जनवरी 2023, वॉल्यूम 08 अंक 01
January 2023, Volume 08, Issue 01
₹ 40/-

Skill Power

SKILLING INDIA

एक कदम आत्मनिर्भरता की ओर

Decarbonising India Bio-CNG
National Hydrogen Mission
Green Hydrogen Energy
Tidal Energy Solar Energy

Renewable Energy

Hydropower Electric Vehicles
Geothermal Energy
Compressed Bio Gas
Nuclear Energy Wind Energy
Ethanol Biofuel Energy
Achieving Net-Zero Vision Bio Diesel

Skill India
कौशल भारत-कुशल भारत

IASC
SECTOR SKILL COUNCIL
INSTRUMENTATION AUTOMATION SURVEILLANCE COMMUNICATION

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTERPRENEURSHIP

N·S·D·C
National Skill Development Corporation
Transforming the skill landscape

Skill India
कौशल भारत-कुशल भारत

IASC
SECTOR SKILL COUNCIL
INSTRUMENTATION AUTOMATION SURVEILLANCE COMMUNICATION

NCVET
कौशल गुणवत्ता प्रगति

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTERPRENEURSHIP

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

We are ready to capitalise this opportunity with our QPs

NSQF aligned QPs

QP Name	NQR Code	NSQF Level	Notional Hours	Credits
Additive Manufacturing (3D Printing)	IAS/Q5602	4	390	13
Building Automation Specialist	IAS/Q3006	5	570	19
Cabling Technician	IAS/Q5603	4	420	14
DCS Programmer and Troubleshooter	IAS/Q5605	4	420	14
HMI/SCADA Programmer and Troubleshooter	IAS/Q5606	4	420	14
Industrial Automation Specialist	IAS/Q8005	5	570	19
Industrial Automation Technician	IAS/Q5601	4	390	13
Installation and Commissioning Technician (AM/FM Radio Station)	IAS/Q0204	4	420	14
Instrumentation Technician (Control Valve)	IAS/Q3001	4	420	14
Instrumentation Technician (Process Control)	IAS/Q3102	4	390	13
Junior Instrumentation Technician (Process Control)	IAS/Q3003	3	330	11
Programmable Logic Controller (PLC) Programmer and Troubleshooter	IAS/Q5604	4	450	15
Testing and Calibration Technician (Electrotechnical)	IAS/Q5003	4	450	15
Testing and Calibration Technician (Mechanical-Dimensions)	IAS/Q5002	4	450	15
Installation and Commissioning Technician (Head End)	IAS/Q0203	4	210	7
Calibration Technician (Thermal)	IAS/Q5001	4	240	8

E-mail : info@iascsectorskillcouncil.in Website: www.iascsectorskillcouncil.in

Skill Power
VOLUME: 08 ISSUE: 01
January 2023 ₹40

EDITOR
Nagendra Goel

EDITORIAL BOARD
Mr Rakesh Kr. Upadhyay
Dr. A.K. Jain
Dr. Babu Lal
Ms. Renu Agrawala

MANAGING EDITOR
Renu Agrawala

COPY EDITOR
Dinesh Sharma

DESIGN & GRAPHICS
Sameer Kishore
info@fillandstrokes.com

EDITORIAL OFFICE
B-12, 2nd & 3rd Floor, Sector-1,
NOIDA-210301, U.P.
Phone- 0120-2424331, 2424332

Owner Instrumentation Automation Surveillance & Communication Sector Skill Council, **Publisher** Nagendra Goel, **Printer** Nagendra Goel, **Printed at** SWASTIKA CREATION 19, DSIDC Sheds Scheme 3, Okhla Industrial Area, Phase-II, New Delhi-110020, and **Published from** E-261, Ground Floor, Amar Colony, Lajpat Nagar-IV, New Delhi-110024

Editor Nagendra Goel

Website: www.iascsectorskillcouncil.in
Follow us on

Editor's Desk

Dear Readers,

This month's issue is focusing on "Go Green – help the environment". There is an Aboriginal proverb, "Look after the land and the land will look after you, destroy the land and it will destroy you." How true it is. The time has come to seriously work on saving our environment.

On the 75th Independence Day, Prime Minister Narendra Modi announced the National Hydrogen Mission with an aim of making India a hub for the production and export of green hydrogen. India is at a crucial juncture in terms of its energy landscape and green hydrogen has a critical role to play to make the nation self-reliant and energy-independent.

As a global community we must take immediate steps, to decarbonize electricity generation by transitioning from fossil fuel–based production to renewable energy sources like wind and solar; to electrify our cars and trucks; and to maximize energy efficiency in our buildings, appliances, and industries. This is the era of solar, wind, and hydroelectric, non renewable options.

We should not take the abundance of nature for granted. Earth has a limited resource and it has to be preserved for the next generation.

"The world still needs a giant leap on climate ambition" Secretary-General António Guterres' remarks on conclusion of COP27.
Let us put all our efforts together to "Go Green".

नया साल, नई उम्मीदें, नया विचार और नई शुरुआत,
नये साल की हार्दिक शुभकामनाएं!

Warm regards

Nagendra Goel
nagendra.goel01@gmail.com

CONTENTS

JANUARY 2023

MOVING FORWARD

CEO, IASC Sector Skill Council signed a Memorandum of Understanding with FEAST Software for AR/VR

MoU signed with FEAST for development of AR/VR content on existing QPs. 5 QPs selected in pase-1.

Memorandum of Understanding with GBU

MoU signed with GBU for starting CoE on drone technology and starting of training program on drone technology.

Memorandum of Understanding with SMC Corporation

MoU signed with SMC for recognition of their training facility as CoE on Industry 4.0 and working jointly in the domain for certificate training courses for corporates and students.

Discussion with NIET management on adaptation of QPs from IASC

Scope of aligning training activities with IASC NSQF aligned courses.

Memorandum of Understanding with Prena Group for B.Voc courses on IASC Qps.

MoU signed with prerna group on introducing IASC QPs for B.Voc in some of skill universities.

Panel discussion on Industry 4.0 at PHD Chambers of Commerce, New Delhi

Conference on Industry 4.0 organised by PHDCC . Many industries attended the conference .

Memorandum of Understanding with Phytec Embedded Pvt. Ltd.

MoU signed with Phytec to set up training and innovation lab on embedded IIoT.

Bio-CNG Plant

Anil Pise
Managing Director
Raj Process Equipment & System Pvt. Ltd.
anil@raj-india.com

Raj Group developed a large scale biogas upgradation plant for M/s. Jakraya Sugars Ltd., Watawate, Solapur in the state of Maharashtra. This biogas Up-gradation upto pure methane and bottling project at Solapur is one of Asia's largest project

It is a 20 TPD BioCNG plant for biogas upgradation based on spent wash and organic waste from sugar industry generation. This is first of its kind of project, developed in partnership with a large co-operative organisation of society. Raj Group is purifying and enriching about 48,000 m^3/day of biogas produced from spent wash as well as press mud which generates around 20000 kg Bio-CNG which is CNG grade fuel also called as CBG (Compressed Bio Gas).

This is a price-competitive renewable energy that can be used in vehicles as well as heating application in heat treatment facilities replacing LPG (Liquefied Petroleum Gas), diesel or other fossil fuels. CBG can also be used for electrical power generation. Raj Process Equipment & System Pvt. Ltd. provides a close cycle of sugar cane crop i.e. sugar cane is harvested from the agricultural fields and sent to the factory for sugar recovery and spent Wash, press mud is further treated through process of biomethanation for gas generation and Spray Dryer Technology potash reached powder

manufacturing. Also from digester organic manure goes back to the fields where sugar cane is cultivated have additional gain for farmer's close economy. Hence, Raj Process Equipment & System Pvt. Ltd. Pune given project is a renewable energy and waste management project with triple bottom line impact such as Environmental, Social and Financial.

Background

India is the second largest producer of sugar cane in the world. The states of Uttar Pradesh, Maharashtra and Karnataka lead the nation in sugarcane production. About 202 sugar factories exist in Maharashtra alone. As a nation dominated by agricultural activities, India has massive potential for utilization of agricultural products and waste for energy generation.

India's sugar industry and farmers stand too benefited greatly from biomethanation, a technology with economic, social and environmental objectives. Biogas is produced by the biological breakdown of organic matter under anaerobic conditions. Biogas is advantageous because it can be used as a fuel substitute at local level for vehicles or as fuel to generate electrical and thermal energy.

Spent Wash

The waste by-product produced during ethanol making from molasses, juice is an ideal feedstock for biomethanation. The conversion of spent wash into biogas also produces high quality potash richer organic-fertilizer, which can be used as a soil enricher and nutrient in agriculture. Farmer members of the sugar factory, other agricultural farmers and manure merchants/ dealers can be benefited immensely by the continuous and assured supply of organic manure all through the year from this plant.

India's sugar industry and farmers stand too benefited greatly from biomethanation, a technology with economic, social and environmental objectives.

Salient features of the plant

Plant operation: 80 % is mechanical PLC based and 20 % is manual. Three section made of plantBiogas Generation, H_2S Removal Section , Co_2 Removal Section.

Biopgas generation Section

These are CSTR type reactor and operate at mesophillic temperatures.

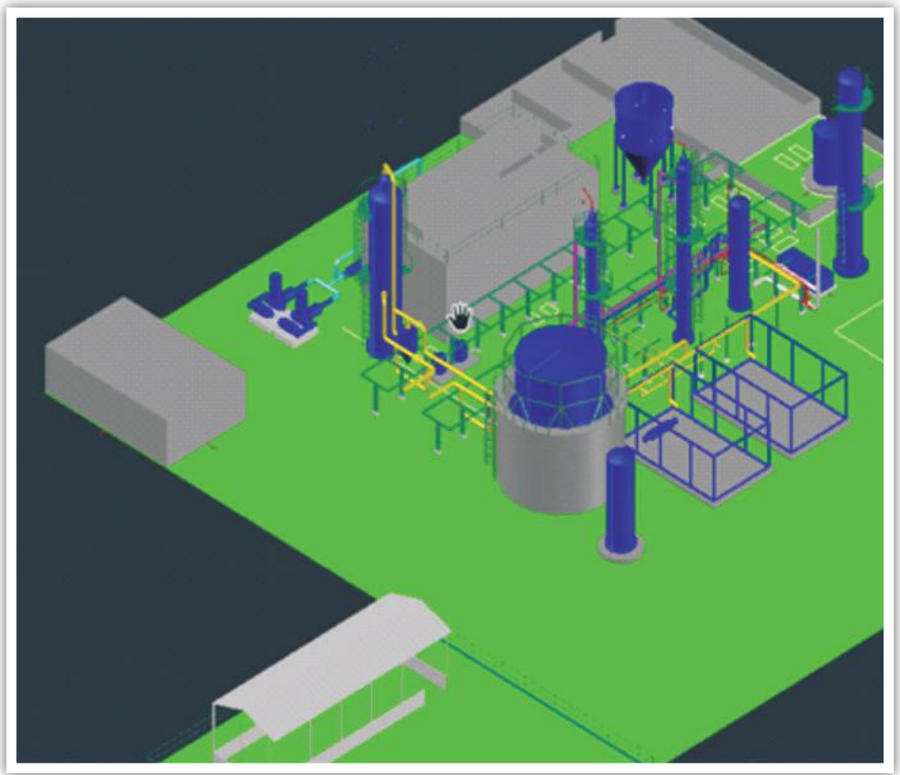
Biogas cleaning process description (for H_2S and CO_2 removal Section)

It is of Indian Technology make to upgrade biogas upto 96% above methane gas purity following norms of government. All absorber column used for H_2S removal & Co_2 Removal is also weather resistant. All the up gradation section are interconnected through pipes such way that any stage popo up of any gas will be reverse back through centralised gas holder area to have equal gas pressure. All the absorber column are fitted with safety valve to prevent over and under pressure. Pressure and level sensors fitted to all the upgradation plant equipment for safety purpose and all of them are connected to PLC.

The raw Biogas from digester based distillery waste and press mud is taken to the gas header. Raw biogas parameters at the header are as below;

- Biogas Flow:48000 Nm^3/ day
- Biogas pressure: 2500 mmWC
- Methane (CH_4): 60 %
- Carbon Dioxide (CO_2): 35 % (Max)
- Hydrogen Sulphide (H_2S): 3 % (Max)

The Biochemical process, consist of an aerobic reactor with an absorber and a sulphur recovery unit, which treats H_2S containing gases. The process leads to conversion of sulphide biologically to elemental sulphur. Biogas from this plantwhere H_2S is 200 ppm



is compressed through the low pressure compressor unit for further polishing purpose.

Online H_2S analysers are provided to measure the H_2S concentration monitoring facility given by Raj Group. The parameters after the absorber bed are as follows;

- Biogas Flow:42,800 Nm^3/ day
- Biogas pressure: 1300 mmWC
- Methane (CH_4): 65 - 67 %
- Carbon Dioxide (CO_2) : 30 - 32 %
- Hydrogen Sulphide (H_2S): less than 150 ppm guaranted
- Moisture (H_2O): 2 – 3 %

CO_2 Removal Section

For CO_2 removal from biogas a packed column is used. Soft water is used as solvent at moderate pressure (7.5 kg/cm^2). CO_2 concentration is reduced to less than 4%. Due to closed loop & regenerating soft water continuously chilling & heating cost will be less. After CO_2 free biogas content moisture will be removed by Dryer Unit. H_2S &CO_2 removal

Raj Process Equipment & System Pvt. Ltd. provides a close cycle of sugar cane crop i.e. sugar cane is harvested from the agricultural fields and sent to the factory for sugar recovery and spent Wash, press mud is further treated through process of biomethanation for gas generation and Spray Dryer Technology potash reached powder manufacturing.

system dry methane gas is passed through drying system. Dryer is two vessel molecular sieve type and heatless. Here the moisture is removed to ppm level. It is equipped with timer logic for regeneration and Pressure Relief Valve (PRV). Purge gas is taken to the clean gas holder.

BIO-CNG composition

- Upgrade BioCNGFlow:20,000Kg/day
- Methane (CH_4): minimum 95 to 95.5 %
- Carbon Dioxide (CO_2): maximum 4.0 to 4.5 %
- Hydrogen Sulphide (H_2S): less than 5 ppm
- Water vapour: Nil
- Oxygen: Nil
- Hydrogen: 0.2 to 0.5%
- Upgrade BioCNGPressure: 6-7 kg/cm^2

From the drying unit biogas is sent to the buffer vessel at pressure 6 to 7 kg/cm^2. It is equipped with pressure control system and PRV connected in close loop to recycle gas header. Gas from this buffer vessel is taken to the high pressure compressor

Then it will be boosted from 6 bar to 200 or 250 bar as per application

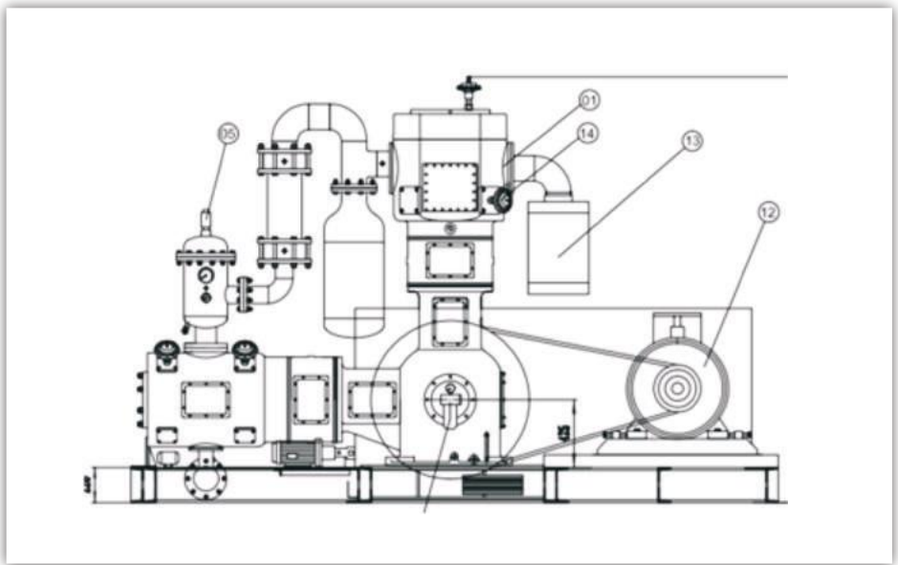
Gas Compressing & Bottling System

Online analysers and flow meters are provided to measure the above parameters. All above units are operated through PLC installed at control room. Two HPCU installed for compressing the purified biogas from 7 bar to 200 bar pressure and bottled into a cascade of cylinders. The CBG stored in cylinders (cascades) is transported to the client place and used instead of diesel, LPG and furnace oil through PRV's. Flare unit Excess Biogas released during plant breakdown or in any other case of emergency is burned by flare unit.

Advantages and Benefits of Biogas

- Biogas is eco-friendly fuel. Provides a non-Polluting and renewable source of energy.
- Has a calorific value of around 6kWh/m^3—this is equivalent to half a liter of diesel.
- Larger biogas plants generate BioCNG and fuel into mainstream gas grids.
- Efficient way of energy conversion.

Biogas is produced by the biological breakdown of organic matter under anaerobic conditions. Biogas is advantageous because it can be used as a fuel substitute at local level for vehicles or as fuel to generate electrical and thermal energy.



- Saves women and children from drudgery of collection and carrying of firewood, exposure to smoke in the kitchen, and time consumed for cooking and cleaning of utensils.
- Spray Dryer outlet powder & granules has very great market demand. Also additional sulphur fertiliser also gain from this system.
- The digested sludge is high quality organic manure, completely natural and free from harmful synthetic chemicals. It can supplement or even replace chemical fertilizers.
- Leads to improvement in the environment, sanitation and hygiene. Provides a source for decentralized power generation.
- Leads to employment generation in the rural areas.
- Industrial wastes and bio-wastes can be disposed of usefully and in a healthy socially and economical gaining manner.
- The technology is cheaper and much simpler than those for other bio-fuels.
- Dilute organic waste materials (2-10% solids) can be used as feed materials.
- Any biodegradable matter can be used as substrate.
- Anaerobic digestion inactivates pathogens and parasites, and is quite effective in reducing the incidence of water borne diseases.
- Environmental benefits on a global scale: Biogas plant significantly lowers the Greenhouse effects on the earth's atmosphere.
- The plant lowers methane emissions by entrapping and using it as fuel.
- No direct contact of Air (O_2) to biogas so risk level is very low.(Hybrid Bio Chemical H_2S Removal Plant)
- Low cleaning cost (OPEX) of biogas as upto 92 % caustic recycled.
- Very high H2S removal efficiency – over 99 %.
- Elemental sulphur as bi-product with 80 – 90 % purity.
- Low pressure Co2 Absorption system has less methane loss.
- No other expensive chemicals required.
- Low operation cost.
- User friendly system designed suitable for Indian environment.
- Operation at ambient temperature and pressure.
- All equipments/Machineries are up to latest technology.
- Plant is totally automatic (PLC & SCADA operated) hence very less man power is required.
- The gas will comply with latest IS STD 16087:2016 & it will meet the standard of oil marketing company such as BPCL, HPCL, and IOCL. ●

Sugar Industry transitioning to Bio-Energy Hub

Roshan Lal Tamak
ED & CEO, DCM Shriram – Sugar business
roshantamak@dcmshriram.com

Image Courtsey : India TV News

Sugar industry has travelled a long way from being a commodity player to being a major green energy player over time and during this transitionhas contributed substantially to the growth & prosperity of rural India. Today the industry generates almost 3000 MW of renewable green power and also produces >3.0 billion litre of ethanol (green fuel) besides meeting the sugar requirement of the country.

It's worth mentioning that the sugar industry is the second largest agro-based industry supporting over 50 million farmers. In addition, it provides direct & indirect employment to around 12% of the rural population in major sugar producing states. The turnover of the industry is about Rs 100,000 crores, 80% of which accrues to the sugarcane growers without any intermediaries. So any growth in the industry gives a tremendous boost to rural India. The industry spearheads numerous sugarcane development measures, CSR initiatives & sustainability practices that have a direct impact on the livelihoods of the rural population. During Covid19 pandemic, sugar industry rose to the occasion and contributed in all possible ways, most notably manufacturing and distribution of sanitizers and setting up oxygen plants. As the industry engages directly with farmers round the year, the efforts have contributed to significant improvement in sugarcane crop productivity and consequently enhanced farmers' incomes.

Sugar industry is now out of the infamous cycle wherein both industry & farmers used to suffer and has now become a strategic exporter from an opportunist exporter or importer. Heartening to note that last year India exported about 11 mmt sugar which is the highest quantity in history. These exports helped the industry in sustaining domestic sugar prices and thereby timely payments to sugarcane farmers. Now the industry has also started diverting the excess sugar by producing ethanol directly from sugarcane juice instead of exporting sugar. All these measures have helped in improving the cash flows of the sector directly benefitting

the sugarcane growers in getting their dues.

Reflecting on the past and looking ahead, some key highlights are:

1. India has overcome the cyclicality in sugar production and turned into a strategic exporter with an exportable surplus of 4-6 mmt inthe medium term (recently being ~11mmt). This has been made possible through the introduction of better varieties and good agriculture practices.

2. With the launch of national program on promotion of biomass power & many reforms during this period, cogeneration capacities have reached more than 3000 MW. However, further investments are not happening with various State Governments reducing the cogeneration power tariffs.

3. Ethanol blending Program is a very progressive policy of the Govt. Of India and progressing at a very good pace. Last year 10% blending has been achieved and the Government revised the blending targets and now aiming for20% by 2025 instead of 2030. All stakeholders right from Govt, Oil marketing companies, automobile manufacturers and the sugar sector are working very closely to achieve this target. Now Govt.has expanded the range of feedstocks and included grain also to produce ethanol.

This program is a win-win for all.This is likely to give a boost to the industry as it achieves the following objectives

- Enhances energy security of the country
- Promotes industrialization - Make in India
- Supports agriculture – small holders
- Reduces Green House Gas emission
- Saves forex for the country

Sugar industry is now out of the infamous cycle wherein both industry & farmers used to suffer and has now become a strategic exporter from an opportunist exporter or importer.

4. Sugar industry is currently diverting ~ 3.5 mmt sugar for ethanol production either through B-Heavy molasses or Cane syrup. This is expected to touch 5mmt this year. Industry is adding further capacities and GOI is offering fiscal incentive for this purpose.

5. Press mud another by-product of the sugar manufacturing process continues to be used as high quality manure, and farmers are able to access it at affordable rates. This helps in replacing the carbon content back into the soil thereby increasing its productivity and quality. Newer initiatives by the industry such as the setting up of Compressed BioGas (CBG) plants under the aegis of Sustainable Alternative Towards Affordable Transportation (SATAT) scheme to ensure energy security and provide manure to the farmers is in the pipeline. Sugar industry has the potential of adding 1800 TPD of green CBG.

6. Going forward another leg of sugar sector could be Food processing.

Sugar Industry being located in the rural heartland of India can also play a pivotal role in providing the impetus to the food-processing sector as it has the following unique advantages:

- Sugar complexes are located exactly at the origin of agri-produce i.e. rural India, and over the years have established their agri-value chain and supply chain linkages.
- Sugar factories have the basic infrastructure readily available for food processing units such as manpower, machinery and production capabilities.
- The industry produces excess green power which would be vital for the operations of cold chain infrastructure.
- On the market side, the fundamental market linkages for selling processed food are already available.

So sugar sector is also well placed to be the food processing hubs in future.

For the sustainability of the sector following challenges need to be addressed

- linkage of sugar prices with sugarcane prices
- Organized research for various development.
- Viable prices for sugarcane juice ethanol
- Viable prices for cogen-power.

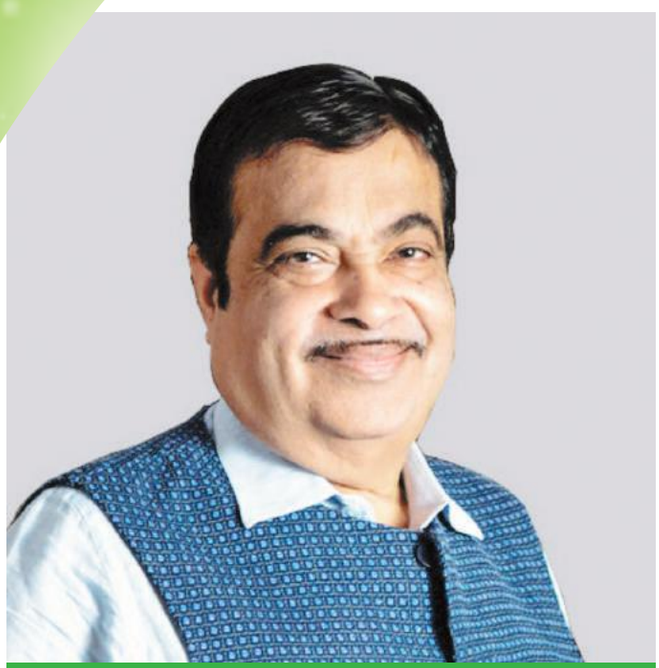
I feel sugar industry has come a long way and will continue to play a pivotal role in the development of rural India as well as in ensuring the energy security of the nation.

Clearly, the transition is happening from Sugar Complexes to Bio Energy Parks.

Sugar industry is the only industry that has potential to process all its inputs to outputs without any wastage and is a classical example of a Circular Economy and that too with an Element of Green.

INITIATIVES AND ROAD MAP FOR ZERO GREEN HOUSE GAS EMISSION

Dr Babu Lal
lalsumang@gmail.com



"We can run trains, aircraft, trucks and buses on green hydrogen. Today, India is an importer of this energy but with innovation, India will be an exporter of green hydrogen."

– Nitin Gadkari, Union Minister For Road Transport & Highways

The threat of the climate change has become the most pressing challenge for the humanity. The same has been recognised by almost all the countries all over the world and have declared their targeted emission reduction goals [i.e., Nationally Determined Contributions(NDCs)] post the historic Paris Climate Accord in 2015. Even though the nations have declared their NDCs, according to the recently released 'Emission Gap Report 2021' by UNEP, to get on track to limit global warming to 1.5°C, the world needs to take an additional 28 Gt CO2 eq reduction in the annual emissions by 2030, over and above what is promised in updated unconditional NDCs. India has also set and ambitious target to reduce carbon intensity by 45% by 2030 (w.r.t 2005 levels) and to become a Net zero nation by 2070.

The window to limit dangerous global warming and ensure a sustainable future is quickly closing. This is the stark but unequivocal finding of recent climate change reports. It can be seen that in 2022 alone, China experienced severe drought while half of Pakistan flooded. Massive wildfires spread across Spain and California. East Africa's worst drought in decades threatens millions with starvation. In Canada, in 2021 a heat dome over Lytton, British Columbia reduced the town to ash.

National Hydrogen Mission Decarbonising India, Achieving Net-Zero Vision (Ministry of New & Renewable Energy) The initial outlay for the Mission will be Rs. 19,744 crore, including an outlay of Rs. 17,490 crore for the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, Rs. 1,466 crore for Pilot Projects, Rs.400 crore for Research & Development, and Rs. 388 crore towards other Mission components.

Climate change and extreme weather are undermining health, food and water security, nature, safety, and socio-economic development. A recent UN report shows that while the curve of global emissions is bending, it is not happening quickly enough to limit temperature rise to 1.5°C.

Between March and May, Delhi experienced five heatwaves with record-breaking temperatures reaching up to 49.2 degrees Celsius which increased

the vulnerability of half of the city's population which lives in low-income, informal settlements, a report by the World Meteorological Department said. The report titled 'United in Science 2022' also cited a recent attribution study which concluded that climate change made this prolonged hot weather in Delhi 30 times more likely and that the same event would have been about 1 degree Celsius cooler in a pre-industrial climate.

A severe winter storm or 'bomb cyclone' has seized large parts of the United States and Canada, enveloping them in snow and rain. On 23th December 2022, Buffalo city in New York State recorded 566.4 millimetres of snowfall, according to the private weather company AccuWeather. This was double the previous record daily snowfall of 320 mm in 1976. The city also recorded highest rain fall of 50.2 mm against a previous record of 43.9mm in 1878.

GOALS FOR NET ZERO EMISION

992 Rio Earth Summit	Kyoto Protocol in 1997	Paris Agreement year 2015	COP27 declarations , NOV22
The threat of climate change was formally acknowledged. This summit led to incorporation of United Nations Framework convention on climate change (UNFCCC).	Ratification in 2005. The Kyoto Protocol put a binding clause on developed nations to cut emissions. For developing nations, this was voluntary in nature. In the first commitment period (2008 to 2012), the targeted GHG reduction was 5% by 2012 vis-à-vis 1995 emission level. In the second commitment period (20132020), the target was further increased to GHG emission reduction by 18% by 2020 vis-àvis 1990 emission level	196 countries adopted the historic Paris Agreement to reduce global warming and build resilience to climate change. Its overall goal: limit warming to no more than 1.5 degrees Celsius	Usa: Zero emission by 2050 China and the third largest producer of oil worldwide Russia announced to be carbonneutral by 2060. India: Zero emission by 2070

The top seven emitters (China, the United States of America, India, the European Union, Indonesia, the Russian Federation, Brazil) accounted for about half of global greenhouse gas emissions in 2020. The Group of 20 (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union) are responsible for about 75 per cent of global greenhouse gas emissions as per UNEP Emissions Gap Report 2022.

At the COP 27 climate conference in Egypt, Antonio Guterres, United Nations Secretary-General said " we need commitments that will deliver a reduction of emissions by 45 per cent by 2030 so we can reach net zero emissions by midcentury."

The World Bank has been ramping up its finance for renewable energy for several years. In fiscal year 2021, the World Bank (IBRD/IDA) did zero new fossil fuel financing. The World Bank Group stopped investing in upstream oil and gas in 2019. From 2016 to 2020, the Bank financed 34 gigawatts of renewable energy to help communities, businesses and economies thrive.

One of the recent successes of COP26 was the finalisation of the Paris rulebook through agreement on Article 6 that calls for cooperative approaches among all signatories to Paris Agreement. As per recent discussion paper floated by International Emission Trading Association (IETA), the potential cost reductions that may be achieved through Article 6 cooperation are estimated to exceed $300 billion per year when compared with the independent implementation of NDCs by countries.

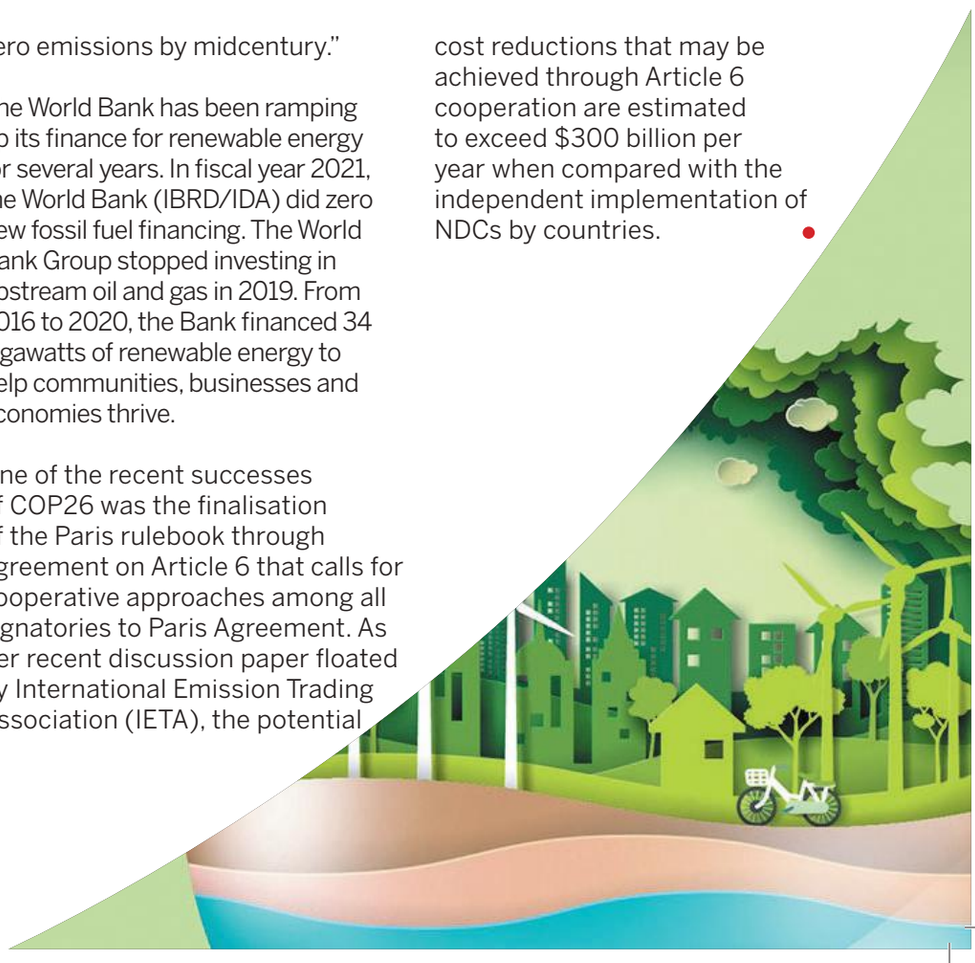


Image Courtsey : The Economic Times

Ethanol as Green & Renewable fuel

Ajay Gupta
link_chem@rediffmail.com

Writer is a Chemical Engineer and having experience in ethanol since June 1978

Ethanol is a clean burning with high-octane number [Less knock] motor fuel that is produced by the fermentation of plant sugars from any source. It is made from renewable energy and reduces greenhouse gas emissions by as much as 90%.

Henry Ford designed the first Model T automobiles in 1908 to run on ethanol. In addition, ethanol has been produced in the World for over 50 years, for both alcohol and transportation fuel purposes and our fuel contained around the world ethanol blends of between 10-27% from the 1970's up until the late 2000's. This blending was introduced to alleviate fuel shortages and high petrol prices. In the world during this 20 year period ran on an ethanol blend of up to 27% with no compatibility issues.

Ethanol has been produced since pre-historic times, mainly used in alcoholic beverages [for drinking or potable purpose]. However, in the transportation industry, ethanol is either used as a vehicle fuel by itself, blended with petrol, or as a petrol octane enhancer and oxygenate. It is going on since 1910 as hydrous then anhydrous.

At Green and Renewable Fuel, we produce anhydrous ethanol from sugarcane & grains with a purity range of a minimum of 99.6% ethanol and a maximum of 0.4% of others. This is the highest quality ethanol available for blended fuel and is created by passing the ethyl

alcohol through the latest distillation & dehydration technology. However companies are producing minimum of 99.8% ethanol.

In addition, the ethanol since 1910 was hydrous, containing between 4% and 7% water. This is unlike the current ethanol, which is anhydrous by dehydration and has a purity level of 99.8%. Water-free ethanol is superior for blending purposes and Green Fuel's anhydrous ethanol is in line with the 'fuel grade' approved for use in Europe, US and around the world

Ethanol blends are the amount of ethanol as a percentage mixed with petrol. For example, E10 is 10% ethanol blended with 90% petrol. The most common blends are E 5, E10, E15, E20, E24

E 27 without changing Engine but with little modification. The 'E' indicates that the fuel contains ethanol or Green Fuel.

A significant number of countries use ethanol blended fuel and every country that produces ethanol for domestic consumption has implemented incentives for such projects, the most basic of these being mandatory blending.

Incentives are introduced because of the many benefits that ethanol production and use brings to a country – job creation, foreign currency retention, environmental protection, promotion of agriculture and the reduction of the price of petrol at the pump.

Lower percentages are in place in countries where there is little or no production of ethanol and all targets are set to increase over the next few years due to the benefits of renewable fuels.

Ethanol is a liquid alcohol made of oxygen, hydrogen and carbon and is obtained from the fermentation of sugar or converted starch sugar contained in grains and converted cellulose sugar contained in agricultural feed stocks. Due to this reason ethanol is renewable fuel.

Image Courtesy : Naran Lala

A summary of the mandatory blending worldwide is set out in this table without changing Engine but little modifications.

COUNTRY	BLEND	LEGAL USE
Argentina	E5	Mandated
Brazil	E27	Mandated Since 2007
Canada	E5	Mandated Since 2010
China	E10	Mandated in 9 Provinces
Colombia	E10	Mandated
Costa Rica	E7	Mandated
India	E5 Now E10	Mandated
Jamaica	E10	Mandated Since 2009
Malawi	E10 Minimum - blends up to E20	Mandated
Mexico	E6	Mandated Since 2010
Paraguay	E6	Mandated
Peru	E18-E24	Mandated
Peru	E8	Mandated
Philippines	E10	Mandated
Thailand	E20	Mandated Since 2008
Finland	E10	Mandated
Ireland	E4	Mandated
Romania	E4	Mandated
Sweden	E5	Mandated
USA	E5-E10	Mandated

Image Courtsey :Bareilly's Best Website

Green Hydrogen

Nipun Jain
Project Director,
Indo Nuclear Energy Pvt. Ltd.
nipunn.jain@gmail.com

Hydrogen is the ultimate green fuel. It is the most abundant element in the universe. It provides three times more energy than fossil fuels and releases pure water as the only byproduct. It is also one of the leading options for storing energy from renewables and promises to be the lowest-cost option for storing electricity over a long period of time.

Green hydrogen is produced by using renewable energy to power the electrolysis of water. Green hydrogen (GH_2 or GH_2) is hydrogen generated by renewable energyor from low-carbon power. Green hydrogen has significantly lower carbon emissions than grey hydrogen, which is produced by steam reforming of natural gas, which makes up the bulk of the hydrogen market.

Hydrogen can be produced through multiple methods: One of the most established ways is to split water into hydrogen and oxygen through an electrolyser using RE sources. The hydrogen thus produced is green hydrogen; other methods are accompanied by carbon emissions. Renewable hydrogen can be made by splitting water into hydrogen and oxygen using electricity generated by wind or solar power.

Countries are now waking up to the idea of replacing fossil fuels with

renewable sources to isolate green hydrogen. This shift is happening because of two reasons. Firstly, there are clear signs that fossil fuels can no longer be used to meet the world's energy needs.Secondly, natural abundance of hydrogen means it has the potential to level competition in the automobile sector.

Green hydrogen can be blended into existing natural gas pipelines, and also used to produce green ammonia, the main constituent of fertilizer production. It is suggested by hydrogen industry bodies that green ammonia will be cost-competitive with ammonia produced conventionally by 2030.

According to a new study by research firm Bloomberg NEF (BNEF) - Widespread adoption of clean hydrogen can cut global greenhouse gas emissions by up to 34 per cent in fossil fuel-dependent sectors by 2050, and at a manageable cost.

The Union Cabinet approved the National Green Hydrogen Mission January 4, 2023, with the goal of developing a green hydrogen production capacity of at least five million metric tonnes (mmt) and an associated renewable energy capacity addition of about 125 gigawatts (GW) by 2030.

An official statement by the Union Ministry of New and Renewable Energy indicated that the Mission also plans to create a coordinated skill development programme. This will lead to the creation of 0.6 million job opportunities.

The Mission aims to increase the export of green hydrogen and simultaneously reduce fossil fuel imports of over Rs 1 lakh crore. Over Rs 8 lakh crore in investments is expected for infrastructure development.

Hydrogen can be used as a hydrogen fuel for fuel cells or internal combustion engines. Hydrogen vehicles are not limited to automobiles, with trucks also being designed to run on green hydrogen. In 2020, major European companies announced plans to switch their truck fleets to hydrogen power. Hydrogen can be used for cooking and heating within homes.

As of 2021, companies across countries have formed alliances to increase production of the fuel fifty-fold in the next six years.The market could be worth over $1 trillion a year by 2050 according to Goldman Sachs.

In April 2022, the public sector Oil India Limited (OIL), set up India's first 99.99% pure green hydrogen pilot plant in keeping with the goal of "making the country ready for the pilot-scale production of hydrogen and its use in various applications" while "research and development efforts are ongoing for a reduction in the cost of production, storage and the transportation" of hydrogen.

The power ministry of India has stated that India intends to produce a cumulative 5 million tonnes of green hydrogen by 2030.

Hydrogen Tanker

Image Courtsey : HT Auto

NTPC-Install Green Hydrogen Fueling Station

Image Courtsey : Mercom India

पर्यावरण संरक्षण

Renu Agrawala
Member Standing Committee
IASC Sector skill council

वृक्ष, पानी और स्वच्छ हवा,

यह तीन है जीवन रक्षा की अनमोल दवा।

पर्यावरण संरक्षण का अर्थ है हमारे पर्यावरण को सुरक्षित करना यानी की पर्यावरण सुरक्षा। लेकिन हमारे द्वारा किये गए कई कारणों से हमारा पर्यावरण खराब हो रहा है। ये कारण कुछ इस प्रकार है ग्लोबल वार्मिंग, वनों की कटाई और विभिन्न प्रकार के प्रदूषण में वृद्धि आदि कारणों से पर्यावरण हमारे लिये चिंता का कारण बन गया है।

पर्यावरण संरक्षण केवल सरकारी कार्यक्रम नहीं है, बल्कि हम सभी की साझी जिम्मेदारी है। प्रत्येक नागरिक को अपनी जिम्मेदारी समझना चाहिए और पर्यावरण संरक्षण में अपना अमूल्य योगदान करना चाहिए। पर्यावरण का सामान्य अर्थ प्रकृति द्वारा प्रदान किया गया समस्त भौतिक और सामाजिक वातावरण यथा जल,वायु, पेड़–पौधे,पर्वत, प्राकृतिक संपदा आदि पर्यावरण संरक्षण के अंतर्गत आते हैं।

पर्यावरण संरक्षण न केवल मानव के लिए बल्कि अन्य जीवित प्राणियों के लिए भी बहुत ही आवश्यक है। क्योंकि यदि पर्यावरण सुरक्षित नही रहेगा, तो पृथ्वी पर भी जीवन की संभावना कम हो जायेगी। इसीलिए हमे अपने पर्यावरण के संरक्षण के लिए ऐसे कदम उठाने चाहिए जिससे हमारा पर्यावरण सुरक्षित रहे।

भारत में पर्यावरण के प्रति वैदिक काल से ही जागरूकता रही है. विभिन्न पौराणिक ग्रंथो में पर्यावरण के विभिन्न कारको का महत्व व उनको आदर देते हुए संरक्षण की बात कही गई है। भारतीय ऋषियों ने सम्पूर्ण प्राकृतिक शक्तियों को ही देवता का स्वरूप माना है। सूर्य जल, वनस्पति, वायु व आकाश को शरीर का आधार बताया गया है। अथर्ववेद में भूमिसूक्त पर्यावरण संरक्षण का प्रथम लिखित दस्तावेज है। ऋग्वेद में जल की शुद्दता, यजुर्वेद में सभी प्रकृति तत्वों को देवता के समान आदर देने की बात कही गई है।

हमारी संस्कृति को अरण्य संस्कृति भी कहा जाता है। इसके पीछे भाव यही है कि वन हरे भरे वृक्षों से सदैव यहाँ का पर्यावरण समर्द्ध रहा है। महाभारत व रामायण में वृक्षों के प्रति अगाध श्रद्धा बताई गई है। विष्णु धर्म सूत्र, स्कन्द पुराण तथा याज्ञवल्क्य स्मृति में वृक्षों को काटने को अपराध बताया गया है तथा वृक्ष काटने वालों के लिए दंड का विधान किया गया है।

प्रदूषण का बढ़ना

आप सभी को पता होगा कि पर्यावरण के संकट के कई कारण है जैसे प्रदूषण, ग्लोबल वार्मिंग, वनों की कटाई आदि। आज के इस आधुनिकता में हम अपनी ज़रूरतों की पूर्ति के लिए प्लास्टिक, वाहनों, जैसे अन्य चीजों का इस्तेमाल करते है। जिससे वायु प्रदूषण, जल प्रदूषण, भूमि प्रदूषण जैसी समस्या उत्पन्न हो रही है। प्रदूषण के कारण आज स्थिति इतनी गंभीर है कि लगभग 2 बिलियन लोगो के पास स्वच्छ पीने का पानी नहीं है। हमारे पर्यावरण के संकट का मुख्य कारण प्रदूषण है।

पर्यावरण संरक्षण के तीन प्रमुख उपाय हैं, जिनमें पहला पर्यावरण संरक्षण को हानि पहुंचाने वाली चीजों यथा प्लास्टिक से बनी वस्तुएं आदि का उपयोग कम से कम करना चाहिए। दूसरा पुनरू उपयोग में आने वाली वस्तुओं को हमें खरीदना चाहिए, जैसे कागज, कांच, प्लास्टिक से बनी चीजें। तीसरा जिन वस्तुओं को दुबारा बनाकर प्रयोग कर सकते हैं, उनके प्रयोग को बढ़ावा दिया जाना चाहिए। जैसे अखबार, गत्ता आदि को दुबारा बनाकर प्रयोग किया जा सकता है। इससे पर्यावरण भी शुद्ध रहेगा और धन का अपव्यय भी कम होगा। पर्यावरण संरक्षण को असंतुलित करने वाले कारकों में वायु प्रदूषण,जल प्रदूषण,ध्वनि प्रदूषण,भूमि प्रदूषण,रेडियो धर्मी प्रदूषण प्रमुख हैं। इसके स्थान पर हमे ई–पेपर या ई–बुक का इस्तेमाल करना चाहिए।

जल प्रदूषण

अपने पर्यावरण को बेहतर बनाने के लिए हमें सबसे पहले अपनी मुख्य जरूरत 'जल' को प्रदूषण से बचाना होगा। कारखानों का गंदा पानी, घरेलू, गंदा पानी, नालियों में प्रवाहित मल, सीवर लाइन का गंदा निष्कासित पानी समीपस्थ नदियों और समुद्र में गिरने से रोकना होगा। कारखानों के पानी में हानिकारक रासायनिक तत्व घुले रहते हैं जो नदियों के जल को विशाक्त कर देते हैं, परिणामस्वरूप जलचरों के जीवन को संकट का सामना करना पड़ता है। दूसरी ओर हम देखते हैं कि उसी प्रदूषित पानी को सिंचाई के काम में लेते हैं जिसमें उपजाऊ भूमि भी विषैली हो जाती है। उसमें उगने वाली फसल व सब्जियां भी पौष्टिक तत्वों से रहित हो जाती हैं जिनके सेवन से अवशिष्ट जीवननाशी रसायन मानव शरीर में पहुंच कर खून को विषैला बना देते हैं।

> ओजोन परत, हमारी पृथ्वी के चारों ओर एक सुरक्षात्मक गैस की परत है। जो हमें सूर्य से आनेवाली हानिकारक अल्ट्रावायलेट किरणों से बचाती है। वायु प्रदूषण के कारण जीन अपरिवर्तन, अनुवाघांकीय तथा त्वचा कैंसर के खतरे बढ़ जाते हैं।

जल प्रदूषण, वायु प्रदूषण और ध्वनि तीनों ही हमारे व हमारे फूल जैसे बच्चों के स्वास्थ्य को चौपट कर रहे हैं। ऋतुचक्र का परिवर्तन, कार्बन डाईऑक्साइड की मात्रा का बढ़ता हिमखंड को पिघला रहा है। सुनामी, बाढ़, सूखा, अतिवृष्टि या अनावृष्टि जैसे दुष्परिणाम सामने आ रहे हैं, जिन्हें देखते हुए अपने बेहतर कल के लिए '5 जून' को समस्त विश्व में 'पर्यावरण दिवस' के रूप में मनाया जा रहा है।

वायु प्रदूषण

वायु प्रदूषण अर्थात हवा में ऐसे अवांछित गैसों, धूल के कणों आदि की उपस्थिति, जो लोगों तथा प्रकृति दोनों के लिए खतरे का कारण बन जाए। दूसरे शब्दों में कहें तो प्रदूषण अर्थात दूषित होना या गंदा (गन्दा) होना। वायु का अवांछित रूप से गंदा होना अर्थात वायु प्रदूषण है। वायु में ऐसे बाह्य तत्वों की उपस्थिति जो मनुष्य

एवं जीव–जंतुओं के स्वास्थ्य अथवा कल्याण हेतु हानिकारक हो, वायु प्रदूषक कहलाती है तथा ऐसी स्थिति को वायु प्रदूषण कहते हैं।

वायु प्रदूषण के कुछ सामान्य कारण हैं। वाहनों से निकलने वाला धुआँ। औद्योगिक इकाइयों से निकलने वाला धुँआ। आणविक संयत्रों से निकलने वाली गैसें तथा धूल–कण। जंगलों में पेड़ पौधें के जलने से निकलने वाला धुआँ। कोयले के जलने से तथा तेल शोधन कारखानों आदि से निकलने वाला धुआँ। ज्वालामुखी विस्फोट, वायु प्रदूषण हमारे वातावरण तथा हमारे ऊपर अनेक प्रभाव डालता है।

हवा में अवांछित गैसों की उपस्थिति से मनुष्य, पशुओं तथा पक्षियों को गंभीर समस्याओं का सामना करना पड़ता है। इससे दमा, सर्दी–खाँसी, अँधापन, श्रव का कमजोर होना, त्वचा रोग जैसी बीमारियाँ पैदा होती हैं। लम्बे समय के बाद इससे जननिक विकृतियाँ उत्पन्न हो जाती हैं और अपनी चरमसीमा पर यह घातक भी हो सकती है।

वायु प्रदूषण से सर्दियों में कोहरा छाया रहता है, इससे प्राकृतिक दृश्यता में कमी आती है तथा आँखों में जलन होती है।

ओजोन परत, हमारी पृथ्वी के चारों ओर एक सुरक्षात्मक गैस की परत है। जो हमें सूर्य से आनेवाली हानिकारक अल्ट्रावायलेट किरण से बचाती है। वायु प्रदूषण के कारण जीन अपरिवर्तन, अनुवाशंकीय तथा त्वचा कैंसर के खतरे बढ़ जाते हैं।

वायु प्रदूषण के कारण पृथ्वी का तापमान बढ़ता है, क्योंकि सूर्य से आने वाली गर्मी के कारण पर्यावरण में कार्बन डाइ आक्साइड, मीथेन तथा नाइट्रस आक्साइड का प्रभाव कम नहीं होता है, जो कि हानिकारक है। वायु प्रदूषित क्षेत्रों में जब बरसात होती है तो वर्षा में विभिन्न प्रकार की गैसें एवं विषैले पदार्थ घुलकर धरती पर आ जाते हैं,जिसे 'अम्ल वर्षा' कहा जाता है।

जनसंख्या वृद्धि

अधिक जनसंख्या भी पर्यावरण के संकट के लिए जिम्मेदार है। जनसंख्या में वृद्धि होने के कारण संसाधनों की पूर्ति नहीं हो जाती है और मांग बढ़ जाती है। जिससे मनुष्य अपने अस्तित्व को बनाये रखने के लिए पक्षियों और जानवरों का आश्रय नष्ट कर देता है। इससे पारिस्थिति की तंत्र का संतुलन बिगड़ जाता है। जो हमारे पर्यावरण के लिए हानिकारक साबित हो सकता है।

वनों की कटाई में बढ़ौतरी

वनों की कटाई पर्यावरण के संकट का एक मुख्य कारण है। मानव अपनी आवश्यकताओं के अनुसार वनों की कटाई करते रहते है। इसके कारण जंगली जंतुओं और पक्षियों का आवास नष्ट हो रहा है। इसके अलावा वनों

की कटाई के कारण वातावरण में कार्बन डाई ऑक्साइड (CO_2) और कार्बन मोनो ऑक्साइड की मात्रा लगातार बढ़ती जा रही है, क्योंकि पेड़ ही कार्बन डाई ऑक्साइड (CO_2) को ऑक्सीजन में बदलने का काम करते है।

ग्लोबल वार्मिंग का बढ़ना

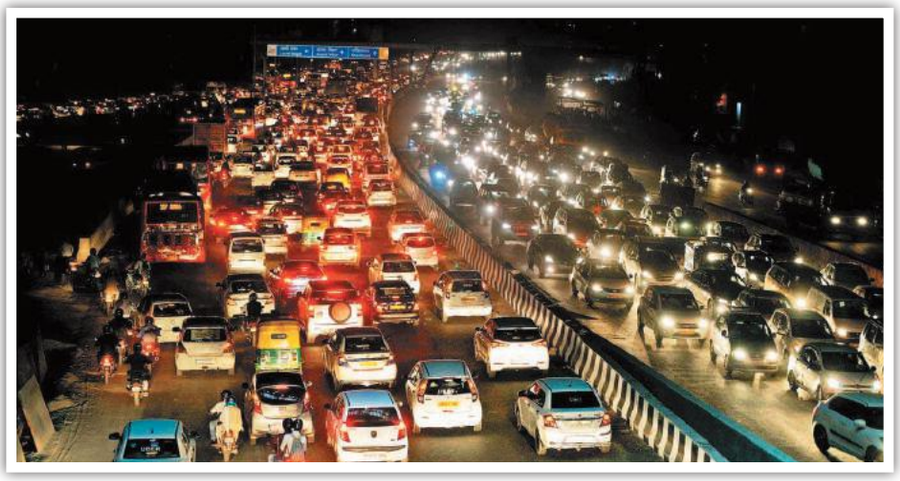
दिन प्रतिदिन ग्लोबल वार्मिंग का खतरा धीरे–धीरे बढ़ता जा रहा है। इसका मुख्य कारण है कार्बन डाई ऑक्साइड (CO_2)। हमारे द्वारा उपयोग किये गए जीवाश्म ईंधनों से निकलने वाला कार्बन डाई ऑक्साइड (CO_2) हमारे वातावरण में उपस्थित होता है जो पृथ्वी के तापमान में वृद्धि करता है। जिसके फलस्वरूप ग्लेशियर पिघलने लगते है और समुद्र के जल का स्तर बढ़ जाता है। इसके फलस्वरूप जो शहर तट पर उपस्थित होते है उनके डूबने का खतरा बढ़ जाता है।

किसानों को कीटनाशक और रासायनिक खाद का उपयोग काम करना चाहिए, जिससे पर्यावरण संरक्षण किया जा सके। हमारे पर्यावरण को सुरक्षित रखने के लिए हम 3R (recycle, reduce and reuse) की अवधारणा का उपयोग कर सकते है। इससे हम एक सामान को बार बार उपयोग पाएंगे और इससे पर्यावरण भी सुरक्षित रहेगा।

ध्वनि प्रदूषण

अनियंत्रित, अत्यधिक तीव्र एवं असहनीय ध्वनि को ध्वनि प्रदूषण कहते हैं। ध्वनि प्रदूषण की तीव्रता को 'डेसिबल इकाई' में मापा जाता है। ध्वनि प्रदूषण के संकट के मुख्य कारण है–शहरों एवं गाँवों में किसी

भी त्योहार व उत्सव में, राजनैतिक दलों के चुनाव प्रचार व रैली में लाउडस्पीकरों का अनियंत्रित इस्तेमाल/प्रयोग। अनियंत्रित वाहनों के विस्तार के कारण उनके इंजन एवं हार्न के कारण। औद्योगिक क्षेत्रों में उच्च ध्वनि क्षमता के पावर सायरन, हॉर्न तथा मशीनों के द्वारा होने वाले शोर। जनरेटरों एवं डीजल पम्पों आदि से ध्वनि प्रदूषण।



ध्वनि प्रदूषण का प्रभाव

ध्वनि प्रदूषण के प्रभाव से श्रवण शक्ति का कमजोर होना, सिरदर्द, चिड़चिड़ापन, उच्चरक्तचाप अथवा स्नायविक, मनोवैज्ञानिक दोष उत्पन्न होने लगते हैं। लंबे समय तक ध्वनि प्रदूषण के प्रभाव से स्वाभाविक परेशानियाँ बढ़ जाती है। ध्वनि प्रदूषण से हृदय गति बढ़ जाती है जिससे रक्तचाप, सिरदर्द एवं अनिद्रा जैसे अनेक रोग उत्पन्न होते हैं।

नवजात शिशुओं के स्वास्थ्य पर ध्वनि प्रदूषण का बुरा प्रभाव पड़ता है तथा इससे कई प्रकार की शाारीरिक विकृतियां उत्पन्न हो जाती हैं। गैस्ट्रिक, अल्सर और दमा जैसे शारीरिक रोगों तथा थकान एवं चिड़चिड़ापन जैसे मनोविकारों का कारण भी ध्वनि प्रदूषण ही है।

प्रकाश प्रदूषण

बढ़ती बिजली की जरुरत और काम के लिए बढ़ती प्रकाश की जरुरत इस प्रकाश प्रदुषण का कारण बन सकता है द्यप्रकाश प्रदुषण के मुख्य कारण है –बढ़ती गाड़ियों के कारण हाई वोल्ट के बल्ब का इस्तेमाल द्यकिसी कार्यक्रम में जरुरत से ज्यादा डेकोरेशन करना द्यएक कमरे में अधिक बल्ब को लगाना है।

प्रकाश प्रदूषण का प्रभाव–आँखो के आगे अंधकार का छा जाना द्य जो गाड़ी चलते समय एक्सीडेंट का कारण बन सकता है। दिमाग में दर्द होना, मनुष्य का अँधा होना, शहरी भाग में तारों का न दिखना इसी प्रदुषण का परिणाम है।

आज अगर हम पर्यावरण सुरक्षा पर ध्यान नहीं देंगे तो आने वाले समय में हम पृथ्वी के विनाश को रोक नहीं पाएंगे। पर्यावरण संरक्षण किसी एक व्यक्ति या किसी एक देश का काम न होकर समस्त विश्व के लोगों का कर्तव्य है। पर्यावरण को प्रदूषित करने वाले सभी कारकों को अतिशीघ्र रोका जाए। युवा वर्ग द्वारा वृक्षारोपण व जलवायु स्वच्छकरण हेतु जन जागरण का अभियान चलाया जाए, तभी पर्यावरण सुरक्षित रह सकेगा।

वर्तमान समय में गैसीय पदार्थों, अपशिष्ट पदार्थों, विभिन्न यंत्रों की कर्णकटु ध्वनियों एवं अनियंत्रित भूजल के उपयोग आदि कार्यों से भूमि, जल, वायु, भूमंडल तथा समस्त प्राणियों का जीवन पर्यावरण प्रदूषण से ग्रस्त हो रहा हैं। ऐसे में पर्यावरण का संरक्षण करना और इसमें संतुलन बनाएं रखना कठिन कार्य बन गया हैं।

विषैले अपशिष्ट छोड़ने वाले उद्योगों और प्लास्टिक कचरे का विरोध करे. वे जल स्रोतों की शुद्धता का अभियान चलावे। पर्यावरण संरक्षण के लिए हरीतिमा का विस्तार, नदियों की स्वच्छता, गैसीय पदार्थों का उचित विसर्जन, रेडियोधर्मी बढ़ाने वाले संसाधनों पर रोक, गंदे जल मल का परिशोधन, कारखानों के अपशिष्टों का उचित निस्तारण और गलत खनन पर रोक आदि उपाय किये जा सकते हैं। ऐसे कारगर उपायों से ही पर्यावरण को प्रदूषण से मुक्त रखा जा सकता हैं।

पर्यावरण संरक्षण किसी एक व्यक्ति या किसी एक देश का काम न होकर समस्त विश्व के लोगों का कर्तव्य है। पर्यावरण को प्रदूषित करने वाले सभी कारकों को अतिशीघ्र रोका जाए। युवा वर्ग द्वारा वृक्षारोपण व जलवायु स्वच्छकरण हेतु जन जागरण का अभियान चलाया जाए, तभी पर्यावरण सुरक्षित रह सकेगा।

www.hihindi-com@environment&conservation
www.hi-wikipedia-org@wiki

GREEN HYDROGEN ENERGY
PRODUCTION and DISTRIBUTION

Dr Babu Lal
lalsumang@gmail.com

Renu Agrawala
Member Standing Committee
IASC Sector skill council

Green Hydrogen is produced when water is electrolysed in electrolysers using electricity from renewable sources like wind mills, PV modules.

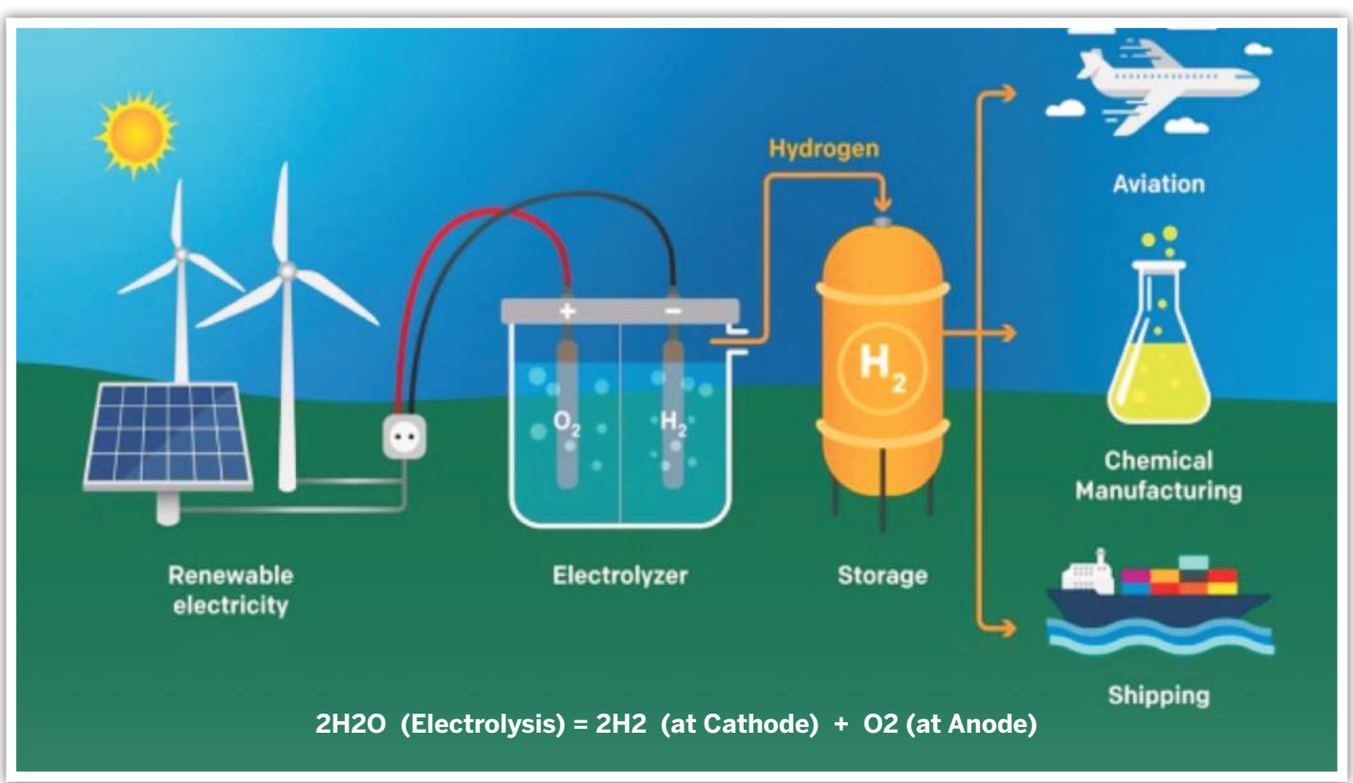
When Hydrogen is burned in presence of Oxygen, heat is generated along with water and therefore zero emission in the environment. Green hydrogen is most suitable in the process of decarbonisation of the atmosphere . Hydrogen is very light in weight and high in volume, so poses a big challenge in its transportation. Besides supply through pipelines, transport in liquid form at high pressure and low temperatures, Ammonia is the favoured mechanism to transport hydrogen over large distances. Firstly, the cost of energy storage is cheaper than for either hydrogen or liquified petroleum gas. Secondly, ammonia contains more hydrogen by volume than either pipelines or liquid hydrogen. There are many challenges in terms of financing and technologies, governments across the globe are taking special initiatives to promote hydrogen economy ecosystem.

The government may come up with a PLI Scheme for electrolysers in the Budget. Electrolysers are required for the production of hydrogen and the domestic availability of this equipment will boost India's plan to become a global hub of hydrogen manufacturing.

Major Incentives by India

Reliance Industries (RIL) chairman Mukesh Ambani has set an ambitious 1-1-1 target for Green Hydrogen in India, meaning India to become the first country in the world to produce Green Hydrogen at less than $1 per kilogram in a decade.

This will make India the first country globally to achieve $1 per 1 kilogram in 1 decade – the 1-1-1 target for Green Hydrogen," said billionaire Ambani while addressing the International Climate Summit 2021.



Shri Narendra Modi
Hon'ble Prime Minister of India

> Green Hydrogen is the future of the world. Today I announce the setting up of the **National Hydrogen Mission with the aim of becoming the new global hub of Green Hydrogen** and also its largest exporter.

National green Hydrogen Mission has been set up by the Ministry of New and Renewable Energy. It will help entail the decarbonisation of the industrial, mobility and energy sectors; reducing dependence on imported fossil fuels and feedstock; developing indigenous manufacturing capabilities; creating employment opportunities; and developing new technologies such as efficient fuel cells.

Prime Minister Narendra Modi has set the goal to reach 450GW of renewable energy capacity by 2030. Out of this, Reliance has committed to establish and enable at least 100GW of solar energy by 2030, leading to a pan-India network of kilowatt and megawatt-scale solar energy producers who can produce Green Hydrogen for local consumption.

RIL has started developing the Dhirubhai Ambani Green Energy Giga Complex over 5,000 acres in Jamnagar to be among the world's largest integrated renewable energy manufacturing facilities with an investment of Rs 75,000 crore in the next three years. This complex will have four Giga Factories, which cover the entire spectrum of renewable energy, including an integrated solar photovoltaic module factory, advanced energy storage battery factory, electrolyser factory for the production of Green Hydrogen, and a fuel cell factory for converting hydrogen into motive and stationary power.

The rapid fall in the cost of production has made solar energy highly competitive, attracting large-scale investments and shall play a key role in ensuring similar growth trends in "Green Hydrogen" – the future replacement of fossil fuels. Green Hydrogen is zero-carbon energy, the best and cleanest source of energy, which can play a fundamental role in the world's decarbonization plans. New technologies are emerging for hydrogen storage and transportation, which will dramatically reduce the cost of distribution.

Adani Group: France's TotalEnergies SE and Adani Group have agreed to invest $50 billion over the next 10 years in India to produce green hydrogen and develop an ecosystem around it as they seek to cut their reliance on fossil fuels and transition to zero net carbon emissions.

L&T: The Green Hydrogen Plant is designed for an electrolyser capacity of 800 kW comprising both Alkaline (380 kW) and PEM (420 kW) technologies and will be powered by a rooftop solar plant of 990kW peak DC capacity and a 500kWh Battery Energy Storage System (BESS). As part of the first phase of the project 380 kW Alkaline electrolyser has been installed, while the 420 kW PEM electrolyser along with solar plant capacity augmentation to 1.6 MW peak DC, will be part of future expansion. This initiative is in line with L&T's climate leadership targets of Lakshya2026 that will help reduce greenhouse gases footprint for us as well as our clients by approximately 300 tonnes/annum. Green Hydrogen is a promising alternative fuel, and this plant is a testimony that we are committed to creating a greener tomorrow.

Hon'ble Prime Minister launched the National Hydrogen Mission on India's 75th Independence Day (i.e. 15th August, 2021). The Mission aims to aid the government in meeting its climate targets and making India a green hydrogen hub.

BHEL: has invited EOI for seeking interest for partnering with BHEL to address growing Hydrogen economy business through manufacturing of : i) Electrolyser System for Hydrogen Production, ii) Hydrogen based PEM Fuel Cell System.

NTPC: Out of the 60-GW renewable energy target, roughly about 5 GW of the capacity will for green hydrogen.

IOCL: has drawn a strategic growth path to focus on its core refining and fuel marketing businesses while making bigger inroads into petrochemicals, hydrogen, and electric mobility over the next ten years". Sharing his insights on Indian Oil's growing footprint in the green energy landscape, Mr Vaidya, CMD added, "Indian Oil has a wind power project in Rajasthan. We intend to

wheel that power to our Mathura refinery to produce absolutely green hydrogen through electrolysis". Mr Vaidya also elaborated on the project's rationale and said, "Mathura has been selected because of its proximity to TTZ (Taj Trapezium Zone). As we see it, the Green hydrogen will replace carbon-emitting fuels used in the refinery to process crude oil into value-added products such as petrol and diesel. Moreover, we have got several expansion plans down the line which are already approved. We will not have a captive power plant and will utilise power from the grid, preferably green power. This will help decarbonise some part of the manufacturing".

France Initiatives: France was one of the first developed nations to create a national strategy for hydrogen in 2020 and a hydrogen plan in 2018. During its Railshow in May 2022, Alstom demonstrated the hydrogen fuel cell-powered train in the Czech Republic and Slovakia. Transport accounts for more than a quarter of global energy consumption; it is one of the human activities whose C02 emissions continue to rise. There is an urgent need to reduce the environmental impact of transport. Alstom is committed to supporting carbon neutrality in transport by building innovative, sustainable mobility solutions with a lower carbon-footprint while actively contributing to the public debates on sustainable development policies. The new cooperation is expected to boost Europe's Fit for 55 goals, which call for a 55% reduction in net greenhouse gas (GHG) emissions by 2030.

German Inititiaves: Siemens commissions one of largest green hydrogen generation plant with electrical capacity of 8.75 megawatts opened in Wunsiedel. Facility to generate 1,350 tons of hydrogen a year and cut CO2 emissions by about 13,500 tons. Hydrogen is generated by an electrolyser based on proton exchange membrane (PEM) technology, which is optimally suited for operation with renewable energies. The hydrogen will be used primarily in the region's industrial and commercial enterprises, but also in road transport. With this amount of hydrogen, 400 40-ton hydrogen-powered trucks could – assuming a regional distance of 150 kilometers per day – drive for an entire year without emitting any CO2.

Initiatives by India

Initiatives by USA: To unlock the market potential for clean hydrogen, the U.S. Department of Energy (DOE) launched the Hydrogen Energy Earthshot (Hydrogen Shot)12 in June 2021, to reduce the cost of clean hydrogen by 80 percent to $1 per 1 kilogram in 1 decade ("1 1 1"). The Hydrogen Shot is the first of the DOE's Energy Earthshots, which aim to accelerate break throughs of more abundant, affordable, and reliable clean energy solutions within the decade while creating good-paying union jobs and growing the economy. Building on this momentum, the Infrastructure Investment and Jobs Act (IIJA) provides allocation of USD 9.5 billion to fund Regional Clean Hydrogen Hubs, Clean Hydrogen Electrolysis Program, and Clean Hydrogen Manufacturing and Recycling Programs.

Biden–Harris Administration's

Nestlé Waters in Europe: By 2030, 10 million tons of green hydrogen are to be generated annually in the European Union alone. The hydrogen fuel cell solution for massified rail freight, including renewable hydrogen supply, developed by Alstom and ENGIE, will be used for the first time by Nestlé Waters in Europe which will reduce emissions by 10,000 tons of CO2 equivalent annually, or by 90% of its present emissions. The development of the new hydrogen solution from a highpowered fuel cell system that can run electric locomotives in non-electrified areas is a significant innovation. On a national and European scale, this method will be able to move commodities over large distances.

Evolution of Automobiles
Electrical Vehicles

Prabhat Khare
BE (Electrical), Gold Medalist,
IIT Roorkee
Director, KK Consultants
kkconsultantsnoida@gmail.com,
kkconsultantsiitr82@gmail.com

An electric vehicle (EV), is a vehicle that uses one or more electric motors or traction motors for propulsion as its main drive which may be powered through a collector system by electricity from off-vehicle sources, or may be self-contained with a battery, solar panels, fuel cells or an electric generator to convert fuel to electricity. EVs include, but are not limited to, road and rail vehicles, surface and underwater vessels, electric aircraft and electric spacecraft.

However, in common terminology EV is used for Automobiles which came into existence in the mid-19th century, when electricity was among the preferred methods for motor vehicle propulsion, providing a level of comfort and ease of operation that could not be achieved by the gasoline cars of the time. Rise of internal combustion engines due to rapid

technological development in IC engine technology, manufacturing processed as well as its overall eco-system dominated the road transportation for almost 100 years now and electric power was pushed to other bigger kindly either heavy or lighter mobility applications, such as trains and smaller vehicles. Due to changes business scenario, technological developments in electrical traction, battery technology and power controls & charging systems and an increased focus on renewable energy and the potential reduction of transportation's impact on climate change and other environmental issues, post 2000, EVs have seen a resurgence. Project Drawdown describes electric vehicles as one of the 100 best contemporary solutions for addressing climate change (https://drawdown.org/solutions/electric-cars).

There are many inherent advantages of EVs however the most critical ones are – 1) EVs have very low adverse impact on environment throughout their life cycle, 2) EVs have a much smaller carbon footprint & 3) EVs have much lower ownership cost over their whole life cycle. With success of Tesla cars as well as of many others, coupled with rise of internet/IoTs in last few decade, Connected and Autonomous Electric Vehicles (CAEVs) were the natural successors of EVs which can provide a well-controlled & coordinated transportation system which is self-governed, self-driven, self-controlled, self-corrected and which requires least human interference as far as mobility issues are concerned.

Such vehicles, which while on move, could access to a wide range of data as well integrate them with each other, would become more proactive, well-informed and coordinated in the future. A highly complex & interconnected future, in which these CAEVs would be able to "talk" with each other, their surroundings like smart roads, smart signals, smart parking lots, local terrain and geographical information, weather condition including many other such information as well as with live traffic data. Coupled with their extremely high level of computation capacities, these CAEVs will be able autonomously work out the best, most comfortable & safest possible routes for the humans travelling in them without their intervention.

Thus these CAEVs in future would create more free time for people traveling in them, enhance traffic safety leading to accident prevention; improving accessibility,

The new automotive industry in which EVs are the clear leader, is still evolving where old guards are falling while new ones are taking over, by reinventing the proven methodologies, like mass production/ lean manufacturing, which were master over almost a century during the rise of ICEVs.

comfort and in-vehicle riding experience; potentially making it easier for policymakers to prioritize car-sharing and ride-sharing business models; and reducing road traffic congestion, environmental degradation, air pollution, noise nuisance and social exclusion for those currently unable to drive to name a few.

The new automotive industry in which EVs are the clear leader, is still evolving where old guards are falling while new ones are taking over, by reinventing the proven methodologies, like mass production/ lean manufacturing, which were master over almost a century during the rise of ICEVs.

These EVs manufactures are actively working on the development of CAEVs and conducting trials with various degrees of success is a mix of traditional car manufacturers, ride-hailing and intelligence companies. IT & electronics based companies like Google, Apple, Uber, Ola & Sony which are not presently in a mobility business, are investing heavily in EVs which will radically change the dynamics of the automotive industry, where ICT will be a difference-making competitive advantage.

With this dramatic shift in mobility arena, 150 years old conventional automotive industry will be forced to adopt new business models for sales as well after sales services. While sale will prioritize shared use over private ownership the after sales service network will also have to change drastically from current service setup which is more or less a mechanical process and many times can be found in nooks and corner of every city to a highly complex service setup. The new setup has to evolve where block replacement of units would be more prominent as compared to current trend of repairing & sub-component replacement.

In the context of smart cities which will promote sustainable growth and provide tremendous growth opportunities for these CAEV who will slowly become

With success of Tesla cars as well as of many others, coupled with rise of internet/IoTs in last few decade, Connected and Autonomous Electric Vehicles (CAEVs)

the epicenter of all transportation, providing smart mobility solutions by forming an interconnected vehicular network assessing & analyzing varied diversified live information. With this kind of complex networked & integrated future society in which CAEVs will always be dynamic, interacting & interfacing with human beings who will be using them for their all mobility solutions, it is expected that there will be many expected & many more unforeseen potential benefits & challenges to users & society as well as to CAEVs themselves.

CAEVs are a certainty and it is only a matter of time when they become a part of human lives. They are going to lead a much bigger change in transforming the whole mobility system as we today, related energy network infrastructure, road, signaling, parking infrastructures, Rules related to traffic violation and insurance claims, vehicular ownership and travel habits of people.

Control and track of these CAEVs as well as changing human's behaviors while interacting with such autonomous mobile machines which will generate enormous amount of movement related information will require exponential large computational and AI capacities leading to next major boom in this field of Information Technology. CAEVs are projected to be the next gold standard of mobility, transforming automotive industry, city development, the whole gamut of infrastructure what we see today and probably the way current social interaction takes place. The rise of current trend in the EVs is certainly a step in bringing this dramatic change which has paced up in last decade since conventional ICEVs could not have provided this intelligent interface of an automobile despite having a highly sophisticated system with all their mechanical complexities. This would be an interesting transformation phase for both automotive industry as well as the whole society we live in.

However, it is very essential to note & remember that when Henry Ford developed the first ICEVs, they were not reliable, there were no gas stations, there was no precedence of many systems (like traffic singles, traffic regulations, expressways, highways, disposal eco-systems of these vehicles at end of their life) which are taken for granted currently, but he was still devoted to his creation (ICEV) by improving the quality & performance, reducing cost, and negotiating with oil companies to build the gas station infrastructure and to establish the maintenance service network. The philosophy of making & continually improving a product, backing up system to create good infrastructure, and focusing on a good business model of providing economical & affordable product for mass convenience of varied usage to reduce human burden and effort still remains valid. Most importantly, his philosophy of having an open mind and having courage to develop & continually improve a new technology with a focused business philosophy will continues to inspire EV/CAEV manufacturers across the globe. ●

IASC Sector Skill Council
an Enabler of Efficiency & Growth

CB Sinha
Head Standards & QA
IASC Sector Skill Council
bdm@iascsectorskillcouncil.in

IASC Sector Skill Council addresses the skilling challenges and opportunities in a high growth technological domain of Instrumentation, Automation, Surveillance and Communication.

Industry 4.0 technologies and IoT are recognized as major drivers of efficiency, flexibility and growth for the Indian manufacturing Industry . The primary focus area includes transformative technologies like Sensorics, Mechatronics, Digitalization, Cyber security, AI/ML, Robotics, Drones , Digitalization , IIoT , Additive manufacturing etc. The key to implementation is knowledge on technology integration.

A comprehensive skill development plan in these transformative technologies is need of the hour .Skill Development plan requires development of competency model. This model will describe what a person needs to know and be able to perform the tasks required, in terms of knowledge, skills, and abilities.

One of the major challenges for the industries are to get skilled workforce having structured knowledge in the domain of IASC. Along with basic programming and scripting skills, there is also increasing emphasis on bridging the IT and operational technology (OT) divide so data can seamlessly flow between plant floor systems like supervisory control and data acquisition (SCADA) systems and manufacturing execution systems (MESs) into core enterprise IT platforms such as enterprise resource planning (ERP), product lifecycle management (PLM), and supply chain management (SCM). "The ability to do coding and work with SQL databases, whether writing queries or creating schemas—there is a real shortfall in terms of engineers having cross-discipline skills.

Skill Gap

Skill gaps are huge – as the technologies are emerging and high end in nature, the adoption requires caution. The demand and gap estimates are derived by specialists based on economic and industry growth indicators.

The demand and gap estimation has to be inferred from growth projections based on other parameters and drivers such as Digitalization, Industry 4.0 and IioT which are applicable to all sectors – industrial as well as others. IASC addresses key stills needed for these.

IASC SSC has worked extensively with Industries across sectors to identify job roles which are futuristic and transformational for contributing to the India's manufacturing & Process Industry . It is extremely important to create a skilled workforce in the domain of Industrial Automation and Industry 4.0 technologies for making government's vision of "Make in India" and "Atmanirbhar Bharat" a successful initiative. India can be manufacturing hub of the world only if right technology is adopted by the Industry to achieve scale, quality and competitiveness. Industrial Automation is one such tools to achieve that.

IASC SSC identified 21 job roles (futuristic & emerging technology) for QP development based upon the inputs from various Industries.

List of QPs (24) Proposed to MHI for Development

S. No.	Domain	Qualification Pack/Job Roles	NSQF Level
1	Factory Automation / Process Automation	Pneumatic, Hydraulic & Motion control Specialist	7
2		Industrial Automation Project Manager	7
3		Manager-System Integration	7
4		DCS Specialist	6
5		Process Automation Engineer	6
6	Robotics	Robotics Application Expert	7
7		Autonomous Robot Specialist	6
8	Industry 4.0 Technologies	Industrial Cyber Security Expert	7
9		Industry 4.0 Specialist	7
10		Smart City Automation Specialist	7
11		AI / ML specialist	6
12	Medical Instrumentation	Bio Medical Instrumentation specialist	6
13	Mechatronics	SPM (Special Purpose Machine) specialist	7
14		Applied Mechatronics Specialist	6
15		Locomotive Mechatronics Engineer	6
16	Smart Manufacturing	Manufacturing Digitalization Manager	7
17		Rapid Prototyping Engineer	6
18		Sensor Technology & Application Expert	6
19		Smart manufacturing expert	7
20	Green Automation	Green Automation Expert	6
21	Farm Automation	Smart Farming (Farm Automation) expert	6
22	Surveillance	Physical Securities and surveillance Specialist	6
23	Drone Technologies	Drone Design & Manufacturing Engineer	6
24	Communication & Broadcasting	Communication &Broadcasting Technologist	6

Integration Of Vocational Training with School Education

The world is undergoing rapid changes in the knowledge system. With the quickly changing employment landscape and global ecosystem, it is becoming increasingly critical that children not only learn, but more importantly learn how to learn. Education thus, must move towards learning about how to think critically and solve problems, how to be creative and multidisciplinary, and how to innovate, adapt, and absorb new material in novel and changing fields.

Education must build character, enable learners to be ethical, rational, compassionate, and caring, while at the same time prepare them for gainful, fulfilling employment. The gap between the current state of learning outcomes and what is required must be bridged through undertaking major reforms that bring the highest quality, equity, and integrity into the system, from early childhood care and education through higher education.

National Education Policy 2020 (NEP 2020), proposes the revision and revamping of all aspects of the education structure. The inclusion of skill education at school level has been one of the key highlights of NEP 2020. IASC has proposed development of QPs for schools in the domain of IASC which will have a simple and effective curriculum that can be easily adopted by the schools.

IASC has proposed development of QPs for school education for the students of class 9 to 12 that will help to train students on prospective job roles, about the world of machines that shape our lives, demystifying machines, instruments and automation.

The QPs addresses the skill education need at school level in 3 layers.

1. Foundation courses – Joy of Learning
2. Experiential Learning – Lab, Industry based
3. QP based Job oriented courses

Final QPs list proposed to DHI

- Factory Automation / Process Automation
- Robotic Automation
- Industry 4.0
- Medical Instrumentation
- Mechatronics
- Smart Manufacturing
- Green Automation
- Farm Automation
- Surveillance

'Joy of Learning' is to expose students to the world of Instruments, Automation and Surveillance.

Experiential learning is to generate excitement about exploring machines and acquire basic knowledge behind making and using them – and the role of AI, ML, Robotics, IoT.

QP based courses to make students learn about occupations linked to instrumentation, automation, surveillance and communication and about installation, programming, use, maintenance and repairs.

Right from the school level the children will be introduced to the intelligent systems – AI, ML, Cloud, IioT and understanding the man-machine synergy.

Implementation Plan

Once approved, IASC intends to facilitate schools in adoption of these QPs by supporting them on course content like PPT, videos, AR/VR, other digital aids, industry connect and faculty training.

QPs Proposed for Schools

Sl.	Job Role	Level
1	Calibration Support Technician (Thermal)	3
2	Calibration Support Technician (Electrotechnical)	3
3	Calibration Support Technician (Mechanical-Dimensions)	3
4	Jr Programmer DCS	3
5	Jr Programmer HMI/SCADA	3
6	Jr Programmer PLC	3
7	Building Automation Support Technician	3
8	Industrial Automation Support Technician	3
9	Control Panel Assembly Assistant	3
10	RTU Wring and Assembly Assistant	3
11	Industrial Automation Support Technician	3
12	Additive Manufacturing (3D Printing) - Support Technician	3
13	Building Automation Technician	4
14	Industrial Automation Technician	4
15	Control Panel Assembly Technician	4
16	RTU Wring and Assembly Technician	4

Sl.	Job Role	Level
17	IIoT Support Technician	3
18	Robotics Support Technician	3
19	Mechatronics Support Technician	3
20	Water Quality Testing Sampler	3
21	Loop Testing Support Technician	3
22	Automation Support Technician	3
23	Surveillance Field Technician	3
24	CCTV Installation Technician	3
25	Intrusion Detection Installation Technician	3
26	Automated Lift Operator	3
27	Automated Lift Preventive maintenance Assistant	3
28	Home Automation Assistant Technician	3
29	Smart City Assistant Technician	3
30	Solar Panel Installation Technician	3
31	Solar Water Heater Installation Technician	3
32	Solar Pump Installation and Operation Technician	3

Union Minister Jitendra Singh said that the government headed by Prime Minister Narendra Modi created futuristic avenues for India's youth.

Addressing 'a dialogue with new young voters' at the Venkateshwara University, the minister said that the forward-looking reforms unleashed by Narendra Modi government has given a new hope to the youth. "India's reputation has grown in the Global Club of Nations and the whole world is now keen to understand and connect with India."

The minister said that Industrial Training Institutes have a big role to play in India's success. "New courses like Coding, Artificial Intelligence, Robotics, 3D Printing, Drone technology, Telemedicine are being offered IITs."

www.livemint.com


Image Courtsey :DD News

सत्यमेव जयते

Skill development news from the Government

- For skill-based training of youth across the country, including candidates with disabilities, MSDE is implementing its flagship scheme PMKVY through Short Term Training (STT) courses and Recognition of Prior Learning (RPL).
- O/o DC (Handicrafts) to be implementing the SAMARTH Scheme to provide skill training to handicraft artisans. Also under the scheme, more than 13K artisans have been trained in the last three years.
- MNRE implements significant initiatives to boost the representation of women in the energy sector; 836 of the 2251 candidates trained under the Suryamitra skill development program were women.
- Ministry of Education (MOE) held a one-day consultation workshop on "Reimagining Vocational Education and Career Guidance for School Students" in partnership with UNICEF and YuWaah

Skill development news from the Industry

- To provide training and digital certification to thousands of freshers, Urban Company and NSDC signed an agreement.
- To provide higher education and skill development to 5100+ girls and women, JSP launched the second edition of the Yashasvi program.
- MCL signed an MOU with CIPET to provide skill based training to 1000 youths of its operational areas in Odisha.
- To increase the impact of training and skilling initiative among the youth, Schneider Electric signed an agreement with NTTF.
- RCPSDC Annual Awards celebrated skilling excellence on 20th December 2022 by felicitating the best performers in the skillng eosystem.
- To provide deserving candidates with high-quality free skilling and education opportunities in Europe, NSDC International has partnered with Dynamic World Education Community (DWEC).
- By bridging the supply-demand gap for skills, the Adani Foundation's Saksham program is focusing on skill development efforts to help strengthen the nation.
- NSDC and MSDE partnered with different organisations to provide various training programs to upgrade and upskill individuals.

Multi-skill training centre launched in Hubballi

Minister for Higher Education, IT,BT, Skill Development, Entrepreneurship and Livelihood Dr. C.N. Ashwath Narayan emphasized the need for further upgrading the quality of education and skilled manpower in emerging technologies for realizing Prime Minister Narendra Modi's dream of an 'Atma Nirbhar Bharat'.

He was inaugurating the Multi Skill Training Centre with 60 plus courses setup at a cost of Rs. 20 crores by Government Tool Room and Training Centre (GTTC) at the Gokul Road Industrial Estate in Hubballi.

Dr. Narayan said that the 60+ short and long term courses being offered help youth become more employable. "We have missed the benefits of first three industrial revolutions and should not miss the fourth," he said.

The Minister said that the government was focusing on promoting the growth of the semiconductor sector and chip manufacturing in the State and in the next couple of years.

Photo Credit: Kiran Bakale

Minister for Higher Education C.N. Ashwath Narayan along with former Chief Minister Jagadish Shettar inaugurating the training centre in Hubballi on Tuesday.

www.thehindu.com

Skill development news from the Academia

- Department of School Education Poonch organized a seminar on NEP 2020 "Transforming Vision into Action " on December 20, 2022 to explore and understand the impact and challenges of NEP.
- NCERT to develop new textbooks in line with NEP 2020 perspective on culture and language.
- To avoid gaps in teaching and learning process, UGC has issued guidelines on the pedagogical approaches such as experiential learning, art integrated learning and more.
- More than 55,000 schools have received registrations for the PM SHRI Schools Scheme to execute NEP 2020 objectives.
- To provide technical skills and hands-on experience to students, Consortium of Education signed an MOU with Central India Group of Colleges.
- IIT Kharagpur to set up top quality higher educational institutions in Malaysia, aiming to be top 10 institutes in the world.
- NCL Krishnashila inaugurated a training program and skills training center at Sampling Tailor trade at Sonbhadra, 400 rural youths will be trained for 3 months.

https://www.nationalskillsnetwork.in/

RNI NO. : DELBIL/2017/76167

IASC

SECTOR SKILL COUNCIL

INSTRUMENTATION AUTOMATION SURVEILLANCE COMMUNICATION

Wishes everyone a very

We so appreciate your dedication to our goals, to this team, to our mission. Here's to making each year better than the last!