EnggCyclopedia

Engineering Design Encyclopedia

www.enggcyclopedia.com

Monthly Newsletter – August 2011

Contents

Engineering personality of the month

Mr. Subir Raha – Former Chairman of ONGC

Education and Early Life

- Born on August 28, 1948, in West Bengal India.
- Graduated in Electronics & Telecommunications Engineering, from Jadavpur University in 1969
- MBA with Distinction at the University of Leeds in 1985, specialising in Strategic Marketing. He is an alumnus of the Administrative Staff College, Henley (1995)
- Served with field rank in the Territorial Army, winning the Commandant's gold medal in post-commission training.
- Actively engaged in the Mountaineering & Trekking Club, Film Society, Debating Society, Photographic Club and the Students Union during college life

Career

Indian Oil Company (IOC)

- He began his career at the IOC as a management trainee.
- Major part of his career was shaped at Indian Oil for over three decades from 1970 to 2001.
- Honed his business leadership skills, handling field and staff assignments in Supply & Distribution, Plant Operations, Engineering, Sales, HR and Marketing.
- Served as Director (HR) (1998–2001) and he set up India's first in-house MBA programme.
- Created several Indian firsts while at IOC including, networked on-line transaction processing (OLTP) across India, real-time automated product terminals, and modern Retail Outlets with Convenience Stores & ATM.

Oil and Natural Gas Corporation (ONGC), India

- Chairman & Managing Director of Oil and Natural Gas Corporation a Government of India Enterprise, for five years from May 25, 2001.
- Credited for ONGC's vertical integration by acquiring Mangalore Refinery (MRPL) and aggressive pursuit of overseas forays.
- During his tenure, ONGC became the only Indian Company, ever, to be featured in the Fortune Magazine's listing of the World's Most Admired Companies.
- Increased ONGC's market capitalisation by more than 10 times, making ONGC Most Valuable Indian Company.
- ONGC created more wealth than any other business enterprise, ever, in India.

Others

- Mr. Raha concurrently served as Chairman of the wholly-owned subsidiary, ONGC Videsh (OVL). From just one property in Vietnam when Raha took charge, OVL expanded to 24 properties (31 Blocks) in 14 countries.
- He floated Team Raha Ideation - an India-based consulting firm focused on strategic advisory services.
- He was on several boards including that of GeoGlobal Resources as independent director and had turned into a columnist writing on energy issues.

Death

- Mr. Raha passed away in New Delhi on 1 February 2010, valiantly fighting lung cancer for over a year. Mr, Raha's ideal vision of a corporate leader was somebody who may not be uniformly liked, but nobody should be able to point an accusing finger at his moral and professional integrity. That is certainly how he would like to be remembered.

Engineering Question of the month

How to calculate LMTD when the formula fails?

Calculate log mean temperature difference for the following shell and tube heat exchanger with countercurrent flow.

Hot fluid in temperature $TH1 = 100\ ^0C$ Hot fluid out temperature $TH2 = 80\ ^0C$
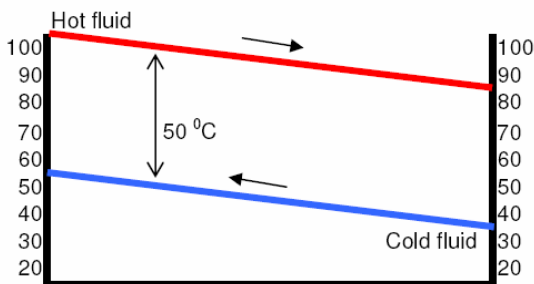Cold fluid out temperature $TC2 = 50\ ^0C$ Cold fluid in temperature $TC1 = 30\ ^0C$

As per the definition and equation for Log Mean Temperature Difference (LMTD),

LMTD = (TH1-TC2 – (TH2-TC1 / log ((TH1-TC1) / (TH2-TC2)).. (for countercurrent flow)

= (100-50) – (80-30) / log (50/50)

= 0 /0 ➔ Indeterminate!!?

Answer and explanation -

Plainly using the LMTD formula is clearly misleading in this case. It can be observed that the temperature difference between hot and old media is 50 ^0C at both ends of the exchanger. Following figure for temperature profile of the countercurrent flow, suggests that the temperature difference is always constant and equal to 50 ^0C. Hence the mean temperature difference should also be equal to 50 ^0C and clearly is not indeterminate.

New on EnggCylopedia.com

Latest highlighted articles and calculators

Some calculators added in July

- o Restriction orifice sizing calculator for liquids
- o 2 phase separator design calculator – Vertical Knock Out Drum
- o Flare Stack Sizing calculator
- o Equivalent length calculator

Some articles posted in July
- o Difference between pipes and tubes
- o Sample problem – pump NPSH calculation
- o Steam desuperheater
- o Pig Traps (pig receivers and pig launchers)
- o Orifice plate / Restriction orifice
- o Pressure based flow measurement devices
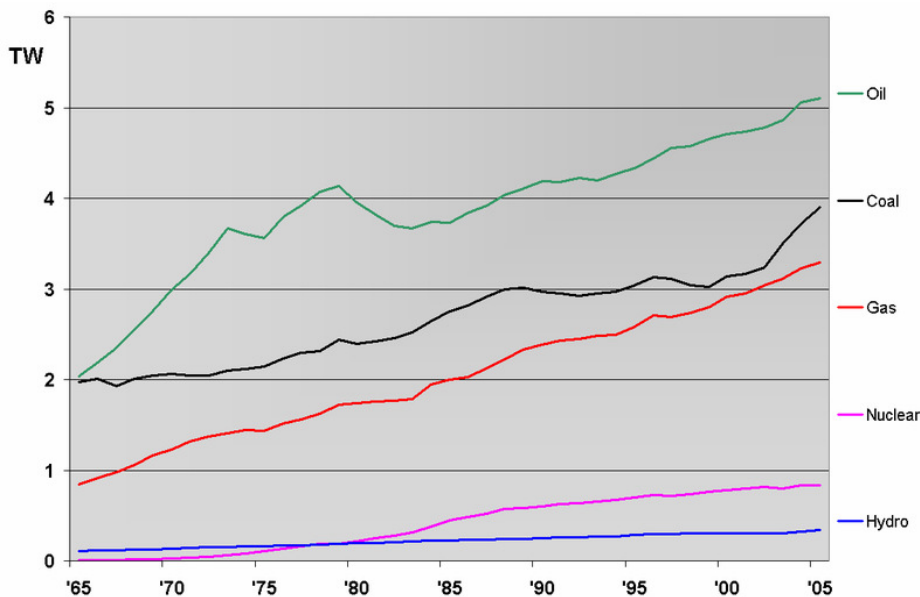- o Mechanical flow measurement devices
- o Pipe pigs

Engineering Stats for the month

Quick look at global Energy Mix stats

More often than not, numbers, figures, plots, graphs and pictures can convey a message in stronger and quicker fashion, leaving a deeper impression than words can manage. Hence, we present the section in our newsletter where only stats and numbers do the talking.

The stats theme for this month's newsletter is *'Energy Mix – past, future, regional and global'*

Source - http://www.eia.gov

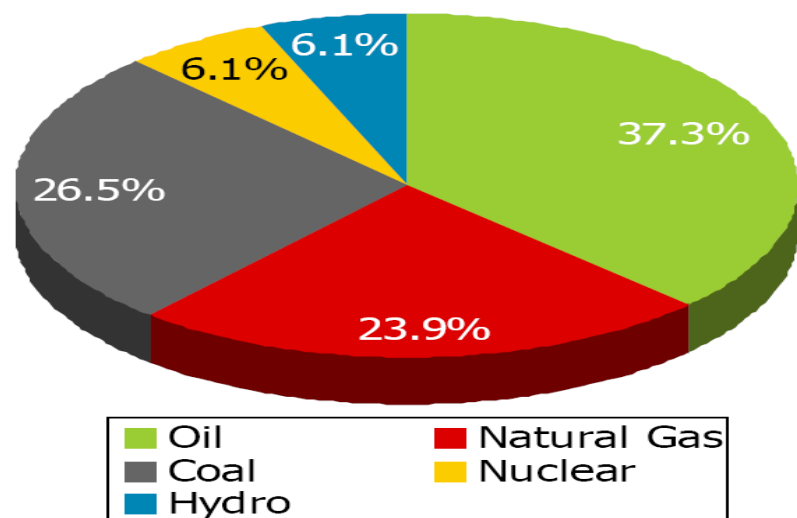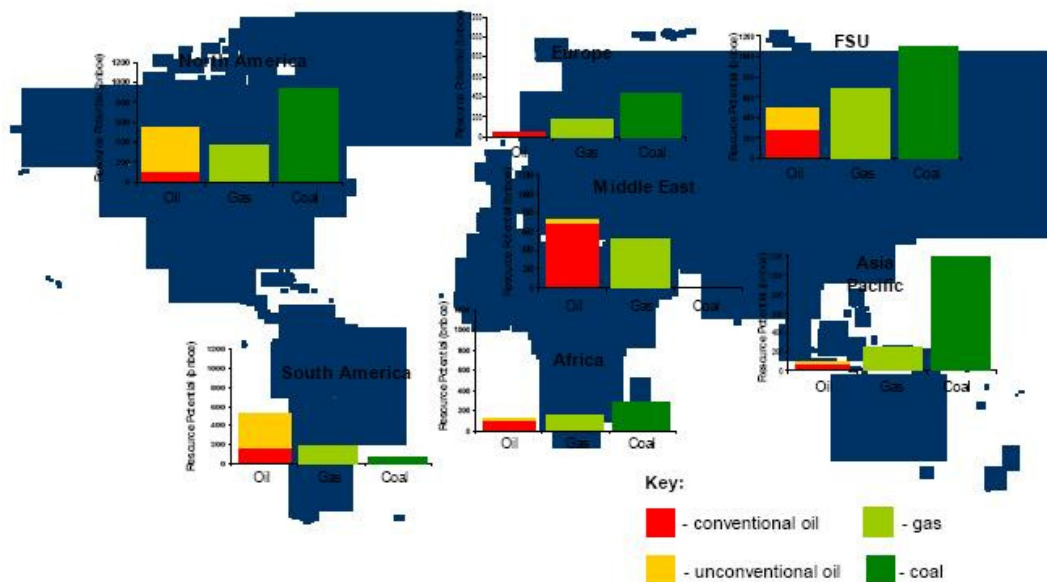
Rate of global energy usage in terawatts (TW), 1965–2005

The graph shows historical trend in global energy mix. Clearly usage of hydrocarbons has steadily increased to meet steadily increasing global power demands in recent history. Relatively little increase in usage of hydro power highlights the limitation on potential of hydro power to be used on large scale. Low use and an apparent saturation level in nuclear power hints toward limited spread of the required technology. Interesting trend is seen for coal in recent years possibly caused by

Current global energy usage – % share of each energy type

Pie chart showing the current global energy mix clearly indicates the domination of hydrocarbons in the energy mix.
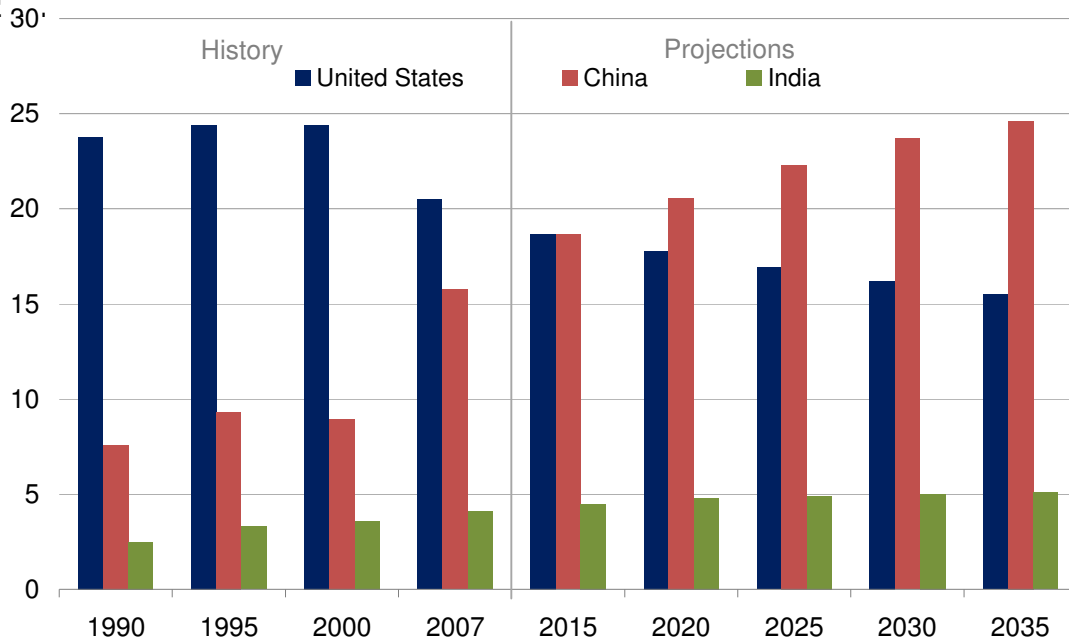
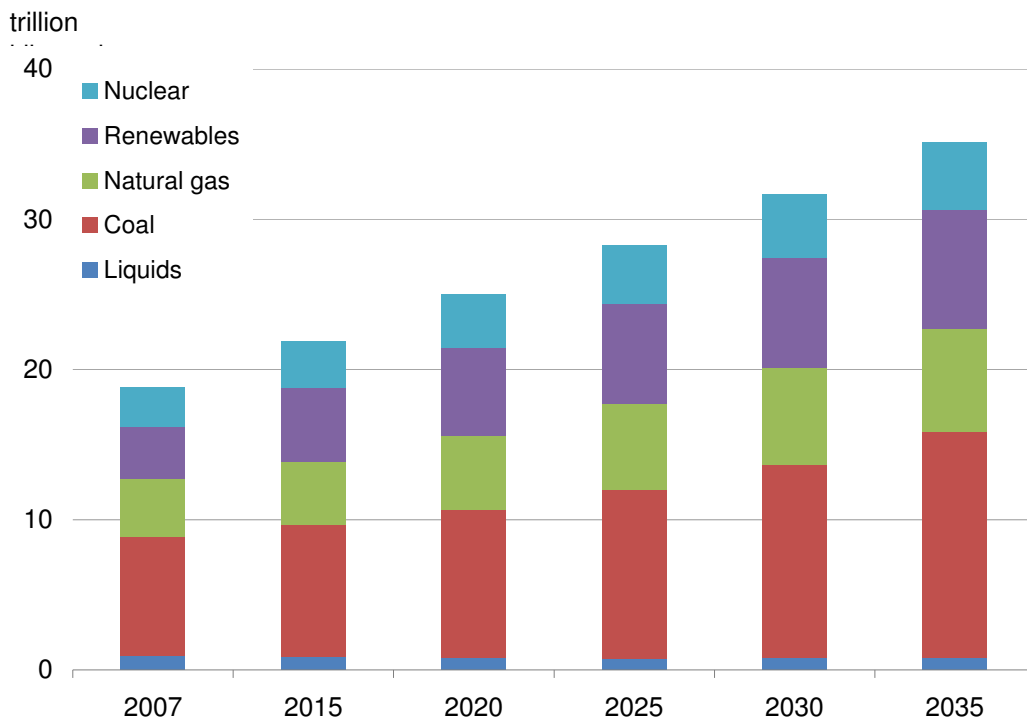## Global energy source distribution – Coal, Gas and Oil reserves

The map shows global distribution of hydrocarbon energy sources. Middle East countries dominate as the energy suppliers due to high share of oil in current energy mix. A peak into the future might suggest change in this picture given that coal and gas are likely to dominate future energy mix, looking at the current trends.

Key:
- conventional oil
- unconventional oil
- gas
- coal

Shares of world energy consumption in the United States, China, and India (Historical data and future predictions)

The bars in this chart represent balance of energy consumption between the developed world (USA) and the developing world (India and China). There is notable difference between energy consumption rise rates of India and China.
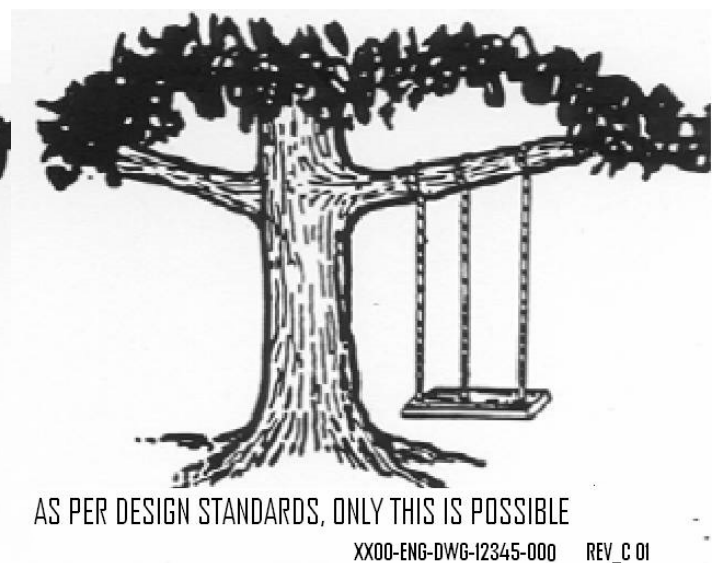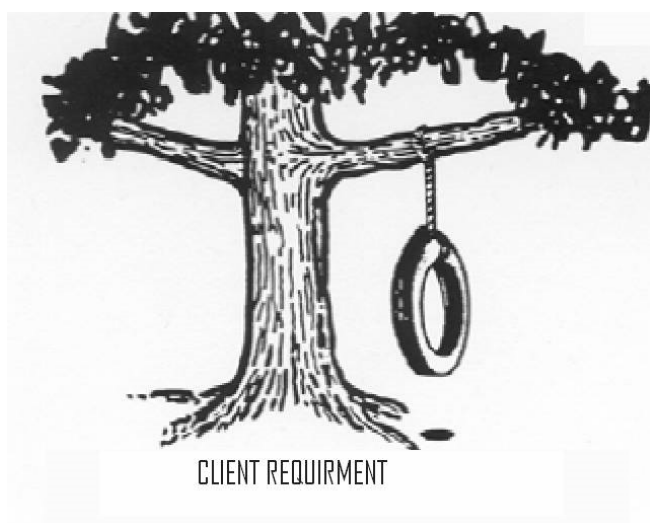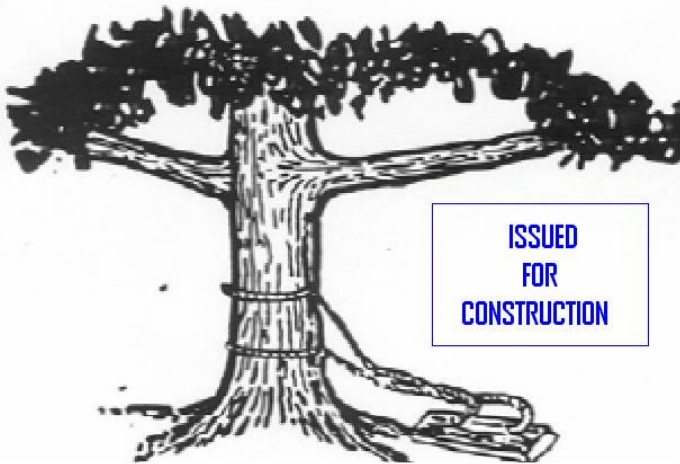

percent of world

History — United States, China, India — Projections

trillion

Legend:
- Nuclear
- Renewables
- Natural gas
- Coal
- Liquids

X-axis: 2007, 2015, 2020, 2025, 2030, 2035
Y-axis: 0, 10, 20, 30, 40

Global electricity generation by fuel type

Another chart represents the predicted energy mix trend for the near future. Note that, even if the renewable energy source are predicted to grow more than two folds, the share of renewables in energy mix is not predicted to change much.

Engineering can be funny at times

Stages in an Engineering Project

CLIENT REQUIRMENT

AS PER DESIGN STANDARDS, ONLY THIS IS POSSIBLE

XX00-ENG-DWG-12345-000   REV_C 01

AS ENGINEERING DESIGNED IT (THESE BRANCHES NOT CAPABLE OF HOLDING MUCH LOAD YOU KNOW)

XX00-ENG-DWG-12345-001 REV_C02

AS CONSTRUCTION DONE IT (THIS ENGINEERING DESIGN IS STUPID YOU KNOW)

QC COMMENTS

MAIN BARANCH OBSTRUCTING THE PROCESS FLOW

NEED TO PROVIDE ACCESS FOR MAINTENENCE TEAM

RED LINE MARKUP DRAWING REQUIRED (AS BUILT)

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RED LINE MARKED UP

Engineering News for the month

Brief report on recent awards of Engineering Projects

Project	Contractor	Awarded by	Budget	Timeline
New Natural Gas Processing plant in Northesatern US	CB&I		USD 300 Million	To be completed in 2012
Study of contrsuction of a greenfield chemical plant producing epichlorohydrin from glycerine.	Technip - Shanghai Operating Center	Solvay		To be completed in 2nd half of 2013
Engineering contract renewal for engineering, construction, operations and maintenance services	Petrofac	Marathon Oil	GB Pound 36 Million	August 2011 to August 2015
lump-sum turnkey contract for expansion of the electrolysis facilities at a plant	JGC Plant Solutions and JGC Indonesia	P.T. Asahimas Chemical, P.T. Rodamas, Ableman Finance Ltd., Mitsubishi	USD 600 Million.	1st Quarter of 2013
Construction of Kalinga Naga plant with four new Coke Oven Batteries - Engineering and Technology provided by ACRE, China	Larsen & Toubro (L&T)	Tata Steel	~ INR 10 Billion	To be completed in 2.5 years
High Density PolyEthylene (HDPE) plant at Dahej SEZ (Special Economic Zone) with 340,000 Tons/yr capacity	Samsung Engineering	OPAL (ONGC Petro Additions Limited)	USD 229 Million	To be completed by August 2013

EnggCyclopedia's September newsletter

A sneak peek at next month's newsletter contents

o How the future of energy industry can benefit from past of Nazi Germany.
o E. Sreedharan as the Engineering personality of the month
o Question of the month – Why use of mobile phones prohibited in petroleum plants?

Plus Engineering Stats, Engineering News, Engineering Humour and more..

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