

IEI NEWS

GOA

The Institution of Engineers (India)

AN ISO 9001:2008 CERTIFIED ORGANISATION
(Estd. 1920, incorporated by Royal Charter 1935)
GOA STATE CENTRE

*'98 Years of Relentless Journey Towards
Engineering Advancement for Nation Building'*

Issue No. 64

January 2018

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From the Chairman's Desk

Dear members,

It gives me an immense pleasure to talk to you through this effective medium of IEI Goa News. On this occasion, I take this opportunity to wish you all a very HAPPY NEW YEAR 2018.

After successfully organizing IEI Convocation and Technicians' / Students' Convention at Kala Academy on 28th & 29th October 2017, we are all set to take new venture of International Conference in November 2018 in collaboration with Dhempe College of Arts & Science, Miramar, Goa.

In January 2018, IEI GSC organised a three days workshop on 'ETAB Software', which was conducted by Mr. Prakash Bajaj, Mumbai. Er. Yogesh Bhoje was convenor for this workshop which was attended by 10 participants. In the month of December, we conducted Section A & B AMIE examination which



G. M. Naik Parrikar

was attended by 200 students.

We are functioning from the premises rented by Government Polytechnic Panaji for the last 8 years. Recently, we have been asked to pay increase in rent along with arrears. Ours being non profit making organisation we need to look for alternate premises or have our own premises. I appeal to all the members of state centre to come forward with suggestions identifying a suitable piece of land which can be obtained either by purchase or lease etc. In the meanwhile, we are also writing to the Government to waive of this increase in rent and allot new premises which would be rent free. Friends, I need your active support to make this happen. Your proposal and feedback are welcome to email id gurunathmn_54@yahoo.co.in.

With best wishes.

Er. Gurunath M. Naik Parrikar, FIE
Contact: 9168694667.

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Seminar on 'Impact of RERA on the Goan Real Estate Industry - A Report

by Thomas D'Costa

Seminar on 'Impact of RERA on the Goan Real Estate Industry' jointly organised by Goa Chamber of Commerce and Industry, Institute of Chartered Accountants of India (Goa Chapter), The Indian Institute of Architects (Goa Chapter), Confederation of Real Estate Developers' Associations of India (Goa Chapter), The Institution of Engineers (India) and Goa Association of Realtors (GAR) on Tuesday, 9th January 2018 from 2:30 p.m. to 6:30 p.m. at ESG Auditorium, Maquinez Palace Complex, Panaji, Goa.

The Seminar began with a key note address by Adv. Shivan Desai and an overview on RERA Regulations by Chartered Accountant Shri. Nandkishore Harithe. It was then followed by a Panel Discussion with

panellists Shri. Mahajan – IAS – Secretary of Urban Development / RERA officer for Government of Goa, Dr. Desh Prabhudesai, President, CREDAI, Ar. Tulio D'Souza, The



Audience



Chief Guest at RERA event

Indian Institute of Architects (Goa Chapter), Eng. Thomas D'Costa, The Institution of Engineers, Mr. Denzil Xavier, Goa Association of Realtors, Adv. Shivan Desai, Chartered Accountant, Shri Nandkishore Harithe, Institute of Chartered Accountants of India and Chartered Accountant, Paresh Sabadre (Maharashtra). The session was moderated by Ar. Manguesh R. Prabhugaonker, Chairman, The Indian Institute of Architects (Goa Chapter) and Chairman, Real Estate & Housing Committee, Goa Chamber of Commerce and Industry. It was a collaborative effort and initiative by GCCI President Shri. Sandip Bhandare to bring together all the stake holders related to housing and

real estates in Goa. The seminar was organised with a view to create awareness amongst all the stakeholders. Performing pre-ordained roles according to RERA Act, the additionally proposed changes with reference to the current practices in the construction procedure were discussed. Also, its impact on the Goan Real Estate sector was deliberated.



Organising Committee

The Real Estate Regulatory Act 2016 is an important legislation passed by our Parliament with an intent to monitor the builders and their construction projects. The primary purpose of the Act is to restore the confidence of the consumers in the real estate sector by establishing transparency and accountability. Goa State has also notified the State Rules under the Act. The forum tried to get everyone in the construction industry enlightened on the various implications of this Act and the State Rules for smooth functioning of the businesses.

The seminar focussed on understanding the key issues under the Real Estate (Regulations and Development) Act and highlighted its legal implications for all the stakeholders. The talk also included a session educating the process of obtaining various certifications mandatory under the said Act.

Question & Answer session also clarified several aspects of working mechanism for RERA Regulations to the audience. It has been proposed that any additional inputs from stake holders in regards with the above (which could be taken up with the authorities for its attention/ application) be kindly addressed to R S Kamat, Director General, Goa Chamber of Commerce & Industry (GCCCI), Narayan Rajaram Bandekar Bhavan, T.B Cunha Road, P. O. Box 59, Panaji, Goa, India. 403 001. Tel: + 91 (0832) 2424252, 2422635 Fax: +91 (0832) 2425560 Web: <http://www.goachamber.org> Email: goachamber@goachamber.org.

Continued on page 3

Three Day Workshop on Etabs - A Report

A full three day hands-on workshop was held from 26th January to 28th January 2018 in the CAD lab of Government Polytechnic Panaji, GPP campus Altinho, Panaji, Goa. This training in the structural software Etabs was conducted under the Civil branch of IEI, Goa State Centre with Mr. Prakash Bajaj, a renowned trainer in this field from Mumbai being the faculty member.

On the first day i.e 26th January, the workshop begun at 10:00am with IEI GSC Chairman, Shri Gurunath Naik Parrikar welcoming the gathering. There were in all 10 participants consisting of structural engineers practicing in Goa.

The program had the following agenda:

Day 1: 26th Jan :- Introduction to Etabs 2016 and creating of working building model

Day 2:- 27th Jan :- Loading inputs and design of the above created building model

Day 3:- 28th Jan:- Interpretation of result, creating of shear walls and introduction to Revit and Plan Win

On the third day i.e 28th Jan Ms. Pervez Soloman addressed the gathering with her knowledge on Revit and evaluation of quantities.

The above workshop ended with vote of thanks by Er. Yogesh Bhoje, the Convenor of this three day workshop.

Lunch and tea was served to all participants on all three days of the workshop.



Workshop on E-tabs

GOA STATE CENTRE CONDUCTS WINTER 2017 AMIE EXAMINATIONS

The Winter 2017 AMIE examinations of Section A and B for diploma stream was held from 02nd to 08th December 2017 at Government Polytechnic, Panaji. The number of students registered was 206.

Four examination halls & 10 invigilators were promptly arranged by Shri. T. K. Shridhar (I/c. HoD, Examination Section) and Er. Raghuvir Chary Nachinolkar (HOD, Fabrication Department) of Government Polytechnic Panaji. The examinations proceeded smoothly without any problem.

The main aim of the centre is to increase the number of

students passing out from Goa and neighbouring states with degrees. The centre also intends to increase the knowledge base by providing information and data to the students.

The examinations were conducted & supervised by Er. Raghuvir Chary Nachinolkar, Officer in charge, AMIE Exams IE (I), Goa State Centre and assisted by Ms. Vallavi Sirsat & Ms. Arthi Raul from The Institution of Engineers (I), Goa State Centre under the support of Er. Deepak Karmalkar, Hon. Secretary.



Examination Team for AMIE Examination



Students Appearing for AMIE Examination

... Impact of RERA

Continued from page 2

Er. Thomas while representing The Institution of Engineers (India), Goa State Centre highlighted that this RERA act and rules would bring transparency in construction industry and streamline the procedures of building development. He also assured that all engineers and consultants would respond to RERA in a positive way and fulfill all their obligation and duties of providing drawings, certificates, etc which are time bound so that the promoter can complete their projects for handing over to their clients in time. He also suggested that since all the projects required to register under RERA would be constructed only after getting approval from TCP office (as per The Goa Land development and Building construction Regulations, 2010), hence it was very important that RERA Rules should be tuned up to in line with The Goa Land Development and Building Construction Regulation, 2010. Er. Deepak Karmalkar, Hon. Secretary IEI also attended the function. Er. Gerard D'Mello co-ordinated through IEI, Goa State Centre.

FUNGUS USED FOR WINE-MAKING CAN HEAL CONCRETE

By Austin S. Rodrigues



New research conducted by Congrui Jin, Assistant Professor of Mechanical Engineering, Professor Guangwen Zhou and Associate Professor David Davies, the trio from Binghamton University, and associate professor Ning Zhang from Rutgers University suggests that a fungus called *Trichoderma reesei* which is used in industrial-scale production of carbohydrase enzymes such as cellulase, which plays an important role in fermentation processes during wine-making may act as a sealing agent for permanently repairing cracks in aging concrete, potentially helping save crumbling infrastructure.

Structures made in concrete undergo deterioration. Cracking is very common in concrete due to various chemical and physical processes it is subjected to. Shrinkage cracks, structural cracks due to overloading, movement of concrete due to temperature variations can lead to cracking. The steel reinforcement undergoes corrosion due to the ingress of moisture and air due to cracking.

The micro-cracks as well as the larger ones are very difficult to be repaired due to the financial burden and the labour output involved. "The idea was originally inspired by the amazing ability of the human body to heal itself of cuts, bruises and broken bones. A person takes in nutrients which the body uses to produce new substitutes to heal damaged tissues. In the same way, can we provide necessary products to concrete to fill in cracks when damage happens?" Congrui Jin tried figuring out since 2013. When water seeps in through the cracks, the calcium hydroxide from concrete dissolved in water, and the pH of the liquid was observed to be as high as 13.0. From the 20 different species of fungi placed in the medium to find one that could withstand this high alkalinity, only *Trichoderma reesei* could not only survive this environment, but in this high pH

medium, it's spores germinated into threadlike hyphal mycelium. *Trichoderma reesei*, was the fungus first isolated in the Solomon Islands during World War II when it was found in rotting U.S. Army equipment.

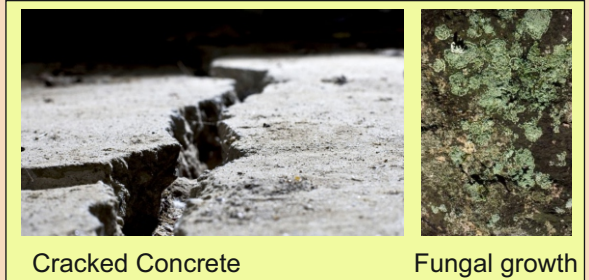
The research further says that as the *T. reesei* fungi grow, they would work as a catalyst within the calcium-rich conditions of the concrete. They would promote precipitation of calcium carbonate crystals which can fill in the cracks. The filling up of the cracks will stop the seepage of the moisture, and the fungi would form spores. In case any more cracks get generated and moisture seep through, the process would be restarted again due to presence of spores.

"The fungal spores, together with nutrients, will be placed into the concrete matrix during the concrete mixing

process. When cracking occurs, water and oxygen will find their way in. With enough water and oxygen, the dormant fungal spores will germinate, grow and precipitate calcium carbonate to heal the cracks" Assistant Professor Congrui Jin.

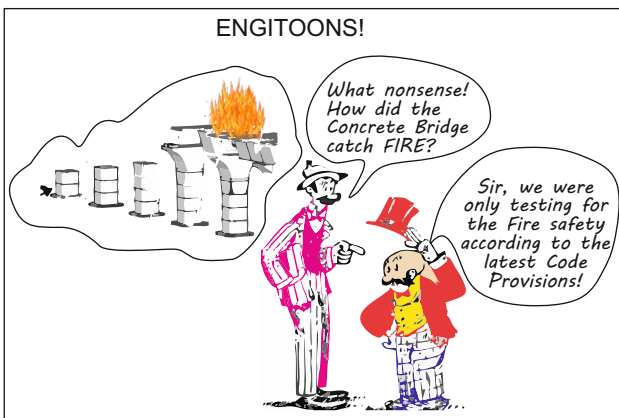
If cracks in concrete can be healed when they're still tiny, then they can't become large enough to ultimately cause structures such as bridges to collapse. The fungus, *T. reesei* is an eco-friendly and nonpathogenic fungus, and there have been no reports of adverse effects in aquatic or terrestrial plants or animals.

The research is still in the early stages. Meanwhile, scientists from both Newcastle University and the University of Bath have been developing self-healing concrete that incorporates calcium carbonate-producing bacteria.



Cracked Concrete

Fungal growth



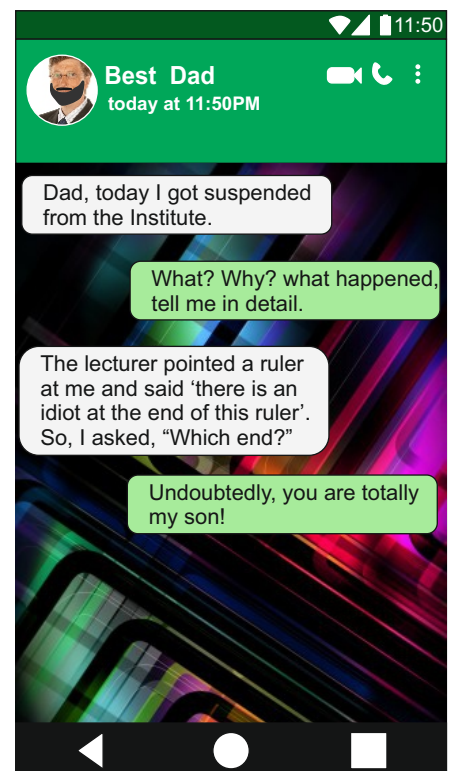
BRAIN TEASER

There are 16 scooters each with a tank that has the capacity to go 100 km. Using these 16 scooters, what is the maximum distance that one can go?

(Answer on page 8)

ENGINEERING FACT!

If you get less marks, your parents shout at you.
If you get more marks, your friends shout at you!



SEMINAR ON GALVANIZED REBARS IN RCC STRUCTURES – LIFE CYCLE ADVANTAGES

The Institution of Engineers (India) Goa State Centre has organized the Seminar jointly with the India Lead Zinc Development Association, New Delhi and ACCE (India) Goa Centre on Galvanized Rebars in RCC structures – Life Cycle Advantages on 15th November 2017 at Hotel Mandovi, Panaji Goa.

Mr. L. Phugazhenty, Executive Director ILZDA presented the welcome speech, followed by the address to the audience by the Guest of Honour Shri Gurnath M Naik Parrikar, Chairman of IEI Goa State Centre. The Chairman of ACCE Shri Antonio

Olavo Carvalho also spoke on this occasion. Hon. Secretary, IEI Goa Shri Deepak A. Karmalkar presented the vote of thanks.

The Technical Session was by Dr. S R Karade, Central Building Research Institute on the topic 'Corrosion of Steel in Concrete Structures – Current & Future Remedial Measures'. Shri D. S. Joshi from Joshi Consultants delivered lecture on 'Practical Usage & Advantages of Hot Dip Galvanized Rebars in Reinforced Concrete Structures for Durability'. Shri Rahul Sharma from International Zinc Association presented a lecture on Continuous Galvanized Rabars. L. Phugazhenty coordinated the Questions and Answers session from the audience.



Audience for the Seminar



Shri L. Phugazhenty, ILZDA



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Arduino: Numerous Engineering Applications Of A Small Invention

by: Raghuvir L. Chary Nachinolkar-F.I.E
 Contact: raghuvirchary@yahoo.com



In the recent past, electronics has burnt a lot of midnight oil to churn those millions of experts around, who in turn have made things simpler for the generation next.

What is Arduino? Arduino is an open source electronics platform accompanied with a hardware and software to design, develop and test complex electronics prototypes and products and programming is done using basic principles of C and C++ languages. Ready libraries are available for multiple hardware components. Arduino consists of programmable circuit board (often referred to as a microcontroller) and a software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board. This combination can perform any task in

Provided that they are available in the market, or in case one can develop his own, there is no limit to what can be done using Arduinos. In fact, some developers claim that a board like Arduino Uno is "too large", to perform majority of sensing, data collection and other tasks. Therefore, a smaller version called "Arduino Nano", is available for less than Rs. 500/- in India. By incorporating modules for Bluetooth, Wifi, Ethernet, Internet connectivity, wireless and remote controlled domestic as well as Industrial tasks can be very easily performed.

Now, what are the commonly available sensors for academic and engineering usage? The Sensors and accessories used with Arduino are Light, Ultrasound, Infrared, Voltage, Accelerometers, GPS modules, PIR, Temperature, Pressure, Humidity, Force, Gyroscopes, Photovoltaic, Magnetic and Water level.

Thousands of people working around the world in this area, have made things trivial, what seemed to be a dream a few years back. Google, American GPS system, MITs 'App inventor', and the 'Cayenne' from mydevices.com, free of cost facilities make control of any device even separated continents away, possible and with ease. Figure 2, shows

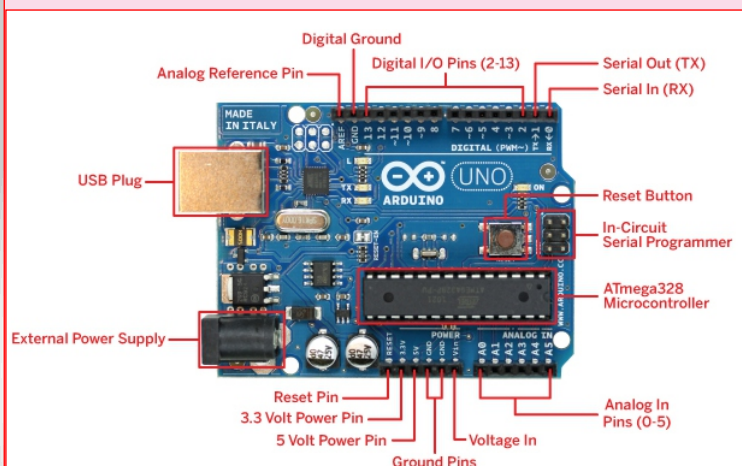


Fig. 1: Arduino Uno board
 (Available under Rs. 1000/- per pc)
 (Courtesy <http://maklabstore.com>)

37 IN 1 Sensors kit for Arduino



some of the commonly used sensors with Arduino boards:

Fig. 2: Sensors for all Arduino boards
 (Courtesy: Amazon.com)

A few schools and colleges are unable to develop facilities to promotion of scientific temperament amongst the students. They can switch over to Arduinos. Today, things have changed. Any person interested in electronics can start learning things by buying low cost items available online. A list of resources is made available at the end of this article. My dear fellow Engineers! Here is a call for all of you out there. If you were unable to get free access to these resources, give the Next Gen, a chance to play with these interesting and innovative items. Provide them with these facilities. Start by providing the required resources to your own children. We need to impart practical hands on, experience to budding engineers and scientists. It is a matter of grave concern that our soldiers are laying down life at our frontiers every day, without any protection, due to lack of sophisticated protective gears. We cannot go on importing arms and ammunition forever. Leave aside organisations like DRDO, which are busy in their domain. Nevertheless, our young generation need inspiration to develop items useful on all fronts. If any school or college imparting technical education is unaware of this development, there can be no excuse.

Our Ex-President, Dr. A. P. J. Kalam, always advocated the use of open source code platforms and proprietary free items for faster economic growth of the nation. Arduino- is one such name.

engineering. The simplicity of the Arduino language makes it easy for almost everyone who has an interest in electronics to write programs without the understanding of complex algorithms or codes. Refer Figure 1 which depicts an Arduino Uno, one of the many types of boards available in the market. Arduino boards have both digital and analog signal input and output facilities. They can collect both digital and analog signals and also control items like motors, small and big with ease.

Degree and Diploma engineering students are fascinated by the recent developments in robotics and general electronics. Online purchases make things a lot easier for these students, as items beyond reach, are made available within a few days. In fact, a few known secondary and higher secondary school children are engaged in deeper understanding of scientific concepts like control of parameters such as humidity, temperature, etc. for agricultural activities, power generation, speed control in material conveyers, toy engineering, robotics, etc.

Many ask, as to why the Arduinos are not used in commercial products. The answer is simple: Arduinos are meant for initial prototyping. Manufacturers incorporate many changes and make their own boards and software, using similar logic circuits, pcbs, and proprietary hardware so as to claim rights in the market.

What makes the Arduinos useful? They are the 'sensors'.

GOOGLE ANALYTICS

By: Er. Deepak A. Karmalkar

Once the website is built, the owner wants to know how many users have visited the website? where do the users come from on the website? And what they did on the website? The answer to these questions can be found by using the popular and free web analytics tool called Google Analytics. Google launched this service in November 2005 after acquiring from Urchin Software Corporation.



Er. Deepak A. Karmalkar

Google Analytics helps to measure, report and analyse the behaviours of the users coming to the website. Now let us see how they do this.

1. Measurement:

After setting up of the Google Analytics by adding the required information of the website such as account name, website name, website URL, Industrial category, country and reporting time zone, the Tracking code will be generated.

This tracking code has to be placed on the every page of the website and the installation will depend on what types of website. For HTML files, the tracking code shall be inserted before the Head Tag on each of the pages. For Word Press files, the tracking code can be placed through Appearance and Editor command, Yoast plugins Header and Footer Script Inserter plugins etc. Every time somebody goes to the website, this tracking Code will send information to Google Analytics that tells which page the user is currently on, which browser is the user using, what other language setting of his browsers, which previous page the user is using before coming to the current page and many other data points on which Google Analytics actually measures. This all happens at the background through the technology called Java script, so the users do not know these things when the users visit on the website. The Google Analytics itself records and stored the data and then can see who is there on the website.

2. Reporting:

Google Analytics built many reports from the data to

measure. In this Interface the audience report tells everything about the visitors, their age and genders, where they come from, what language they speak, how often they visit the website and technology used to visit the website.



The Acquisition report tells about how the visitors driven away from the website. The Behaviour report tells about the contents of the top pages, landing and exit pages. The Conversion reports tells what action did the users actually have taken that the owner desired to take him on the website.

All these reports are built and filled automatically by the Google analytics; the custom report on the interface can also be built. All this report does not do anything unless they are analysed.

3. Analysing:

This section answers the question based on the available data. Google Analytics has many different tools, filters the data, breaks down further, visualise differently by comparing and segmenting it and many more different techniques that are available within the tools to do a quick analysis. The goal of the analysis is to get insight action.

Google Analytics provide a business owner with the confidence to make sound business decisions about their web-based business that can be measured by hard data. This data can be used to ensure that an owner can make the proper adjustment to do their business as website traffic is analysed and the needs of their visitors are identified in order to enhance the market and business development strategies.

Google Analytics Resources

1. Official resources from Google
2. YouTube channel - <https://www.youtube.com/user/googleanalytics>
3. <https://www.umassmed.edu/globalassets/it/web-services/google-analytics/google-analytics-user-guide.pdf>



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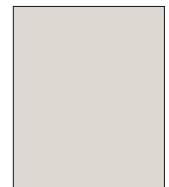
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Answer to Brain Teaser on page 4

First, 16 scooters travel the distance of 50km and consume half the tank capacity of fuel. Total distance covered at this point is 50km. From 8 scooters, the fuel is transferred to the other 8 scooters. The 8 scooters travel another 50km and so on. Therefore, the total distance covered at this point is 300km.

We request our members to get more interactive with the Institution. We'd love to have your contributions towards our bulletin, too. Do send in your articles, reports and other information that you'd like to share with other members to our office: **The Institution of Engineers (India)**, Goa State Centre, D-Type Quarters, D-8-1, Government Polytechnic Campus, Altinho Panaji, Goa. Tel.: 2434686. Email: goastatecentre@gmail.com Website: www.ieigoasc.org

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