MOET

AUGUST 2013

# TECHTFORUM DESIGN YOUR DESIGNATION

# DEPARTMENT OF INSTRUMENTATION AND CONTROL ENGINEERING



"If you want to live a happy life, tie it to a goal, not to people or objects."



-Albert Einstein

"I WILL ALWAYS CHOOSE A LAZY PERSON TO DO A DIFFICULT JOB... BECAUSE HE WILL FIND AN EASY WAY TO DO IT."

-Bill Gates



The only way to do great work is to love what you do.

~ Steve Jobs



# **ROBERT BOSCH**

Robert Bosch Engineering and Business Solutions Limited is a 100% owned subsidiary of Robert Bosch GmbH, one of the world's leading global supplier of technology and services, offering endto-end Engineering, IT and Business Solutions. With over 12,000+ associates, we are the largest software development Bosch. outside center of Germany, we are the Technology indicating Powerhouse of Bosch in India. We have a global footprint with presence in US, Europe and the Asia Pacific region.

We are ISO 9001:2008 certified (2009), ISO 27001 (2009) appraised at CMMI Level 5 as per 1.3 (2011), ISO 14001:2004 Environmental Management System, OHSAS 18001:2007 Occupational Health & Safety Management System .we have branches all over the world.

#### HISTORY

On 15 November 1886, Bosch opened his own 'Workshop for Precision Mechanics and Electrical Engineering' in



Stuttgart. A year later, he made a decisive improvement to an unpatented magneto ignition device made by the engine manufacturer Deutz providing his first business success. The purpose of the device

was to generate an electric spark to ignite the air/fuel mixture in a stationary engine. In 1897, Bosch was the first to adapt a magneto to a vehicle engine. In doing so, he solved one of the greatest technical problems faced by the nascent automotive industry. The invention of the first commercially viable high-voltage spark plug as part of a magneto-based ignition system by Robert Bosch's engineer Gottlob Honold in 1902 greatly enhanced the development of the internal combustion engine.

Before the 19th century ended, Bosch expanded his operations beyond Germany. The company established a sales office in the UK in 1898, and other European countries soon after. The first sales office and the first factory in the U.S. were opened in 1906 and 1910 respectively.



By 1913, the company had branch operations in America, Asia, Africa, and Australia, and was generating 88% of its sales outside Germany. In rapid succession in the years following the First World War, Bosch launched innovations for the motor vehicle, including diesel fuel injection in 1927. In the 1920s the global economic crisis caused Bosch to begin a rigorous program of modernization and diversification in his company. In only a few years' time, he succeeded in turning his company from a small automotive supplier into a multinational electronics group.



In 1937, Robert Bosch had restructured his company as a private limited company (close corporation). He had established his last will and testament, in which he stipulated that the earnings of the company should be allocated to charitable causes. It is developing in many domains and showing its increment till date.

#### www.boschindia.com

#### WRITTEN:

(Rules - sectional cut off + negative marking - 90 quests 90 marks)

Tech: Topics covered- LIC, EDC, CIRCUITS, DLC, C PROGRAMMING (output and debugging)

Aptitude: Will cover basic maths (types of quests solved by Mr. Thanickachalam sir will really help a lot)

Reasoning: Verbal & non-verbal reasoning

Verbal: Max. 5 to 6 (grammatical corrections and phrases/synonyms/antonyms for sure)

Technical Round

Questions covered

->DLC

->C program

->Pointers in C

->Project

->Control Systems

->diff in microprocessor n controller

->LIC

->Reaction to a situation put before by the HR

->Area of interest

General Round (Hardly 20 to 25 min)

Brief description about our self, short term n long term goals

I was also asked with basic science & maths (depends on the HR)

BY ROOPINI.R

# Bosch role.

"We see RBEI as helping us to achieve the technological lead we need to have in order to prevail in increasingly competitive world markets.....RBEI is about ensuring product excellence under conditions that allow us to maintain our global competitiveness".

-Mr. Franz Fehrenbach, Chairman of the Supervisory Board, Robert Bosch GmbH, Managing Partner of Robert Bosch Industrietreuhand KG (RBIK).



## **MAJOR OFFICE LOCATIONS:**

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SUBMITTED BY

L.R.DEEPTHI





Identification No SGL 035–003 Made From Sustainable Alternative Fibres ISO 14001 Certified Environmental Manufacturer





Tamil Nadu Newsprint and Papers Limited (TNPL) is engaged in the manufacture of newsprint and printing and writing paper using bagasse as the primary material. The Company has identified two business segments: Paper and Energy. Its brand products include TNPL Copier - Platinum, TNPL Perfect Copier, TNPL Eezee Write, TNPL Printer's Choice, Copy Crown and Eco-friendly Exercise Notebooks. The Company's mill is located at Kagithapuram in Karur District, in a sprawling campus of 830 acres. During the fiscal year ended March 31, 2012 (fiscal 2012), TNPL has produced 5325.71 lakh kilowatt hour captive power and 507.28 lakh kilowatt hour wind power. During fiscal 2012, 15,218 acres of pulpwood plantation were added. TNPL caters to the requirements of multifunctional printing processes.

**Clarifier in Water Treatment Plant** 

The New Ten Body, Seven Effect Free Flow Falling Flim Evaporation Plant, the largest Black Liquor Evaporation Plant in India

#### TECHNOLOGY

TNPL is an acknowledged leader in the technology of manufacture of paper from bagasse – the sugar cane residue. Started with an initial capacity of 90,000 tonnes per annum (tpa) on a single Paper Machine, the Mill doubled the capacity to 180,000 tonnes per annum in the year 1995 by addition of one more Paper Machine. Under the Mill Development Plan (MDP) completed during May 2008, the pulp production capacity has been increased from 520 tpd to 720 tpd. The pulp being produced by TNPL, in post-MDP is Elemental Chlorine Free (ECF). Along with this, the upgrade of the Paper Machines has resulted in reaching the paper production capacity to 2,45,000tpa. TNPL completed the Mill Expansion Plan (MEP) in December 2010 to raise the mill capacity to 400,000 tpa from January 2011, by installing a third Paper machine (PM #3) and simultaneously increased the pulp production capacity to 880tpd.

Having successfully completed the MEP, the mill has now embarked upon a green field project to install a double coated multilayer paper board machine. The pre-project activities have commenced for this project from May 2013. The target set for Commissioning of the project is May 2016.



# OTHER KEY PROJECTS UNDER IMPLEMENTATION:

# Revamping of Steam and Power system (RSPS):

The Company is implementing a project to replace the 3 low pressure (44 ata) Boilers of 60 tph each installed during 1984 with a new energy efficient and environmental friendly Circulating Fluidised Bed Combustion (CFBC) Boiler of 125 tph steam generation capacity at 105 at a pressure rating. In addition, the Company has proposed to replace the two old Turbo Generator (TG) sets with a new TG set of 41 MW capacity to augment the in-house power generation for meeting the additional power requirement. The project features installation of an Air Cooled condenser for the TG in place of conventional water cooled condenser, in order to conserve water. The total capital outlay for the project is Rs 150 crore. The project is heading for commissioning in the month of July 2013.

#### **De-inking Plant :**

То meet the additional pulp requirement in the post- MEP, the Company has initiated steps to install a state- of-the-art Deinking plant of capacity 300 tpd, at an estimated outlay of Rs.174 Crore. capital Commissioning trials for the plant commenced from 3rd week of June 2013.

## On-site Precipitated Calcium Carbonate (PCC) plant

Following the switching over to alkaline sizing in the Stock preparation, the machines started paper using Precipitated Calcium Carbonate (PCC) as the wet end filler. In view of the huge requirement of PCC, the Company has proposed to install an on-site PCC plant of 60,000 tpa capacity on Built, Own and Operate (BOO) basis in the Mill premises. The plant will be established by OMYA International AG, Switzerland at a capital outlay of Rs.30 crore. The Environmental clearance for the project is received. The project is scheduled to go on stream from March 2014.

# On-site Wet Ground Calcium Carbonate (WGCC) plant

While the company continues to use PCC, trials were conducted for increasing the ash content in the paper. Towards this, a combination of GCC and PCC was tried out, to improve the surface properties of paper in an economical way. As the results are found encouraging the company has been using GCC, which is currently being purchased in powder form. Considering the huge quantity of GCC requirement the company has initiated action for establishing an on-site GCC plant, on the same lines of PCC plant. An agreement on BOO basis has been entered into and the plant is scheduled for commissioning by November 2013.

# Lime Sludge & Fly Ash Management (600 tpd Cement Plant)

The lime sludge generation from the Recovery Cycle and the Fly Ash generated from the power boilers are issues of concern in solid waste management of the mill. An innovative solution of combining these two wastes and converting them into high grade cement has been drawn through installation of a 600 tpd cement manufacturing plant abutting the Mill premises. Environmental Clearance and the Consent to Establish were received from Department of MOEF / GoTN and the Tamil Nadu Pollution Control Board. This project is undertaken at a capital outlay of Rs.100 crore. The project has commenced the commercial operations from January 2013.



STACKING OF BAGASSE (BOOM STACKER)

# TNPL PRODUCTS TNPL Ultra White Map litho Radiant Printing Hardbound Notebook TNPL Offset Printing Cream wove Copy Crown TNPL Copier Students' Favorites

TNPL's contemporary cutting edge technology processes and equipments along with a team of dedicated trained professionals ensure that customers always get consistent quality products. State of the art 'Online Process Control Systems' installed at various stages of manufacturing processes continuously measure and control critical parameters. R&D and QC activities are aimed towards achieving company's corporate goals.

- Sustained R&D efforts to support process for improvements in quality and trouble shooting.
- Customized support to customers and provide workable solutions for specific problems.
- Right quality and quantity of raw materials usage ensured through structured sampling and testing.
- Effective pollution

   abatement measures to
   meet all statutory and
   mandatory norms which
   also fetch Carbon Credit.



SIDE VIEW OF PAPER MACHINE -I (BELOIT WALMSLEY)



# SIFTABLES





Siftables are small computers that display graphics on their top surface and sense one another and how they are being moved. Siftables were developed as a platform for hands-on interactions with digital information and media and were the prototype for Sifteo cubes.

Siftables were created by David Merrill and Jeevan kalanithi when they were graduate students at the MIT Media Lab. Merrill and Kalanithi are friends from their undergraduate years at Stanford, where they both majored in symbolic systems, Merrill focusing on human-computer interaction and Kalanithi on artificial intelligence and neuroscience.



The design of Siftables was inspired by observing the skill that humans have at and sifting. sorting. otherwise manipulating large numbers of small physical objects. When we overturn a container of nuts and bolts and sift through the resulting pile to find one of a particular size, or spread photographs out on a tabletop and sort them into piles, we use all of our fingers and both hands actively and efficiently. However, when we sort digital information or media such as digital photographs or emails, the experience typically does not leverage our physical manipulation skills. One typical user interaction with a modern graphical user interface (GUI) is to click on an icon with the mouse, drag it to another location on the screen, and drop it to reposition it or to assign the data it represents to a folder. This so-called 'direct manipulation' of information afforded by a GUI is a poor substitute for our facile all-finger. two-handed manipulation of physical items.

Siftables consists in a collection of compact tiles (36mm x 36mm x 10mm) each with a color LCD screen, a 3-axis accelerometer. four IrDA infrared transceivers, an onboard rechargeable battery and an RF radio. For a typical data manipulation task, each tile is populated via radio with a representation of a single instance of the data to be sorted, and a user's physical manipulations to the collection of tiles are sensed and used as input to the system. Visual feedback during the task is presented to the user on the LCD display, and auditory feedback can be played by a nearby computer. Sensing in the current Siftable design is accomplished by the accelerometer and the IrDA transceivers. Manipulated atop a flat surface, a siftable can sense its own motion in the plane of the surface, as well as impacts with other objects. It can also sense the action of being lifted, tilted or shaken.





# www.sifteo.com

transceivers are tuned for extremely short-range communication on the order of 1cm, and are used to detect neighboring tiles at close range. The sensed information can be shared with other siftables or with a nearby computer wirelessly. These sensing, graphical display and wireless communication capabilities allow Siftables to behave as a single,coordinated interface to information and media.



Siftables are physical responsive objects, interacting with them seems more intuitive than interacting with their digital counterparts. There is no user manual. Instead, users are able to explore possibilities given blocks with the predefined behaviors. In another example of their capabilities, they are literally the "building blocks" for music composition: lead, bass, and drum sounds, reverb and filter effects, and tempo and volume controls that can be combined and sequenced improvisationally. As someone who doesn't play any musical instrument, I'm intrigued by this simple and exploratory method of making music.





Siftables may be tactile, but can they recreate the board game experience? Probably not, but they may be able to equally or even more create an compelling experience. Imagine programming them to interact with Microsoft's Surface, for example, where Surface is the board and Siftables are the game pieces. Suddenly dozens or even hundreds of games are possible with those compatible technologies. Just as BumpTop falls somewhere between the 2-D desktop and the virtual environment, Siftables are hybrid digital-physical interfaces, uniform as icons in shape and size but receptive to tilting and shaking. Perhaps they are a harbinger of interfaces to come, objects that are pleasurable to touch and hold, responsive not only to us but to other objects, aware of their environment and communicative.

There's really nothing else out there quite Sifteo Cubes. like The company characterizes the product as a cross between a toy and video games, but it is a refreshing breeze in the world of either, one that should pick up velocity as more third-party games hit the system by this holiday season. If Sifteo can inspire developers to exploit its platform, its unique mode of interaction gaming should be enough for it to steal sufficient attention from smart phone gaming.





There is a swing on the edge of a cliff in Ecuador. It has no safety measures and is called the 'Swing at the End of the World'.



A giant rock performing an unbelievable balancing act on a seemingly smooth, curved mound in the dense forests of Finland is a mystery because nobody knows how it got there.



Cherries can cause cancer cells to kill themselves





# DO U KNOW???

## **3Doodler**

An innovative discovery in the field of 3D printing, this 3D pen could ease the life of many a data modelers, designers and amateurs alike. 3Doodler is the first, one of its kind 3D printing pen. It enables the user to create 3D drawings in the air or on flat surfaces.

The fact that it is extremely compact and easy to handle with no software requirements whatsoever, makes it all the more unique. Interestingly enough, it doesn't require any degree of expertise and can be used by both experts and novices.

#### Working

This 3D pen works on electricity but a battery operated version is to be released soon. The principle on which the 3Doodler works is extremely simple. It expels fine strips of molten plastic which can be designed into any desired shape, and with the help of an in-built fan, the structure can be cooled just as easily. There are two control buttons in the device which helps the user control the speed at which plastic is expelled from the pen. For designing 2D objects, the high speed options is the best, however for 3D modeling, the speed has to be finely controlled. Thus, 3Doodler offers great control to the users and helps them to design a variety of structures of any desired shape and size. Interesting



#### **Stencils for 3Doodler**

A simple method to create 3D objects is creating 2D versions of the object and then welding the pieces together in a 3-dimesional fashion to get the desired effect.



Yet another fancy method is the use of pre-designed shape stencils for 3Doodler. These stencils need to be merely printed out and then with a flick of 3Doodler pen, we can draw out the traced stencil shape in 3 dimensions.

An option for creating customized stencils shall also be introduced in future to encourage extensive use of this innovative and fun tool, 3Doodler.

#### **3Doodler popularity**

3Doodler has already become a hit with its users, who vouch for its designing capabilities and ease of use. Some of the major promoter-artists are Ruth Jenson, Ele McKay, Bud Bullivant to name a few.

# Easy on pockets

With all these awesome functionalities, one must be left wondering as to what would be the price of this amazing pen. Good news folks! 3Doodler is extremely easy on the pocket and value for money, just about \$100 a piece.

### The Ink (ABS/ PLA Plastic)

The doodler uses3mm ABS or PLA plastic as its ink just like 3D printer.each 3Doodler backed on kickstarter comes with at least one bag of plastic and each 1 feet strand produces approximately 11 feet of 3Doodling pen.



ABS is one of the most common plastics around. Its used in most of the plastice stuff around you. PLA is what we call a "bioplastic". Its made from corn, its biodegradable and has a low melting temperature then ABS.



## The future of 3Doodling

We have a tons of ideas for addons and accessories that will make 3Doodler even cooler,more useful,fun and generally awesome.

It will be a big success so that we can share all our ideas and offer you can even more 3Doodling fun.







# TECH QUIZ

## ELECTRONIC DEVICES

1.The wide end arrow on a schematic indicate <u>A.g</u> round	es the of a diode.
<u>B.</u> direction of electron flow	
<u>C.</u> cathode	
<u>D.</u> Anode	
2.Under normal conditions a diode conducts on <u>A.</u> reverse-biased.	urrent when it is <u>B.</u> forward-biased.
<u>C.</u> avalanched.	<u>D.</u> saturated.
3.Effectively, how many valence electrons are there in each atom within a silicon crystal? <u>A.2</u> <u>B.4</u>	
<u>C.</u> 8	<u>D.</u> 16
4.A common-gate amplifier is similar in config <u>A.</u> common-emitter	guration to which BJT amplifier? <u>B.</u> common-collector
<u>C.</u> common-base	<u>D.</u> emitter-follower
5.In which of the following are operational amplifiers (op-amps) used? <u>A.</u> Oscillators	
<u>B.</u> Filters	
<u>C.</u> Instrumentation circuits	
<u>D.</u> All of the above	

6.An op-amp has an open-loop gain of 100,000 and a cutoff frequency of 40 Hz. Find the open-loop gain at a frequency of 30 Hz. A.800 B.8,000 <u>C.</u>80,000 <u>D.</u>100,000 7.An FET is a \_\_\_\_\_-controlled device. **B**.voltage A.current 8.What is the open-loop gain of an op-amp at the gain-bandwidth product of the opamp? <u>A.</u>200,000 <u>B.</u>50,000 <u>C.</u>200 <u>D.</u>1 9.The \_\_\_\_\_ amplifier configuration has the highest input impedance and the lowest output impedance of the three basic op-amp configurations. A.non-inverting **B**.inverting C.voltage-follower 10.You have the schematic diagram of several types of circuits. Which of these circuits most likely uses a triac? A.an oscillator B.an ac motor control C.a programmable oscillator D.an amplifier

Be the change you want to see in the World. -Mahatma Gandhi



- My flight takes of at 2am from a place at 18N 10E and landed 10 Hrs later at a place with coordinates 36N70W. What is the local time when my plane landed?
   a)6:00 am b) 6:40am c) 7:40 am d) 7:00am e) 8:00am
- 2) A person had to multiply two numbers. Instead of multiplying by 35, he multiplied by 53 and the product went up by 540. What was the raised product?
  a) 780 b) 1040 c) 1590 d) 1720
- 3) How many positive integer solutions does the equation 2x+3y = 100 have?a) 50 b) 33 c) 16 d) 35
- 4) The total expense of a boarding house are partly fixed and partly variable with the number of boarders. The charge is Rs.70 per head when there are 25 boarders and Rs.60 when there are 50 boarders. Find the charge per head when there are 100 boarders.
  a) 65 b) 55 c) 50 d) 45
- 5) Amal bought 5 pens, 7 pencils and 4 erasers. Rajan bought 6 pens, 8 erasers and 14 pencils for an amount which was half more than what Amal had paid. What % of the total amount paid by Amal was paid for pens?
  a) 37.5% b) 62.5% c) 50% d) None of these
- 6) Anand finishes a work in 7 days, Bittu finishes the same job in 8 days and Chandu in 6 days. They take turns to finish the work. Anand on the first day, Bittu on the second and Chandu on the third day and then Anand again and so on. On which day will the work get over?a) 3rd b) 6th c) 9th d) 7th

7) Tea worth Rs. 126 per kg and Rs. 135 per kg are mixed with a third variety in the ratio 1:2. If the mixture is worth Rs. 153 per kg, the price of the third variety per kg will be:

A. Rs. 169.50	B. Rs. 170
C. Rs. 175.50	D. Rs. 180

8) A can contains a mixture of two liquids A and B is the ratio 7 : 5. When 9 litres of mixture are drawn off and the can is filled with B, the ratio of A and B becomes 7 : 9. How many litres of liquid A was contained by the can initially?

A. 10B. 20C. 21D. 25

9) A milk vendor has 2 cans of milk. The first contains 25% water and the rest milk. The second contains 50% water. How much milk should he mix from each of the containers so as to get 12 litres of milk such that the ratio of water to milk is 3 : 5?

A. 4 litres, 8 litres B. 6 litres, 6 litres

C. 5 litres, 7 litres D. 7 litres, 5 litres

10) A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?

A. 26.34 litres B. 27.36 litres

C. 28 litres D. 29.16 litres

SUBMITTED BY

GOWTHAMSARATHY.P

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STUDENT COORDINATORS

THIRD YEAR

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