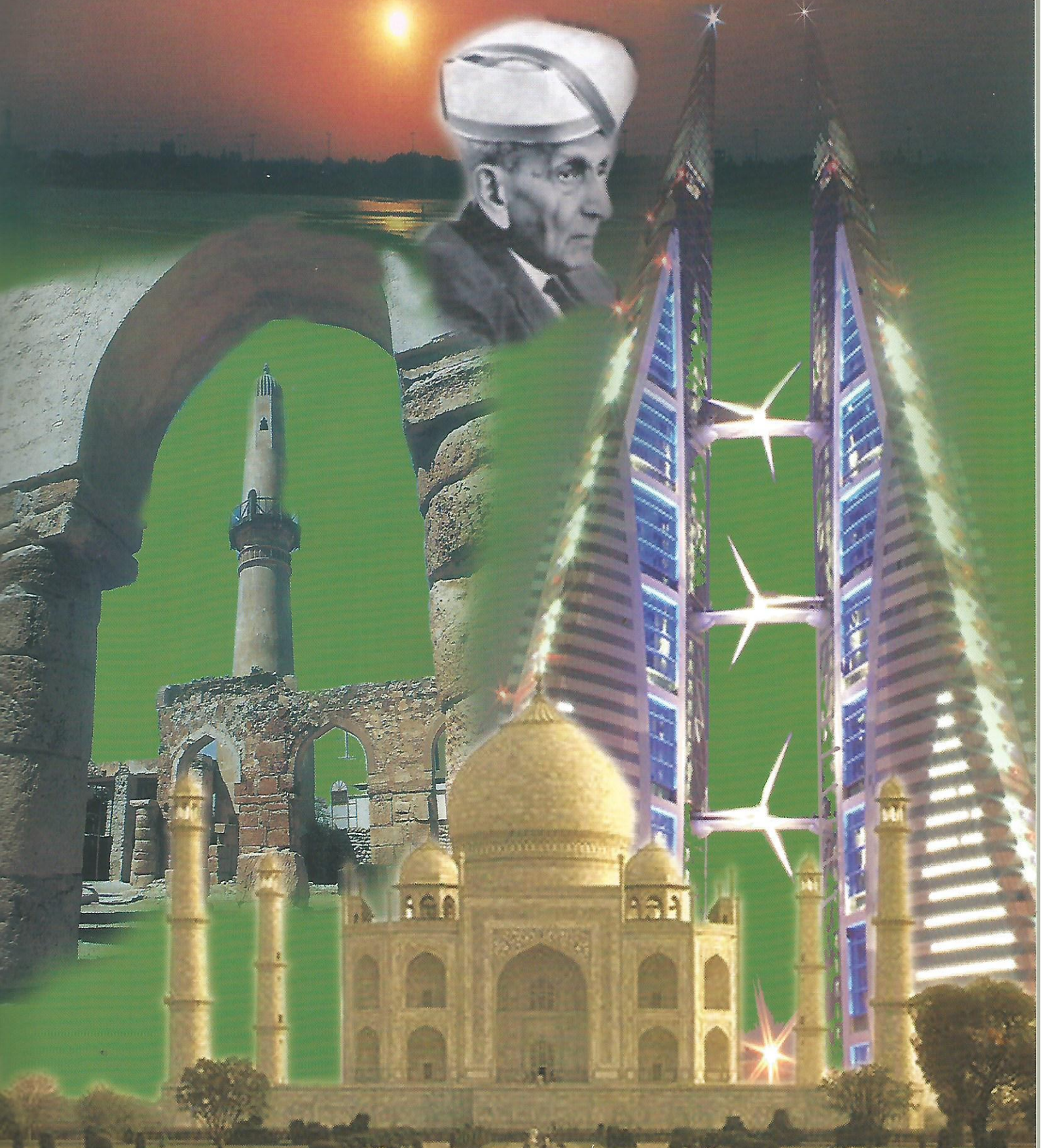
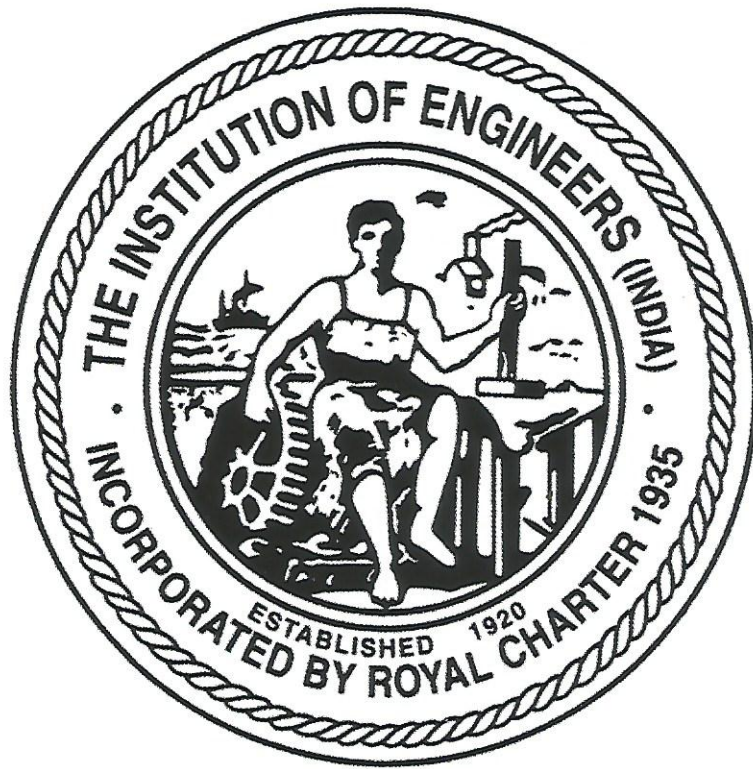


The Institution of Engineers (India)

Bahrain Chapter



IEIBC JUBILEE 20 SOUVENIR





صاحب السمو الملكي
الأمير خليفة بن سلمان آل خليفة
رئيس الوزراء الموقر
حفظه الله ورعاه

H.R.H. Prince Khalifa Bin Salman Al Khalifa
The Prime Minister



حضرة صاحب الجلالة
الملك حمد بن عيسى آل خليفة
ملك مملكة البحرين
حفظه الله ورعاه

H.M. King Hamad Bin Isa Al Khalifa
The King of the Kingdom of Bahrain



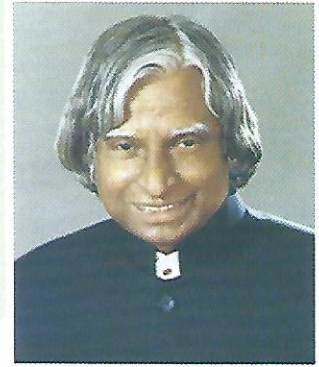
صاحب السمو الملكي
الأمير سلمان بن حمد آل خليفة
ولي العهد الأمين نائب القائد الأعلى
حفظه الله ورعاه

H.R.H. Prince Salman Bin Hamad Al Khalifa
The Crown Prince and Deputy Supreme Commander

Dr. APJ Abdul Kalam
Former President of India



25 December 2009

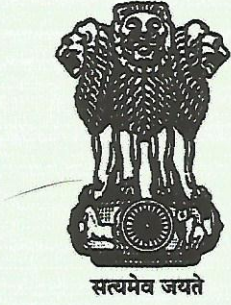


MESSAGE

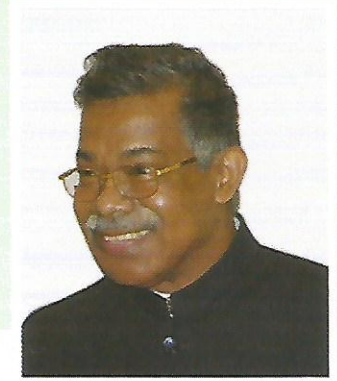
I am delighted to know that Institution of Engineers (India) Bahrain Chapter has been functioning for over two decades with the vision to disseminate knowledge and experience, latest engineering practices and modern engineering methodology among professional engineers serving in Bahrain. I am happy that during the last two decades, IEI Bahrain Chapter has taken up number of advocacy missions through which the engineers serving in Bahrain have been enriched. Also, number of diploma holders have got themselves upgraded through the efforts of IEI Bahrain Chapter. I would suggest the chapter to consider enhancing the education levels of ITIs and semiskilled workmen serving in Bahrain through a special programme which is essential to improve the earning capacity and lifestyle of personnel in the bottom of pyramid. This could be a unique venture of IEI Bahrain chapter worthy of emulation by other centres. I congratulate the pioneers both present and past for setting up this chapter and nurturing it to the present status. My greetings and best wishes to all the members of IEI Bahrain in their Mission of enriching every engineer and technologist through their awareness programmes and transforming them as civic technologists.

25 December 2009

Dr. APJ Abdul Kalam
Former President of India



भारतीय राजदूत, बहरीन *Ambassador of India, Bahrain*



I am happy to note that the Institute of engineers (India) - Bahrain Chapter is bringing out the Jubilee souvenir to commemorate their 20th anniversary. I would like to extend my hearty congratulations to them and share their joy and pride.

Engineering has risen to prominence as a profession that mediates between the existing me-first civilization and the fragile assets of our shrinking planet. While functioning in a field that is defined between these coordinates, engineers have provided commitment to the client and concern for the environment which is a quite a task. Therefore, it is justified for the pride of place that our engineer occupies in our present society.

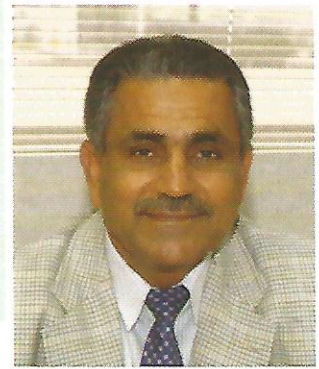
Engineers from India have been an inseparable part of the progress of this country over the last half century. With their knowledge and experience gained from the motherland and from this land of hospitality, they have proved themselves and contributed to the growth and development in the Kingdom of Bahrain.

The Institution of Engineers (India) - Bahrain Chapter have done a commendable job in conducting the technical seminars and site visits, arranging the science model contests, conducting AMIE examinations and other social activities. All these are possible by the hard work and sacrifice of the highly dedicated engineers.

On behalf of the Embassy of India, I wish the Institution of Engineers (India) - Bahrain Chapter continued success in the coming years. May the memory of the great engineer Sir Visweswarya challenge you to the dazzling future.

Dr. George Joseph

September 24, 2009



MESSAGE

Date: 9th November 2009

Dear President,
Member of the Board and member of **The Institution of Engineers (India)**, Bahrain Chapter.

On behalf of the Bahrain Society of Engineers and its affiliates, I congratulate you as you celebrate 20th anniversary serving the Engineering Profession in the Kingdom of Bahrain.

It is my privilege to have had many contacts with your organization since 1993, I am also aware of your leadership in many fields of engineering and your contribution to bring the success to the engineering society and **The Institution of Engineers (India)**, Bahrain Chapter.

I have enjoyed many fruitful discussions with you over the years and wish you and your society every success in the future.

Once again congratulations for your 20th anniversary celebrations.

Abdul Majeed Al Gassab
President
Bahrain Society of Engineers

Anna University

MESSAGE



I am delighted to learn that The Institution of Engineers (India), Bahrain Chapter is celebrating its Jubilee 20 and Annual Science Model Exhibition for School Students on 12th December, 2008 at Bahrain and planning to release a Souvenir to memorialize the occasion.

I am proud to note that the IEI –Bahrain Chapter is engaged in promoting professional activities since 1988 in Bahrain thereby disseminating knowledge and experience in the recent advancements in the converging technologies.

I firmly hope and believe that the Jubilee celebrations and the Science Exhibition will be stimulating and encouraging for all the students and other participants to get acquainted with different and latest techniques on various themes exhibiting their scientific and technological talents in them.

I am confident that this forum will ensure the scientific distinction and success recorded by the eminent predecessors of Bahrain Chapter and I wish every success in all your future endeavors.

Dr. P. Mannar Jawahar

Vice-Chancellor
Anna University
Chennai

From the Chairman's Desk.....



I have immense pleasure to bring out the Chapter's Jubilee20 souvenir publication in commemoration of twenty successful years of its operation in Bahrain.

Most people are eager to know the time of the moment; many learn to read the clock, but only a few take the initiative to set up a clock so that others could read the time off it. These people who take the initiative have a vision; they feel compelled to establish or create something that will endure the test of time and flourish forever. They want to make a difference by doing something that deserves to be done; that benefits others. Their beginnings may be humble, but they eventually become defined by their initiative. Collins and Parras, in their book *Built to last* made a clear distinction between the ability to tell the time in the moment and the ability to build a clock that could tell the time beyond the lifetime of the builder. I pay tribute to a couple of such clock-builders - R N Ghosh and BTC Jeyakumar in particular, who gathered about 200 members of the Institution of Engineers (India) on the island, promoted their vision and established the Bahrain Chapter of the institution in 1988, with the encouragement and invaluable help from the late Hisham Shehaby, Past President of Bahrain Society of Engineers.

I express my gratitude to all the successive leaders who through their indomitable bondage, amazing dedication and selfless service have led the Chapter to greater heights. Over the past 20 years, several engineers have gained through our seminars the knowledge not found in text books, a few have grabbed the leadership opportunities and developed themselves as better leaders, and a few have been inspired to become specialists. We have been a role model for the establishment of other professional chapters in Bahrain. We have been motivating young students to pursue science, with our annual science exhibition; one of them has won a coveted title later as a young scientist of Chennai, India.

I sincerely thank our patron, HE the Ambassador of India George Joseph and Mr. Abdul Majeed Al Gassab, President of Bahrain Society of Engineers for their kind patronage and great support to our Chapter activities.

I am greatly privileged and highly delighted to have received a message from the former President of India, Dr. Abdul Kalam.

I express my sincere gratitude to Mr. P Mannar Jawahar, Vice Chancellor of Anna University, India, for having graced the occasion of Jubilee20 celebration and the science exhibition of the chapter last year as our chief guest.

I wish to place on record my sincere appreciation of relentless and sustained efforts of our Past Chairman Sidney Ponniah, editor and chairman of Jubilee 20 souvenir publication committee, and the tireless service of all souvenir committee members despite the effects of global economic situation.

It has been exciting years - over a decade long - of leadership for me with the Chapter during which I gained valuable knowledge, harvested useful lessons and honed my skills in leadership. I urge now the young corporate members to come forward to take up leadership roles in the executive affairs of the Chapter, serve the Chapter and to set up clocks that will tell the time beyond their lifetime.

I wish you and your family a happy, prosperous and peaceful new year full of success in your endeavours.

P K Kasinathan

Hon. Chairman - IETI Bahrain Chapter
December 2009

MESSAGE



I am glad to hear that the Chapter is celebrating its 20th Anniversary on 12th December 2008. It is satisfying to note that the seed sown by the elders is bearing fruit and the lamp that was lit 20 years ago continues to shine.

It shows dedicated leadership, selfless service and tireless effort of the members of the Chapter, particularly those who have served relentlessly in the Executive Committee.

I felicitate the members of the Chapter for bringing out the souvenir on this occasion and wish them all success in their endeavors.

Bobby Chacko

Past Chairman

USA

Sept. 2008

MESSAGE



It gives me immense pleasure to know that IEIBC is celebrating 20th anniversary.

I was privileged to associate with IEIBC in its formative and crucial years including the 10th anniversary.

My first assignment in the executive committee was as Officer in charge of AMIE examinations. I am pleased to inform that wherever I go I meet a few who have benefited from IEIBC's AMIE examinations in Bahrain. It is heartening to know that they are placed well after passing the AMIE exams.

I am happy to note that the annual Science and Technology exhibition - initiated during my tenure to encourage school children - has now expanded to include all the Gulf countries in addition to Bahrain.

Affiliation with the Bahrain Society of Engineers gave a boost to our activities. We could arrange frequent technical seminars, sometimes even four in a month. These seminars opened opportunities to be in touch with latest developments, to expand our network with fellow professionals. Members used to look forward to our family events as well.

I admire a group of dedicated executive committee members and volunteers who have been the backbone of IEIBC. A few to mention are Sydney Ponniah, who has been with the IEIBC executive committee from its inception and has been instrumental in organizing innumerable seminars, P.K.Kasinathan who steered the IEIBC committee during its 10th anniversary and also its 20th anniversary. The services of many volunteers and past executive committee members are commendable.

My association with IEIBC has enriched my knowledge and capabilities and I am grateful to IEIBC for this valuable experience.

I wish IEIBC all the success and look forward to its continued growth.

R.Krishnan

Past Chairman/IEIBC
Chief Engineer, Sohar Aluminium,
Sultanate of Oman
12 Dec 2008

DOWN MEMORY LANE....



Twenty years ago, two Indian engineers Mr. RN.Ghosh and Mr.B.T.C.Jayakumar, who were working in Bahrain at that time, simultaneously conceived the idea of forming the Bahrain chapter of Institution of Engineers (India). I was there with fifteen other engineers who were interested on this subject when they met at Mr. Jayakumar's residence and discussed about the functions of the chapter. It was then decided to call for a general body meeting. By then, Mr. R.N. Ghosh had already collected the names of 150 Indian engineers. The first general body meeting with 150 engineers was held at the Indian Ladies Association Hall. It was unanimously agreed that Mr. R.N.Ghosh will be the Chairman and Mr.B.T.C. Jayakumar will be the secretary. The other prominent engineers formed the rest of the executive committee.

Mr. M.Balagopal who was guiding some candidates for AMIE examinations was selected as the member for examinations. It was also decided to establish a centre for examinations at Bahrain.

On September 15th, 1988, the Bahrain chapter was inaugurated on the Indian Engineer's day as their first event. Mrs. Sheela Sreekumar suggested having technical seminars to share the professional knowledge among the engineers. The bylaws of the chapter were prepared by a subcommittee headed by Mr. Jasmersingh. The first seminar was conducted on 19.10.2008 on the title "Fire prevention and safety" The speaker was Lt.Col.K.N. Penn. The then president of the Bahrain society of engineers, Mr. Hisham Al Shihabi provided the necessary encouragements for the activities of the chapter.

Since then, subsequent office bearer engineers Dr. Somnath Chaterjee, Mr. S.J.J. Moses, Mr.S.K.K. Pathak, Mr. Jasmer Singh, and Prof. V.K.M. John, Mr. Bobby Choko, Mr. R.K. Singh, Mr. Sudesh Deshmukh, Mr. P.K. Kasinathan. Mr. R. Krishnan, Mr. Sidney Ponniah, Mr. Shardool Desai, Mr.D. Jayachandran, Mr. Natarajan, Mr. M.Mahendran held key positions in the executive committee and brought the chapter to this level of celebrating the twentieth anniversary successfully.

The chapter has done creditably on the contribution to the professional field. Each year six to eight technical seminars were conducted in addition to the site visits. This helped to update the professional skills of the engineers. There were several instances the engineers from the neighbouring countries used to attend our seminars. Every year the summer and winter AMIE examinations were regularly convened with the help of Indian Embassy. Many candidates have passed through our centre and were benefited. The yearly science model contest gave the school children to shapeup their engineering skills. Once there was a student who got a young scientist award In India. He quoted our chapter as the motivation for his inspiration in his television interview.

The chapter also contributed to numerous noble causes that were suggested by our embassy. We can see many of our young engineers who have recently come to Bahrain have noticeable abilities. We request them to join our chapter and contribute to the society. We also thank all those contributed to this souvenir and to the Chairman and Hon. Secretary of the chapter for their encouragement. I thank Mr. P.K. Kasinathan, Mr. Karthikeyan and Mr. Thirukamu for their cooperation. I also thank Mr. Nooruddin and Mr. Mostafiz of Arabian Printing Press.

Sidney Ponniah

Editor

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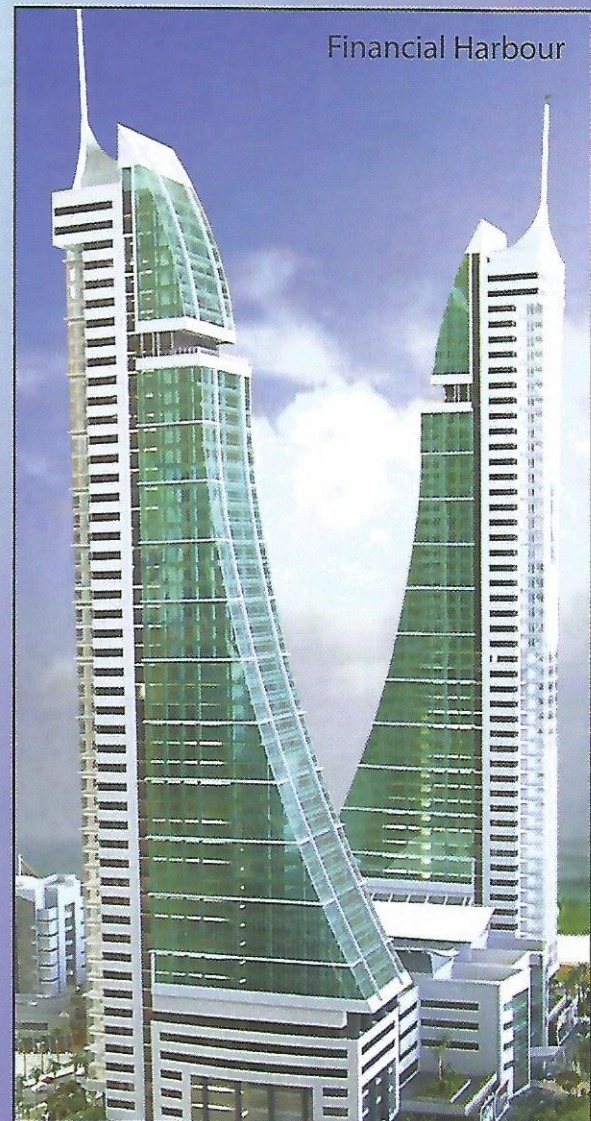
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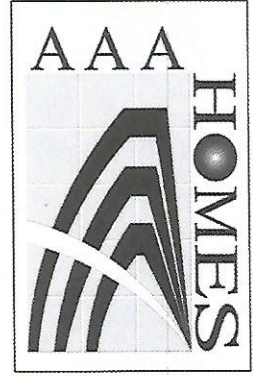


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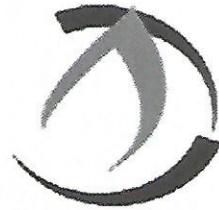
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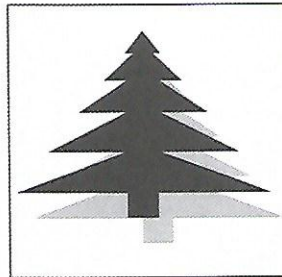
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Executive Committee.....



Sitting (L-R)

M Mahendran

P K Kasinathan

Shardool Desai

Sidney Ponniah

Hon. Secretary

Hon. Chairman

Member - Public Relations

Immediate Past Chairman

Standing (L-R)

S Thangamani

Shiv Raj Singh

Vivek Helwetkar

Shibu Jacob

Member, Finance

Member, Examination

Member, Membership

Member, Cultural

Not in the photo

Saminath Sekar

M.K. Samy

Member, Technical

Hon. Joint Secretary

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Event Log.....

30 th August 2008	Seminar & demonstration: Computer networks & Intelligent Lighting systems- - Mr.Agnelo P. Lobo / Mr. Bob Mukherjee, G.E.Communications WLL
26 th November 2008	Seminar: Quality Control in Concrete Works and Related Field Practices" - Er. L Praveen Kumar Reddy Technical Engineer, Kooheji
1 st December 2008	Seminar: High Quality life through Pranayam & Yoga Dr. Shrikant Bhave, Professor of Mechanical Engg.
1 st December to 7 th December 2008.	AMIE winter examinations at Indian embassy, Bahrain
July, November and December 2008.	20 th Jubilee celebrations competitions like Drawing contest, Speech contest, energy contest, safety contest and essay writing contest
12 th December 2008	Celebration of 41 st Engineers' day and 20 th anniversary of Bahrain chapter with science and technology model contests by school students. Chief Guest -Dr. P. Mannar Jawahar, Vice Chancellor Anna University, Guest of honour Er. A. Majid Al ghasab, President Bahrain Society of Engineers.
14 th February 2009	Site visit & Demonstration-Bahrain Precast Company in Salmabad- Mr. Ashok Raisingani
04 th April, 2009	Site visit & Demonstration - Berger Paints in Sitra- Mr V.Subramaniam CEO
6 th June 2009 to 13 th June 2009	AMIE summer examinations at Indian embassy, Bahrain
22 nd June 2009	Seminar: "Transformer Oil DGA Monitoring"- Mr.David Bidwell, Vice President, Servon Unit BPL Group, Belgium.
22 nd June 2008	Presentation of shields for achieving highest marks in Engineering Drawing exam of class XII of the Central Board of Secondary Education, INDIA
9 th July 2009	Seminar: HYBAC Technology on waste water treatment plant- Dr Hoyland , Technical Director, Blue water Bio Ltd, United Kingdom.
12 th September 2009	Seminar & presentation on Building Management System- Mr. Naresh Kumar, Service Manger, Yateem Air-conditioning
10 th December 2009	Seminar: Salient Features of Modern Waterproffing Systems- Eng. Ahmed Hidmi, Technical Manger, Waterproofing & Wrapping Products Co. Ltd, (Inswarap Co.)
21 st October 2009	Celebration of 42 nd Engineers' Day & 21 st Anniversary of the Chapter" Chief Guest. H.E Dr. George Joseph, Ambassador of India to Bahrain, Guest of Honour. Er. A. Majeed Al Gassab, BSE president

Dr.M. Mahendhran
Hon. Secretary

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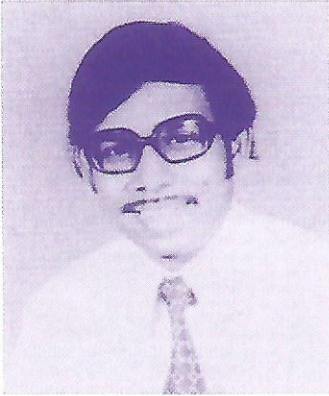
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Tribute.....



Er. B.T.C. JAYAKUMAR

Er.B.T.C. Jayakumar was the first secretary of our chapter. He was a dynamic and enterprising person. He had worked in many countries before he came to Bahrain. He had previous experience in starting overseas chapter for IEIBC and wanted to start one in Bahrain. He mooted this idea among friends and found that there was good response for that. Coincidentally, he met Er.R.N. Gosh who had the similar idea and collected the names of Indian engineers in the island jointly with him. He arranged the first general body meeting and answered the questions and doubts raised in that meeting. He had in depth knowledge of IEI rules. He was instrumental in selecting the first panel of executive members. He always had a very positive approach and quite fast in accomplishing the activities. His contribution was one of the saplings of which the present chapter had grown.



Er. S.J.J. MOSES

Er. S.J.J. Moses was the first member Mechanical of our chapter He immediately took over as secretary and subsequently as chairman of our chapter. As it was the beginning of the chapter, many items such as technical seminars and examinations started in his tenure. The standards and procedures have to be set. He carried out all administrative and technical activities single handedly. He conducted the examinations with Er. Balagopal and also carried out the other correspondences and coordination works. He set the pattern of working for our chapter and had good rapport with the then Bahrain Society of Engineers officials. During his period, the examination centre was established, the first technical seminar was presented and the first news letter was published. His dedication and charm will never be forgotten.



Er. SUSHILKUMAR PATHAK

Er. Pathak was a founder member of the chapter and was inducted in the committee by Er. R.N. Ghosh who was the first chairman of our chapter. He had acquaintance with Er. R.N. Ghosh in his previous tenure of service at India and acquired the habit of professionalism and hard work from him. His approach to work used to be perfect. He also believed in regular exercise and insisted his friends to follow that. He had a keen dress sense and always well dressed. He later served as secretary and chairman of our chapter. His association and contribution to the chapter as a professional and to us as friends will always be remembered.

Tribute.....



Er. Hisham Shihaby

When the idea to start the Institution of Engineers (India) Bahrain chapter 20 years ago was floated, Er. Hisham Shihaby was one of the persons who encouraged the idea and provided the support to the then founding members. He had an in-depth knowledge in concrete field and was an expert in engineering code of practice. Needless to point out the contributions he made during his tenure as the president of Bahrain Society of engineers which most of the engineers are aware of.

His relationship with Indian engineers was amazing. Due to his illness he had to eat vegetarian food and got tuned to Indian vegetarian food. He used to bring his Bahraini friends to Indian vegetarian restaurants. His thoughts were continuously on the future programs for engineers. Exactly one year before his demise, he presented a seminar for Institution of engineers-India on the topic concreting on hot and humid weather condition. He was the vice president for world Federation of engineering organization. He not only contributed to the engineers technically but he also impressed the fellow engineers with his unassuming and friendly attitude He literally showed the love for his profession till the end and was a role model for the future generation of engineers.



ER. D. JAYACHANDRAN

Initially Er. Jayachandran worked for IEIBC as a member volunteer for a few years and was then inducted into the executive committee. He worked as Member Examinations and worked creditably. He also was secretary of the chapter and later he served in the advisory committee. The dedication with which he worked was remarkable. He took interest in all chapter activities and prompted the other members on their activities. His major past time work was this institution works. As a matter of fact when he had heart attack, he wrote and gave some telephone numbers of his friends which were our committee members. His demise was a great loss to our chapter and he left behind a void that was difficult to fill in.

Energy Management Quiz.....

The Institution of Engineers (India) – Bahrain Chapter
Jubilee20 contests

Test of Awareness on Energy Management

(Conducted by P K Kasinathan and Saminath Sekar, Energy Auditors certified by Bureau of Energy Efficiency, India)

A. Expand (any 20) the following abbreviations.

- | | |
|-----------------|------------|
| 1. ZEB | 13. TOE |
| 2. LEED | 14. GCV |
| 3. ECBC (India) | 15. CFC |
| 4. BMS | 16. VOC |
| 5. CDM | 17. ESCO |
| 6. PCC | 18. UNFCCC |
| 7. HRSG | 19. PCF |
| 8. GWP | 20. GHG |
| 9. HITW | 21. ETS |
| 10. BEE (India) | 22. VSD |
| 11. CFM | 23. THD |
| 12. CFL | 24. OTEC |

B. Match the following.

- | | | |
|-------------------|----|--|
| 1. Dakin Building | a. | A powerful greenhouse gas from Industrial process |
| 2. Burg Al Arab | b. | Hydrogen powered buses in the UK |
| 3. Energystar | c. | Biomass fuel |
| 4. Wood | d. | Many cars in Brazil operate with this fuel |
| 5. Methane | e. | A biogas from municipal waste |
| 6. Ethanol | f. | Fuel from plant cellulose |
| 7. Jatropha | g. | A bio-fuel from crop that grows in poor soil |
| 8. Green gasoline | h. | Has the tallest atrium |
| 9. CUTE | i. | Reflects solar heat (in San Francisco, California) |
| 10. HFC | j. | Label on energy efficient product |

Energy Management Quiz.....

A. Write the question number and the answer choice a, b, or d.

1. The nodal agency for coordinating the energy conservation activities under the EC Act in India is:

- | | |
|--------------------------------|-----------------------------------|
| a) Bureau of Indian Standards | b) Bureau of Energy Education |
| c) Bureau of Energy Efficiency | d) Bureau of Energy & Environment |

2. Which is a greenhouse gas?

- | | |
|--------------------|----------------------|
| a) Sulphur dioxide | b) Nitrogen |
| c) Nitrous oxide | d) none of the above |

3. When heat is added or taken away resulting in a change in temp, the heat is called

- | | |
|------------------|------------------|
| a) Sensible heat | b) latent heat |
| c) specific heat | d) Heat capacity |

4. Which of the following does not damage ozone layer?

- | | |
|---------|---------|
| a) CFC | b) CCL3 |
| c) HCFC | d) HFC |

5. India's share of global coal reserve is approximately

- | | |
|----------|----------|
| a) 18.5% | b) 12.5% |
| c) 8.5% | d) 1% |

6. Replacement of electric heaters with steam heaters is called

- | | |
|------------------------------|------------------------|
| a) Energy substitution | b) Energy conservation |
| c) Energy efficiency measure | d) Energy improvement |

7. ESCO's will generally carryout:

- | | |
|------------------------------|-----------------|
| a) Assessment of the project | b) Financing |
| c) Project management | d) All of above |

8. Which has the higher calorific value

- | | |
|----------------|--------|
| a) Coal | b) LPG |
| c) Furnace oil | d) HSD |

9. Ozone layer thickness is measured in

- | | |
|-----------|--------------|
| a) cms | b) Lightyear |
| c) Dobson | d) metres |

Energy Management Quiz.....

10. Typical thermal efficiency of a low temp batch type furnace is

- | | |
|-----------|-----------|
| a) 20-30% | b) 10-20% |
| c) 15-25% | d) 80-90% |

11. A recuperator is used to preheat

- | | |
|-------------------|-------------|
| a) water | b) stock |
| c) combustion air | d) Flue gas |

12. Conversion efficiency of diesel engine is

- | | |
|-----------|-----------|
| a) 13-28% | b) 23-38% |
| c) 33-48% | d) 43-58% |

13. The efficiency of standalone gas turbine is

- | | |
|-----------|-----------|
| a) 35-40% | b) 20-25% |
| c) 15-20% | d) 10-15% |

14. Incomplete combustion can be best judged by measuring in the exhaust

- | | |
|----------|----------------|
| a) Smoke | b) excess air |
| c) CO | d) temperature |

15. Thermal efficiency of an oil fired boiler based on GCV is

- | | |
|--------|--------|
| a) 40% | b) 50% |
| c) 85% | d) 94% |

16. A steam trap is a device that discharges

- | | |
|---------------|----------|
| a) Condensate | b) steam |
| c) TDS | d) heat |

17. In a forging furnace, its temp in deg C is

- | | |
|---------|---------|
| a) 1200 | b) 900 |
| c) 1500 | d) 1000 |

18. Radiation loss is directly proportional to (T is for temperature)

- | | |
|-------------------|-------------------|
| a) T ³ | b) T ⁴ |
| c) T ² | d) T |

19. The combustion efficiency of Fluidised bed boiler is (in %)

- | | |
|-------|-------------|
| a) 60 | b) 70 |
| c) 85 | d) above 95 |

Energy Management Quiz.....

20. Max efficiency of steam turbine in % is

- | | |
|-------|-------|
| a) 34 | b) 17 |
| c) 68 | d) 92 |

21. What is the overall efficiency (%) of thermal power plant in India?

- | | |
|----------|----------|
| a) 22-27 | b) 28-35 |
| c) 35-40 | d) 40-45 |

22. A fan draws 16kW at 800rpm. If the speed is reduced to 600rpm, the power drawn is reduced to (in KW)

- | | |
|-------|----------|
| a) 32 | b) 14.32 |
| c) 12 | d) 6.75 |

23. Which lamp has the highest efficacy?

- | | |
|-----------------|------------|
| a) metal halide | b) Halogen |
| c) HPMV | d) HPSV |

24. Which of the following refrigerant has a zero ozone depleting potential

- | | |
|-------------|-------------|
| a) HCFC 22 | b) HCFC 123 |
| c) HCFC 124 | d) HFC 134a |

25. Energy consumption per unit of GDP is called

- | | |
|---------------------------|---------------------|
| a) energy ratio | b) energy intensity |
| c) per capita consumption | d) EGDP |

26. Max allowable U-value (W/m² 0C) for roof as per thermal insulation requirements in Bahrain:

- | | |
|---------|--------|
| a) 0.55 | b) 0.6 |
| c) 0.75 | d) 0.8 |

27. The Efficiency of compressed air system is around

- | | |
|--------|--------|
| a) 90% | b) 75% |
| c) 10% | d) 30% |

28. If the speed of a centrifugal pump is doubled, power goes up by

- | | |
|------------|------------|
| a) 8 times | b) 2 times |
| c) 4 times | d) 6 times |

Energy Management Quiz.....

29. The Efficiency of a DG set ranges between

a) 20-25%

b) 10-20%

c) 40-45%

d) 60-70%

30. Improvement in efficiency that can be achieved with the use of EE motors is

a) 1-2%

b) 9-10%

c) 4-5%

d) 12-15%

C. Write the question number and write 'True' or 'False'

1. Turning appliances off at the wall sockets instead of leaving them on standby save energy.
2. Replacing incandescent lamps with CFL's of equal power saves energy.
3. Adjusting Thermostats to get water at the tap at 55deg C and not more saves energy.
4. Drying clothes in dryer than in clothesline saves energy.
5. 20% more fuel is used up when the engine is cold.
6. With low car tyre pressure the energy is wasted.
7. Keeping a safe distance from the car in front enables you to maintain a constant speed and thereby avoid wastage of energy.
8. 50kG of additional weight in a car increases fuel consumption by 2%. So avoid unnecessary load in the car.
9. Domestic appliances with energystar mark could save upto 10% on electricity bills.
10. CFL's have a shorter life than incandescent lamps.
11. In Bahrain, Thermal Insulation for Building Envelope is mandatory for buildings above four floors.
12. Convection : Energy Transfer in Liquid
13. Typical I²R losses in an A C motor accounts for 55 – 60% of the total losses
14. Increase in inlet air temperature results in higher energy consumption an air compressor
15. Pneumatic tools consume more energy than motor driven tools
16. Average LUX level of a CFL is around 60.
17. DG set performance is varies according to Altitude
18. Soft starter operates at lower power factor
19. Amorphous metal core transformers have higher efficiency even at lower loads as compared to Iron core transformers.
20. Use of Electronico ballasts reduces energy consumption.
21. Lower pf for electrical appliances means higher efficiency of operation.

Energy Management Quiz.....

22. Cleaning air-inlet filter regularly prevents a drop in operating efficiency of compressors.
23. Over-sizing the motors help ensuring trouble free operation at full load at the maximum efficiency.
24. Use of sun-films on car clear glass windows help save energy.
25. TEFC motors are more efficient than SPDP motors.

D. Answer the following.

1. A plane maker has completed the first manned flight using Hydrogen Fuel cell power. Name the manufacturer.
2. A Green tower to be built in Dubai will derive power from PV cells/Solar and 48 carbon fibre wind turbines. It has 80 floors. It will be so energy efficient it will have energy surplus to power 5 similar sized towers. Name the tower.
3. The firm QinetiQ built a solar powered aircraft that has completed a two-day flight. It is built of carbon fibre and weighs just 30kgs despite its 18m wingspan. Name the lightweight aircraft.
4. Two countries launched a post carbon capture research venture with a pilot plant at the Huaneng Beijing pccogen power plant. Name the country that joined hands with China.
5. A car maker is installing the world's largest rooftop Solar power station at its assembly plant in Spain. Name the car maker.

Refer to penultimate page for Keys to above.



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Engineers Mobility Forum.....

The globe has shrunk today. The economic and political scenarios are changing in an unprecedented manner. The technology advances so rapidly now than ever before in history that knowledge mass doubles in less than 2 months. The FTA, outsourcing and cost effective solutions to manufacturing etc have banished all barriers to employment. Furthermore, the availability of technical professionals continues to decline in the west. There is thus a growing demand for Indian engineers in the Western countries. Can you migrate to Canada and start your engineering profession without having to re-qualify yourself?

Yes, you can!

Yes, You can, provided you are registered as an IntPE(India).

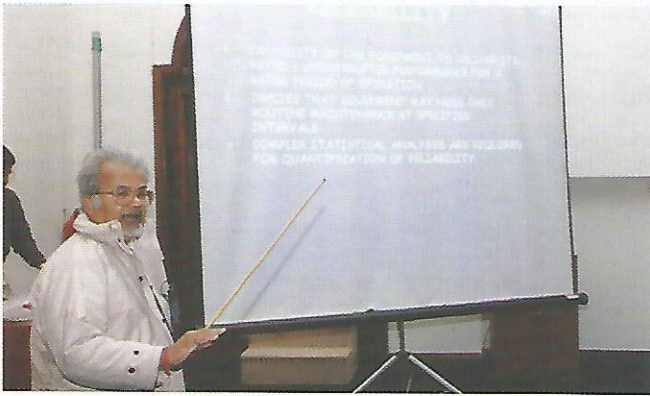
The most daunting challenge was how to facilitate mobility of engineers by establishing an acceptable international standard of competence for practicing engineers. The Engineers Mobility Forum Agreement was established to find a way and facilitate mobility for engineers. It is an International Recognition Agreement for Professional Engineers between the engineering organizations in the member jurisdictions. In a landmark achievement, The Institution of Engineers (India) obtained the full membership of the Engineers Mobility Forum (EMF) for India at the Bi-annual International Engineers Meetings 2009 held at Kyoto, Japan on 17 June 2009. This means that the Indian engineers certified by the institution of engineers India can pursue their engineering practice in any of the member countries. The IEI has now been authorized to operate Indian Section of the International Professional Engineers (IntPE) Register. The eligible Indian Professional Engineers would be placed, after due process, on the International Register. They would be entitled to exclusively use the title IntPE(India), indicating their international status. Engineers on this International Register receive credit when seeking registration or license in the jurisdiction of another member organization. I reiterate, Engineers on the International Register are free to practice engineering in member countries and are recognized at par local Professional Engineers. Presently, the following countries are the members of the Engineers Mobility Forum :

Australia, Canada, Chinese Taipei, Honk Kong, Ireland, Japan, Korea, Malaysia, New Zealand, Singapore, South Africa, Sri Lanka, United Kingdom, United States of America and India.

This is known as the Washington Accord. The Washington Accord covers undergraduate engineering degrees. Engineering technology and postgraduate programs are not covered by the accord, although some engineering technology programs are covered under the Sydney Accord and the Dublin Accord.

The Institution of Engineers (India) was registered under the Indian Companies Act, 1913 in the year 1920 and was formally inaugurated in 1921 by Lord Chelmsford, the then Viceroy and Governor General of India. The Institution of Engineers (India) was granted the Royal Charter of Incorporation 1935 by His Majesty the King George V of England in 1935, "to promote and advance the science, practice and business of engineering in all its branches in India". Starting with this humble beginning, The Institution of Engineers (India) has now become a unique professional body to certify and maintain the international professional engineers of India. The IEI encompasses 15 engineering disciplines with an overall membership of over 0.5 million.

Seminars & Visits.....



Dr. Bhave Speaking on Reliability.



Seminar Audience.



David Bidwell on Transformer oil online Monitoring.



Late Hisham Shihaby answering questions.



Joint Seminar with BSE.



Memento to the speaker Peter Vogt.



Memento to the speaker Saminath Sekar.



Photocall at the seminar.

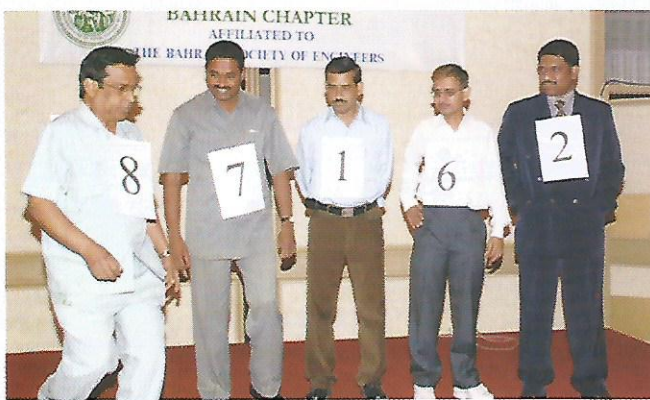
Annual Family Function.....



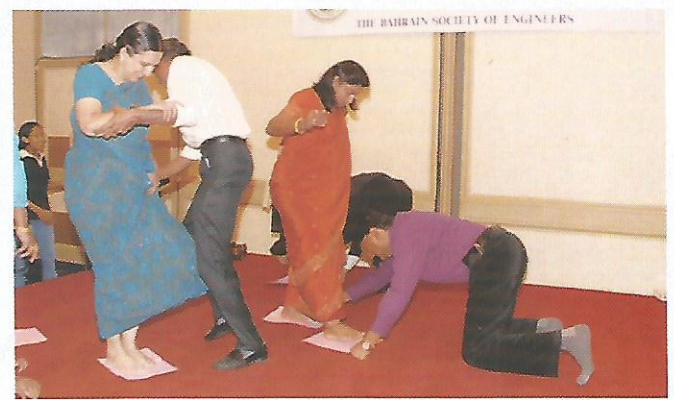
Welcome Address



Former Ambassador Balkrishna Shetty



Members enjoying the game



Members with their families at Golden Tulip



Showcasing children's talents



Showcasing children's talents



Members enjoying the game



Families Enjoying Dinner

Jubilee 20 Celebration....



Chairman welcoming Vice Chancellor, Anna University



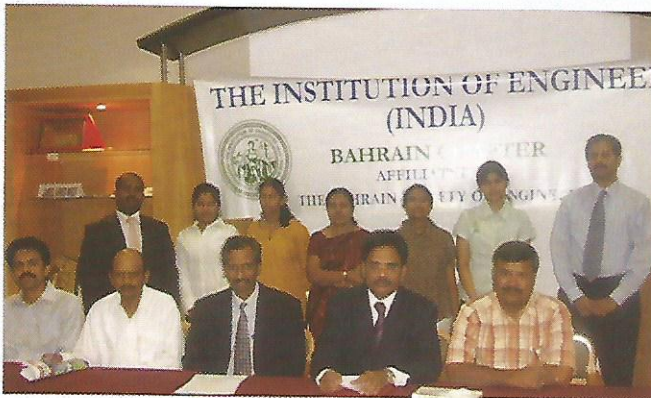
Secretary welcoming President of BSE



Vice Chancellor releasing IEIBC newsletter to President of BSE



Joining the celebration



Organising Committee with speech contest winners



Receiving prizes with smiles



Appreciating the sponsor CEO, Berger Paints

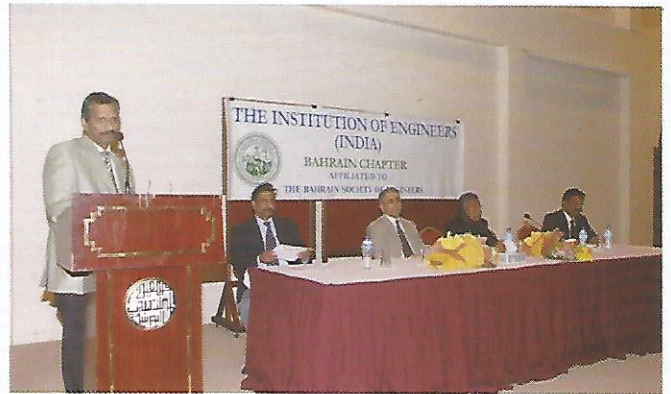


Energy Conservation contest

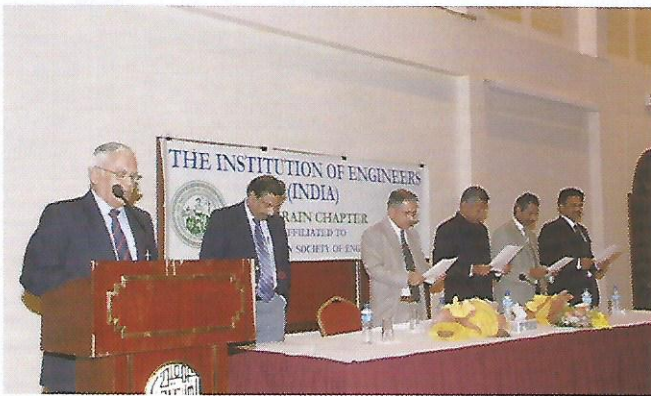
Engineers' day....



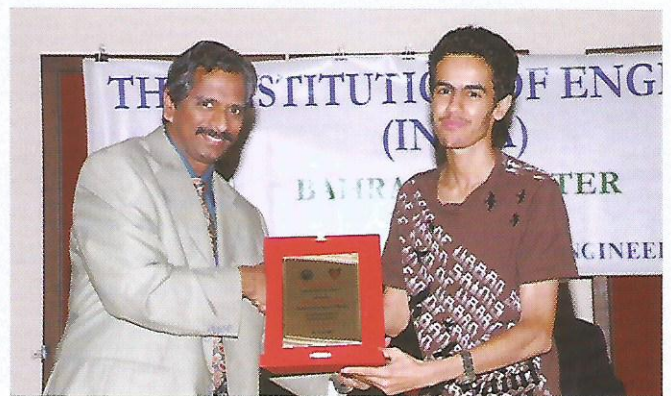
At the registration counter



Welcome address by Chairman



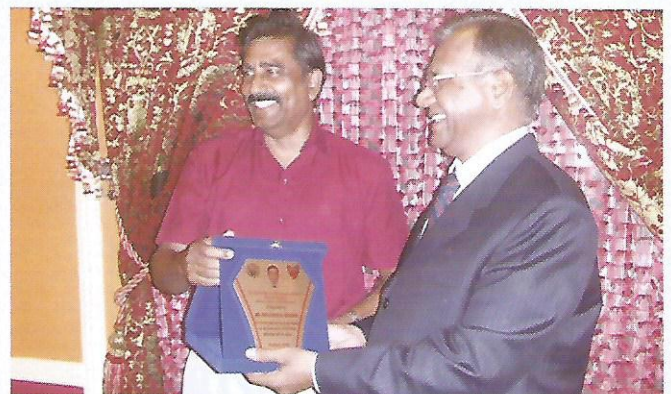
Oath taking process



Top scorer in Engineering Drawing - Class XII CBSE receiving the IEIBC award



Farewell to Past Executive committee member Ravi Nigam



Farewell to Past Executive committee member Anil Kumar

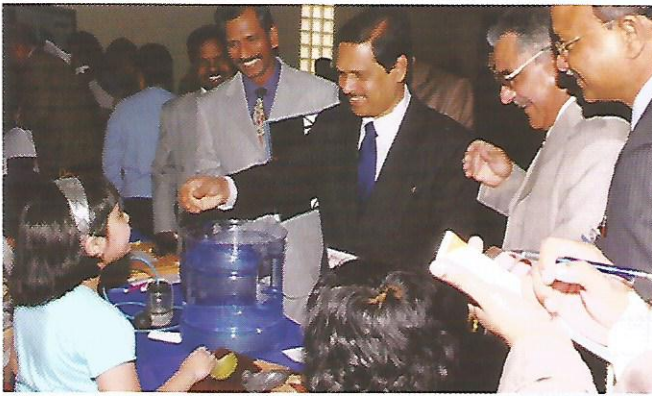


Proud engineers with Ambassador of India



Examination committee

Science Exhibition....



Young talent Exhibition



Contest winners and the teacher from Saudi Arabia



Contestant- Visitors interaction



Evaluators at work



Visitors at the science exhibition



Evaluators of models with the contest coordinators, Shibu and Perumal



Winners of science working model contest



Photography contest

Chapter news....

1. KKU Nair who was volunteer and member of subcommittee for many years of the chapter left Comsip for good to India.,
2. P Gangadharan left Alba to join Emal.,
3. Past Chaiman S Deshmukh has retired from MEW and left for India.,
4. D Gnanasekar migrated to Canada and joined Bechtel.
5. Mr. Shardool Desai was elected as Director, Education and Certification, PMI, AGC, Bahrain.
6. Mr. Ratna Kumar was elected as Director, Membership, PMI, AGC, Bahrain.

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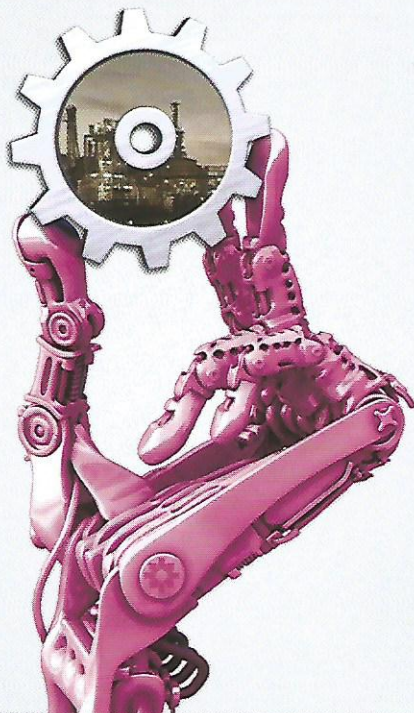
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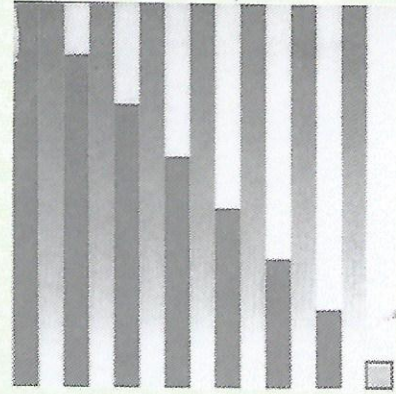


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Feed Back.....

LETTER FROM HE BALAKRISHNA SHETTY, AMBASSADOR OF INDIA TO SWEDEN

No.STO/AMB/2009

1 October 2009

Dear Mr. Sydney Ponnaiah,

Please accept my Season's Greetings.

I still remember with gratitude the help and assistance that you have rendered to me and the Embassy when I was in Bahrain in ensuring support to the weak and vulnerable of our community.

Let us remain in touch.

With regards,

Yours sincerely,

Balkrishna Shetty

Ambassador

Embassy of India

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SWEDEN

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LETTER FROM BRIGADIAR MISRA

To

The Institution of engineers(India) Bahrain chapter,

Dear Sir,

I was delighted in the way whole proceedings of the Engineers Day celebration was conducted yesterday. It was a grand success on the part of the Institution of Engineers(Bahrain Chapter).

I am interested in the Group Photograph taken at the end of the session as well as some of the photographs where I am there. How to get them? I am leaving Bahrain on 24th of this month. On hearing from you I will send the address of my son in law at Bahrain.

Thanking you,

Yours sincerely.

Brig S K Mishra

Letter from Er. Karthikeyan

To

The Institution of engineers(India) Bahrain chapter,

Sirs

With all your support and assistance, I have been elected as Member of Institution of Engineers (India) on 16-06-2009, membership no: 1397049. While I am waiting for the certificate and ID card, I confirmed my enrollment from web update. Please see the file attached for your info.

Thank you very much for all your support and wishes.

Thanks and Regards

Karthik

Structural Engineer

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ALBA-LINE-5 EXPANSION PROJECT

The case study describes how several major accomplishments were achieved on Implementation of 1.7 billion US Dollar Alba Line 5 Expansion Project. This presentation is to share the knowledge with other Project Management Practitioners.

The project was one of the Mega Projects implemented in the Gulf Region.

Major Accomplishments were:

1. World class Safety record.
2. Well within Budget.
3. New Benchmark in Schedule for Aluminium Industry.
4. Achieved stretch goals of Training for Bahrain.
5. More than 500 Million USD spent inside Bahrain.
6. Aluminium Technology transferred to local companies.
7. A Case study on Finance Strategy by Harvard Business School, USA.

Project Success Factors were:

1. Front-end Planning & Engineering at Feasibility stage.
2. Project Structure with use of ALBA's local managers, engineers, and O & M staff.
3. ALBA higher management's confidence in the Project team.
4. Contract Management approval structure.
5. Communication & Alignment between Project Stake holders.
6. Unique Finance Strategy.
7. Risk Management.
8. Procurement through E-auctions & use of EPCM's worldwide network facilities.
9. Use of local consultants, vendors & contractors for 40% works.

Lessons learnt from the implementation of this mega project were:

1. Front-end Planning & Engineering should be completed during the feasibility stage.
2. Define Project Structure & Communication Lines well in advance.
3. Complete Front-end Engineering and Lock- in Scope with the involvement of O & M staff.
4. Complete all Financial-hedging requirements prior to award of ECM and EPCM packages.
5. Provide value added to the community in the form of Training & Technology transfer.
6. Capitalise on the benefit of integration with the existing know-how and facilities.

Note: The above is the Summary of the original paper which was published in Bahrain Society of Engineers' Journal "Al Mohandis" in Issue no. 45 of July 2007. The Case Study was presented in PMI-AGC 11th International Conference held in Bahrain in January 2007. Anyone interested to read or see the presentation may contact Engr. Shardool Desai by Email: shardoolkumar@yahoo.com

The Technological Innovations in ancient India

In the history we see that the cultural advancement impelled technological innovations. The construction in India went in parallel with human psychological processes. The technological developments reflected on the art and architecture indicated the way of living of the people. As a result, and private and public dwellings was a matter of unconscious reflection of the society .

The earliest evidence of technological progress in the Indian subcontinent is to be found in the remains of the Harappan civilization. The archaeological remains point to the existence of well-planned urban centres that boasted of private and public dwellings laid out in orderly fashion along with roads and drainage systems complementing them. The drainage systems were particularly remarkable for the times since they were built underground and were constructed in a manner to allow for regular cleaning. Smaller drains from private homes connected to the larger public drains.

Larger private dwellings were invariably multi-storied and all homes were constructed from standardized fired bricks and provided for separate cooking areas and toilets. Storage facilities for grain and goods for trade were built as were public baths and other buildings intended for various public functions.

Urban centres were often planned near riverine or sea-ports. Accurate weights and measures were in use and ports such as Lothal were developed as export centres of early manufactured products from smelted copper and bronze. Kilns for smelting copper ingots and casting tools were in existence as were metal tools such as curved or circular saws, pierced needles and most significantly,

bronze drills with twisted grooves. The drill enabled the production of items with unparalleled precision for the times and could be regarded as an ancient precursor of the modern machine tool.

There is also evidence of planned irrigation systems and it appears that fire and flood control measures to protect farms and villages were also in place. Artisans made use of the wheel and clay pottery was decorated in a variety of colors and designs. Cotton was grown and used to produce textiles.

Urban centres in the Harappan region traded with each other as well as with counterparts in Babylon, the Persian Gulf, Egypt and possibly the Mediterranean. The span of the Harappan civilization was quite extensive, and included much of modern Sindh, Gujarat, Rajasthan, Haryana, Punjab and Western UP.

But prior to its disappearance, there is also evidence of considerable social decay and disintegration. Excavations from the later phases of the Harappan civilization suggest that population pressures led to greater anarchy in building construction. Urban dwellings became smaller and settlements became more haphazard indicating a breakdown of social mores and structures that promoted urban regulations and enforced construction codes.

The use of mordants in color-fast dyeing of textiles became known as did the knowledge of lacquers that could be applied to wood or leather. Paints that could be used on different building materials were developed and elaborate techniques were employed to prevent fading and loss of color during the heavy monsoons. (It is remarkable that paintings in the Ajanta caves have survived almost

The Technological Innovations in ancient India

1500 years, but what is even more noteworthy is how the paint on some of the exterior sections of Ellora's temples has survived 1200 years. The richness of color in well-preserved Indian miniatures continues to amaze and astonish. It may be noted that for many centuries, color-fast dyes made up an important component of India's exports, and export of these to ancient Rome has been documented in Roman records.

It is quite possible that the decline in civil society extended to other areas such as agricultural planning and maintenance of irrigations systems making the civilization more vulnerable to natural disasters such droughts, floods, fires or earthquakes - thus contributing to the eventual extinction of that vibrant civilization. This suggests that technological progress cannot be divorced from social conditions that may either encourage the progress of technology or conversely cause civilizations that may be (in relative terms) quite advanced to stagnate and even decline.

For instance, 3000 years after Harappa, we find anecdotal evidence of impressive urban settlements constructed during the Mauryan period. Greek travellers have left behind admiring descriptions of Patliputra - the Mauryan capital. But social strife brought a precipitous end to the grand civilization. The growth of a parasitic, exploitative and socially oppressive elite led to massive social upheavals. In the course of the civil wars, fires and looting destroyed virtually all of the wood-based dwellings including grand palaces and public buildings.

Thus, an entire tradition of wood-based urban construction - (which may have taken several centuries to develop) was destroyed. But it also led to

a greater emphasis on the use of more lasting construction materials. The very social conditions that destroyed technological progress in one direction gave birth to technological progress in another. Sculptural finds from the Mauryan period indicate that Mauryan sculptors of that time had achieved a high degree of proficiency in working with stone. They must have had tools and implements that enabled them to create smoothly modelled and highly polished representations of human and animal figures. Later civilizations in India employed these skills not only for the purposes of sculpting but for creating entire monuments constructed from a variety of hard building materials. For instance, various methods for preparing cements were developed, and by the 7th century, cement of highly durable quality came into use in the construction of important monuments that survive to this day.

Monumental architecture required considerable advances in the technology of lifting, loading and transportation of construction materials, building construction ramps, scaffolding, and related tools and implements. As in ancient Egypt or Babylon, appropriate techniques also had to be developed and implemented in India. But more importantly, stone-based construction presupposes the existence of hard metal based tools and implements for cutting and shaping stone. The discovery of iron thus played an essential role in the development of monumental architecture in India which may have in turn given a further impetus to the development of metallurgical skills.

As early as the 4th C. BC, Kautilya's Arthashastra had a section outlining the processes for metal extraction and alloying. Later Sanskrit texts talk about assessing metal purity and describe techniques for

The Technological Innovations in ancient India

achieving metal purity. Various alloying techniques were in use and some may have had their origin in the Harappan or Vedic periods. (For instance, there are references in the Vedic literature that suggest that copper vessels were coated with tin so as to prevent milk from going sour.)

A combination of scholarly investigation and broad dissemination of practical techniques propelled the development of metallurgical skills. The fifth century Iron Pillar of Delhi is a remarkable example of those skills. Standing over 23 feet high it consists of a single piece of iron and has weathered over 1500 monsoons without showing any signs of rust. The pillar is made of wrought iron with an iron content of 99.72 % and appears to have been protected from rust by the application of a thin coating of manganese dioxide.

By the 12th century, Indian construction engineers were using iron girders and beams on a scale unknown in any other part of the world. The most significant use of iron beams was in the temples of Puri and Konarak. The Puri temple contains 239 iron beams and one of the beams in Konarak is 35 feet long. All are 99.64 percent iron and were produced in a similar manner to the Delhi iron pillar. During the middle ages, India acquired a reputation for producing very high quality steel and was also able to extract zinc from its ore by the 14th century. Bidari (an alloy of copper, lead and tin developed in the Deccan) was also extensively used. Unsurprisingly, developments in metallurgy also had their impact on artillery production. By the 16th century, the heaviest guns in the world were being cast in India and a variety of weapons were being manufactured in the subcontinent. The Jaigarh cannon factory was one of India's best and before the crucial battle of 1857, the Jaipur Rajputs laid

claim to owning Asia's largest cannon. Yet, none of the Rajput cannons were ever used to confront the British who succeeded in conquering the subcontinent without ever having to fight against the country's best equipped armies, thus demonstrating that technological progress is not an end in itself.

More often than not, social needs (as arising from geographic, climatic or living conditions) have been the primary impetus for technological progress in society. The long dry months that most regions of India had to deal with led to numerous innovations in water-management techniques. Irrigation canals, wells of different types, storage tanks and a variety of water-harvesting techniques were developed throughout the sub-continent. The Harappans were not alone in creating water-management solutions. Irrigation works of enormous size were undertaken time and time again. The Kallanai dam at the river Cavery was built by a Chola king, Karikalan, 400BC. The reservoirs at Girnar in Kathiawar that were built in the 3rd C. BC, had an embankment over 100 ft thick at the base. The artificial lake at Bhojpur (near Bhopal) commissioned by Raja Bhoj in the 11th C covered 250 sq. miles. In the 11th C., an artificial lake fed by the Kaveri river had a 16-mile long embankment with stone sluices and irrigation channels. Rajput kings built artificial lakes throughout the desert state of Rajasthan, but irrigation schemes were essential to agricultural prosperity even in Kashmir, Bengal and the delta regions of the South.

The need for accurate prediction of the monsoons spurred developments in astronomy while the intense heat of the summer led to innovations in architecture. In Rajasthan and Gujarat step-wells were

The Technological Innovations in ancient India

built deep into the ground - sometimes descending as much as a hundred feet and large scale observatories were built in Benaras, Mathura and Ujjain to facilitate advances in the astronomical sciences. Bengal became known for its fine muslins that were light and airy to wear in the warm and humid climate of the state. Manually operated cooling devices were also invented. The Arthashastra mentions the *variyantra* (probably a revolving water spray for cooling the air). Technology thus arose in response to compelling material needs.

But technological progress also requires a favorable social milieu. A foundation of scientific knowledge, rational thinking and practical experimentation can be essential to the process of making technological discoveries (although the application of already known technologies can occur more easily). Numerous technological inventions occurred in parallel with developments in rational philosophy and advances in mathematics and natural sciences.

This is not to say that Indian society was entirely rational. In all ancient societies and even modern ones, superstitions, religious beliefs, reliance on astrology, numerology or the advice of 'seers', palmists and fortune-tellers have impinged on the scientific process and consequently hindered the progress of technology. Even in the civilizations of ancient Egypt and Babylon, we see numerous instances of scientifically accurate statements and practical truths mixed up with religious myths and popular superstitions.

A notable aspect of technological progress in India was its dependence on state support. Without the support of a technologically inclined nobility, with-

out grants from the royal treasuries, many of the technological developments that took place in the field of water-management, construction and metallurgy simply would not have taken place. Progress in astronomy also benefited from active state support.

Cavery delta had an remarkable irrigation system dating back to 400BC with river dams constricted by the king Karikal Chola. The Chola temple at Thanjavur is an remarkable construction in stone masonry.

Raja Bhoja (1018-60 of Dhar -Malwa) who was himself a great engineer and was the architect of Bhojsagar - (one of the largest artificial irrigation lakes of medieval India) was a great patron of engineering projects. and several monumental temples in the Malwa region, including one at Bhojpur which has a cast iron Linga of very impressive proportions, Viewing town planning as an important aspect of government, he provided a detailed network of roads connecting villages and towns in his magnum opus, *Somarangana Sutradhara*.

In addition to a chapter on town planning, the *Somarangana Sutradhara* also included chapters on mechanical engineering, soil testing, orientation of buildings, the selection of building material, architectural styles, and the vertical and horizontal components of buildings.

The *Somarangana Sutradhara* also describes machines and mechanical devices such as chiming chronometers (*putrika-nadiprabodhana*), and in his *Yuktikalpataru*, Raja Bhoja also warned ship-builders about using iron along the bottom of the vessels for this would render them vulnerable to magnetic rocks at sea.

Keys to Energy Management Quiz....

Keys to Jubilee 20 contest

Test of Awareness on Energy Management

Part A

1. Zero Energy Building
2. Leadership in Energy & Environmental Design
3. Energy Conservation Building Code (India)
4. Building Management System
5. Clean Development Mechanism
6. Post Combustion Capture
7. Heat Recovery Steam Generator
8. Global Warming Potential
9. High Temperature Thermal Wool
10. Bureau of Energy Efficiency (India)
11. Cubic feet per minute
12. Compact Florescent Lamp
13. Tonnes of Oil Equivalent
14. Gross Calorific Value
15. Chloro-Floro Carbon
16. Volatile Organic Compound
17. Energy Saving Company
18. United Nations Convention for Climate Change
19. Prototype Carbon Fund
20. Green House Gases
21. Emission Trading System
22. Variable Speed Drive
23. Total Harmonic Distortion
24. Ocean Thermal Energy Conversion

Part B

1. i
2. h
3. j
4. c
5. e
6. d
7. g
8. f
9. b
10. a

19. d
20. a
21. b
22. d
23. d
24. d
25. b
26. b
27. c
28. a
29. c
30. c

Part C

1. c
2. c
3. c
4. d
5. c
6. a
7. d
8. b.
9. c
10. a
11. c
12. b
13. a
14. c
15. c
16. a
17. a
18. b

Part D

1. T
2. T
3. T
4. F
5. T

Part E

1. Boeing
2. DA Vinci Tower
3. Zephyr
4. Australia
5. GM

ENGINEERING HUMOUR.....

- Beware of Quantam Ducks! Quark! Quark! Quark!
- An electrical engineer deals with current events.
- An engineer is someone who is good with figures, but doesn't have the personality of an accountant.
- Engineers calculate all the angles
- Engineer's Motto - If it isn't broken, take it apart and fix it.
- Gonna Be an Engineer (song by Peggy Seeger)
- If you're not part of the solution, you're part of the precipitate.
- If we knew what we were doing it wouldn't be called research.
- The joy of engineering is to find a straight line on a double logarithmic diagram. (Thomas Koenig)
- The major difference between a thing that might go wrong and a thing that cannot possibly go wrong is that when a thing that cannot possibly go wrong goes wrong, it usually turns out to be impossible to get at and repair. (Douglas Adams)
- Old chemical engineers never die, they just fail to react.
- Optimist: The glass is half full.
Pessimist: The glass is half empty.
Engineer: The glass is twice as large as it needs to be.
- People who do the world's real work don't usually wear ties.
- Quantum Mechanics - The dreams stuff is made of.
- Research is the act of going up alleys to see if they are blind.
- To err is human, to forgive divine, but to check - that's engineering.

ENGINEER IDENTIFICATION TEST

You walk into a room and notice that a picture is hanging crooked. You...

- A. Straighten it.
- B. Ignore it.
- C. Buy a CAD system and spend the next six months designing a solar-powered, self-adjusting

picture frame while often stating aloud your belief that the inventor of the nail was a total moron. The correct answer is "C" but partial credit can be given to anybody who writes "It depends" in the margin of the test or simply blames the whole stupid thing on "Marketing."

Engineering Terminologies

1. A number of different approaches are being tried. (We don't know where we're going, but we're moving.)
2. Close project coordination. (We should have asked someone else.)
3. An extensive report is being prepared on a fresh approach to the problem. (We just hired 3 guys. We'll let them kick it around for a while.)
4. Major technological breakthrough. (Back to the drawing board.)
5. Customer satisfaction believed assured. (We're so far behind schedule that the customer is happy to get anything at all from us.)
6. Preliminary operational test were inconclusive. (The darn thing blew up when we threw the switch!)
7. The test results were extremely gratifying. (It works and boy are we surprised.)
8. The entire concept will have to be abandoned. (The only guy who understood the thing quit.)
9. It is in the process. (It is so wrapped up in red tape that the situation is almost hopeless.)
10. We will look into it. (By the time the wheel makes a full turn, we will assume you have forgotten about it.)
11. Please note and initial. (Let's spread the responsibility for this job.)
12. Give us the benefit of your thinking. (We'll listen to what you have to say as long as it doesn't interfere with what we have already done.)
13. Give us your interpretation. (Your warped opinion will be pitted against our good sense.)
14. See me, or Let's discuss. (Come down to my office, I'm lonesome.)
15. All new. (Parts not interchangeable with previous design.)
16. Rugged. (Too heavy to lift.)
17. Lightweight. (Lighter than rugged.)
18. Years of development. (Finally got one that worked.)
19. Energy saving. (Achieved when the power switch is off.)
20. No maintenance. (Impossible to fix!)

Is Hell exothermic (gives off heat) or Endothermic (absorbs heat)?

Most of the students wrote Proofs of their beliefs using Boyle's Law, (gas cools off when it expands and heats when it is compressed) or some variant. One student, however, wrote the following:

"First, we need to know how the mass of Hell is changing in time. So we need to know the rate that souls are moving into Hell and the rate they are leaving. I think that we can safely assume that once a soul gets to Hell, it will not leave. Therefore, no souls are leaving. As for how many souls are entering Hell, let us look at the different religions that exist in the world today. Some of these religions state that if you are not a member of their religion, you will go to Hell. Since there are more than one of these religions and since people do not belong to more than one religion, we can project that all souls go to Hell. With birth and death rates as they are, we can expect the number of souls in Hell to increase exponentially.

Now, we look at the rate of change of the volume in Hell because Boyle's Law states that in order for the temperature and pressure in Hell to stay the same, the volume of Hell has to expand as souls are added. This gives two possibilities:

1. If Hell is expanding at a slower rate than the rate at which souls enter Hell, then the temperature and pressure in Hell will increase until all Hell breaks loose.
2. Of course, if Hell is expanding at a rate faster than the increase of souls in Hell, then the temperature and pressure will drop until Hell freezes over.

So which is it?

If we accept the postulate given to me by Teresa Banyan during my Freshman year, "...that it will be a cold day in Hell before I sleep with you.", and take into account the fact that I still have not succeeded in having sexual relations with her, then, #2 cannot be true, and thus I am sure that Hell is exothermic and will not freeze."

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