and core of structural work made of ultra high strength concrete to fire resistant thermal glazing.

4) Sustainability

The sustainable and responsible use of nanotechnology is the most important discipline of all. The great promises and opportunities that nanotechnology has to offer will only come to fruition if we handle nanotechnology with great care and foresight. The European Commission is proposing a code of conduct, which is due to reach as far as covering research of individual mechanisms – even though at the current stage many researchers still do not know the possible consequences and application areas of their research results. Throughout the life cycle of nanotechnology – i.e. during their production, processing, use and disposal – potential risks and consequences ought to be identified and adequately researched or addressed, in line with the precautionary principle. Aside from safety, a second principle ought to be applied: nanotechnology should be used in those areas where they not only create added value, but where they also make a contribution to sustainable development. Our Common Future (1987): "Sustainable development is develop ment that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Medicine and Health Protection

Medical treatment of the general public in the case of an emergency is regulated by state and federal level laws and regulations. The term Disaster Medicine includes all medical interventions which are necessary when dealing with a mass casualty incident involving injured or ill people. Disaster medicine is the link between emergency services and disaster management and is regulated by the respective German federal states' relevant emergency services or disaster management laws. One key challenge in disaster medicine is that medical treatment of individual with regard to hygiene, precision and diagnostics can only be delivered and maintained to a limited extent. In Development Cooperation, the general lack of medical care is one of the key factors. Developing countries and some emerging countries are characterized by a generally low life expectancy and high rates of infant and child mortality.

Potential nanotechnology solutions: These are mainly due to a high infection risk, lack of medical staff, lack of drugs and patients' weak immune systems caused by malnutrition

Innovative disinfectants with long-term efficacy "Lab-on-a-Chip": Miniature laboratories for use in clinical diagnostics, Antimicrobial wound dressings, Insecticides in textiles can save lives, Improved cooling chain and intelligent packaging, Mobile diagnostics, Refrigerator box running on fuel cells, Improved bioavailability of drugs, Innovative sensor technology

Emergency Response Resources and Protective Equipment

In many professions the use of personal protective equipment (e.g. safety shoes, helmets and gloves, or bulletproof vests) is mandatory. This is detailed in the accident prevention regulations and rules of the accident insurance institutions and by state level legislations of the federal states. The wearing of appropriate personal protective equipment to protect against hazards in fire fighting activities is required in accordance with the applicable regulations.

Potential nanotechnology solutions- Coatings with long-term efficacy, increased stab resistance, Anti reflective coating for visors, protective goggles and displays, Anti fog coating for visors, protective goggles and displays, Innovative filters for breathing masks.

Emergency Vehicles and Emergency Equipment

The demands placed on emergency vehicles and equipment used in fire protection and disaster relief are high: peaks of extreme pressure alternate with long periods of rest, and a fire engine is generally in use for approxi mately 25 years. In this time span, the vehicles do not accumulate a very high mileage because in some cases, several days or weeks can pass between emergency response operations or training exercises. However, it is these long periods of rest which are particularly challenging for these vehicles. In an emergency, the emergency equipment has to withstand short but high-intensity periods of pressure e.g. from heat or water, just to then remain unused until the next emergency. The above scenario not only applies to emergency vehicles but also concerns emergency equipment: it must be ready for use within seconds and has to function with absolute reliability. In the field of International Develop ment Cooperation, the resilience of equipment to ageing and weather is also of particular importance. In many developing countries, vehicles, machinery and technical equipment are subjected to extreme climatic conditions. Spare parts are hard to come by and there is usually not enough money to fund new purchases. An increase in the "life span" of existing equipment is therefore of vital interest. Potential nano technology solutions. Safety, durability and reduced fuel consumption, Self-cleaning and anti-corrosive coatings. applications for Nanofiber-Coated Media.

Energy and Communications

Shrinking resources, rising energy prices and progressive climate change have all demonstrated over the last few years that a fundamental shift in thinking must take place in the field of energy production and supply. What are the alternatives ? This is the crucial question; the answers are also of relevance to Development Cooperation and Disaster Relief, because we need to also think about alternatives in these areas. After all, millions of people in developing countries are still far away from being connected to a central power supply. Alternative solutions will have to be found instead, in order to e.g. supply shops or public buildings with electricity.

Construction and Housing

Setting up accommodation quickly that offers shelter to as many people as possible – this is the challenge relief workers are faced with in disaster areas and hot spots the world over. The most common choice is tents, because they are cheap and easy to transport and set up. The protection they offer against the weather, however, is correspondingly low. In addition, these emergency shelters are not designed for long-term use, and yet many of them are in use

for weeks if not months in refugee camps. The task of ensuring an effective protection of houses and buildings against environmental conditions is not limited to the field of Disaster Relief. In fact, every house owner has an interest in protecting his property against the weather as effectively as possible. This is a major challenge in developing countries in particular, since in many regions the climatic conditions are much more extreme than in our temperate zone: buildings are exposed to extreme heat as well as freezing cold, while elsewhere long rainy seasons alternate with extreme drought. Parasites are also a nuisance to buildings and their inhabitants. According to experts, emerging economies in particular are currently witnessing the development of a market based on the issue of building protection. For any solution to be successful in this sector, it will have to be both highly efficient and affordable. Potential nanotechnology solutions: Surface protection with long-term effects, Antibacterial wood polish, Using photo catalytic building materials to improve air quality, Ultra high-strength concrete, Multifunctional emergency accommod ation, More efficient climate control, Concrete canvas shelters, Nanogel used as building insulation.

Water

In the field of water purification, nanotechnology can provide valuable services which will be of particular benefit to Develop ment Cooperation and Disaster Relief. Nanotechnology applications are already available on the market in the form of cleaning mechanisms, such as water treatment, waste water treatment or groundwater remediation. The issues of safe water supply and drinking water are central to the cooperation work with developing countries The image of smiling children by a gushing water tap is literally synonymous to a successful project. In fact, in many areas of the world, the provision of safe drinking water often provides the foundations for a decent life. The issue of wastewater disposal, however, is often neglected in this context, despite its huge relevance – in the rural areas of Africa as much as in the sprawling mega cities of Asia or Latin America. The main problem is that the cost for the disposal and cleaning of polluted water is about three times higher than the cost of water supply. The consequences of a lack of waste disposal systems are obvious: in addition to serious environmental pollution there is an increased risk of infections and diseases. However, the issue of water is not only relevant in Development Cooperation. Even in countries with functioning water supply and sanitation systems such as Germany, the systems remain susceptible to failure. The risk of terrorist attacks on the drinking water supply – with possibly fatal consequences – is at least conceivable. In many disaster management plans, the treatment of drinking water has so far been neglected. Experience shows, however, that in the case of emergency, the transport and mobile treatment of drinking water become issues of vital importance requiring fast resolution. Potential nanotechnology solutions: Removal of arsenic from drinking water, Filtration of drinking water, Desalination.

Decontamination

In general, decontamination describes the treatment of pollution caused by hazardous radioactive, biological or chemical substances. General decontamination measures carried out by fire fighters include the primary cleaning of Emergency Response staff and their protective clothing, as well as the cleaning of civilians, equipment and vehicles. In addition, the term decontamination includes the cleaning of polluted objects and areas with the aim of reducing existing contamination to an acceptable level. Emergency Response operations involving dangers posed by radioactive, biological or chemical substances therefore place very particular demands on fire and disaster management personnel – not only during the acute phase of

deployment but also in the aftermath: the first step is to contain the contamination as well as possible and to clean contaminated individuals without further spreading the contamination. At a later stage, a huge yet often neglected challenge is the disposal of polluted, contamin ated (fire fighting) water which must not enter the sewage system or ground water unfiltered. Potential nanotechnology solutions, improved sensor technology, Decontamination of fire water and soil.

Conclusion-

In feature use the nanotechnology is important for the disaster management, in whole world.

Acknowledgements

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Rival study of strontium tartrate and calcium tartrate gel grown crystals

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ABSTRACT

In this investigation the gel grown crystals of strontium tartrate [$C_4H_4O_6Sr$] and calcium tartrate [$C_4H_4O_6Ca$] were grown by simple gel method by using simple single diffusion technique, The optimum conditions were established by various parameters such as pH of gel solution, gel concentration ,gel setting time, concentration of reactant etc.gel was to make by mixing sodium metasilicate [$Na_2SiO_39H_2O$] and supernant strontium chloride[$SrCl_2$],calcium chloride[$CaCl_2$] at pH 4.4,and transferred in glass tube of diameter 2.5 cm and 25 cm length. The mouth of test tube was covered by cotton plug and kept it for setting. After setting the gel, Then few days incorporated the supernant solution of strontium chloride[$SrCl_2$],calcium chloride[$CaCl_2$] was poured over set gel by using pipette then it was kept undisturbed. After three-four days the small nucleation growth was observed at below the interface of gel. The good quality crystals of strontium tartrate and calcium tartrate were grown. These grown crystals were characterized by XRD, SEM, chemical analysis and electrical conductivity.

Keywords: Gel grown strontium tartrate crystals, calcium tartrate crystals, XRD,SEM, Electrical conductivity.

1.INTRODUCTION

A variety of crystals required for the purpose of research and application can be grown in silica gels. The gel medium prevents turbulence and being chemically inert, it provides a three-dimensional crucible which permits the reagent to diffuse at a desirable controlled rate. Its softness and uniform nature of constraining forces that it exerts upon the growing crystals encourages orderly growth girase [1].

The growth of single crystals in gel at an ambient temperature, which are sparingly soluble in water, is a fascinating alternative to the techniques involving high temperature and expensive equipments as reported by Sangwal [2]. During last few

years, successful application of gel growth technique has been demonstrated by the preparation of single crystals of alkaline earth metal iodates joshi [3] and tartrates Henisch [4]. The gel growth technique appeared quite attractive for growing crystals of such compounds on account of its unique advantages in terms of crystals produced and the simplicity of process.

In recent years, crystals growth in gel medium has attracted the attention of many investigators, such as Henisch, Dharma Prakash, Shedam, Garud [5-8].The principle relies on the slow migration of crystal constituents (ions) through silica gel so that a very slow reaction occurs with the formation of a sparingly soluble compound. When the concentration of this compound exceeds the solubility limits, crystals will be formed, the main function of the gel being to control the flow of reacting ions.

Mixed crystals growth has scarcely been studied by employing the gel technique as reported by Joshi, Dharma Prakash [9-10] and the field is in an early stage of development with many opportunities to create new species. Most of the tartrate compounds are insoluble in water and decompose before melting. Hence single crystals of such type of compounds cannot be grown by either slow evaporation or melt technique. In this situation gel method is the appropriate one for their growth. The growth of single crystals of calcium tartrate and strontium tartrate was reported by Henisch , Rahimkutty [4, 11]. Thermal studies on tartrate crystals grown by gel method were reported by many investigators, such as Henisch, Kotru [12-14]. Tartrate crystals are of considerable interest, particularly for basic studies of some of their interesting physical properties. Some crystals of this family are ferroelectric. As suggested by Abdel- Kader et al, Gon, Desai [15-17], some others are piezoelectric Yadava [18] and quite a few of them have been used for controlling laser emission Pipree [19]. As tarterates are sparingly soluble in water and decompose before melting, the gel method is found to be more promising than the high temperature crystal growth methods.

Many tartrate salts with monovalent cations; such as rubidium hydrogen tartrate Desai [20], Sodium tartrate Abdel-Kader [21] and ammonium tartrate Abdel-Kader [22] and divalent cations; such as calcium tartrate. Sahaya Shajan X [23], Cadmium tartrate Yanes [24], Manganese tartrate Lopez [25], Zinc tartrate Arora [26] and Strontium tartrate. Arora, Jain [27-28] have been studied for their dielectric and thermal properties.

	diffusion technique	and $CaCl_2$	Elongated, Good	Transparent, Whitish, Good

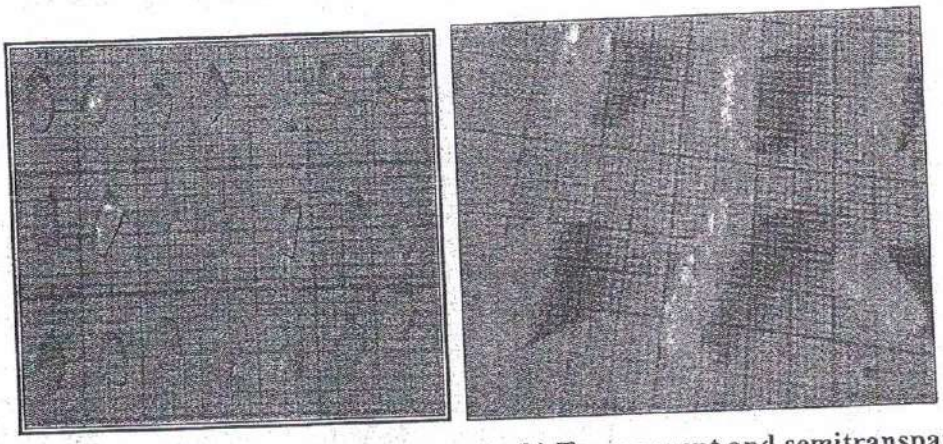


Fig.1(a) Transparent, pale yellowish crystals (b) Transparent and semitransparent, needle shaped strontium tartrate crystals.

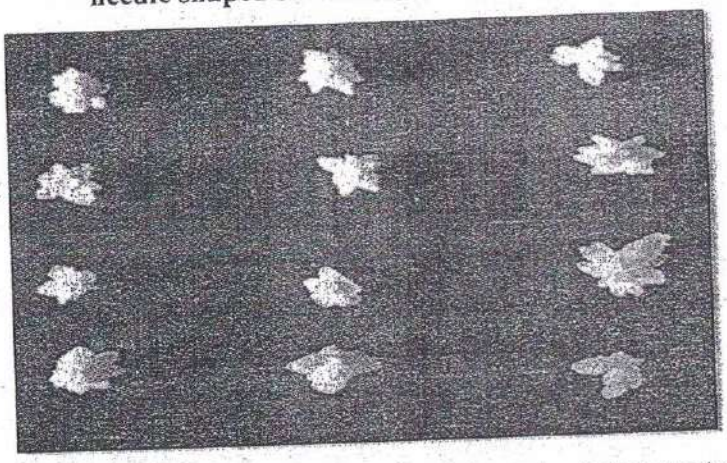
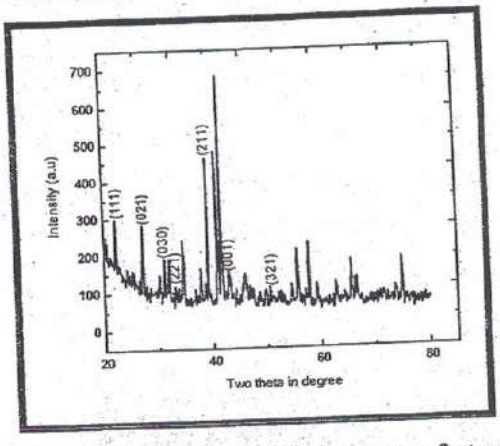


Fig.2 Transparent and semitransparent, star shaped calcium tartrate crystals

3. RESULT AND DISCUSSION

These crystals possess better habits and better transparency among the grown crystal. Better transparency of strontium tartrate may due to presence of more crystals established by varying various parameter such as gel density, pH of gel ,gel setting time, gel aging time, etc are reported in table 2.For all these two crystals, suitable value of density of sodium meta silicate solution is found 1.04gm/cc, pH 4.4,gel took 7 days to set and this gel was allowed to age 6 days. Crystal were removed from test tube after 36 days respectively. Further growth was not allowed, some times crystal became opaque or translucent due to inclusion of silica gel. Various concentrations of reactants were tired.

The computer program, POWD (Interactive powder diffraction data and indexing program version 23.0550) was used to calculate'd' and (hkl) values. The unit cell parameters and system calculated by the computer program are given in the table 3.These parameters satisfy the conditions for monoclinic system i.e. a≠ b≠ c and $\alpha = \gamma = 90^0 \neq \beta$.From X-ray diffraction study, it is concluded that the grown crystals of strontium tartrate have monoclinic system. The unit cell parameters and system Calculated by the computer program are shown in the table 3. These parameters fulfil the conditions for orthorhombic structure of calcium tartrate crystal i.e. a≠ b≠ c and $\alpha = \beta = \gamma = 90^0$. The recorded x-ray diffractogram is shown in figure 4.



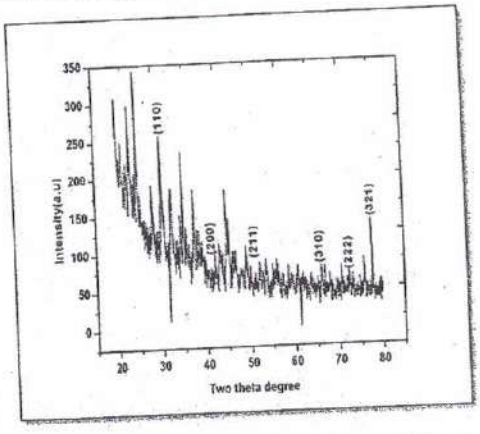


Figure 3 X-ray diffractogram of strontium tartrate. Figure 4. X-ray diffractogram of gel grown calcium Tartrate

Table 3 Calculated unit cell parameters

Sr.No	Crystals	a A.U	b A.U	c A.U	System
1	Strontium tartrate	$7.5500A^0$	$7.5500A^0$	$7.5500A^0$	Monoclinic
2	Calcium tartrate	$9.627A^0$.	$9.627A^0$.	$9.627A^0$.	Orthorhombic

3.2 SEM

In the present work powdered sample of strontium tartrate crystals was examined by using SEM technique at Department of Physics, Hanyang University, Seoul, Korea. The study of the surface of the crystal gives valuable information about its internal structure. Figure 5.1 (a) illustrate SEM photographs of crystals of strontium tartrate crystal. An enlarged SEM image is shown in Figure 5.1 (b).

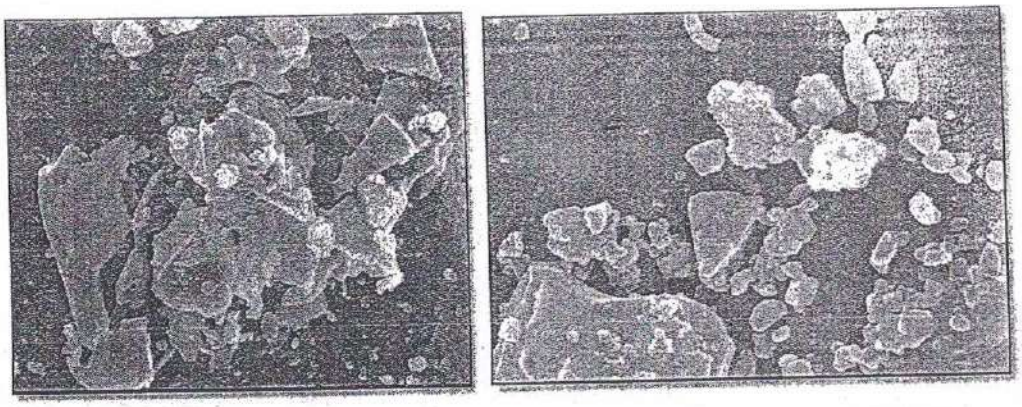


Fig 5.2 (a) SEM image of calcium tartrate crystal. (b) Magnified SEM image of calcium tartrate.

3.3 Electrical conductivity

Electrical conductivity is a measure of a material's ability to conduct an electric current. as quoted by Priya et al,Freeda et al,Ferdousi et al, Neamtu et al. [38-41].

From table 4 it is observed that, value of resistance of gel grown strontium tartrate is in mega ohm, which is a characteristics of insulating material. It can also be observed that, as voltage increases, current also increases. As temperature decreases, resistance increases and conductivity decreases. Fig 6.1 shows the graph log k v/s 1/T $x10^{-4}$ and it re-inforces above conclusion. it is observed that, value of resistance of gel grown calcium tartrate is in mega ohm, which is a characteristics of insulating material. It can also be observed that, as voltage increases, current also increases. As temperature decreases, resistance increases and conductivity decreases.

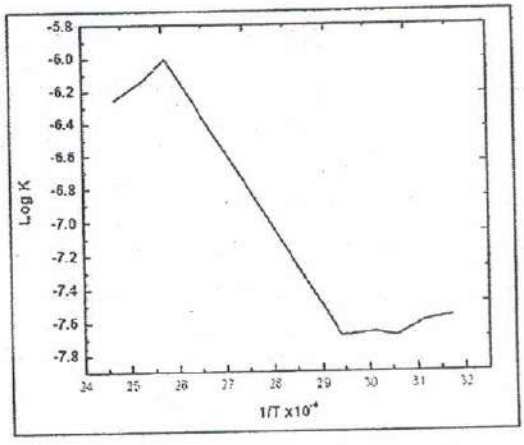


Figure 6.1 Ele. Conductivity of SrTr crystal

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ROLE OF BUSINESS FOR DEVELOPMENT OF TRIBLES

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ABSTRACT:

It is the part of India for development in business, tribles are include in the business, The business will start in tribles region, because of lot of man power will be available in tribles region and also educated person is available. its development is sustainable, India is popular in the world if business is start in tribles region including tribles.Most tribes with significant gaming initiatives and related businesses can find themselves bombarded with myriad offers, opportunities and potential scams.

INTRODUCTION:

The late 20th century brought a new era of federal-tribal relationships and a policy of self-determination to Indian country. Indian Tribes are increasingly asserting control over their land, resources, and governance of their communities. Tribes are involved in a wide range of economic activities from tourism, gaming, energy, agriculture, forestry, manufacturing, federal contracting, and telecommunications. In many parts of the country, Tribes are becoming regional economic and political power houses. They are the largest employer in many counties. Tribal governments and tribal businesses engage in a wide range of business and financial transactions. The unique legal status of tribes is only now beginning to be used by Tribal governments to contribute to their business and economic development efforts. This century marks a new era for tribes using their sovereign status and governmental authority to achieve economic self-sufficiency and cultural preservation. There are still high levels of poverty and unemployment in Indian country and a lack of the basic infrastructure crucial to the building blocks of economic success. There are, however, increasingly more examples of tribes breaking their dependence on federal programs and creating the necessary legal infrastructure to build the foundations for successful economic development. As tribal business transactions become increasingly more sophisticated and involve non-Indian partners, investors, and lenders, there is a need to understand the basic methods for doing business in Indian country. In particular, in the energy industry, Indian tribes are shifting from being passive owners of their energy resources by evaluating ways in which they can own, develop, and produce their resources. Tribes are increasingly looking at ways to develop their resources in a manner that gives them an active ownership interest in the development of the project, often with a non-Indian business partner.

1. Why Choosing a Business Structure is Important

The choice of business structure will have long-term and far-reaching consequences for a tribal government and tribal business. The business structure you choose will have a major impact on how tribal assets are protected, how tribal sovereignty is preserved, and how potential liability is minimized. Critical decisions regarding the tax status of the business entity and whether or how sovereign immunity is waived must be made early in the decision making process. The choice of business structure may also be determined by the requirements a lender imposes as a financing condition or be determined by a business partner seeking certainty and predictability in the legal framework chosen to organize for economic development. This Handbook will help you to

3. Overview of Structures

Tribal governments are distinct political entities in our federal system of government. They have the power of self-government and exercise sovereignty over their members and territory. Their sovereignty pre-dates the Constitution and is derived from the fact that they owned all the land that is now the United States. The U.S. Constitution acknowledges the sovereign status of Indian tribes in the Treaty Clause, in the 14th Amendment as "Indians not taxed," and in the Commerce Clause. The sovereign nature of Tribes has been recognized in the Constitution, treaties, court decisions, and the course of dealing with tribes. As sovereign Nations, Indian tribes have powers and capabilities not available to individuals. This Handbook will assist you in evaluating the different forms available for organizing economic development and to begin to take steps to achieve financial and economic independence. When developing a new tribal enterprise, an important consideration is the applicable law and regulations governing its formation and operation. In Indian country, business entities can be formed under tribal law, state law or federal law. Your choice of law and the entity that is chosen will have consequences on issues relating to tax, financing, and sovereign immunity. It will also determine how you can maximize risks and liability. An important consideration for tribes is how to preserve tribal control and to protect tribal assets while providing a business partner or lender with certainty. A tribe, because it is a sovereign nation, can form a governmental entity to perform business functions. This entity can be an instrumentality of tribal government, a political subdivision of the tribe, or an agency or division of the tribe. A tribe can also form a separate business entity formed under federal, tribal, or state law.

Below is a brief description of the main business structures.

I.Tribal Government

Many tribes conduct business through an economic development arm of the tribe. This is often referred to as in unincorporated instrumentality of the tribe. The business operation is generally overseen by the governing body of the tribe--sometimes by a business committee or a separate board, but they generally do not have a separate legal structure.

II.Section 17 Corporations

Many tribes conduct their commercial activities through federally-chartered corporations formed under Section 17 of the Indian Reorganization Act (IRA).4 To form a Section 17 Corporation, a tribe must petition the Secretary of the Interior for issuance of a corporate charter. A Section 17 corporation provides a framework by which a tribe can segregate tribal business assets and liabilities from the assets and liability of tribal governmental assets.

III.Tribally Chartered Corporations

Some tribes have adopted tribal laws that govern the formation of tribally chartered for-profit corporations. These laws authorize the formation of tribal business entities owned by the tribe. Several courts have held that sovereign immunity applies to activities of a tribally chartered corporation owned by a tribe. The issue of whether tribally charted corporations are subject to federal income taxes for income derived from on-reservation activities is up in the air. The Internal Revenue Service has this issue under consideration and has indicated that it will issue guidance, but has not yet done so.

IV. State-law Corporation

A corporation is a legal entity that is formed under the laws of the state by filing a certificate of incorporation or articles of incorporation with the jurisdiction in which it is formed. Corporations are owned by shareholders and governed by a Board of Directors elected by the shareholders. Corporations are governed by the terms and conditions contained in its articles of incorporation.

6. See, e.g., Gavle v. Little Six, Inc., 555 N.W.2d 284, 294 (Minn. 1996). 110
7. Id. at 294-95; Trudgeon, 71 Cal. App. 4th at 639-40. 111
8. Dixon, 772 P.2d at 1110-11. 112 Id. at 1108;
9. White Mountain Apache Indian Tribe v. Shelley, 480 P.2d 654, 656 (Ariz. 1971). 113
10. Dixon, 772 P.2d at 1110-11.

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Windmill is another Sources of Alternative Energy for the Development of India

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Abstract – The potential issues surrounding the use of fossil fuels, particularly in terms of climate change, were considered earlier than you may think. It was a Swedish scientist named Svante Arrhenius who was the first to state that the use of fossil fuel could contribute to global warming, way back in 1896.The issue has become a hot-button topic over the course of the last few decades. Today, there is a general shift towards environmental awareness and the sources of our energy are coming under closer scrutiny. This has led to the rise of a number of alternative energy sources. While the viability of each can be argued, they all contribute something positive when compared to fossil fuels. Lower emissions, lower fuel prices and the reduction of pollution are all advantages that the use of alternative fuels can often provide. Here we examine eleven of the most prominent alternative fuel sources and look at the benefits they offer and potential for increased uptake in the coming years.

What is a Windmill A windmill is a structure used to harness the power of the wind for purposes like grinding grain, pumping water, and generating electricity. The power of the wind was first harnessed by sailors, who were able to understand lift and harness the winds power through sails. This knowledge led to the development of the first vertical axis sail-type windmill used by the ancient Persians and Chinese for grinding grain and pumping water. They consisted of vanes called sails or blades that when prompted to turn by the wind, converted the wind's energy into rotational energy that could be utilized. Early European windmills with horizontal axis systems were the foundation for current wind turbine technology used for energy production. This article is going to discuss the history of windmills and how they advanced to modern designs, as well as how they work. A windmill is a mill that converts the energy of wind into rotational energy by means of vanes called sails or blades. Centuries ago, windmills usually were used to mill grain (gristmills), pump water (windpumps), or both.The majority of modern windmills take the form of wind turbines used to generate electricity, or windpumps used to pump water, either for land drainage or to extract groundwater.Early History of WindmillsThere is no concrete evidence on who exactly was the first to invent the windmill, whether it

which was mounted on the rear of the mill at right angles to the sails automatically turning the cap to bring the sails into the wind.Smock mills are similar to tower mills differing mainly in their appearance, in which smock mills were octagonal or hexagonal with their six to eight sides, rather than circular. Smock mills have the same rotating cap design as the tower mills, but were typically much larger. The first mechanical mills that appeared in the United States had four wooden blades that resembled paddles, and most were equipped with "tails" that oriented them into the wind. However, some of these mechanical mills were designed to operate downwind, called weather-vaning mills.Some mechanical mills sported speed control provided by hinged blades that folded back in high winds reducing the thrust, by reducing the rotor capture area. When steel blades where introduced they required a reduction gear to compensate for their high speed, so that the standard reciprocal pumps were at the right speed for the mill to function properly. The three-bladed turbine systems commonly seen today, function in much the same way as the original post mills. Wind turns two or three blades around a rotor that is connected to a main shaft that spins a generator to create electricity. The rotor, which is the blades and hub combined, are mounted 100 feet or more above the ground to take advantage of faster, less turbulent wind. The rotor is attached to a pitch system that turns the blades out of the wind to control the rotor speed. When winds are too high or too low to produce electricity the pitch system prevents the rotor from turning.

The pitch system is connected to a low speed shaft that turns at about 30-60 rotations per minute. The low speed shaft is connected to the gear box which turns the low rotational speeds into the high rotational speeds of 100-1800 rpms required by the generator, which is attached to the gearbox, to produce electricity. Describes the post mill as a building balanced and pivoted on a vertical central post kept upright by crosstrees and angled quarter bars, whose ends carried four upright stone or brick pillars. The mill consisted of a wallower, a large brake wheel located on the same shaft as the sails, which transferred power to a smaller gear. The wallower shared the vertical shaft with the great spur wheel, from which a stone nut drove the grinding stone. The tower mill was an advancement of the post mill having multiple floors for storing grain, removing chaff, grinding grain, and living quarters for the windsmith and his family. The most important feature of the tower mill was a cap (roof) that could pivot in response to changing wind patterns. Unlike the post mill where you had to move the entire structure to orient the mill, only the cap had to be moved in the tower mill. Both the tower and post mills were originally designed to be manually oriented into the wind by pushing a lever located on the back of the mill. In 1745, Edmund Lee invented the windmill fan tail, which was mounted on the rear of the mill at right angles to the sails automatically turning the cap to bring the sails into the wind. Smock mills are similar to tower mills

scale sources of wind energy, a large number of wind turbines are usually built close together to form a wind plant. Several electricity providers today use wind plants to supply power to their customers. Stand-alone wind turbines are typically used for water pumping or communications. However, homeowners, farmers, and ranchers in windy areas can also use wind turbines as a way to cut their electric bills. Small wind systems also have potential as distributed energy resources. Distributed energy resources refer to a variety of small, modular power-generating technologies that can be combined to improve the operation of the electricity delivery system. Tached to the gearbox, to produce electricity.

How does the windmill work?

Wind turbines operate on a simple principle. The energy in the wind turns two or three propeller-like blades around a rotor. The rotor is connected to the main shaft, which spins a generator to create electricity.

What is windmill and its uses?

A windmill is a mill that converts the energy of wind into rotational energy by means of vanes called sails or blades. Centuries ago, windmills usually were used to mill grain (gristmills), pump water (**windpumps**), or both.

What are the benefits of windmills?

It's a clean fuel source. Wind **energy** doesn't pollute the air like **power** plants that rely on combustion of fossil fuels, such as coal or natural gas, which emit particulate matter, nitrogen oxides, and sulfur dioxide—causing human health problems and economic damages.

Wind power continues to grow strongly, providing 4.4% of global power

Wind power generating capacity grew by 10% in 2017, with capacity increasing by 47 GW to reach 515 GW by the end of 2017.China leads the world in terms of installed wind capacity (164 GW), and in 2017 China recorded the largest addition of new wind capacity (15 GW), followed by the US (6 GW), Germany (6 GW), India (4 GW) and UK (4 GW).Wind power generation grew by more than 17% in 2017 to reach 1120 TWh, or 4.4% of total world electricity generation. That is more than the total power generation of Russia, the world's fourth largest power generator. China was the largest wind power producer last year, growing by 21% and contributing 30% of global growth in wind power.Wind has become an important contributor to European electricity generation. In Denmark wind power provided more than 48% of power generation in 2017: and wind power now provides 15% or more of power generated in Ireland, Lithuania, Germany, Portugal, and Spain. Wind has a much smaller share in the US, where it contributed just under 6% of power generation in 2017; and in China, where wind provided just under 4% of power.