

QUALITY *Striving for Excellence*

NATIONAL CENTRE FOR QUALITY MANAGEMENT



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S. P. Thapliyal

The automotive industry in India is one of the largest in the world and one of the fastest growing globally. India's passenger car and commercial vehicle manufacturing industry is the seventh largest in the world, with an annual production of more than 3.7 million units in 2010, growing 16-18 per cent to sell around three million units in the course of 2011-12. In 2009, India emerged as Asia's fourth largest exporter of passenger cars, behind Japan, South Korea, and Thailand. As of 2010, India is home to 40 million passenger vehicles. According to the Society of Indian Automobile Manufacturers, annual vehicle sales are projected to increase to 5 million by 2015 and more than 9 million by 2020. By 2050, the country is expected to top the world in car volumes with approximately 611 million vehicles on the nation's roads.

The Indian Automobile Industry manufactures over 11 million vehicles and exports about 1.5 million each year. The dominant products of the industry are two-wheelers with a market share of over 75% and passenger cars with a market share of about 16%. Commercial vehicles and three-wheelers share about 9% of the market between them. About 91% of the vehicles sold are used by households and only about 9% for commercial purposes.

The first car ran on India's roads in 1897. Until the 1930s, cars were imported directly, but in very small numbers. Embryonic automotive industry emerged in India in the 1940s. Following the independence, in 1947, the Government of India and the private sector launched efforts to create an automotive component manufacturing industry to supply to the automobile industry. Following the economic liberalisation in 1991 and the gradual weakening of the license raj, a number of Indian and multi-national car companies launched operations. Since then, automotive component and automobile manufacturing growth has accelerated to meet domestic and export demands. Following economic liberalization in India in 1991, the Indian automotive industry has demonstrated sustained growth as a result of increased competitiveness and relaxed restrictions. India's strong engineering base and expertise in the manufacturing of low-cost, fuel-efficient cars has resulted in the expansion of manufacturing facilities of several automobile companies.

National Centre for Quality Management (NCQM) provides help, support and guidance to industries in various manufacturing and service sectors to promote Quality leading to total satisfaction and to provide knowledge and expertise in pursuit of Quality. This issue of "Quality - striving for excellence" is dedicated to auto sector and contains a few articles on auto industry with emphasis on environment-friendly, energy-conserving and fuel-efficient Quality vehicles. NCQM has the expertise and experience to facilitate automobile companies to produce Quality vehicles as per customer and market requirements at competitive costs.



National Centre for Quality Management (NCQM) was established in 1985 by a group of eminent Industrialists and Professionals. It is a premier institution engaged in promoting quality culture in Indian economic sectors through services like training, education, publication, research and advisory services. It is a Society registered under Bombay Public Trust Act, 1950.

NCQM is a 'not-for-profit' organization supported by various categories of members. Membership of NCQM contributes to the cause of quality, encourages continuous improvement and provides sustained support to NCQM. A member can join this organization any time during the year.

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- Use of Library facilities.
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*Annual Subscription could be paid in equivalent Indian Rupees also.

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Indian Automobile Industry

Dilip Chenoy

Director General, Society of Indian Automobile Manufacturers

The economic development in the last two decades has impacted the metropolitan cities more than the rest of the country in India. The high rise buildings, the shopping malls, the flyovers are a sharp contrast to much of the Indian countryside. However, this quick growth has also brought with it the unavoidable problems of urbanisation - and as people go about their lives at high speeds, air quality in general emissions from vehicles and safety on the roads, in particular, has become an issue of primary concern.

Mobility creates prosperity. A society's economic strength increases as it makes use of the benefits of spreading its division of labour. The mobility of goods and of people is, therefore, a pre-requisite, rather than a consequence. In India vehicles have played a crucial role in ensuring that this remains the case. Most of the goods transportation movements in India are by trucks, whilst significant percentage of all passenger traffic relies on Two-Wheelers, Cars and buses.

The Indian Automobile industry generates an annual turnover of Rs. 149 thousands Crores and is one of the largest providers of employment in the country, employing more than 11 million Direct and Indirect. It invests significantly in research and development. The changing face of our vehicles demonstrates innovative spirit, a quest for perfection, responsibility, skill and passion. The Indian Auto industry is one of the key players in the world.

The power to move a vehicle comes from burning fuel in an engine which causes vehicular pollution. All Hydrocarbon driven automobiles will emit some kind of emissions, but the quantum of emissions from each vehicle, depends on the technology, fuel quality, maintenance practices, etc. One of the main sources of emissions from automobiles is exhaust emission. In view to control this emission, limits have been set by Government of India and all the automobiles are mandatorily required to meet the notified limits.

These limits are made stringent from time to time, in a phased manner, in discussion with several stakeholders.

The Auto Fuel Policy of Government of India recommends that from 1st April 2010, BS IV Emission Norms (Equivalent to Euro IV Emission Norms) will be applicable for vehicles in 11 major cities and rest of the country will follow BS III Emission norms. The primary reason for Government of India to propose dual norm is due to projected unavailability of BS IV grade fuel across the country.

For SIAM, protection of the environment continues to represent a central challenge - which the industry is meeting head-on with an integrated concept in a sustainable manner. This comprises following approaches:

1. Meeting stringent emission regulations for new vehicles
2. Introduction of Clean Fuels
3. Alternative Fuels and vehicles
4. Periodic Vehicle Inspection
5. Better Traffic management systems

It is to be noted that above are the five pillars of emission control and laxity in any one measure would negate the efforts taken by other measures for improving the air quality of cities.

Fuels play a very critical role in the overall emissions of vehicles. Lead content in Gasoline was phased out from the year 1995 to the year 2000, as lead is known to be a serious carcinogenic. Subsequently, Benzene was also reduced from 5% to less than 1% in Gasoline. However, one of the key impurities in fuel is Sulphur. Over the years Sulphur content in Fuel both for Diesel and Gasoline is being reduced to enable the vehicles meet stringent emission regulations. Simultaneously, Octane number in Petrol and Cetane number Diesel is being increased to enable the engines work on higher pressures.

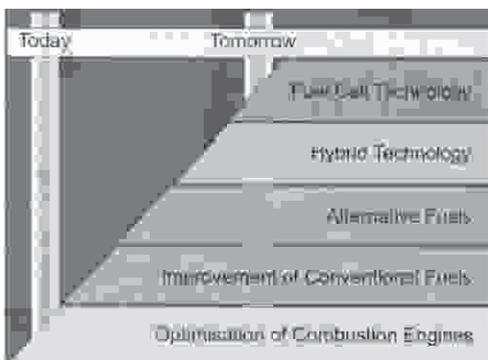
It is to be recognised that clean diesel is essential for reducing fuel consumption and emissions from vehicles. Diesel technology essentially will have to be a cornerstone of the Indian environment protection strategy. European countries such as Germany has an established plan to use Diesel for their long term climate action plan. The US Environmental Protection Agency has established that in USA if 50 percent of the fuel used was Diesel, savings of 837 million barrels of crude oil imports could be made each year. In China, a calculation by a state research institute comes to the conclusion that a 10 percent saving in total oil consumption could be made if the market share of diesel cars could be increased to 30 percent. The Ministry of Land, Infrastructure and Transport of Japan recently opined in a seminar in Delhi that Japan may have made a mistake in discriminating against Diesel vehicles and corrective measures are underway. It is logical, therefore, diesel is of significant importance as an engine solution, fit for the future.

However, in future, in view of the increased concern of environmental pollution, the road for sustainable mobility would follow the following process globally.

Presently, a major portion of the work is being done on optimisation of the existing combustion engines, coupled with improvement of conventional fuels. The alternative fuels would now start playing an important role in overall strategy to develop clean and efficient vehicles. But due to limited sources of alternative fuels such as ethanol and biodiesel, most of the work is presently being done on Compressed Natural Gas (CNG) and

Liquefied Petroleum Gas (LPG). However, CNG and LPG also have constraints of infrastructure, supply, availability and ease of handling which still makes the conventional fuelled vehicle, the most attractive proposition. Use of Ethanol with a blend of upto 10 percent is contemplated in India, but clarity is yet to be established by the Government if the required amount of Ethanol from various suppliers is available for blending in Gasoline. One of the major concerns of the Automobile Industry for across the board blending of Ethanol is the impact on in-use cars and two-wheelers. It is understood that this fuel may be detrimental if used by old vehicles and hence a parallel supply of normal fuel (5 percent blend) should be available along with E10 whenever introduced in the country.

Continuous improvement of conventional combustion engine would continue for a long time, as there are opportunities in improving the combustion processes through better combustion chamber design and increase in compression ratio. With the use of increase electronics in engine management system, the control of the fuel-air have enhanced the performance in terms of emissions and drive-ability of the vehicles, and further developments on control systems on engine would be seen in near future with technologies such as, selective injection control cylinders. Coupled with the above, reduction in sulphur content in the fuel, increase in Octane / Cetane number, control on aromatic content and special fuel components will provide an impetus to the overall cleaning of the engine systems. In future, we are likely to see gasoline cars, which are as efficient as diesel cars and diesel cars which are as clean as gasoline cars. The developments in diesel technology for the last few years has been manifold across the world, with the introduction of multi-valve engines, thereby reducing emissions and improvement in energy efficiency, turbo-charging systems for higher power, lower NOx, lower PM and better fuel consumption, advancement in fuel injection pumps with high pressure air fuel mixing, which enables reduction of particulate matter, improvement in fuel economy and reduction in combustion noise.



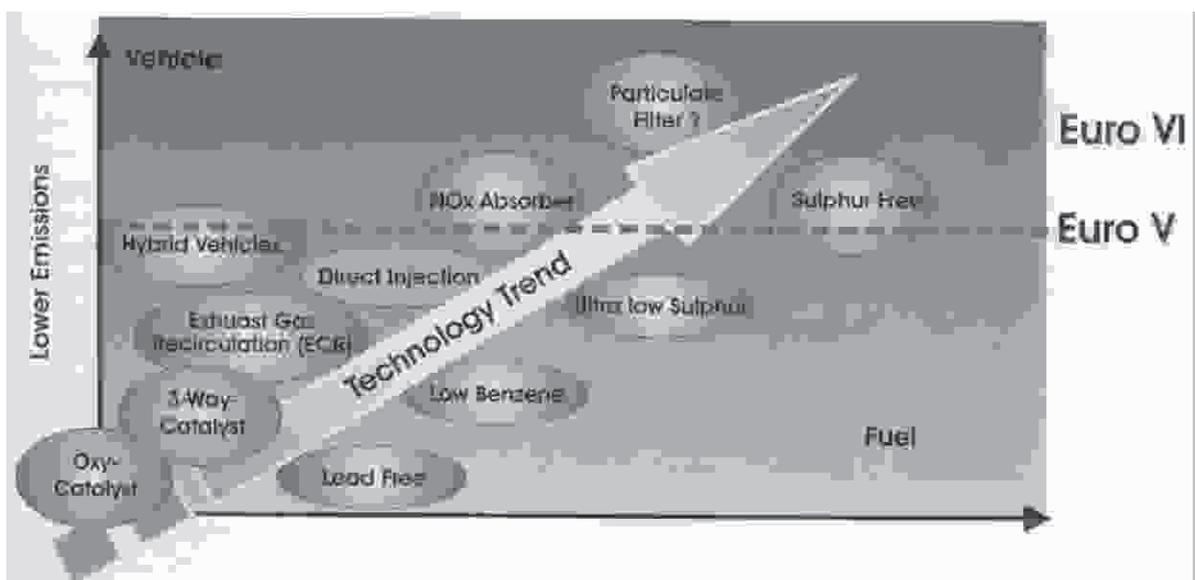
Other conventional technologies, which are being increasingly used in diesel vehicles, are Exhaust Gas Recirculation (EGR) system for reduction of NO_x and improvement in fuel economy, diesel oxidation catalysts for primary reduction in CO and HC emissions along with reduction in particulates. With the improvement in fuel quality the vehicle manufacturers would commence introduction of diesel particulate filters and selective catalytic reduction technologies for NO_x and PM reduction. Similarly, the evolution of gasoline engine has seen development of multi-point injection system from the earlier single point injection system along with EGR, use of variable valve train system and direct injection turbo-charging systems.

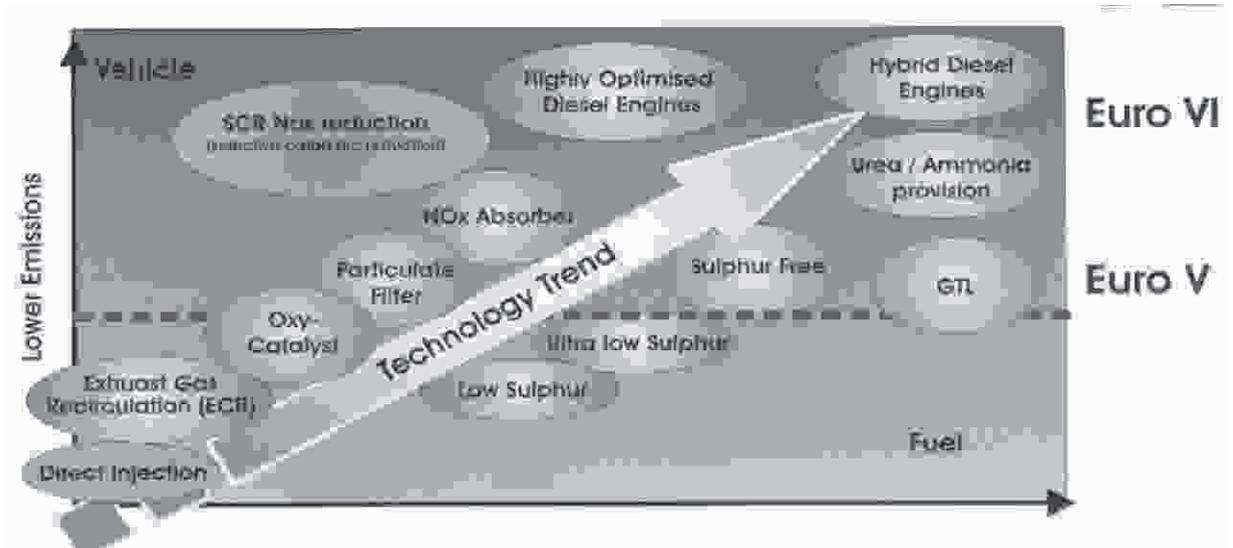
Development of engine technology and fuel technology has been going hand in hand across the world and it is evident that development of one aspect is not possible without the other complementing technology.

Recent developments in hybrid technology worldwide have found interest of automakers as well as policy makers across the world. In India, some of the manufacturers have already started work on this Technology and prototypes have been widely demonstrated. Under the National Hybrid Propulsion Platform (NHPP) programme,

SIAM with consortia of a few members is undertaking pre-competitive research for use of this technology by several Indian manufactures for India specific purposes. The project would initially work towards Hybrid Technology Demonstration for Commonwealth Game in 2010 which would involve system integration and running the vehicles.

Fuel cell technology is believed to be the panacea for sustainable mobility. But, the challenges of availability supply, distribution of hydrogen at a competitive price are some of the major hurdles to be crossed before it is widely used for mobility. However, SIAM has already worked in preparation of the Hydrogen Roadmap for India along with Ministry of New and Renewable Energy which proposes introduction of Hydrogen application in Automobiles in three phases in India. First, Hydrogen will be blended with CNG to enable vehicle manufacturers and Energy suppliers in India to get sufficient experience for Handling Hydrogen Fuel. A project with Indian Oil Corporation on this concept is already underway. Thereafter, pure Hydrogen IC Engines will be developed and in the last phase Hydrogen Fuel Cell vehicles will be developed by Indian manufacturers. By this time it is also estimated that the Fuel Cell technology world-wide would have matured for wider mobile applications.





The road to sustainable mobility has to be through an integrated approach with contributions from all stakeholders, the automobile industry should work on improvement in fuel efficiency, reduction in emissions and development of alternate drive systems. The fuel industry would need to continuously develop environment friendly fuels. The customer should also now play an active role by improving the ways of driving by way of saving the fuel. Finally, the regulators and policy makers should provide a relevant framework with appropriate infrastructure for overall development of the society.

In the last one year, the Government of India is deliberating on setting up standards on Fuel Economy of vehicles in India. Recognising a need for structured approach for Fuel Economy regulations for vehicles in India, in line with the existing emission regulations for new vehicles, as both of them are complementary, SIAM submitted a comprehensive approach for developing standards on vehicle Fuel Economy, to the Government taking into consideration views of all vehicle manufacturers in India. Further, as a proactive measure SIAM members have committed to declare the Fuel Economy of M1 category of vehicles and two-wheelers at the point of sale for informing the customer to enable him make an informed decision. The same will be available starting from 1st January 2009 but would

be available at all Point of Sale for all M1 Category vehicles and Two-Wheelers, not later by 31st March 2009.

It would also be pertinent to note that the Indian Automobile Industry is gradually aligning its safety standards with International safety regulations under the United Nations WR29. Presently, most of our vehicles already adhere to more than 75 European Regulations and several models with advanced safety devices such as Anti Lock Braking Systems (ABS), Head Light Aligning Systems, Air Bags, etc. are available in the Indian market. Initiatives are also being taken to improve the Public Transportation Buses with Low Floor Bus Technology being introduced in several cities for providing safe, convenient and comfortable transportation for the society.

The Indian Automobile is presently a key driver of the Indian Economy and would continue to play an important role in the World arena to steer the Automobile Industry towards a sustainable future with an ultimate vision of making our environment clean and roads safe for generations to come. SIAM is committed to making the vision as outlined in the Automotive Mission Plan 2006-2016, a reality.

Sources : Urjavarani - Vol.02 / No.05 / Feb-Mar 2009

Electric Vehicles Are they Energy Efficient ?

Mukesh Bhandari

Chairman & Managing Director, Electrotherm India Ltd.

Transportation sector has been the prime lover for development in the last century. The conditions in which the transportation sector evolved have changed beyond recognition over the last hundred years. In the early part of nineteenth century the crude oil was abundant, cheap and most areas of society were unaware of the consequences of its use, today anthropogenic climate change, deteriorating urban air quality and destruction of essential ecosystems are the backdrop of the global energy systems. This sector is ninety-five percent dependant on liquid hydrocarbons derived from crude oil. No other sector is so utterly reliant on a single source of primary energy.

Today, around half of every barrel of crude oil is converted into transportation fuels, and the share continues to grow. The automotive sector accounts for roughly three-quarters of the total transport sector demand for primary energy, with the remainder shared equally between aviation and shipping. It is no exaggeration to say that the oil and transport sectors are inextricably linked. If we are to stand any chance of reversing the negative trends, this link must end by transitioning to a transport paradigm which is both highly efficient and compatible with a sustainable renewable energy future.

"The only sustainable approach to the crisis is to tackle its root cause: the prevalence of the internal combustion engine coupled to a mechanical drive train, an outdated combination which is inherently inefficient in converting stored chemical energy into kilometers. Unnecessary journeys can be eliminated through smarter urban planning, encouraging behavioural change, and switching from private to public transport modes. Doubling the effective fuel economy of a private car is as easy as carrying a passenger. Vehicle downsizing, light weighting, aerodynamic improvements, efficient auxiliary components, lower maximum speed limits, reducing the rolling resistance of tyres and simple hybridising are worthwhile in that all will

increase the efficiency of the automotive fleet. Yet none of these measures will do anything to reduce the transport sector's dependency on liquid hydrocarbon fuels. Automotive transport is ripe for transformational change. We need to accelerate the commercialisation of vehicles with diversified primary energy sources, high efficiency and compatibility with a sustainable, renewable energy future. The electrification of automotive transport offers a promising way to achieve this objective."

(Excerpt from WWF's book "Plugged In: The End of the OilAge")

With that in view we want to promote electric vehicle as the alternative technology for transportation. The electric vehicle, once the "Zero-Emissions" product of environmentalists, is sometimes maligned as an "Emissions Elsewhere" vehicle, since the electricity to charge its batteries must be generated in electrical generation plants that produce emissions. This is a reasonable point, but we must then ask how much pollution an electric vehicle produces per kilometer-accounting for all emissions, starting from the gas or oil well where the source fuel is extracted, all the way to the final consumption of electricity by the car's motor. When we work through the numbers, we find that the electric vehicle is significantly more efficient and pollutes less than all alternatives. In this article, we will investigate YOspeed, which uses commodity lead-acid batteries. The Lithium-ion batteries are superior to lead-acid batteries for automotive application, but are not in much use because of prohibitive costs. Not only does this lithium-ion based vehicle have extremely high well-to-wheel energy efficiency and extremely low well-to-wheel emissions, it also has astonishing performance and superior convenience.

We at Electrotherm believe that grid connected vehicle technology - enabling all or part of the journey to be powered by electricity taken from the grid is the good alternative to this problem. To reaffirm we did a back-of-the-envelope kind of

Energy Efficiency calculation of our electric vehicles (this is based of the input http://www.veva.be.ca/wtw/Tesla_20060719.pdf)

- a) A standard petrol scooter: Here we will calculate the well-to-wheel energy efficiency of the normal gasoline powered scooter. First, let's take the gasoline content, which is 46.6 MJ/kg. Second we know that 18.3% of the energy content of the crude is lost in production and transportation. Thus, $34.3 \text{ MJ/l} / 81.7\% = 42 \text{ MJ/l}$; i.e. 42 MJ of crude oil is required to produce one litre of petrol at the gas station. A standard petrol scooter has the rated mileage of 50 km/l. Thus its efficiency is $52 \text{ km/l} / 42 \text{ MJ/l} = 1.19 \text{ km/MJ}$.
- b) A standard electric scooter (Our YOspeed): With standard specifications YOspeed consumes only 1.5 KWH (or 5.4 MJ) per 50 kms., or 9.26 km/MJ. The energy cycle of Lead acid batteries would be around 80% efficient (estimated). This means that 100 MJ of electricity used to charge a battery, only 80 MJ of electricity is available with battery to run the scooter. Thus, the "electrical-outlet-to-wheel" energy efficiency of the YOspeed is $9.26 \text{ km/MJ} \times 80\% = 7.4 \text{ km/MJ}$. The most efficient way to produce electricity is with a "combined cycle" natural gas-fired electric generator. (A combined cycle generator combusts the gas in a high-efficiency gas turbine, and uses the waste heat of this turbine to make steam, which turns a second turbine - both turbines turning electric generators.) The best of these generators today is the General Electric "H-System" generator, which is 60% efficient, which means that 40% of the energy content of the natural gas is wasted in generation. Natural gas recovery is 97.5% efficient, and processing is also 97.5% efficient. Electricity is then transported over the electric grid, which has an average efficiency of 80%, giving us a "well-to-electric-outlet" efficiency of $60\% \times 80\% \times 97.5\% \times 97.5\% = 45.63\%$. Taking into account the well-to-electric-outlet efficiency of electricity production and the electrical-outlet-to-wheel efficiency of the YOspeed, the well-to wheel Energy Efficiency of the YOspeed is $7.4 \text{ km/MJ} \times 45.63\% = 3.38 \text{ km/MJ}$, or more than double the efficiency of a petrol scooter.

The fundamental trade-off in convenience with electric vehicles is the advantage of starting every day with a "full tank" (and never visiting a gas station) versus inconvenient refueling on the road. While it is wonderful never to visit a gas station, this would be a bad tradeoff if the driving range was too short. Electric vehicles, like the YOspeed gained notoriety for their short, 60-70 kms. driving ranges. In contrast, a typical gasoline car can go more than 250-300 kms. on a tank of gas. The main reason that we want to have 250-km range on our gasoline vehicles is not primarily because we want to drive 250 miles in a day, but rather because we don't want to go to the gas station every day - a tank of gas should go about a week. From this perspective, the 60-70 kms. range of the electric vehicle might be enough for a commuter vehicle.

Electric vehicles are mechanically much simpler than both gasoline vehicles and fuel-cell vehicles. There is no motor oil, no filters, no spark plugs, no oxygen sensors. The motor has one moving part, there is no clutch, and the transmission is much simpler. Due to regenerative braking, even the friction brakes will encounter little wear.

The power sector is set to decarbonise over time as climate change policies penalise CO2 emissions from large stationary sources such as power plants. Physical renewable energy technologies - Wind, Solar-Thermal, Solar-PV, Geothermal, Hydro, Wave, Tidal - will become increasingly competitive and will hopefully form the major share of our electricity mix within few decades.

An environmentally and economically sustainable transport sector will not- be achieved through electrification alone. Additional measures to reduce overall demand through smarter urban planning, modal shift to mass transit, from road to rail, increased use of telecommunication technologies, and car sharing will make necessary and significant contributions. Nevertheless, road-based transport will likely continue to play a vital role in the delivery of essential mobility services which underpin economic and social development.

Sources : *Urjavarana* - Vol.02 / No.05 / Feb-Mar 2009

Hero Honda

HERO HONDA is committed to demonstrate excellence in environmental performance on a continual basis, as an intrinsic element of its corporate philosophy. Amongst the multiple environment related focus areas, the company continues with its commitment to institutionalise resource conservation, in particular, in the areas of oil, water, electrical energy, paints and chemicals industries.

While energy is a vital resource for industrialisation and economic growth, it is also responsible to factors leading to climate change. The company strongly believes that Energy Conservation is the most economical and effective solution to energy shortages, and is a more environmentally benign alternative when compared to increased energy production. The company has trained energy managers to check the wasteful use of energy and ensure energy efficiency levels. Some of the initiatives undertaken are:

Rain Water Harvesting

Access to water is one of the most challenging issues facing the world today. Rain water harvesting has emerged as a viable option to redirect rain water back into the ground. Over the years Hero Honda has been involved in rainwater harvesting projects to protect, preserve and enhance the environment.

The company has implemented various recommendations after an extensive study that on assessment of the scope of Ground Water Recharge through rooftop harvesting, storm water harvesting and open area harvesting systems carried out in the premises of the factory at the Dharuhera Plant.

The project executed in three well-planned stages was carried out in 2004 until 2007. In February 2004 when the study commenced, the groundwater level, 17.0 m bgl (below ground level), reached 16.9 m bgl in February 2007. The rooftop rainwater is collected by a series of collection chambers and interconnecting pipes from the Administrative Building, the New Time Office, the EHS Center, the Canteen, the R&D Centre and the Export and Dispatch Buildings. This water is diverted to recharge wells constructed at six different locations in the factory premise.

In the next stage, the company is planning to deploy artificial groundwater recharge techniques. Artificial recharge is the process by which rainwater is filtered into groundwater system. Ground water resources

are augmented by altering natural conditions for water to replenish. The water recharge potential of the factory after the completion of the rainwater harvesting, road runoff water harvesting, open area storm water harvesting is estimated to be about 25829.2 m³ per annum. The Company has installed one of the world's largest green roof plant a state-of-the-art technology. In this 25th year of our existence, this latest manufacturing plant went on stream in Haridwar, Uttarakhand.

Energy Conservation Projects implemented by Hero Honda

Details	Saving kWh/annum
VFD installation on air supply unit in the paint shop	71,000
Replacement of fixed speed compressors along with VFD compressors in AC & Refrigeration systems	12,342
VFD installation on cooling tower fans in the winter season	2,448
FRP fans in place of aluminum casting in cooling towers	2,64,132
Replacement of low rating oil injected compressors with higher rating oil free compressors	51,000
Installation of real timer on FDV's	1,50,000
Individual circuits installation for main machine to save power of AC chillars	6,000

The Company is also in the process of exploring projects that can minimise energy consumption and measures envisaged for Energy Conservation are:

- Erection and Commissioning of RO plant
- Vapor Absorption System
- Waste Heat Recovery of Boiler
- Installation of Waste Heat Recovery Unit at HHD
- HPS DG sets
- Installation of Automatic Power factor Control Panel for controlling and regulating the Load on Generators
- Automation of Boilers
- Automatic Blow down
- Oxygen trimming
- Lighting Automation
- Lighting Automation
- Replacement of tube lights with CFL Bulbs in certain areas of the plant with effective reflector, maintaining same lux levels

The Company is striving hard to achieve long-term goals and implement sustainable-clean energy solutions to save the planet for the future generations.

Sources : *Urjavarani - Vol.02 / No.05 / Feb-Mar 2009*

Energy Conservation at Bajaj Auto Ltd.

Pradeep Shrivastava
President (Engineering), Bajaj Auto Ltd.

Bajaj Auto Ltd. (BAL) is one of the leading automobile manufacturers in India, involved in production of motorised two and three wheelers with a plan to enter into 4 wheeler commercial and passenger segment very soon.

On Energy Conservation at Bajaj, it is our "Environment Policy" which guides us in our everyday working life and our decision making process. We are committed to protect the environment by way of consuming less from nature and are also committed to recycle to the extent viable, each time we consume any natural resource. This commitment of ours is the prime mover behind all the Energy Conservation efforts we have taken in the past and those that we would take in the future.

All the manufacturing facilities of Bajaj Auto are certified for ISO 14000 and 18000. The newest plant in Bajaj stable at Pantnagar was certified for "Integrated Management System for 14001 and 18001" this year. This has been the first such achievement for a plant in less than 2 years of its operations. Our Waluj plant has a distinctly ahead achievement of being the 2nd facility in Indian industry and the first in automobile to be certified for ISO 14001 in June 1997.

All our plants are also certified by JIPM for "Excellence in TPM" achievement, well known for it's approach of changing mindset of people. This mindset gave birth to more than 50,000 kaizen generated by our employees till date and 10% of which are towards Energy Conservation.

Major Energy Resources and its application at BAL:

Like all Automobile industries, BAL uses Energy from Electricity, LPG, Diesel, and Petrol for the process of conversion of raw material to finished goods through value additions at various stages of manufacturing. These Energy inputs are generally used for:

Electricity: As motive power for machines and equipments, Lighting, Air cooling and conditioning.

LPG: As heat source for furnaces in Heat Treatment operations, ovens for paint shops and as fuel in canteens.

Petrol and Diesel: As fuel for tests and inspection of finished products. As fuel for buses used for employees and goods transportation.

Initiatives at BAL for energy conservation:

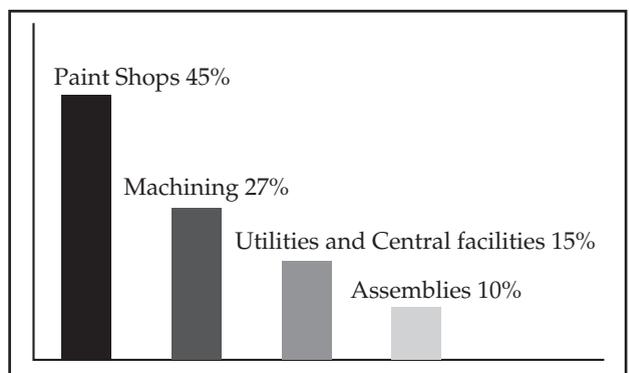
All above resources are used with following principles of conservation.

- a) Remove: Is it must to use? If not, eliminate.
- b) Replace: Can it be replaced with natural source like Solar/Bio.
- c) Reduce: Can it run on a cheaper energy resource? Is there any wastage?
- d) Recover: Try to recover and reuse to maximum possible extent.
- e) Recycle: To the extent economically viable.

These principles of conservation leads to various initiatives. Some of them are explained below.

(A) **Electricity:** Out of all the energy resources, Electricity is used most predominantly. Following chart explains the consumption of Electricity use by us.

- Electricity consumption of Paint Shops contribute almost 45% of total electricity

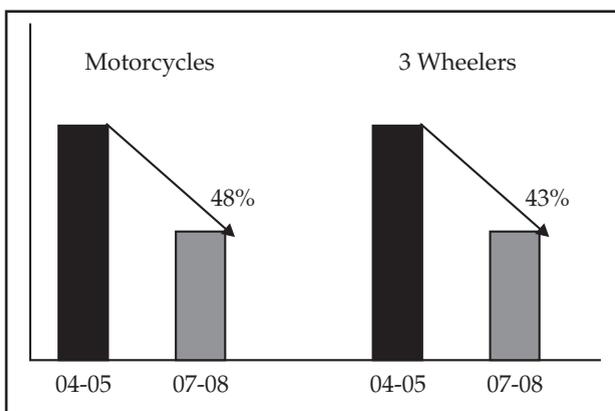


consumption by our manufacturing. Out of this, approximately 50% is consumed by the Air Supply Units. Installation of Variable Frequency Drives on the Motors of these units has given us savings of 1,50,000 units / month.

- Use of LPG burners / Solar heating for washing machines in place of Electricity.
- Downsizing of Pumps and Motors by carefully studying the requirement of application.
- Use of Energy Efficient Motors and regular preventive maintenance of blowers and other such equipment.
- Use of CFL in all our offices in all locations. Use of LED street lights, which consumes less power than Sodium Vapour.
- Auto switch ON and switch OFF through sensors for lightings and fans.
- Use of Natural air draft ventilators on roof of all shops in all our plants.
- Eliminating use of compressed air for cleaning purpose.
- Use of Karakuri kaizens, which have eliminated need of power for material handling between machines, dispensing of fasteners, clamping and de-clamping of components on fixtures etc.

The above efforts have given us reduction in Electricity consumption which we measure in terms of Rupees per vehicle. Following graph gives us an example of saving achieved in electricity consumption per vehicle for Motorcycles and 3 Wheelers over last 4 years.

B) LPG: Main consumption of LPG happens in Furnaces of Heat treatment (HT), Paint shops and in canteen for cooking food. While we have



converted most of our erstwhile electrically operated equipments in HT, Paint Shops and Canteens to LPG, the efforts to reduce the consumption of LPG is continuously on. Some of the initiatives taken in this direction are:

- Use of reflective coating inside furnaces for better heat retention.
- Optimising the cube size utilisation of paint jigs in all our paint shops have virtually doubled our capacity which facilitated us in running the Paint shops optimally.
- Recovery of hot exhaust gases for heating water required in pre treatment process of paint shops.
- Use of Bio-gas as supporting fuel for cooking.
- Use of Solar energy in canteens.

C) Petrol and Diesel: As said earlier, petrol and diesel is mainly used by us for testing and inspection.

A portion of our diesel consumption also comes from buses for employees and goods transportation etc.

Few of the major initiatives taken in the past to conserve this precious resource of energy are:

- Synchronisation of weekly offs with our cluster vendors at all 3 plant locations has eliminated the need of running DG sets by suppliers.
- 45% reduction in number of trips per 1000 vehicles through milk route and improvement in packing efficiency in trucks.
- Consolidation of Vendor clusters near our manufacturing plants at all locations (80% Suppliers at less than 15km. radius).
- Change in Vehicle testing method which has reduced consumption per vehicle from 250 ml. to approx 60ml. of petrol.
- Optimisation of truck loads for vehicle transport to our Dealerships.
- Optimisation of employee transportation routes and better capacity utilisation.

Awards and Recognitions:

BAL's efforts and initiatives as briefed above have been recognised at various State and National level competitions held for "EFFICIENT ENERGY OPERATIONS".

Special Initiatives:

BAL is committed to be "ENERGY EFFICIENT" in all its operations. On the issues related to Energy Conservation, Pollution Control, Meeting emission norms etc, BAL has been always a fore runner and all it's actions have been proactive. Few examples are:

- Setting stringent norms which are generally 30% tighter than the PCB norms on important parameters.
- Energy Conservation activities with Vendor clusters through implementation of SHE pillar activities and other initiative under BAL TPM programme.
- Extending the message of Conservation of Energy amongst employees and their families, BAL has distributed CFL lamps to all its workmen free of cost. Each of them was given 4 CFL lamps totalling to approx 50,000. A rough calculation of saving 30% over 30 units per lamp per month gives a saving of 5,00,000 units per month. Needless to mention, this saving goes in the interest of nation.

Results:

All above initiatives has given very good cost benefit apart from a sense of fulfilling our responsibility of conservation of natural resources. Some of the results, are given below.

(A) Energy Efficiency at company level can be measured by the reduction on account of expenditure for energy resources. In our case it is Power, Fuel and Water. It can also be measured as percentage w.r.t. Sales. The table below gives both these.

Year	03-04	04-05	05-06	06-07	07-08	
% Energy Cost w.r.t. Total Expenditure	1.55	1.10	0.95	0.96	0.88	@ 45% reduction
% Energy Cost w.r.t. Sales	1.15	0.85	0.70	0.75	0.70	@ 30% reduction

(B) BAL, in its pursuit to conserve energy resources has been steadily investing in the Energy conservation activities. A look at the past few years INVESTMENT vs. SAVING proves that the measures taken have yielded very good results as evident from the table given below.

Year	03-04	04-05	05-06	06-07	07-08	
Investment in ENCON-Rs. in million	11.50	15.8	8.0	10.6	10.45	Steady investment
% saving in Consumption of Electrical Energy per vehicle	20%	18%	20%	20%	23%	Average 20% reduction YOY
% saving in Consumption of Water per vehicle	20%	26.5%	20%	20%	16%	Average 23% reduction YOY

Glimpse of Future plans:

Continuing of the same path, some of the major initiatives that are planned for implementation in near future are:

- Installation of VFDs at locations that are commercially viable.
- Turbo ventilators in all shops for hot air exhaust.
- Use of Karakuri principle for intra cell material handling.
- Solar street lamps in our premises.
- Use of heat generated in various operations like Jig Stripping for heating water required for other processes.
- Stepping down lighting transformers for converting to Single Phase.
- Power consumption for generation of compressed air will be minimised by separating high pressure and low pressure application areas thus expecting a saving of approx 2500 kwh per day.
- Replacing reciprocating chiller to screw type chiller in paint (ED) shops for expected saving of 25% electricity.
- Installation of Auto tuning mechanism for burners. This ensures complete burning of fuel and is expected to save approx 3 tons of LPG per month.
- By installing Waste Heat recovery mechanism at identified locations, expected saving of approx 4 tons of LPG per month.

We at Bajaj are committed to' conserve the energy in every form that we use for making our products. Our desire to go beyond self interest in this area reflects on the initiatives like free distribution of CFL lamps. Our concern for this cause also inspires us to design products which are most fuel efficient and as well as eco friendly. Our patented technology of DTSi gives more fuel economy to rider and it also ensures complete burning of fuel and thus minimising the exhaust emission.

Sources : Urjavarana - Vol.02 / No.05 / Feb-Mar 2009

Mercedes-Benz's road map to sustainable mobility

Manas Dewan

General Manager (CC), Mercedes - Benz India Pvt. Ltd.

Mercedes-Benz offers the broadest spectrum of technologies for a reduction fuel consumption and emissions in passenger cars and commercial vehicles. These measures are focused in the initiative "Energy for the Future". In the short and medium term, the Stuttgart auto manufacturer is continuing to set store by the great potential still offered by petrol and diesel engines. It is also working together with the petroleum industry on the development of environment-friendly "designer" fuels, derived for example from natural gas or biomass. At the same time, Mercedes-Benz is pressing ahead with the development of hybrid drive systems as an interim solution along the road to zero-emission mobility with fuel cell vehicles.

Further optimisation of combustion engines

The internal combustion engine will continue to dominate the automotive market for many years to come; improvements to this power unit will therefore, prove the most effective for the time being. With innovative technologies and new concepts, Mercedes-Benz has reduced the carbon dioxide (CO₂) emissions of its passenger car fleet drastically. Thanks to the new common-rail direct injection, fuel consumption levels in diesel passenger cars have been lowered even further, while ride comfort and driving pleasure have been enhanced.

The company sees definite potential for reductions in consumption and emission through further far-reaching improvements to combustion engines. In the case of petrol engines, the emphasis lies above all in further reducing fuel consumption. With the diesel engines, which are already extremely favourable with regard to consumption, the main focus of attention is on the further reduction in noxious emissions. At the same time, however, there must be no compromise in power output and torque, in order to maintain the high level of driving pleasure provided to customers.

The bright future for diesel engines with GDI technology

In 1997, Mercedes-Benz hailed in a new era of passenger car diesel technology with common-rail direct injection. Along with achieving fuel savings of more than 10 percent over the familiar pre chamber diesel engines, this technology secured the cars a ranking among the best petrol engines of the various displacement categories in terms of driving performance and comfort. With the introduction of the CDI generation, driving performance, fuel consumption and emission levels were improved even further.

With CDI technology and homogenous diesel combustion processes to be introduced in the future, Mercedes-Benz is summoning all its innovative power to reduce the emission of particulates and nitrogen oxides to the very limits of detectability. In October, 2003 a milestone was also reached in exhaust gas after treatment with the introduction of the world's first additive-free particulate trap for the C- and E-Class vehicles. Mercedes-Benz has phased in this technology in further GDI diesel vehicles.

Reduced consumption in petrol engines

In petrol engines, too, the Mercedes-Benz engineers see quite a number of opportunities for development. The intelligent combination of technologies such as displaced-phase dual ignition, exhaust gas recirculation, low-friction engine components and intelligent lightweight design has already brought about considerable reductions in fuel consumption over the past few years. And then there are technologies such as supercharging, charge air cooling, variably adjustable camshafts, four-valve technology and Lanchester balancers, for instance in the TWINPULSE engines from Mercedes-Benz. Potential can be tapped here too in future, for example through the optimisation of combustion

within the engine and of engine electronics.

Since 2001, the technological achievements in emission reduction have underscored the advanced EU-4 certification of all Mercedes-Benz petrol passenger car models. The six-cylinder petrol engines from Mercedes-Benz, for example, already today number among the most environment-friendly power units in their category.

Clean fuels for lower emissions

In order to achieve further advances in engine technology and to benefit from them on a worldwide basis, Mercedes-Benz is working intensively towards improving fuels. Modern high-tech engines can only develop their full potential with high-performance fuels. Fuel quality varies greatly throughout the world. In some countries, for instance, diesel fuel has a low cetane rating of well under 50, along with high sulphur content. This leads to higher emissions and can preclude the use of modern fuel injection and exhaust gas after treatment systems.

With improved diesel fuels, Mercedes-Benz is setting out to tap a potential in future which can bring about a drastic reduction in noxious emissions. According to estimates in the USA, modern diesel engines and clean diesel fuel can lead to a 35-percent reduction in consumption and a 20-percent drop in CO₂ emissions.

Gas-to-Liquid (GTL) fuels tap the potential of natural gas

In view of the large reserves of natural gas worldwide, use of this resource makes sense, also in terms of long-term availability. Natural gas, which has hitherto gone to waste when burned off in vast quantities in the production of petroleum, could be transformed on site into GTL fuel, which has high energy density.

Biomass-to-liquid (BTL) fuels - environment-friendly CO₂-neutral balance

The production of BTL (biomass-to-liquid) fuels

could prove even more advantageous for sustainable mobility. The biomass is used up entirely in the production of these fuels. On combustion, only the amount of carbon dioxide is produced in the engine that the plants derived from the atmosphere during growth. The carbon dioxide balance is thus neutral, and our atmosphere is not burdened by any additional CO₂.

BTL fuels are free of sulphur and aromates; thanks to their precisely definable composition they have characteristics that can be strategically modified. This means that the fuel can be ideally matched to a specific combustion process.

Hybrid drive-an interim solution

In view of framework conditions prevalent in some markets, hybrid vehicles powered by an electric motor in tandem with a combustion engine could gain significance within the foreseeable future. In hybrid technology, Mercedes-Benz also sees an important interim solution along the road to the fuel cell - the long-term objective of the company's drive strategy.

Mercedes-Benz has realised a further hybrid drive variant in an S-Class vehicle. Under its hood are two electric motors that work in combination with a six-cylinder petrol engine. This automobile is thus the world's first rear-powered hybrid vehicle.

The fuel cell-drive for the future

The fuel cell offers the best long-term opportunities for securing uncompromising environment-friendly mobility in an automobile: this power unit operates on hydrogen, either in pure form or bound in a hydrogenous compound, and is thus completely free of noxious emissions: in a chemical reaction it converts the hydrogen together with oxygen into electrical energy, which powers an electric motor. The only substance produced in this process is water vapour. A car powered by the fuel cell is thus a genuine zero-emission vehicle (ZEV). Furthermore, fuel cell

drive has an efficiency factor about double that of the conventional petrol engine.

Mercedes-Benz is the pioneer in fuel cell development. Ever since the early nineties, researchers and engineers have been working towards practical implementation of this technology. Significant number of research vehicles and prototypes have already come into being along the road to series maturity.

Fuel cell vehicles - cars, vans and buses - in practical tests worldwide

In 2003, fuel-cell operation at Mercedes-Benz outgrew the research stage once and for all: vehicles based on the Mercedes-Benz A-Class and powered by this technology are already being produced under near-series conditions. Since 2003, continuous fleets of these cars have been subjected to tests in everyday operation with selected customers in the USA, Europe, Japan and Singapore. Mercedes-Benz has already ventured down the path to market maturity for this future-oriented drive technology.

In cities like Amsterdam, Barcelona, Hamburg, London, Luxembourg, Madrid, Porto, Reykjavik, Stockholm, Stuttgart and Perth fuel cell buses are already in operation in regular route service. Today, Mercedes-Benz has several hundred fuel cell vehicles on the road gaining experience in day-to-day operations.

The quest for a short, mid and long term solution for sustained, environment-friendly mobility is thus being pursued relentlessly by the company. The objective is to ensure reliable, efficient and environmentally safe mobility solutions for the globe.

Making Biodiesel a reality in India

The above are some of the major initiatives Mercedes-Benz has taken in the International arena to counteract the effects of environmental damage and restoration. On the local level Mercedes Benz India has been pushing its project

on Alternative Fuels in a major way. Bio Diesel which is an indigenised fuel variant created from the seed of the 'Jatropha' plant grown locally.

The first phase of the Jatropha Biodiesel Project by Daimler AG and Mercedes-Benz India recently reached conclusion. This project was partnered with Central Salt and Marine Chemicals Research Institute (CSMCRI), University of Hohenheim and was partly financed by (Deutsche Investitions and Entwicklungsgesellschaft (DEG)). Project landmarks included value-chain optimisation, modeling community-synergies and innovative utilisation of byproducts.

The guiding principles behind the project were: rural income and employment; indigenous and environment friendly Biodiesel; and reclamation of wasteland. The project has provided valuable findings to further optimise the value-chain of Biodiesel creation, develop best practices and models for community participation and upon innovative utilisation of byproducts during the process. In parallel, ongoing focus on vehicle testing, agronomic research and fuel improvements will be maintained.

Since 2004, the Jatropha Biodiesel project by DaimlerChrysler and its project partners have generated community-wide support and interest towards alternate energy and Biodiesel. The project also included field-tests with Mercedes-Benz cars powered by pure (unblended) Biodiesel across nine states in India in 2004. This was followed by the cold weather high altitude tests of the Biodiesel cars across KhardungLa the highest motorable road in the world and across the frozen Himalayan terrains in 2005. The inputs from the successful road tests paved the way for further improvement of fuel characteristics of Biodiesel.

The insights garnered from the first phase about agronomics aspects, creation of hardy high-yielding varieties of Jatropha plants and achievement of high quality Biodiesel to support non-blended utilisation is at the heart of this effort.

Sources : Urjavarani - Vol.02 / No.05 / Feb-Mar 2009

Journey Towards Excellence – My Experiences

J. Sridharan
Aditya Birla Group

To explain excellence he raised following questions:

1. What is excellence ?
2. Is excellence absolute or relative?
3. Is excellence only based on outcome ?
4. Is excellence a one off achievement?

He stated that excellence is

- to do a common thing in an uncommon way.
- doing ordinary things extraordinarily well.

There is no such thing as an excellent organization. There are organizations that believe in continuous improvement.

Tom Peter says - Excellent firms constantly improve and change. Excellence is having a Vision. Without Vision, individuals and organizations do not have the ability to focus on what is important. We are what we repeatedly do. Excellence then is not an act, but a habit.

Aristotle states - Excellence is unlimited ability to improve the quality of what you have to offer. There is no speed limit on the road to excellence. Excellence is ability to perform at a consistently high level, which in turn depends on the mastery of the fundamentals in whatever you are doing. Excellence is an ever moving target.
Insert Slides no. - 15,17

Aditya Birla group has evolved excellence culture. Shri Sridharan Narrated his learnings in the excellence journey with a few musts.

Management must believe in power of 3 Ps - Patience, Persistence and Passion.

Excellence has multi-dimensional perspective. Adoption of a multi dimensional framework for excellence incorporating all the fundamental concepts of excellence and excellence perspectives is a must for a holistic Journey.to achieve and sustain balanced results.

Excellence is adopting the fundamental concepts of excellence.

Excellence is achieving and sustaining best in class levels of performance for attaining and holding leadership position through a structured ongoing improvement process with involvement of all stakeholders based on a robust framework of processes, culture and values.

Excellence Framework - Insert slide 23

The model has -

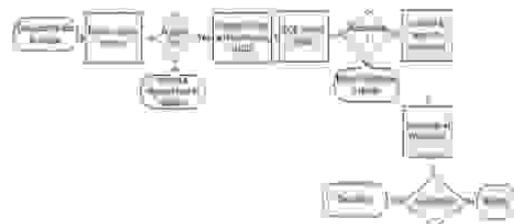
Enablers - Visionary Leadership and Strategic Planning

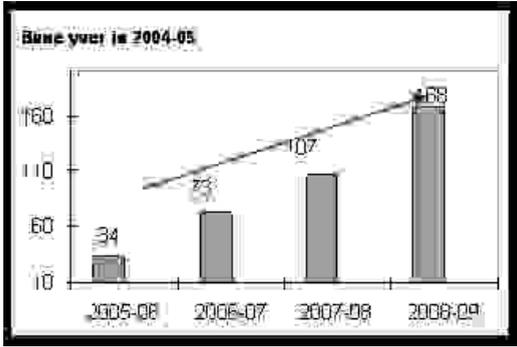
Processes - Work Environment, Asset Management, Supply Chain Management, Market and Customer Orientation, Quality Management, People Management, Information Technology and Technology Management

Key Performance Indicators (QCDIP)

Results - People Satisfaction, Societal Satisfaction, Supplier Satisfaction

The model was initiated by Dr. K M Birla, Chairman with a clear message





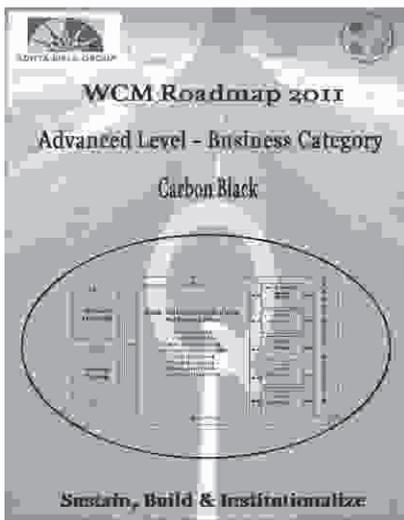
World Class Management(WCM)-Aditya Birla Group's Excellence Framework



Application of Tools/Techniques by themselves is not excellence.

WCM- What and How ?

WCM – What ? (Criteria of Excellence)



WCM - Excellence– How ?

Insert slidw 27

Aditya Birla Group is using following tools and techniques:

Practice of TQM, Internal Customer (CSI), Work Environment, TPM, Self Maintenance, Safety, Six Sigma, SIPOC, VOC, Process Map, Process Capability, Lean, Value Stream ,

Muda - Elimination, RCM

Cross Functional Teams promote Excellence

Its WCM Implementation methodology is stated as under-

Crossfunctional Criteria Ownership Teams provide guidance and support to Area Ownership Teams.

People are keen to participate and crave for involvement

It is a challenges –How to use potential of people.

An employee of GE at one of the work out sessions told Mr. Jack Welch , Chairman GE - :“For twenty-five years, you paid for my hands when you could have had my brain as well for nothing”

Measurements make a difference, “You tell me your measure and I will tell you about your level of excellence.”

Communication is vital for excellence.

One must have ability to see the 'gap - Believe that a 'gap' is always there.

Awards and recognition are the means. Do not let them become the purpose. You always need a booster for periodic renewals.

Create champions of excellence. Do not depend on mandates/ dictates for excellence.

The Future of Mobility and challenges in Auto Sector

Keshav Ram Singhal

The Future of Mobility

Presently we use transportation by car, scooter, motor-cycle, bus, tractor, truck, rail for our mobility. The transportation history of 20th century was written in oil and we were (and still are) using transport system that runs either by petrol or diesel. Oil-based mobility has contributed significantly to the threat of climate change. Oil production is peaking and decline is inevitable and there is also a need and urgency to address climate problems. Oil prices are continuously on the rise, so it is now a time for a transition to alternative transport system.

Many countries in the world are looking to other alternatives for energy and power. In Belgium, solar energy is now being harnessed to meet the power requirements of rail line. The 'Solar Tunnel' project incorporates 16000 solar panels on the roof of the Antwerp-Amsterdam high speed rail line railway tunnel, which is 3.4 kilometer long solar installation with a surface area of 50,000 square meters. The solar power installation serves to power the rail infrastructure, such as signaling, lighting, heating of stations etc. and also to the high speed and classical trains running on the Belgium rail network.

The clean hydrogen technology era is also coming-climate change, the depletion of fossil fuels, and the issue of energy security make it inevitable. Many developing countries, such as China, India, Malaysia, South Africa and Turkey have already developed, or developing, hydrogen programmes, and they can be expected to embrace the hydrogen economy. With the start of 2012, world's first fleet of hydrogen 3-wheelers launched at New Delhi Auto Expo.

The emerging technologies for alternative mobility seem to be focusing on Hybrid Electric Vehicles (HEVs), Plug-in-Hybrid Electric Vehicles (PHEVs), and Full Battery Electric Vehicles (BEVs

or EVs). Many organizations in the world are now manufacturing Hybrid, Plug-in and electric vehicles and this could be possible only because of emerging necessity to save energy and environment and also because of continual research and development of standards.

All over the world efforts are on to create awareness, make research and studies for energy efficiency and renewable sources. Standards have been developed and are being developed for a sustainable energy future and for a better world. The energy sector and similarly the auto sector are facing new challenges.

IEA, ISO, IEC workshop – 16-17 March 2009 in Paris

An international workshop on "International standards to promote energy efficiency and reduce carbon emissions" was organized in the joint venture of three international organizations – International Energy Agency (IEA), International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) and it finalized directions for future including directions for transport sector. Its report indicates following key points related to transport sector:

- The transport sector accounts for more than a quarter of total global final energy consumption and carbon-di-oxide emissions.
- Energy efficiency improvement of transport is imperative, in particular for road vehicles, which account for nearly 90% of the total sector energy use.
- Significant improvements are needed in standards for vehicle fuel consumption tests to take into account more realistic driving conditions and different regional usage patterns.

ISO Technical Committee ISO/TC 197

ISO Technical Committee ISO/TC 197 is actively

working on developing consensus-based international standards on hydrogen technologies that will facilitate the market entry of new technologies. This committee has developed and published 17 documents including international standards, technical reports, such as:

- ISO 13984:1999 – Liquid hydrogen – Land vehicle fueling system interface
- ISO 13985:2006 – Liquid hydrogen – Land vehicle fuel tanks
- ISO 14687 – 1:1999 – Hydrogen fuel – Product specification – Part 1
- ISO 14687 – 2:2008 – Hydrogen fuel – Product specification – Part 2
- ISO/PAS 15594:2004 – Airport hydrogen fueling facility operations
- ISO/TS 15869:2009 – Gaseous hydrogen and hydrogen blends – Land vehicle fuel tanks
- ISO/TR 15916:2004 – Basic considerations for the safety of hydrogen systems
- ISO 16110-1:2007 – Hydrogen generators using fuel processing technologies – Part 1: Safety
- ISO 16110-2:2010 – Hydrogen generators using fuel processing technologies – Part 2: Test methods for performance
- ISO 16111:2008 – Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride
- ISO 17268: 2006 – Compressed hydrogen surface vehicle refueling connection devices
- ISO/TS 20100:2008 – Gaseous hydrogen – Fuelling stations
- ISO 22734-1:2008 – Hydrogen generators using water electrolysis process – Part 1 – Industrial and commercial applications
- ISO 22734-2:2011 – Hydrogen generators using water electrolysis process – Part 2 – Residential applications
- ISO 26142:2010 – Hydrogen detection apparatus – Stationary applications

ISO Technical committee ISO TC 22

An ISO technical committee ISO TC 22 is working

on the scope covering all questions of standardization concerning compatibility, interchangeability and safety, with particular reference to terminology and test procedures (including the characteristics of instrumentation) for evaluating the performance of road vehicles of defined types and their equipment as defined in the relevant items of Article 1 of the convention on Road Traffic, Vienna in 1968 concluded under the auspices of the United Nations. ISO TC 22 has many sub-committees that are looking to the standardization work related to mopeds, motor cycles, motor vehicles, trailers, semi-trailers, light trailers, combination vehicles, and articulated vehicles. It has developed about 60 standards related to its scope.

Electric vehicles will drive down pollution

New draft standards are being developed in order to address existing and future issues related to electric vehicles. International standardization of electric vehicles is carried out by two organizations the International Electrotechnical Commission (IEC), as regards electrical engineers, and International Organization for Standardization (ISO), as regards car manufacturers. Standardization is the necessary tool for creating the conditions for success of electric vehicles. A sub-committee of ISO technical committee, ISO TC 22 / SC 21, is working on electrically propelled road vehicles and developed many standards related to electric road vehicles.

National Policy soon expected on Electric Vehicles in India

The electric vehicle (EV) industry at present is beset with challenges including high cost of vehicles, inappropriate battery technology, lack of infrastructure, and inadequate government support. The Union Government in India has approved a proposal to set up a ministerial body called 'National Council for Electric Mobility' (NCEM), aided by a National Board for Electric Mobility (NBEM) under the Department of Heavy Industries and Public Enterprises. The National Automotive Board (NAB) will also be formed and

it will act as the technical adviser and secretariat for both the NCEM and the NBEM. The NCEM has finalized a national policy for electric vehicles and is under consideration of the government. The government hopes to have the final policy in place by 2012.

Standards on Vehicle ID

The global automotive industry is also using a comprehensive coding system, called the Vehicle Identification Number (VIN). In this connection, the coding system contained in ISO 3779:2009, Road vehicles – Vehicle identification number (VIN) – Content and structure, and ISO 3780:2009, Road vehicles – World manufacturer identifier (WMI) code, serves as a frame of reference for establishing the structure of identification numbers for manufactured vehicles. Both international standards establish, on a worldwide basis, a coding system in order to identify both the vehicle and the vehicle manufacturer.

Concluding Note

Growing aspirations of the consumers to own vehicles also will pose a challenge to the auto industry to develop new products that are friendly to environment with challenging price tags. Oil prices are continuously on the rise, so it is now a time for a transition to alternative transport system.

Courtesy Source:

- Green Energy, World Institute of Sustainable Energy, Pune, India May-June & Jul-Aug 2011
- Green Energy, World Institute of Sustainable Energy, Pune, India Sep-Oct & Nov-Dec 2011
- Making It Industry for Development, UNIDO, Austria, Sep-Dec 2011
- UNews Monthly Newsletter, UN Information Centre, New Delhi, Jan 2012
- ISO Website
- ISO Focus+, April 2011
- ISO Focus+, May 2011
- ISO Focus+, Special Issue on World Energy Congress 2007.



NCQM VISION

To be a premier professional institution to spread culture of Quality in all aspects of human endeavour.

NCQM MISSION

NCQM shall operate as professional not-for-profit service organisation

- To promote Quality leading to total satisfaction
- To provide knowledge and expertise to business industry and society in pursuit of Quality.

NCQM VALUES

Our fundamental objective is creating Quality values through

Key beliefs: How we shall always act

- Constant respect for people
- Uncompromising integrity.

Key goals: What we must accomplish

- Excellence in performance through Quality.

Key initiatives: How we shall do it

- Six Sigma
- TPM
- Lean operations
- Leadership through Quality
- Continual performance improvement
- Empowerment through participative, co-operative and creative workplace.

NCQM OFFERINGS

Programmes – Public / In-house; Advisory Services; Audit Services:

Six Sigma, Total Quality Management (TQM), Total Productive Maintenance (TPM), ISO 9000 (Quality Management System), ISO 14000 (Environment), OHSAS 18000 (Occupational health & safety), Integrated Management System (IMS), TS 16949, ISO 17000 (Laboratory accreditation), ISO 22000 (Food safety), ISO 27000 (Information security), ISO 28000 (Supply chain), ISO 50000 (Energy), Hazard Analysis & Critical Control Point (HACCP), Statistical Process Control (SPC), Workplace management (5 S), Waste management (5 W / 7 W), Design of Experiments, Kaizen, SEI – CMM, CE Marking, Productivity improvement, Internal Quality Audit, Lean manufacturing, Root cause analysis for problem solving through use of QC tools and various modules in Marketing, Materials, Operations, Finance and Human Resources functions in manufacturing and service sectors.

Road vehicles run on ISO standards

ISO News

ISO has just published a new brochure giving a concise overview of its substantial portfolio of International Standards that share state-of-the-art technology and good practice with the automotive sector worldwide.



"Clearly, with more than a billion estimated road vehicles in use worldwide," the brochure states, "if the automotive sector uses state-of-the-art standards for aspects such as safety, impact on the environment, and requirements for supply chain partners, this can have an enormous impact on all three dimensions of sustainable development – social, environmental and economic.

"The importance of this challenge is reflected by ISO's response. Out of a current total of nearly 19 000 ISO International Standards for almost all sectors of business and technology, some 900 have been developed for road vehicles and related technologies."

ISO standards provide benefits for manufacturers and supply chain partners; regulators and health authorities; vehicle owners and drivers, and road users including pedestrians. They cover all aspects of road vehicles: safety, ergonomics, performance, test methods, the environment, and the roll-out of innovative technologies.

The focus of much of this work is ISO technical committee ISO/TC 22, Road vehicles, which has so far developed more than 700 standards and updates. These range from standards addressing basics such as wheels, braking systems and road holding ability, to crash protection, child restraint systems and ergonomics. Many aim to improve compatibility, interchangeability and safety, or to provide the requirements for harmonized test procedures for evaluating performance. Its standards address road vehicles from mopeds, through cars to articulated good vehicles. Twenty-

six countries participate in developing standards within the committee, with another 41 as observers. Other contributors include automotive sector associations and international bodies such as the World Health Organization.

Increasingly, road vehicles are integrated with systems and networks based on information and communication technologies with varied objectives such as safety, traffic control, navigation, fee collection and identification. Today's communications capabilities give the potential for vehicles to foresee and avoid collisions, transmit their position to emergency services in case of an accident, navigate the quickest route to their destination, make use of up-to-the-minute traffic reports, identify the nearest available parking slot, minimize their carbon emissions and provide multimedia communications.

ISO/TC 204, Intelligent transport systems, is the principal focus in this area and has developed more than 110 standards and updates. Twenty-six countries participate with another 24 as observers.

ISO/TC 31, Tyres, rims and valves, has developed some 75 standards and updates. Twenty-one countries participate with another 26 as observers.

The technical specification ISO/TS 16949 has become the global benchmark for quality management by automotive suppliers. Certification of conformity to ISO/TS 16949 is often required of suppliers by the automobile manufacturers as a condition to tender for participation in global supply chains. Up to the end of December 2010, at least 43 946 ISO/TS 16949:2002 certificates, a growth of 7 %, had been issued in 84 countries and economies. The document is the work of ISO/TC 176, Quality management and quality assurance.

The future ISO 39001, Road-traffic safety management systems, being developed by ISO project committee ISO/PC 241, Road safety management, is widely regarded as a major contribution to the United Nations' Decade of

Action for Road Safety 2011-2020.

ISO standards now under development address alternative power systems promising less pollution and therefore contributing to the fight against climate change. These include standards for electrically propelled vehicles and vehicles powered by gaseous fuels, as well as for the infrastructures necessary to support them.

To prepare the future of road vehicles, ISO works closely with its partners of the World Standards Cooperation (WSC) – the International Electrotechnical Commission (IEC) and the International Telecommunication Union (ITU). For example, in March 2012 at the Geneva International Motor Show, Switzerland, the three organizations will host the seventh edition of the Fully Networked Car workshop on the car of the future and the ITS needed to support it.

ISO & road vehicles, published in English and French, is available free of charge from the ISO Central Secretariat or by contacting the Marketing, Communication & Information department. It can also be obtained from ISO national member institutes. The brochure can also be downloaded as a PDF file free of charge from the ISO Website.

Courtesy – ISO Website



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Auto Sector related News from ISO

ISO News

The "car of the future" on agenda when car makers meet standards makers



How international standards can support the development of "the car of the future" and the intelligent transport systems that will support it will be among the main items on the agenda at the next Fully Networked Car workshop.

The seventh edition of the workshop will be held in Geneva, Switzerland, on 7-8 March 2012 at the Geneva International Motor Show. The workshop is organized every year at the Geneva show by the World Standards Cooperation (WSC), a partnership comprising the International Electrotechnical Commission (IEC), ISO (International Organization for Standardization) and the International Union of Telecommunication (ITU).

The Fully Networked Car workshop is a unique opportunity for the automotive industry to engage with the three organizations and discuss needs and priorities for international standards in coming years. It will bring together key players involved in the development of technologies and standards, as well as other major industry representatives.

The workshop will provide a forum for strategic discussions between IEC, ISO and ITU in this area to continue. In addition, through a series of roundtable panels and discussions, it will explore a number of related topics, including but not limited to:

- Electric vehicles and electromobility
- Regional perspectives on intelligent transport systems (ITS)
- Safety
- ITS communications
- The car of the future

Courtesy – ISO Website

NCQM News

WELCOME ABOARD - NEW MEMBERS

Corporate Member :

- CM0553 TLT Engineering India Pvt. Ltd.,
Indrad, Gujarat (Mr. M. K. Jain)
- CM0554 Dalal Engineering Pvt. Ltd.,
Thane (Mr. P. B. Parekar)
- CM0555 Austin Engineering Company Limited,
Patla, Gujarat (Mr. Hiren N. Vadgama)
- CM0556 Ennate Global Services,
Noida (Mr. Rohit Singh)

Institutional Member:

- IM0115 The All India Plastics Manufacturers
Association,
Mumbai (Mr. Jayesh Rambhia)

Individual Life Member:

- LO0132 Mr. M. Balachandran, Navi Mumbai

Individual Member:

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- MI0503 Ms. Ummehani S. Bootwala, Mumbai
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- MI0505 Mr. Sachin V. Sarkhot, Mumbai
- MI0506 Dr. Arundhati S. Athalye, Mumbai

NCQM PROGRAMMES DURING THE QUARTER

Public Programmes Conducted

- Lean Six Sigma - Green Belt
- Root Cause Analysis & use of QC Tools
- HACCP Awareness
- Internal Quality Audit - ISO 9001:2008
- How to manage for sustained success of an organisation

In-house Programmes Conducted

- Internal Quality Audit - ISO 9001:2008
- 5S Awareness & Survey
- Best Maintenance Practices
- ISO 9000 Awareness for workmen

Advisory Assignments

- 5S Audit

Implementation of ISO 9001:2008 QMS
Safety Audit

Networking Programmes Conducted

How to Fight Low Price Competition - NCQM with WICMA (Western India Corrugated Manufacturers' Association)

Root Cause Analysis & Use of QC Tools - NCQM with AIPMA (All India Plastic Manufacturers' Association)

NCQM PROGRAMME DURING THE NEXT QUARTER

- Project Management
- Internal Quality Audit for Integrated Management System
- Root Cause Analysis & Use of QC Tools
- Effective Management of Workplace through principles of Housekeeping (5S) & Waste Elimination (7W)
- Safety Induction and Accident Reduction in Industries
- Improving Productivity in Manufacturing
- Internal Quality Audit (IQA) as per ISO 9001:2008 Standards

WORLD QUALITY DAY

World Quality Day was celebrated on November 10, 2011 by Quality Forum at a function at Hotel Atithi, Mumbai. Dr. Girdhar Gyani, Secretary General - Quality Council of India was the Chief Guest and Speaker alongwith Dr. Venkatesh, also of QCI. The highlight of the function was felicitation and honouring of Prof. H. C. Patel, Joint Secretary and guiding light of NCQM with "Lifetime Achievement" Award.





NATIONAL CENTRE FOR QUALITY MANAGEMENT

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