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PS: What are some construction safety challenges that are unique to Asian countries?
Nirupam: There are a few challenges in highly advanced, high-tech countries such as Japan and Korea and others in India and neighboring countries. The construction industry is not as mechanized as other industries and is more dependent on manual labor, so there are a lot more behavioral issues and human errors. Another challenge in Asia is the kind of contractors we typically get at construction sites. Over the past 10 to 15 years, I don’t think the contractors really geared up for safety challenges as much as they did for new orders and new opportunities.

PS: How would you promote safety awareness among construction personnel whose work sites do not measure up to global safety expectations?
Nirupam: Promoting safety appears to be a giant challenge, especially for multinational companies and Asian clients that really care about safety. The strategies that Praxair adopted, and that most other multinational companies adopt, is to become vigilant about contractors. A rulebook and a signed contract do not go a long way in executing project safety with unfamiliar contractors. We try to be more proactive; we try to anticipate where contractors might fail. So we adopted a few strategies, and I categorize them in five basic points:

1) Hire the right people. We spend a lot of time hiring the right contractors who have some kind of exposure or at a minimum, are willing to elevate the standards to global benchmarks.

2) Invest ample time and energy in finding the right contractors. Before hiring them, for example, we take them to sites that are operating to our expectations. We take their leadership team and key personnel to observe the construction site so that they understand how we manage safety, how we deal with things differently than they do, what kind of extra initiative it takes, what kind of extra cost it takes, what kind of people they need and what kind of training they need to provide to their people.

3) Once we see that they are good candidates, we show them pictures that are examples of how to do things and explain procedures to their field execution team that will run their workers and subcontractors.

4) As they gear up for mobilizing to the site, we look around the site and create a very strong team to support them so that begin in a more organized manner. Planning can be a key weak area for these contractors.

Finally, as they begin to work on the construction site, we have to deploy a strong team of safety inspectors, observers and auditors to constantly evaluate their performance.

PS: What is the cause of gaps in worker safety training and what can be done to ensure that it is more thoroughly addressed?
Nirupam: What we see in developing countries is that most industrial and construction workers have backgrounds in farming. They do not come from an organized sector. In recent years, we have people coming from technical training institutes sponsored by the government in various countries. But unskilled people from unorganized sectors such as farming make up about 64% of the typical construction site workforce. The result is that they never get an opportunity to receive structured safety, operational or behavioral training. Complicating the situation is that culturally, many of the workers come from villages and bring a bit of superstition, fatalism and other deep-seated behavioral traits that can be difficult to change.

Fortunately, we generally do see workers who take direction well and have a sense of respect. If you can exhibit a sense of responsibility, care and compassion to your workforce, it is possible to change their behaviors and learning. Of course, the learning process is initially tough; it takes some time. But connecting to this workforce at a psychological level is important, and if you value what you say, it is easier for them to figure it out.

We teach these contractors how to teach themselves. For a few days or a few months, we train using our trained safety professionals. At the same time, we train their safety engineers to develop the training matrix or roadmap to our standards, and then we do field-based and classroom training for the skilled and unskilled workers. It takes some time but we keep reusing these contractors from one project to another, so the initial investment helps us go a long way. On the second and third projects we do not have to invest a lot of time, rather we keep monitoring their quality.
Nirupam: For multinational companies and Asian companies that have a vision of running their construction sites and projects safely, the first thing they must do is identify construction contractors who are specialized in a similar kind of construction.

For example, if a company that builds petrochemical projects would not hire construction people who are only focusing on civil areas. The company would start looking at contractors with big gas plans, oil plans or refinery projects. We create a database of contractors that have worked with our company or similar companies. Once they are in the database, we try to reach out to practically every potential contractor. We keep driving home that whoever comes to work for us, safety has to be their first priority. That element eliminates a few contractors who think that they have an easier choice than working for a top client with these safety training measures.

Before we start our bidding process, we invest time, money and our expertise in traveling to at least two active construction sites of the prospective contractors. We go to their clients’ construction sites with permission on both ends. We do an informal assessment to understand their safety management program. We talk to their safety people separately and try to gauge their safety culture. We try to see how visible safety is in their workplace. With their permission, we talk to some workers to understand how tolerant and competent in safety these workers are and how well they are taken care of by this contractor. This gives us kind of a high-level view of how these contractors work.

We have also developed a scoring matrix so that the team that visits the construction sites assess these contractors in various areas. Some are maybe strong on personal protection but may be very weak in electrical safety. We take the scores of different prospective contractors and try to evaluate who is the best choice. We evaluate all the aspects. First we get their safety scores, followed by expertise and power in executing projects. Cost and quality may also be evaluated, but we cannot put cost as the first priority for safety contractors.

Nirupam: The orientation is two-fold. The first part takes place in the office. We develop the kind of elaborate safety presentation to address the safety manual section by section. We came across several contractors who had already signed our safety contract, taken the manual, but later we found that they actually did not read it. We ensure that the leadership team is dedicated to section-by-section comprehension of the safety manual. Then we show prospective contractors key studies of the different kinds of incidents that we don’t want to see on the construction sites. On the other side, we show them pictures of similar processes and practices the way we want them to be performed on construction sites. It is a day-long exercise.

Then we schedule their visits to our construction sites so they can see real-world examples.

Nirupam: Site personnel for the contractors are the key drivers of safety. They are the interference between senior management and workers, and how they treat their workers reflects how safe the site is going to be. Selection is extremely important. We generally allow our contractors to interact with the existing crew in the field. We give them some criteria of basic educational qualifications and years of experience and the kind of industry we want their crew to be from. Most often, we select from the existing crew.

We are especially serious about the field construction manager, is a key driver for safety initiatives and programs. We believe in blind management and we ask our contractors to believe in the same philosophy. The second most important person for us on the site is the site safety manager and his team. Depending on their educational qualifications, years of experience and kind of experience, we sit across the table along with our contractor top management people to talk to them in front of their management, then set a score for the qualification process.

We also look into the quality of the site planning engineer [and the] expertise of their quality inspector and their warehouse manager. Those are critical roles for the project’s overall safety. Sometimes in a big project, there are some area charges, area engineers who run a small team, so we take time to evaluate them. Altogether in a large project of around 1,500 workers, we select the top five or six people in the contractor’s site team.

PS: How do you ensure that safety processes are successful after the hiring process is complete?
Nirupam: When the hiring process is complete, the first step the contractor takes is site mobilization. This is one of the most critical phases in the whole project life because the kind of equipment and materials people mobilize at the beginning contribute a lot to the success of the project in the long run. We send our engineers out along with the contractor’s Engineer to our location from which they will mobilize. For example, if we have a 1,000-ton capacity crane coming from another project, which may be 1,000 miles away, we fly down our crane expert along with their personnel to inspect the crane at the contractor’s home location. If the crane meets our requirements, we give a green light for the mobilization process.

We have a team of engineers led by the client’s field construction manager at the job site. They take a strict filter for everything that the contractor brings in.

At the same time, our safety team starts monitoring the quality of safety orientation and the quality of safety training. We also have a system to monitor the workers who are arriving at the job sites. A strong team of safety engineers from our side has a health surveillance program. This program ensures that workers are monitored for different health conditions and based on the results we draw, we identify health professionals in that locality.

PS: Anything else about contractor safety and management that you would like to share?

Nirupam: I mentioned our site audit and inspection program. From these observations and inspections, we keep grading contractors every month. We see that these contractors are motivated to achieve higher scores by working safely. Their score does not depend solely on the number of injuries and incidents; it actually depends on how safely they are working in the construction sites, and what kind of corrective actions they are taking on these audit and inspection findings.

At the end of the project, all the scores are compiled to determine each contractor’s performance. There may be a situation in which the contractor failed to perform satisfactorily. In that case, we will not hire that contractor for the next project. Contractors know this and it is a major driving forces for compliance to our performance requirements.

PS: How has your background helped you to develop practices for improving contractor safety?

Nirupam: I started my career around 18 years ago in India, and that was with one of the largest engineering and construction companies in Asia. I started working on large projects, mostly steel mills, construction and petrochemical construction. From this, I started working with the contractors at the grassroots level. Civil contractors who did not have any training came to the site.

During those formative years, I saw and understood what challenges these contractors bring into a construction site. I witnessed various kinds of incidents and errors. Those errors taught me what needs to be done proactively as a safety engineer. The first 6 or 7 years I spent in India and some of the countries in the Middle East, and then later on I worked in Korea, China and Russia. At the same time I visited sites in the U.S., so I could compare both sides. From a grassroots level to advanced safety systems, it was a long journey. All this combined knowledge helped me frame these strategies to make managing contractors safely effective in growing countries.

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