



Editor:

**Er. S.A. Satyamurthy**

Secretary

## IEI Alumni Association President's Message

Dear Alumni,

In continuation of our efforts to serve, we are taking one more step with the IEI Alumni Newsletter. Initially this is planned as Quarterly Newsletter and depending on response we will consider requests to make it a monthly affair. This would be our platform for communications, celebrations, and continuous improvement. I congratulate all involved in this effort and request Alumni to make best use of this for your benefit.

**Dr. Enti Ranga Reddy**  
President

## Editors Message

Dear Alumni,

Continuous improvement, Networking and Celebration of achievements are amongst primary goals of IEI Alumni Association. Towards this, there was a need felt for bringing out a Newsletter and this issue is the result of initial planning and effort. This will be a quarterly newsletter. In near future, we plan to dedicate each issue to on technology area and bring out some collectable for our members.

These plans are only possible only with the Alumni Support. I encourage all alumni to contribute. Contributions can be

1. Articles, either new or pre-published, with permission from original publisher
2. Intimation of an achievement of an Alumni in recent past that we can all celebrate,
3. Details of any Alumni events happening

This Newsletter will become e-newsletter and will be published in our website [ieialumni.org](http://ieialumni.org).

## Activities of Alumni Association

I also request additional nominations to the editorial board.

The following events are planned in March, April, May and June 2017.

March 19th will be the first South India Alumni meet and is happening in Tamilnadu State Centre of IEI Alumni Association.

As planned First Monday of every month there will be a CEO Talk as part of our program "The Talk". Look for details in our website.

The Second Monday of June 2017, we will have a Discussion program where we discuss way of getting Engineers involved more actively and contribute towards Government initiatives like Swatch Bharath etc. Look for Details in our website.



# Indian Fertilizer Industry - Can 'Make in India' help?

Dr MP Sukumaran Nair, FIE\*

**T**he two trillion dollar Indian economy is set to capture the 7 percent annual GDP growth under the Narendra Modi Government at the Centre. In order to achieve the above target, the productive sectors of the economy – agriculture and industry need a thorough revamping to boost productivity and regain growth. Therefore, we are confronted with two daunting challenges: attaining national level food security and reviving the manufacturing sector.

In the present context of the global economic environment marked by the shale gas revolution and the revival of the manufacturing sector in the US, unprecedented and prolonged decline on oil and gas prices, European economies recovery still in shambles, the Chinese economic downtown, ease of tension in Iran and the disturbance of West Asia pioneered by the terrorist groups all have impacted the Indian economy to a certain extent. Despite the above turmoil the country hopes to maintain its growth impetus in the coming fiscal. The Government has set an ambitious growth plan to revive the stagnant agricultural sector and enliven the dooming manufacturing sector. If the National Food Security Act 2013 commitments are to be honoured, the farm sector will have to considerably enhance its productivity of food grains. As regards the manufacturing sector the intension is to grow the manufacturing sectors share in the GDP from the current 15% to 25% and generate 12 million jobs by 2022. Most Asian economies have got their manufacturing sector to contribute significantly to GDP because of the presence of a variety of cost efficient industries. If manufacturing is picking up it will cast a multiplier effect in other sectors and contribute to overall macroeconomic stability.

Are we placed suitably to materialise the above indented manufacturing revolution? There are several favourable factors and indomitable challenges. The demographic dividend, availability of natural resources, recent advances in science and technology, a stable central administration and the new image of the country as a land of opportunities, a well spread overseas diaspora are all positive ingredients to gather strength and advance into the future. Factors that take away the competitive advantage of our manufacturing include high cost of production, increased energy and feedstock prices, unfair Government policies with regard to taxation, not so easy to do business situation, environmental clearances, high interest rates, foreign

exchange volatility, low employability of manpower, export import hurdles, rising wages across sectors and enormous delays at the bureaucratic level in decision making. Of late, a growing trend of social and religious intolerance is also a worrisome point.

Development related policies and prescriptions have changed a lot in the last two decades. Still we may have “miles to go” before becoming a business friendly nation. In this perspective the “Make in India” campaign of the Government of India assumes paramount importance both in advancing the manufacturing of products in an economically and environmentally sustainable manner and also in streamlining the business environment by adopting the best available practices hitherto accumulated from the experience of already developed countries. It will not be possible for the resurgent manufacturing sector to follow the path traversed by the developed countries or that of China which is highly resource and energy intensive and also environmentally burdensome.

Here the big question remains: How can we pioneer a growth strategy for the manufacturing sector which is socially inclusive and environmentally sustainable. A high order of optimization of existing systems and processes along with innovation to 'make more from less' will be helpful to keep things within our planetary boundaries. Use of more and more renewable energy, improving reaction efficiencies, inherently safe designs, waste reduction, adoption of biological processes and product level life cycle approach are focus areas in achieving a sustainable manufacturing mission.

Let me illustrate this point though a case study from the fertilizer sector which in my opinion has a great potential in imbibe the spirit of resurgence in the manufacturing under the 'Make in India' program.

The fertilizer sector, despite having a strong domestic manufacturing base is also heavily dependent on imports, is inextricably linked to the Agriculture development of the country. Agriculture contributes only to 16 percent of the National GDP even when it employs 65 percent of the country's work force. Between 1970 and 2011, the GDP share of agriculture has fallen from 43 to 16 percent. It has the potential to contribute 30 percent to the GDP as was in the 1980s provided conducive policies are in place. Though

\* Chairman, Public Sector Restructuring & Audit Board, Government of Kerala  
([www.drmpsukumaranair.com](http://www.drmpsukumaranair.com))

Development related policies and prescriptions have changed a lot in the last two decades. Still we may have “miles to go” before becoming a business friendly nation. In this perspective the “Make in India” campaign of the Government of India assumes paramount importance both in advancing the manufacturing of products in an economically and environmentally sustainable manner and also in streamlining the business environment by adopting the best available practices hitherto accumulated from the experience of already developed countries.

we have attained self-sufficiency in the food grain production in the mid-1990s consequent to the slackening of further growth and with the increase in population, the per capita availability of food grain suffered a setback compared to the situation prevailed in the 1970s and 1980s.

The Indian Parliament has passed the National Food Security bill in 2012 which provide mandatory food security to cover about 67 percent of the population. By this, the existing food subsidy scheme is expanded to cover about 180 million of the country's poor people who will receive around 4 million tonnes of food grain to every month through licensed fair price shop. In effect, nearly 75 percent of the rural population (630 million) and 50 percent of the urban people (180 million) will be eligible to receive grain cheaper rate.

In order to achieve the objectives of the food security bill, we may have to increase our grain output to 320 million tonnes from the current 263 million tonnes. If we look at the trend in food grain production there is a certain growth but that is not at all sufficient and have to be stepped up. It is well established that on an average around 55 to 60 percent of the increase in food production is attributed to use of mineral fertilizers to supplement plant nutrient needs. If you trace the course of history of agriculture and fertilizer production in the country it can be seen that in the 20 year period between 1980 and 2000, both good grain production and indigenous fertilizer production flourished. By 2000, we have achieved self-sufficiency in the food grain production and in the production of urea which is the major fertilizer material being consumed. Afterwards there have been no investments in the fertilizer sector in the country and the grain production also slackened in its momentum of growth. It may be noted here that unlike many other sectors, we have indigenously developed total technical capabilities from conceptualizing to design, construction, operation and maintenance of world class fertilizer plants. Imports went up due to stagnation in domestic production at a time when demand is growing at about 5 to 6 percent per annum. Today we are the major fertilizer importing country in the world and its consequent financial strain in the national economy is also heavy. Even when India is the world's second largest consumer third largest producer and largest importer of fertilizer materials our per hectare consumption of plant nutrients remains still lower compared to China or other developed agrarian countries.

## Major issues

*The major issues in this sector are*

1. Growing consumption: The current consumption of 140 Kg /Hectare is still lower compared to other agriculturally advanced countries and it is to be enhanced taking into account a stable and sustainable NPK ratio in the soil.
2. Inefficiency in current application of fertilizer: The soil nutrient requirement is not given adequate importance in the current application of fertilizers. Price and availability have been the primary consideration. This has resulted in an upset in the soil nutrient ratio.
3. Increasing import of fertilizer materials: Over the past over a decade the imports have gone up considerably. Presently we are the World's largest importer of N,P, K combined. This has also upset the fiscal balance in the Government budgets.
4. Food security bill: In order to meet the grain demand as envisaged in the National food security bill crop productivity of our farm lands has to further go up. This inter alia, requires prudent application and increasing consumption of plant nutrients based on the right assessment of soil fertility.

In the near and medium term, import of fertilizer related raw materials, intermediates and finished products is only likely to increase. Considering a normal monsoon situation it is reasonable to expect a 5-6% growth in the consumption of applied fertilizers. Operating plants in the country in the nitrogenous sector are working at almost rated capacities. Most of these plants have undergone retrofits and revamps so as to realize the maximum output and hence, it is not prudent to expect any more realization of capacities from these plants. Thus the situation finally boils down to more and more imports every year. Even if a decision to put up new plants is taken today it will yield results only after a minimum of four years, which means that the imports will continue to rise in the near term.

Shortage of natural gas is the main hurdle for expanding Nitrogen capacity. The Chinese in a similar situation turned to coal, built string of ammonia urea plants based on coal gasification and are operating economically. Though have gained a lot of experience in the initial stages in operating

**The Indian Parliament has passed the National Food Security bill in 2012 which provide mandatory food security to cover about 67 percent of the population. By this, the existing food subsidy scheme is expanded to cover about 180 million of the country's poor people who will receive around 4 million tonnes of food grain to every month through licensed fair price shop. In effect, nearly 75 percent of the rural population (630 million) and 50 percent of the urban people (180 million) will be eligible to receive grain cheaper rate.**

coal based ammonia plants at Ramagundam and Talcher built on the technologies of the 1970 vintage, the Government decided to close down these plants on account of low productivity. The coal gasification technology over the years has become stabilized, environment friendly and profitable as is well illustrated from the Chinese experience. In the present context may have to look at cold gasification as a major avenue for the production of ammonia through clean coal technologies.

Though efforts to increase domestic natural gas production did not fairly succeed, now a days gas is readily available in the form of LNG at affordable price. Lack of a national gas pipeline grid to deliver regasified LNG is a major hurdle. Construction of gas pipelines is being resisted by agricultural and environmental groups in different parts of the country and there are litigations. The industry expects a favourable decision from the apex Court to pave way for construction of pipelines and the State Governments to amicably resolve disputes with the farmers etc. The proposals to extend gas pipelines by another 15 thousand kilometres, a renewed thrust on accessing coal bed methane and a thorough revamp the fertilizer policy in the 2015 central budget are yet to realize.

In the Phosphatic sector the price of products have increased tremendously in the overseas market so also in India especially after the adoption of nutrient based pricing strategy for P & K fertilizers. Free import of raw materials rock Phosphate and Sulphur is becoming critical and consequently the operating margins are declining. It would be necessary for Indian manufactures to enter into long term contract for supply with overseas suppliers, operate joint venture facilities in countries where raw material is available or acquire fertilizer assets abroad for developing and producing for the Indian market.

In the case of potash we do not have any source of indigenous supply. The whole requirement is met by imports and here also we may have to go for either joint ventures or acquisition of assets.

#### Speciality fertilizer and micro nutrients

World over agriculture in general is witnessing sea changes at the advent of new technologies and innovation. Precision agriculture, fertigation, integrated nutrients supply and administration of plant nutrient based on soil analysis are

being accepted as basic tenets of improving crop productivity. Secondary and micro nutrients play vital role in this regard. Micronutrients like boron and zinc came under subsidy through suitable amendments of India's Fertilizer Control Order in 2010. The soil in certain parts of India have been recognized as grossly deficient of sulphur, zinc etc. Specially designed nutrient formulations, fortification of fertilizers with micro nutrients are essential to sustain productivity during intensive cultivation. The proposal to provide soil health card to farmers is would a positive step in addressing the declining trend of crop yields from the Indian farms.

The UPA Government the last ten years have meddled the fertilizer policy on several occasions and every time it proved futile and the investors' interest in the sector faded away during the last one and half decade. Fertilizer projects are highly capital and energy intensive. Lack incentive for investments, lack of clarity uncertainty in the pricing and subsidy regime, enormous delay encountered in the disbursement of subsidy, material becoming readily available in the International market ---- all have sealed the growth impetuous of the Industry.

In order to make up the shortage of natural gas, import of liquefied Natural Gas (LNG) has been thought of by the Government. Currently four LNG terminals are operating in the country ---- Dehej and Hazira in Gujarat, Dabhol in Maharashtra and Cochin in Kerala. A few others are also planned in the western and eastern coasts. Consequent to a wide distortion in the pricing of domestically produce natural gas and re-gasified LNG, the capacity utilization of all the other terminals except Dahej remain low. In order to overcome this precarious situation, it is essential that a national pipeline network has to been place and a rationalized pooling of gas price like any other petroleum fuel is inevitable.

The World's first coal bed methane based Urea plant has come up in West Bengal. Eventhough the construction of the plant is completed the linkage of feedstock which is to come from the Jharia and Raniganj coal fields is yet to be established. Such policy indecisiveness makes huge investments infructuous and investors in the sector will be discouraged forever.

In the context of ever increasing imports, fertilizer

**In the Phosphatic sector the price of products have increased tremendously in the overseas market so also in India especially after the adoption of nutrient based pricing strategy for P & K fertilizers. Free import of raw materials rock Phosphate and Sulphur is becoming critical and consequently the operating margins are declining. It would be necessary for Indian manufactures to enter into long term contract for supply with overseas suppliers, operate joint venture facilities in countries where raw material is available or acquire fertilizer assets abroad for developing and producing for the Indian market.**



manufacturing within the country makes good sense to be taken up under the 'Make in India' programme. A multi-pronged strategy to sustainably address the problems confronting this vital sector shall comprise of

### **1. Increase in domestic production**

There has been no new investment in urea plants since 1995. Most of the urea plants in the country are operating near to the full rated capacities. Governmental efforts to increase domestic production have not yet become successful. Natural gas linkage is the major hurdle. In the near term marginal increase in production of urea is expected from revamp of some of the closed down units with natural gas as feedstock.

Domestic production essentially needs to be stepped up at least to meet half of the imports in the next five year period. Standard plant size of the order of 8 lakh tonnes per annum of urea based on natural gas and the latest energy efficient technology is the right option. We may also pursue the advanced clean coal technology for the manufacture of ammonia which has by now come of age.

Refinery linked fertilizer production is also to be thought of to make use of vacuum residue, petroleum coke, refinery off gases etc as feedstock for making synthesis gas through the integrated gasification route.

Besides, the mineral fertilizer industry shall also ally with the production of organic manure and bio-fertilizers both are at present in the unorganized sector. Composting of biomass and municipal waste to make organic manure shall also be integrated into the framework of a holistic nutrient prescription for agriculture.

Formulation of crop specific specialty fertilizers is another important contribution to the sustainable use of mineral fertilizers.

Thus the new fertilizer manufacturing program under the 'Make in India' perspective shall align the efforts of fertilizer industry, government and research institutes for the common goal of ensuring agricultural sustainability.

### **2. Balanced import programme**

With increasing fertilizer consumption, rising imports and consequent large outgo foreign exchange, a three pronged approach to essentially meet the situation. This involves producing units entering into long term supply contracts

with foreign suppliers, engaging joint ventures with overseas producers and encouraging Indian companies to buy out fertilizer assets abroad

### **3. Diligent application of nutrients**

Excessive application of plant nutrients to the soil does not increase crop productivity, spoil ground water quality through leaching and bring financial loss to the farmer. Hence a prudent system of nutrient administration at the right time and in right amounts is necessary. Growing plants absorb only deficient nutrients from the soil and does not differentiate on the basis of price or availability. Therefore, an effective programme for testing the soil nutrient requirement of the farmlands is needed to advise farmers on the diligent application of fertilizers. This has also supplemented by a nutrient based pricing scheme for all fertilizer material. Industry should gear up its efforts to improve farmers' awareness on 4R Nutrients Stewardship. The 4R philosophy promoted by the Fertilizer Institute, USA in collaboration with the International Plant Nutrition Institute (IPNI), the International Fertilizer Industry Association and the Canadian Fertilizer Institute (CFI) is an innovative and science-based approach that offers enhanced environmental protection, increased production, increased farmer profitability, and improved sustainability. We may adopt this concept is to use the right fertilizer source, at the right rate, at the right time, with the right placement in our fields.

### **4. Curbing leakage in the transfer of subsidies**

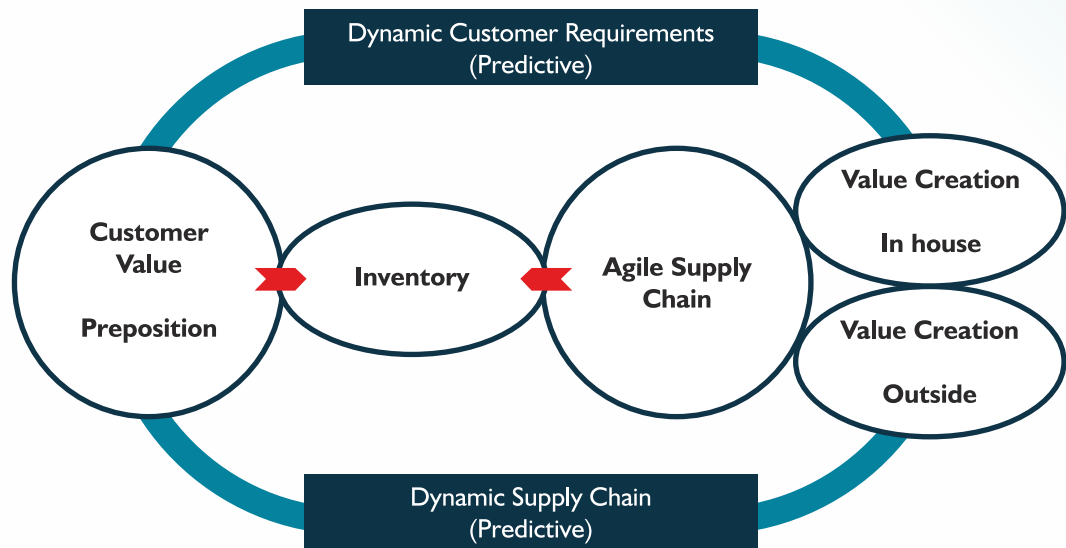
The current subsidy administration is to pay the requisite subsidy to producer companies based on the quantities they produce and send to the market. Instances of last scale manipulation have been observed in this system of subsidy pay out. The Government, with the support of IT capabilities installed a direct transfer of eligible subsidy to the farmers. A few pilot plant trials have taken place, based on the result of which a nationwide implementation of scheme is to be expedited.

Revitalizing the domestic production of fertilizer materials on the above lines together with mandatory guidelines for diligent use and a balanced import strategy for resources not available in the country under the 'Make in India' program shall ensure sustainability in all respects – increased productivity of farm lands, lower environmental burden in manufacturing and reduced dependence of imports besides huge financial gains.

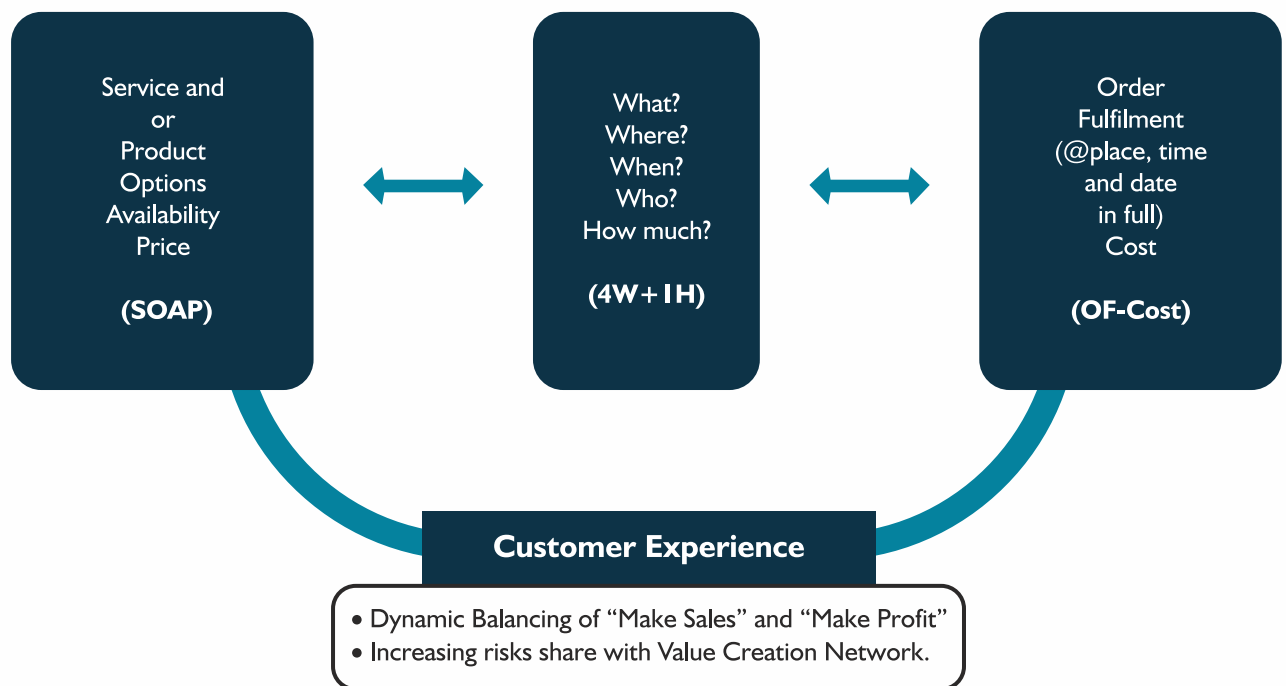
**The World's first coal bed methane based Urea plant has come up in West Bengal. Even though the construction of the plant is completed the linkage of feedstock which is to come from the Jharia and Raniganj coal fields is yet to be established. Such policy indecisiveness makes huge investments infructuous and investors in the sector will be discouraged forever.**

# Future of Value Management

Mr. Harish Pant, harish.pant@hotmail.com



**Contractual Commitment >>> Business Platform/ Value Cloud**



From the early days of Craftsmanship to Mass Production and now to Customization for One and that also at a Global scale but in sync with local context, we are ushering in a Uncertain, Volatile, Complex and Ambiguous world. In this world, demand Projections and Commitment come with a many BIG IF's.

**A**s customers graduate to experiences rather than product and services, value variables like what, where, when, who and how much get pushed to future where companies have to get set to operate in a predictive scenario, for want of time and opportunities lost. Now the experiences are to be delivered through a Platform meticulously designed and operated by various business partners through a flexible network. Pyramid tiered Suppliers base are likely to be subsumed in 3D Printing, IOT and Artificial Intelligence. A rapid obsolescence will collapse a legacy supply chain where an assured order book used to provide jobs to many and allowing them to be cocooned in the comfy, why change?! Product life Cycles will not get defined by Price and Useful life but also by many other Environmental and Social impacts. While organizations are still fighting age old issues of traditional organizational hierarchy and trying to see the new world through functional dominant prism, the Gen Next are having nothing of it! In this Innovation led world even consultants with all the well-earned medals and deep skills find themselves without work!

A world full of Startups will unleash a storm of Innovations where many identities and organizations will humbly vanish. A company who has invested heavily on Leadership and Complete Cultural change will be only qualified for this innovation led world. Business Growth will come to only those who would smartly manage Business risks while organizing capacities and capabilities. Foremost in risk management is risks and opportunities share through an engagement at platform level.

Welcome to the world of Equal Collaborators in a platform where there is strong bond to create and appreciate Value for Customers in a meaningful and sustained way and also there is an appreciation of Human Values of respect, trust and growth for all. This building up of Leadership, complete Cultural Change and Creating a platform/cloud where Innovation is the driving force, calls for answering new questions and imagining, defining and subsequently designing the Future. This means we need to create our Digital and Connected World: design thinking!

The stake holders need to understand and appreciate that

unless they decide new ways of measuring performance of their business, during this transition and later, they would be helping faster closure of present business.

In this world of overcapacity, increasingly Intangibles are of more value than the Tangibles. Imagining a new world is the starting point where a Dynamic Supply Chain works on Predictable algorithm triggered by a Dynamic Customer requirement.

### **Impact on Inventory and Solution**

Now we need a predictive way of working rather than reactive! No one is paying for waste loaded pricing where future success is being discounted in the present! The companies those leverage predictive customer requirements thrive in the B-to-B space of manufacturing. Now companies need to create flexible capabilities for this predictive business model where in the past customer used to provide it through Confirmed Purchase Orders and neat projections.

### **Conclusion**

The word Inventory will be of a little significance by year 2020 as Man Machine merge, 5 Billion population get connected through internet world with 50 Billion smart devices, and we usher into Quantum-Block chain-Recursion-Artificial-Intelligence-Nano (Q-BRAIN) Singularity world!

“The Future” will arrive faster now and will become aggressively transparent where there will not be any place for shortsightedness.

Invite you to create a new collaborative world where truth and humanity become integral part of professional life as well!

Mr. Harish Pant, [harish.pant@hotmail.com](mailto:harish.pant@hotmail.com)

**A world full of Startups will unleash a storm of Innovations where many identities and organizations will humbly vanish. A company who has invested heavily on Leadership and Complete Cultural change will be only qualified for this innovation led world. Business Growth will come to only those who would smartly manage Business risks while organizing capacities and capabilities.**

# Welcome to IE(I) Alumni Association

It is with great pleasure we welcome each one of you to our IE(I) Alumni Association and delighted to have you as partners in our continuing efforts to build and strengthen our incredible Engineering community.

•Unlike other colleges IE(I) is a multilocation institution and we had no single location where we could all develop networks and become a cohesive group. But that doesn't stop our wish to form networks, work for making our Institution even greater, celebrate others and share our achievements amongst our community. Most of all, as constant learners and mentors, we would like to keep in touch with others members for fruitful discussions.

Recognizing this need to bond, interact, celebrate, learn and contribute, IE(I) has provided an appropriate platform through IE(I) Alumni Association with the following objectives.

- To provide a forum for the Alumni of the Institution
- To engage in such academic and social activities to contribute towards promoting liaison between the Alumni and the Institution
- To further the cause of Science and Technology
- To keep alive love, spirit, affection and gratitude for our alma mater
- To recognize the specific contributions of Alumni to the society and engineering fraternity
- To interact with students to help them integrate well with IE(I) more easily and improving mentor-mentee relationships

Alumni Association is planning to host numerous events, programs, graduation ceremonies and volunteer opportunities both locally, nationally and across IE(I).

We would like to encourage all our fellow alumni to get involved and have an immediate impact upon the success of our Institution, its current students and our alumni community.

Request to become members

Application form

## **Application Process**

In order to become a member please follow the below application process.

### **Step 1: Payment of Membership Fee**

The relevant membership fee (as mentioned in the membership eligibility section) has to be paid to the below mentioned bank account.

Name of the Bank : State Bank of Mysore

Branch : Dr. Ambedkar Veedhi Branch (40022)

Account Name : IE(I) Alumni Association

Account Number : Current A/c - 64186406819

Address : State Bank of Mysore , Dr. Ambedkar Veedhi Branch, Visvesvaraya Towers Ground Floor, Raj Bhavan Road, Opp. GPO, Bangalore 560 001.

MICR Code : 560006062 IFSC Code : SBMY0040022

**Step 2: Application Form: collect it from the representatives.**

With best compliments from:

## **ARUDRA MOULDS AND DIES**

Plot No. 64, H. No. 5-5-35/213a

Shaktipuram, Prasanthi Nagar

I.e. Kukatpally, Hyderabad-500072

Phone No. 7995920310

**Contact Person Name: Murthy Dharmana**

**Manufacturing of Moulds and Dies, Jigs and Fixtures,  
Precision Engineering Components**