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Xtronic

The E-Technical Magazine..



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Department of Electronics and Communication Engineering

Sri Vasavi Engineering College
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Accredited by NAAC with 'A' Grade
Pedatadepalli, Tadepalligudem-534101





VISION

To develop the department into a centre of excellence and produce high quality, technically competent and responsible Electronics and communication engineers

MISSION

To create a learner centric environment that promotes the intellectual growth of the students.

To develop linkages with R & D organizations and educational institutions for excellence in teaching, learning and consultancy practices.

To build the student community with high ethical standards.

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YOUNG CHAIRMAN OF DRDO- SATHEESH

Dr G. Satheesh Reddy is an Indian Aerospace Scientist and the current chairman of Defence Research and Development Organisation (DRDO), Scientific Advisor to Raksha Mantri and the secretary of Department of Defence Research and Development. Reddy, who is known for his research and development in missile systems and has contributed towards the advancement of aerospace technologies and industries, Avionics technologies is currently employed as the scientific advisor to defence minister Nirmala Sitharaman.



He has been at the helm of the conceptualisation, design and development of inertial sensors, navigation schemes, algorithms systems, calibration methodologies, sensor models, simulation along with development of satellite navigation receivers and hybrid navigation systems. He was born on 01 July 1963 Mahimaluru village, Atmakuru Mandal, Nellore District.

He graduated in Electronics and Communication Engineering from JNTU, Anantapur and received his M.S & Ph.D from JNTU Hyderabad. He joined Defence Research and Development Laboratory (DRDL), Hyderabad in the year 1986 and subsequently joined Research Centre Imarat (RCI), the brainchild of Dr Kalam, after its formation. From a young navigation scientist and System Manager he rose steadily and after his multiple significant appointments and decades of sustained contributions to Defence R&D, was elevated as Distinguished Scientist in Sep 2014 and was appointed as Scientific Adviser to Defence Minister in May 2015.

He is the first defence scientist working in India to have received the Silver Medal of Royal Aeronautical Society, UK, and has also been selected for the first IEI (India) and IEEE (USA) joint award for Engineering Excellence.

Satheesh is a fellow of the Royal Institute of Navigation in London, the first from India. He is a fellow of the Royal Aeronautical Society, a foreign member of the Academy of Navigation and Motion Control, Russia, a fellow of the Indian National Academy of Engineering and an honorary fellow of the Computer Society of India. He has been conferred with National Systems Gold Medal, Mokshagundam Visvesvaraya Award of the Institution of Engineers (India), IETE B.V. Baliga Memorial Award for his contribution towards planning, design, development, production and timely delivery of critical avionics systems and diversified navigation technologies and Systems Society of India Vikram Award for realisation of Systems of National importance

Reddy, who is the 13th and youngest head of DRDO, received the Indian Science Congress Association Homi J Bhabha Memorial award of the Indian Science Congress Association for the year 2013–14. He is the fourth from the Missile Complex in Hyderabad to reach the top post in DRDO after APJ Abdul Kalam, VK Saraswat and Avinash Chander.

INNOVATION

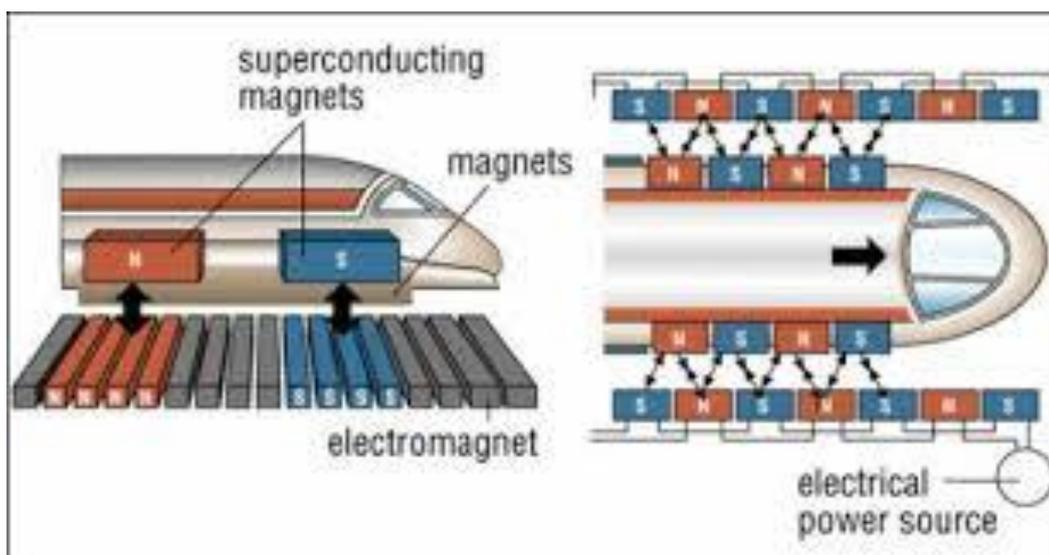
UPCOMING TRANSPORTER: THE MAGLEV

Maglev is a kind of super train that runs in the air rather than running on the track. On 2nd December 2003, the Japanese JR-maglev became the fastest non-conventional train in the world by ticking an amazing speed of 361 mph (nearly 541 kmph). By pulling off this amazing feat, the three-car Japanese maglev edged out the French TGV (Train à Grande Vitesse) - which boasts of being the fastest conventional train with the highest speed of 357.2 mph, by an impressive margin of 3.7 mph. While that was a test run, the Shanghai maglev train - is the most successful maglev in the world, covering a distance of 28.5km in only 7 minutes 20 seconds - with a top speed of 402 kmph and an average speed of 240 kmph!



How Do Maglev Trains Work:

The term maglev is derived from 'magnetic levitation' which happens to be the basic principle behind the maglev trains. These trains work on the principle of [electromagnetic propulsion](#) wherein the cars (boogies) are suspended, guided and propelled using powerful magnets.



The Maglev Train System has three important components - The power source, The track referred to as the 'guideway' and the gigantic magnets that are attached to the cars/track. The

guideway is made up of magnetized coils, which repel the magnets that are attached beneath the cars, and makes them levitate around 0.39 to 3.93 inches(0.9 to 9cm) above the guideway. When the power is sent to these coils, it results in formation of a unique magnetic field which in turn, moves the maglev. Furthermore, these trains resort to two different types of magnetic levitation - electrodynamic suspension (EDS), wherein the repulsive force of magnets comes into play, and electromagnetic suspension (EMS), wherein the attractive force of magnets is involved.

Advantages of Maglevs:

- The foremost advantage of maglev trains is the fact that it doesn't have moving parts as conventional trains do, as a result reducing the wear and tear of parts.
- There are no wheels and this reduces the noise to a great extent.

Maglevs also boast of being environment friendly as they don't work on internal combustion engines. These trains are weather proof, which means rain, snow, or severe cold don't really hamper their performance. Experts are of the opinion that these trains are a lot safer than their conventional counterparts as they are equipped with state-of-the-art safety systems, which can keep things in control even when the train is cruising at a high speed.

Disadvantages of Maglevs:

Even though the maglev have several advantages, the cons must have to be also considered.

- The biggest problem with the maglev trains is the high cost incurred on the initial setup. These cannot run on the conventional tracks, So new tracks must have to be constructed.

If we can do away with their disadvantages, the maglev trains are undoubtedly worth investing. If the commercial success of Shanghai maglev train is to be taken into consideration, maglev trains can be surely considered to be the transport system of the future.

by
U.VIJAY
ECE-C
16A81A04H5

*Peter Piper picked a peck of pickled peppers,
A peck of pickled peppers Peter Piper picked.
If Peter Piper picked a peck of pickled peppers,
Where's the peck of pickled peppers Peter Piper picked?*

- **Career Decision-Making:** The classroom can only do so much in terms of educating students about a specific career. By participating in an internship, students learn about the realities of their field of interest, getting a clear picture of what their work life will be like after graduation. The time spent in an internship can either reinforce their decision to enter a certain field, or let students know that a profession is not the right fit for them.
- **References:** Professional references are an important tool in any job search arsenal. Completing an internship successfully will help recent graduates stand out because they'll have someone in their field who can vouch for their job performance and work ethic.
- **A Foot In The Door:** When students are interested in working for a specific company, getting an internship there is the best way to get their foot in the door. Learning as much as possible about a company and meeting people during an internship will help students get a head start in the hiring process when a full-time position opens up at that company.
- **Meeting Peers:** Students who complete internships may also meet other college students, or recent graduates, who share their same goals and interests. Having a steady stream of support from people who are in the same boat allows students to vent their frustrations, find solutions to problems, and build lifelong connections.

INTERNSHIP SEARCH RESOURCES

From corporate internships to green to government to nonprofit, the websites below can help students seeking pre-professional experience find the right fit.

S.NO	Websites	Information
1	CampusInternships.Com	Includes internships posted directly from employers
2	CareerRookie.com	Lists part- and full-time internships and entry level jobs
3	CollegeGrad.com	Includes internship opportunities posted directly by employers
4	Get That Gig.com	Users can browse internships in a number of sectors
5	Go Government	Includes information on how to apply to internships at the federal government
6	Green America	Internships for those interested in green careers
7	Idealist.org	includes internships and volunteer opportunities in the nonprofit sector
8	InternHere	Allows users to search internships by company, location, and industry

9	InternJobs.com	Allows users to search for internships by keywords and location
10	InternshipFinder	Includes internship listings and advice for students
11	Internships.com	Lists internships by company, city, and industry
12	Internships4You.com	The site partners with colleges, universities, and small businesses to provide internship listings to students
13	Internweb.com	Allows users to browse internship listings
14	Learn4Good	Students can search for internships by major
15	Looksharp	Allows students to create a profile and apply for internships on the site
16	Media411	Lists internships in broadcasting
17	MonsterCollege	Powered by Monster.com, this site allows students to search internships and entry-level jobs

by
Dr. E Kusuma Kumari
Professor, HOD, ECE.

Mary Mac's mother's making Mary Mac marry me.
My mother's making me marry Mary Mac.
Will I always be so Merry when Mary's taking care of me?
Will I always be so merry when I marry Mary Mac?

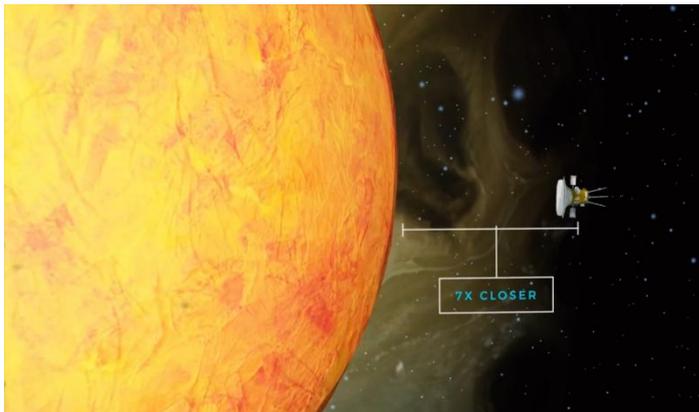
Anudeep.P
16A81A04G1

NASA IS GOING TO THE SUN

The Sun is an unpredictable, violent ball of gas and plasma, radiating fusion energy. It can send streams of charged particles right towards Earth without warning, potentially causing catastrophic damage to our power grid. And while we need the Sun to live, we also need to protect ourselves from its wrath. The problem is, we actually know very little about our nearest star because we haven't been able to get close enough to fully understand its behavior. But finally NASA believes it has the tech to touch the Sun.

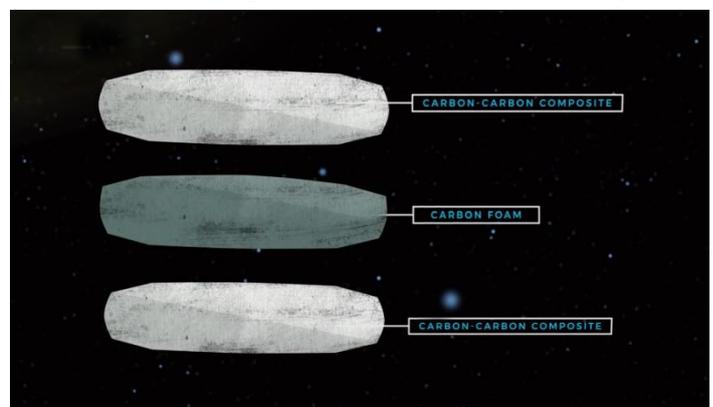


The Parker Solar Probe is humanity's first trip to a star. It will get seven times closer to the Sun than any mission before, and that's because of the probe's Thermal Protection System or TPS. The spacecraft and its instruments are shielded by an 11 centimeter thick piece of carbon foam sandwiched between two panels of superheated carbon-carbon composite.

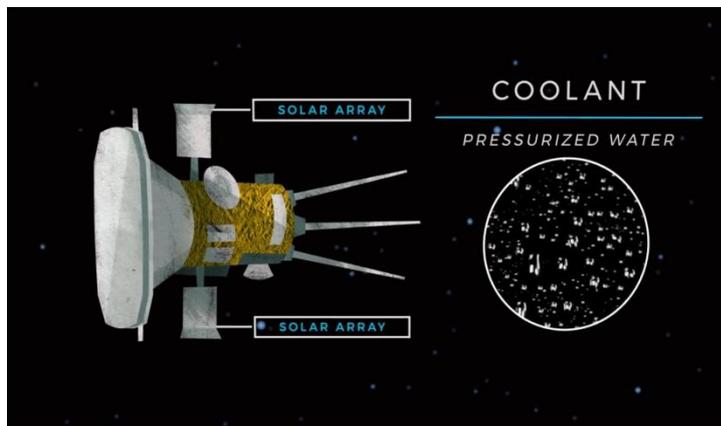


The TPS will enable the front of the shield to withstand temperatures as high as 1,370degrees Celsius, while the inside of the probe remains at the comfortable heat of a summer day - about 30 degrees Celsius. Twin solar arrays will power the spacecraft and its cooling system, which surprisingly utilizes a low-tech coolant: pressurized water. The ability to function in extreme heat is incredibly important because the Parker probe will venture to the corona - the Sun's outermost atmosphere. There, the data it collects will help answer two of the most vexing questions in astrophysics: why the corona is hotter than the solar surface and how solar wind is accelerated.

From Earth, we can only ever see the corona during a total solar eclipse, which is why it is incredibly difficult to study. Because the

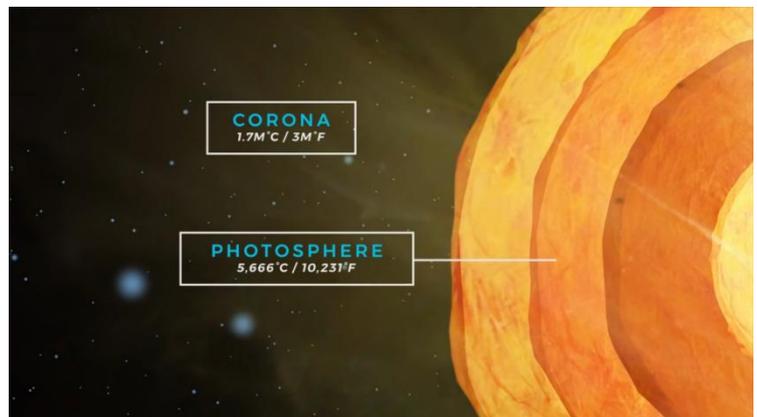


density is so low, the corona's brightness is overpowered by energy coming from the solar surface. As the last layer of the Sun's atmosphere, the corona extends millions of miles into space. Here temperatures can rise to over 1 million degrees Celsius, which is about 300 times



hotter than the photosphere- the lowest layer of the Sun's atmosphere. At this extreme heat, the Sun's gravity can't hold on to rapidly moving particles charged in the corona, so they escape in streams of accelerated plasma, known as solar wind. These streams carry the Sun's magnetic field far into space at speeds up to 800 kilometers per second.

There are theories about the causes of coronal heating and solar wind acceleration, but we haven't been able to land on a definitive answer without actually going to the Sun, and that's why the Parker Solar Probe is so crucial. The spacecraft will orbit the Sun 24 times, coming as close as 5.9 million kilometers and moving as fast as 690,000 kilometers per hour.



Once close enough, it will trace energy as it moves through the corona by measuring particle properties and shock waves in the Sun's plasma. If Parker manages to complete its seven year mission, its data will revolutionize the way we look at the Sun by solving these longstanding solar mysteries. Parker's discoveries will also help us better predict our nearest star's volatile behavior and enhance our ability to forecast solar storms to avoid global disaster here on Earth.

by
A. Sai kiran
17A81A04C3

Mary Mac's mother's making Mary Mac marry me.
My mother's making me marry Mary Mac.
Will I always be so Merry when Mary's taking care of
me?
Will I always be so merry when I marry Mary Mac?

LIMERICKS

Mom

*You filled my days with rainbow lights,
 Fairy tales and sweet dream nights,
 A kiss to wipe away my tears,
 Gingerbread to ease my tears,
 You gave the gift of life to me
 And then in love , you set me free.
 I thank you for your tender care,
 For deep warmhugs and being there.
 I hope that when you think to me
 A part to you you'll always see,*

S.Praneetha

17A81A0453

PROVERBS.....PROVERBS=CONFUSION.....CONFUSION

- ✚ All good things will come to those who wait ...BUT
Time and Tide waits for none...
- ✚ The pen is mightier than sword ...BUT
Action speaks louder than words...
- ✚ Wise men think alike...BUT
Fools seldom differ...
- ✚ The best things in life are free...BUT
There is no such thing as free lunch...
- ✚ Slow and steady wins the race...BUT
Early bird gets the worm...
- ✚ Look before you leap...BUT
Strike the iron when it is hot...
- ✚ Do it well or not at all...BUT
Half a loaf is better than nothing...
- ✚ Birds of same feather flock together...BUT
Opposites attract...
- ✚ Don't cross the bridge until you come to that...BUT
Forewarned is forearmed...
- ✚ You are never too old to learn...BUT
You can't teach old dog new trick...



J. Sai Sree
 Mounika
 16A85A0433

FROM BOOKS TO CANVAS



R Purna Kalyan
16A81A04H0



R Purna Kalyan
16A81A04H0

JOKES



Teacher: "what is the largest city?"

Student: "Electricity!!!"

Teacher: "what is the present tense for the sentence 'i killed someone '?"

Student: "the present tense would be ' I'm in prison '"

Murder of English

1. Pick up the paper and fall in the dustbin.
2. Both of you stand together separately.
3. Why are you looking at the monkeys outside when I am inside.
4. Will you hang the calendar or else I will hang myself.
5. I have 2 daughters both are girls.
6. Give me a blue pen of any color.
7. The principal is revolving in the corridor.
8. all of u stand in a straight circle
9. Open the Window - Let the AIRFORCE come in.

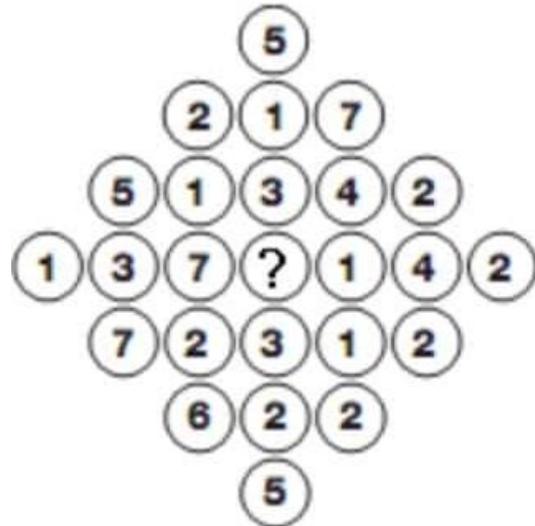
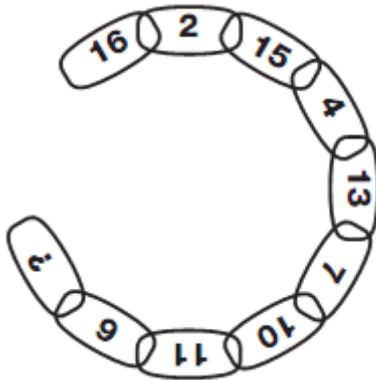
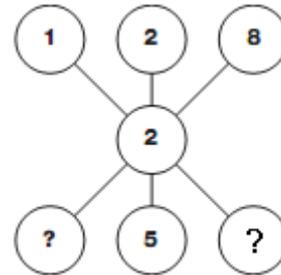


Why science teachers
should not be given
playground duty.

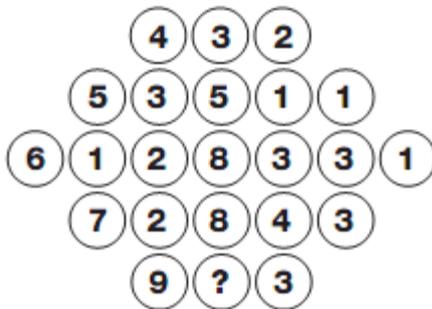
D.Rama Sai
17A81A0472

RIDDLES

Which number replaces the ? mark.....



What number comes inside the circle?



ANSWERS

- 1.1
- 2.2
- 3.6
- 4.2
- 5.6

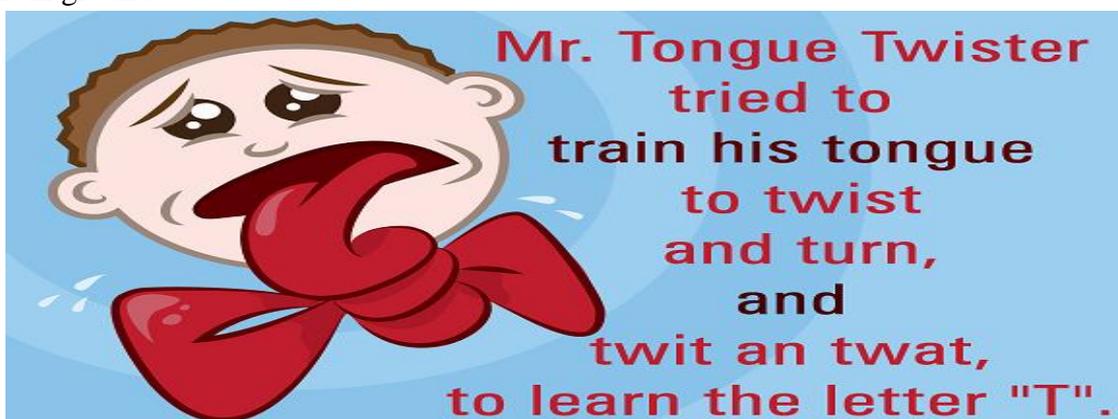
by
P.Varalakshmi
16A81A04G5

microcontroller. Once the controller receives this signal, it generates an output that drives a relay for operating the water pump. An LCD display is also interfaced to the microcontroller to display status of the soil and water pump into the field at a distance.



The important parameters to be measured for automation of irrigation system are soil moisture sensor. The entire field is first divided in to small sections such that each section should contain one moisture sensor and a temperature sensor. These sensors are buried in the ground at required depth. Once the soil has reached desired moisture level the sensors send a signal to the micro controller to turn off the relays, which control the valves.

The signal send by the sensor is boosted unto the required level by corresponding amplifier stages. Then the amplified signal is fed to A/D converters of desired resolution to obtain digital form of sensed input for microcontroller use. The three different red LEDs can be used in the system to sense outputs is dry or weight of all the sensors and the current status & motor status. The water is controlled by microcontroller though relays. And four blue color LEDs are use to indicate which sensor senses appropriate moisture with respect to the piece of land where the sensor is in ground.



MY CAMERA MY LOVE

Before I introduce my love to you, let me show you a little bit of the magic we made together.



f/3.2 - aperture value
1/60s - exposure time
4000 - ISO

This is a double exposure shot, meaning : “combination of two shots at two different exposures”. This done by using multi exposure function in my camera using which we can merge upto 9 frames at a time which implies 9 different exposures in a single picture.

f/4.0- aperture value
1/125s -exposure time
200-ISO

This image is shot by using ‘continuously accelerating and de-accelerating object’ function meaning the camera can track the object which continuously accelerates and de-accelerates.



f/3.2- aperture value
1/320s- exposure time
400- ISO

It's not always about the camera though I love it very much , it's about the clicking fingers too

To get this shot I sat in a very odd and uncomfortable position (I better leave that detail out) for a long time. I have captured lot of pictures of this little beauty but I have been waiting to get this particular posture in which u can observe:

- 1) butterfly sucking nectar
- 2) Head of the butterfly
- 3) Texture on its wings





f/12 - aperture value
30s- exposure time
100 – ISO

This is a multi exposure shot. This same as double exposure but here 9 different exposures are combined at a time.

Now it's time for the introduction

Here is my CANON EOS 1DX mark1 with ultra-sonic lens (70-200mm)



Specifications of my CAM....

- 18.1 MP full frame CMOS sensor
- Up to 12fps plus 14fps High speed mode
- 100-51200 ISO, up to H:204800
- 61 point AF system
- 100,000 pixel RGB AE metering
- Full HD 1080p EOS movie
- Dual “DIGIC 5+” processors
- Clear View II 8.11 cm (3.2”) 1,040k LCD
- Ethernet port

- Consistent, accurate metering: A 100,000 pixel RGB AE metering system with a dedicated DIGIC 4 processor measures not only brightness but also colour to ensure highly accurate exposure for natural results even in complex lighting situations.
- Dual “DIGIC 5+” processors: Canon’s latest generation Dual “DIGIC 5+” processors deliver the fastest and most advanced image processing to date for best-in-class image quality. Working with 4 A/D converters to provide 14-bit image processing for smooth tonal gradations and natural looking colours as well as advanced Noise Reduction at higher ISO speeds.



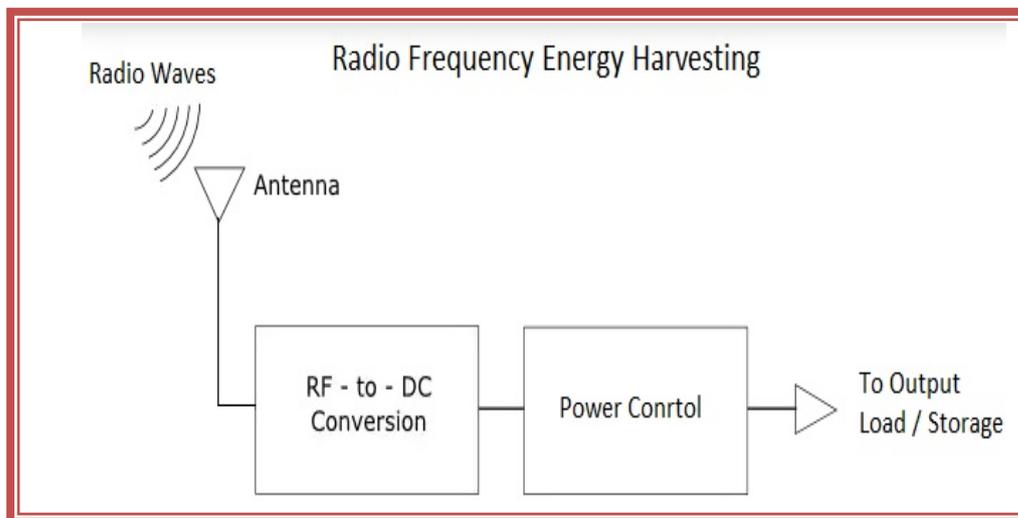
by,
V.Yaswanth Prasad
16A81A0459

Want more ? Stay tuned at http://instagram.com/_shutter_up___

FACULTY ARTICLE

RF BASED WIRELESS ENERGY HARVESTING AND ITS APPLICATIONS

Energy is one the most important factor for any active system to work. At any given moment, RF energy is transmitted from millions of transmitters and device across the globe. There is lot of advantages if we could harvest this energy from surrounding sources. Let's find what is radio frequency based wireless energy harvesting its applications. We have been depending on many energy sources for centuries. Since the modern science and electronics industry growing rapidly, there is a huge demand for various efficient energy sources. What is wireless (RF) energy harvesting?



The concept of energy harvesting is to receive energy from surroundings sources and convert it into a useful form to power any applications or store the energy for future usage. In wireless (RF) energy harvesting, electromagnetic energy from multiple sources received by an antenna, converts it into an electric energy and use as a power source for other devices.

How RF based wireless energy harvesting works

There are mainly three components in a typical RF energy harvesting device. An antenna designed and perfectly tuned to a specific frequency which receives signals from its surroundings. Antenna converts electromagnetic waves into low power electrical signals which will be feed to an AC to DC converter. DC voltage will be controlled by a controlling unit which regulates the output to the load or storage.

Applications of wireless energy harvesting

- Battery-less power source
- RF tags for shopping
- Smart lighting applications
- Smart switches for home automation used with ZigBee technology

- Internet of Things applications
- Recharging of devices
- Power source for smart sensors
- Simple design and cost effective
- Easier implementation

Advantages of wireless energy harvesting

- Conventional power sources can be replaced
- Unlimited spectrum of sources
- Efficient source of energy
- No wastage, green energy
- No need for periodic replacement of battery
- Extended life for devices due to recharging of storage battery during sleep mode

Future of wireless energy harvesting

There are lot of potential for wireless energy harvesting for application like Internet of Things and home automation projects. Smart sensor technology is capable of producing low power devices with advanced embedded technology which typically operates at micro watt input power. Wireless sensors for temperature, humidity and proximity sensors are used in industrial, home automation and automobile industry. Wire-free charging of any electronics device would be possible with advancement in wireless energy harvesting technology.

Our future mobile devices will be capable of using wireless charging technology as an alternate power source. Wearable devices and medical sensors will be using wireless energy as power source. Enhanced security devices with smart sensor technology can make use of power from wireless energy harvesting. It has advantages due to wire-free wireless transmission, compact size and the modules can be easily implemented anywhere.

Conclusion

In conclusion, emerging technologies like IoT will require efficient energy source to connect billions of smart devices and sensors for wide spectrum of applications. Long term sustainable and reliable energy sources are inevitable for any efficient system. Wireless energy harvesting is an area for future developments to deliver effective solutions for IoT, medical, industrial and other smart home applications.

by
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