Developing a Globally Competitive Workforce for Gas Industry

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Introduction

Oil & Gas industry across the world is facing a severe crunch of talented, skilled & experienced manpower. The industry is loosing experience by way of superannuation of old employees, and loosing talent to other industries as oil & gas sector is no longer a preferred sector among younger generation. Over and above this, the job requires a high skill level to ensure the safety and integrity of plants and assets. Especially across the entire natural gas value chain starting from upstream activities of Exploration and Production to transmission and distribution to the downstream activities of petrochemical production, the entire sector is reeling under the shortage of manpower that has the requisite skills and experience to carry forward the much needed growth in this sector. With signing up of international trade agreements and setting up of cross border supply and distribution networks, what is needed is the development of a global and competitive workforce to face the challenge of skilled manpower shortage in the sector.

Increasing dependence of nations on other wise limited Oil & Gas resources to achieve the goal of energy independence, calls for an explosive growth in the infrastructure development in the hydrocarbon sector. The ever increasing demand and thirst for energy and the untapped resources of natural gas across the global are just an indication of the growth potential in this sector. The paper industry is facing serious challenges not only in terms of highly competitive business environment, high stakes, changing regulatory environment, increased public awareness but also in terms of the acute shortage of manpower and requisite skills to complete the projects in a time bound and safe manner. The paper will look into the present manpower demand and supply scenario along with some of the studies on projected human resource requirement in the Indian Gas Sector in the coming 5 years. In specific, the paper will share the experiences of one of the leading gas sector companies of India, GAIL (India) Limited in terms of its present and future requirement of not only the numbers but also the new skill sets needed for successfully implementing its future plans within the country and also in some of the other parts of the globe. The challenges being faced in meeting its manpower and skill requirements and the practices being followed by GAIL (India) Limited will be discussed and presented in the paper. The paper will also present the emerging business scenario for the natural gas sector in India with focus on the expansion in the natural gas transmission and distribution pipeline network across the entire nation. The paper will highlight the need of developing a global workforce in light of the national and international level collaborations and agreements being entered into by various organizations to take up the large scale expansion projects. The special requirements and the challenges being faced by the organizations in executing these projects will also be presented in the paper.

The paper aims to discuss as to how to retain the existing talent from moving away from this sector and at the same time how to attract the new talent especially the younger generation

to take a career in the hydrocarbon sector. The need and issues involved in development of a global workforce for Oil & Gas Industry will also be presented with focus on need for establishing a common qualification and certification criteria.

The conclusion shall highlight the need and benefits of organizations coming together and collaborating not only for business agreements but also to attract and develop new talent in this sector and developing a globally competitive workforce to provide a safe and energy secure world to the future generations.

Natural Gas Sector – Future Outlook

Natural gas has the most diverse range of usage across sectors. While electricity generation represents the largest share of global gas usage, there is also considerable industry usage, particularly in the agricultural sector for feedstock and to produce upstream petrochemical products. Use of gas has also increased due to environmental concerns related to consumption of other fuels and gas being considered as cleaner and a more efficient fuel compared to oil.

The shift toward natural gas, globally, is clearly evident form the fact that global gas consumption grew by 2.5% in 2008, in stark contrast to a decline in oil consumption during the same period. While the US led much of this growth, with a demand for 600 MMTOE, there was significant growth in the Asia Pacific as well. China registered a 16% growth5 in consumption – the largest incremental growth in gas consumption for the year. Global gas production, in response to its increased consumption, grew by 3.8%, which was higher than the average of the last 10 years.

The global demand growth on natural gas is expected to be stronger than that of oil, with the International Energy Agency (IEA) projecting an average growth of 1.8% a year till 2030. As in the case of oil, the demand growth for natural gas is likely to be widespread, mainly led by growth in Asia, the middle East and the Former Soviet union (FSU). It is expected that developing countries will consume more gas than OECD countries by 2020.

The top 15 gas-producing countries account for only 27% of global consumption. Therefore, they have an inescapable need to market their gas globally. However, today, the focus is on the integration of Asian market, which are expected to become the major platform for growth in the global gas sector.

India as a developing nation is expected to witness massive growth in oil & natural gas driven by infrastructural growth particularly in the transportation and industrial sectors. India is the world's fifth largest energy consumer and along with China is driving the growth of the global economy. Oil accounts for around 31% of India's energy consumption, with gas accounting for around 9% Coal remains the most dominant fuel, with 53% share in the primary energy sector, but its share is projected to decrease with the increasing thrust on gas & other renewable sources.

It is projected that the natural gas sector will fare better in catering to domestic demand, with prediction of a narrowing demand supply gap in the short term. Following the trend of global consumption gradually shifting from oil to gas, natural gas has engaged as an alternate source of energy and meets around 9% of India's primary energy needs. This still is very

low as compared to world average of 24%. However, this indicates the huge potential for growth of natural gas sector in India.

Challenges for the Gas Sector

With world demand for energy growing, natural gas is increasingly seen as more environment friendly option to coal, an alternative to oil & nuclear and a more mature technology than alternate energy sources like solar and wind. While coal is still cheap & abundant, it is a major cause of pollution. The recent accident in the nuclear power plant in Fukushima plant in Japan has raised serious concerns on safety of nuclear power. Further, the volatility of oil prices is a cause of concern for the countries that are more dependent on oil. As a result there is an ever increasing demand for natural gas.

However, long standing issues such as control of transit pipelines, a lack of access to pipelines routes, and t he availability of cheaper resources such as coal and oil have constrained the consumption of natural gas in many plants of the world. International trade of liquefied Natural Gas(LNG) allowed produces to bye pass pipelines, but LNG requires costly infrastructure for produces & the importers , and , while growing, is unlikely to reach the levels of shipments of dry gas. Some analysts see potential in shale gas & other unconventional sources as a way to boost domestic resources of countries once thought to have limited gas resources, lessening the potential for import dependence.

The oil and gas produces & users across the world are sitting up and revisiting their strategies in view of the increasing prices. The issue of energy security & board – basing the energy port folio has become every country's priority.

Natural gas, accounting for 24 percent of the total global primary energy supply, is the third largest contributor to the global energy basket. Natural gas consumption is expected to increase at an average of 2.4 percent per year from 2003 to 2030 as per Energy Information Administration (EIA), International Energy Outlook (IEO) 2006. Among the end-use sectors, the industrial sector remains the largest consumer of natural gas worldwide, accounting for 52 percent of the total incremental demand for natural gas between 2003 and 2030. Natural gas is also expected to remain an important energy source in the electric sector, particularly for new generating capacity.

In a global context the natural gas era has truly begun during the last five years. With cross border gas trade becoming a Hobson's choice for gas producers who aspire to achieve real business growth, the global gas markets are fast integrating, the commercial models are undergoing rapid changes and the market structures are evolving and fast changing. More importantly, the Asian gas markets are leading the growth in global gas sector, with special investment focus on countries like India and China.

Integration of Global Gas Markets has by far been the most significant development during the period 2002-07. LNG has been one of the key drivers of this integration. With an almost 75 percent increase in liquefaction capacities from 87 MMTPA to more than 150 MMTPA over the past 10 years, the share of LNG in global gas trade has grown from 14 percent to 26 percent. This has also been supported by the fact that there is a continuous lowering of cost across the LNG value chain, which has transformed the LNG economics. This has contributed to establishing LNG as a major viable and flexible option. By meeting the buyers'

expectations through price and contractual flexibilities, price review option and destination flexibility, LNG trading has emerged as a truly global and mature business.

At the same time, trans-national gas pipelines have continued to be a dominant gas supply option, especially between contiguous nations, and have emerged as a dominant integrating factor. The Russia–Poland–Central Europe pipeline, the Blue Stream project connecting Russia and Turkey via the Black Sea, the idea of a Northern Trans–Europe Gas pipeline connecting Russia to Finland and the UK via the Baltic Sea indicate the integration on the European side. On the Asian side, the Iran-Pakistan-India Pipeline, the Myanmar-India Pipeline and the Turkmenistan-Afghanistan-Pakistan-India Pipeline are receiving the highest attention from the concerned Governments.

According to the Report of the Working Group on Petroleum and Natural Gas for the XI Plan (2007 – 2012) Ministry of Petroleum and Natural Gas of India, integration of gas markets has become a necessity primarily due to five important reasons:

a) Firstly, gas has emerged as an important alternative source of energy. The Reserve to Production ratio of gas at 67 years continues to be ahead of oil at 40 years. There is therefore an economic imperative for faster monetization of gas reserves from a commercial perspective of the producing nations.

b) Secondly, the top 15 gas producing nations, except the US, having 78 percent of the global gas reserves, account for only 27 percent of the global consumption. Therefore, they have an inescapable need to look for marketing their gas globally.

c) Thirdly, there is an overall globalization trend in all businesses, backed by an Information Technology boom and 24 X 7 communication links.

d) Fourthly, the Asian boom has a very important role to play in this area. The gas markets in China and India are shaping out to be major drivers of growth. With China's energy demand growing by 15 percent and India's by 7.8 percent, these two Asian giants are projected to be the leading gas consumers by the year 2020.

e) Finally, the spiralling oil prices and the uncertainty on the pricing front are helping to shape the gas market. In this regard, two interesting trends in the oil sector need a special mention:

.. The rate of growth of world oil supply is constantly reducing and a flatter trend in the future is becoming apparent.

.. The oil prices might settle at comparatively higher levels.

The implications of this integration through global gas trades, propelled by the five factors mentioned above, are far reaching - economically, strategically and, indeed, politically too.

Some of the challenges as identified by Shell's Chief Human Resources & Corporate Officer, are-

- Keeping pace with the ever increasing demand for energy
- Reducing the environmental impact of energy production & consumption
- The world must both produce & consume energy in a more sustainable way

All these translate into much bigger and complex challenges for the global gas industries. This is will include both Capacity Building as well as Capability Building in the gas sector.

HR Challenges

One of the key challenges for the natural gas industry is building up the capacity and capability of the all important resource i.e. Human Capital. Knowledge & skills of their Human capital is going to be the key differentiator among companies across the globe.

Organizations across the world are experiencing following challenges in managing the human resources requirements.

- Attraction
- Recruitment
- Retention
- Retirements
- Attrition
- Training & Development

As per one of the estimates prepared by IEA, the world needs to invest $ 33 trillion in new energy infrastructure over the next 25 years. For such a large scale growth & expansion, the industry is going to face a shortage of qualified, skilled & trained work force. According to one of the studies commissioned by the Petroleum Federation on India (PETOFED), India's oil gas sector is likely to require around 25,500 professionals in the next 5 years on account of business growth & retirements/ attrition is the sector. This is equivalent & around 48% of the current employee strength. More than 50% of the requirements will be in upstream & downstream gas sector.

GAIL (India) Ltd, the leading natural gas transmission & distribution company of India, has plans to make huge investment in coming years towards expansion of the existing infrastructure within country as well as in expanding its business activities in the overseas market. The company has recently finalized its strategy for the year 2020 and one of the key elements of this strategy focuses on the capacity and capability building of human resources. The organization has not only identified the areas and functions which will require capacity building by way of talent acquisition but also the areas for capacity & capability building through talent development. For an organization which is considered to have a very lean and young workforce profile (average age of employees is 38 years only), such large scale diversification & expansion plans signifies a great challenge in terms of manpower planning & its development. These challenges include recruitment of manpower with requisite skill sets at both entry & middle level, talent retention, talent development etc. The biggest challenge would be in providing the human resources with requisite skills at the right time and at the right place. The company is drawing up a structured plan for not only providing training and development opportunities to its employees to enhance & acquire the requisite skills but also to provide an international exposure to learn from the best practices across the world. A number of new initiatives like comprehensive orientation program for all new recruits, Mentoring, Competency Mapping and Individual Development Plans based on Senior Management Development Centres, policy reviews etc. have been launched by the company to retain & develop the talent within the organization.

As is the experience and challenges being faced by GAIL, similar challenges are being faced by gas sector companies across the globe.

Developing a Globally Competitive Workforce

The gas business is no longer limited to the border limits of any nation. All the leading gas sector companies today have established their offices and operations in countries other than their native country also. This highlights the need and importance of developing a globally competitive workforce for Gas Industry.

When Shell built Pearl- the world's largest plant for converting natural gas into liquid fuels & lubricants, in Qatar, at the peak of its construction, over 50,000 workers from 50 countries were working on the construction site. For meeting the manpower requirement in such large scale projects, a few experts can be relocated at the work site, but the much needed larger work force has to be recruited locally only. To ensure the quality & smooth execution of the projects, the local recruits need to be trained in the right technical skills. Not only such a large scale recruitment & training is a big challenge in itself in a new territory but also relocating the work force from other parts of the globe poses unique challenges in terms of preparing the workforce to effectively take up such assignments. Some of these challenges include – understanding and compliance to the employment rules & regulations of the host country, familiarizing the employees with the local culture, policies, laws & regulations, providing an effective & acceptable compensation package, to ensure safety & well being of the employees, adjustments related to work schedules and local language, working in a cross cultural team etc.

Globalization of workplace has become a fact of life. The primary objective of developing a Globally Competitive Workforce as outlined by Ministry of Manpower, Singapore is "Developing a dynamic, flexible and productive workforce that drives economic growth and possesses skills for mobility and growth."

The Way Forward

The challenge in developing such a globally competitive workforce is not just in fulfilling the requisite numbers but also in understanding the current and futuristic skills required and developing the workforce in those skills. This will require all the stakeholders in the process, right from the academic institutions, industry including suppliers & contractors, government, training organizations, quality & certification bodies, forums and bodies like International Gas Union (IGU), National Association of Corrosion Engineers (NACE) , American Society of Mechanical Engineers (ASME) etc, to come together and work upon in creating the talent pipeline.

The way forward to overcome these challenges and to develop a workforce that is not only dynamic, flexible and productive but also possesses skills for mobility & growth, may include the following recommendations –

1) Effective Industry – Academia Interface

The scope of existing interface and association between the industry and the academic institutions needs to be strengthened and extended beyond the conventional vocational

trainings and industry sponsored projects to a more structured and regular interaction between the two, to support-

- Development of strong faculty by deputing employees from industry as faculty
- Development of faculty by providing industry orientation & field related research projects
- Joint review of course curriculum & introduction of new courses to meet industry expectations.
- Industry exposure programs and sponsored projects for students
- Involvement of retired industry professionals as faculty in academic institutes

2) Talent Attraction, Retention and Development Programs

Hiring good people in tough, retaining them is tougher but developing them in alignment with the organisational goals and objectives is the real challenge. This would call for multi-pronged initiatives like-

- Strengthening the gas sector branding in academic institutes through special industry specific campaigns, screening of films, distribution of videos & literature, institution of scholarships, industry sponsored projects & higher education opportunities etc.

- Offering an attractive compensation package, facilities and a challenging work environment, reward & recognition schemes focused at talent retention.

- Competency mapping, skill gaps identification, short & long duration training & development program, focused induction orientation programs, Effective job rotation, mentoring, higher education incentive programs, etc.

3) International Exposure Programs

There is a need to have focused International Exposure Programs to help the students as well as working professionals to assimilate the global best practices in gas sector and understand the importance of cross cultural issues in managing business, trade and industry. This will help the individuals to have a better understanding of the global business requirements and motivate and prepare them for effectively taking up the overseas assignments as and when required.

4) Common Global Qualification and Certification Programs

In the wake of globalization of workplace, it is essential to introduce a system of common minimum qualification and certification across the globe for the workmen. This is all the more important for technical functions related to design, construction, operations & maintenance which directly affect the safety and integrity of the infrastructural facilities. Critical tasks and operations expected to be performed by the workmen in successful execution of the projects can be identified. Based on these tasks, specific programs need to be developed for training, qualification and subsequent skill certification of individual competence to satisfactorily carry out the particular task.

21st Century – the Century for Gas driven by a Globally Competitive Workforce

The growing gas industry offers a great opportunity to both students as well working professionals to take up challenging and exciting career in gas industry. The increasing thirst for a clean energy and achieving energy security will surely make natural gas a fuel for the 21st Century and the scarcity of competitive gas sector professionals will make a career in gas sector as one of the most promising career in the entire Industry across the globe.

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