

Client: GS Caltex
 Industry: Construction/Oil Refining and Petroleum Production
 JMJ Service: Incident and Injury-Free® (IIF®) Safety

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Mr. Dong-Wan Woo
 GS Caltex VGO FCC Project,
 GS Engineering & Construction
 Construction Manager/
 Senior Manager

GS Caltex fundamentally changes the culture of the construction industry in Korea by embracing IIF culture

The first private oil company in South Korea and the country's refining industry leader, GS Caltex provides a supply of more than 30% of the domestic petroleum market in Korea. With world-class oil refining and petrochemical production facilities, GS Caltex transforms imported crude oil into high value added petroleum and petrochemical products and exports overseas. GS Caltex has a state-of-the-art manufacturing system with a refining capacity of 775,000 barrels/day and a desulfurizing capacity of 272,000 barrels/day. In order to keep up with the market's changing demands, GS Caltex is continuously expanding its heavy oil upgrading (HOU) facilities. With the scheduled completion of the fourth HOU facility, VGO FCC, GS Caltex will have an upgrading capacity of 268,000 barrels/day, the largest in Korea.

Business Challenges:

Since 2004, GS Caltex has undertaken three major megaprojects constructing Heavy Oil Upgrade facilities. VGO HCR, the first of these—and the first implementation of the IIF approach in the country—was a billion dollar project with over 6000 workers. While the goal of GS Caltex management was to complete the project as safely as possible, there were a number of initial concerns.

At the time throughout the country, there was the general perception among Engineering, Procurement and Construction contractors that a focus on safety got in the way of production, and that the financial costs would outweigh the benefits. Because Korea's construction industry was so heavily schedule driven, these concerns posed some doubts about the IIF approach.

Along with this, there were other initial concerns on the parts of workers and contractors: that the IIF approach might not be suitable for the Asian culture, that a project without incidents and injuries would not be possible on a project of that size, and that the IIF approach might just be window dressing rather than a genuine commitment. There was also the mindset of some contractors on the project that the IIF approach was an obligation handed down by GS Caltex rather than something worth taking ownership over.



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Mr. Kyeong Bok Cho
GS Caltex Project Manager

As the lifespan of GS Caltex efforts continued over the course of the three megaprojects, many of these challenges were addressed. Still, there were the general challenges of operating safely throughout three major construction efforts. The first HOU project, the VGO HCR cost 1.5 trillion Korean and involved more than 6000 workers per day. The second, VR HCR cost 2 trillion Korean (1 billion US), with over 7000 workers per day. The third, VGO FCC, has over 5000 workers per day and is currently under construction (costs have yet to be determined).

Along with the general demands that such projects set forward, the overall construction culture throughout the country proved challenging for worker safety. Often worker facilities were in poor condition. There were few, if any, worker rest areas, and communication was usually very authoritative rather than cooperative.

Client Goals:

- To complete three megaprojects without incidents or injuries
- To shift the overall mindset around safety from obligation to ownership
- To have a safety record lower than industry average and within target numbers
- To fundamentally change the culture of the construction industry in South Korea

GS Caltex and the JMJ *///* Approach:

The GS Caltex *///* journey has been implemented in three phases over the course of the three megaprojects. The first project saw a top-down introduction to the *///* approach, the second was integration into the overall GS Caltex culture, and the third project has seen a thriving, active *///* culture.

During the first phase, JMJ delivered six two-day workshops to 178 managers and site leaders initiating them into the *///* approach and engaging their commitment to no incidents and injuries. This extended into the formation of a site *///* leadership team led by GS Caltex staff. This led to *///* train-the-trainers events preparing site staff to orient others to the *///* approach, Town Hall meetings every month, and *///* orientations led by GS Caltex and delivered to all personnel.

As a result of this, GS Caltex and site workers created Recognition Awards for strong *///* performance, *///* nights, safety campaigns and magazines, and regular coaching.

While the foundation was laid during the first megaproject, the second was an opportunity to strengthen the *///* culture and bring a focus on middle management. This led to ongoing programs strengthening managements' understanding of the *///* approach, supervisor skills training and monthly *///* coaching by JMJ consultants, along with two-day workshops to ensure site leadership was engaged with the commitment to no incidents and injuries. A mentor program was created that allowed staff to guide other workers towards a more full understanding of the safety approach, and there was a clear visual identity throughout the site that strengthened the integration of *///* safety into the GS Caltex culture.

“JMJ helped change the mindset and perspective of workers on the project,” said Mr. Dong-Wan Woo, Construction Manager/Senior Manager, GS Caltex VGO FCC Project, GS Engineering & Construction. “There were very systematic programs. Not only did they hold workshops that helped change our mindset, but they followed up on workshops with group coaching. Because it was a constant process and there were regular trainings and coaching, it helped people be reminded of the *///* [approach] constantly.”

By the time the third megaproject began, the *///* culture had taken hold, and GS Caltex and JMJ were in a position to raise the bar on the safety culture with similar workshops and trainings, which continue today.



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Mr. Heung-Joo Na
GS Caltex VGO FCC Project,
BumJin Engineering & Construction
General Manager

Client Results:

Over the course of the three mega-projects, GS Caltex has seen dramatic results.

The Total Recordable Incident Rate (TRIR) dropped from 0.36 on the first project to 0.13 on the second. On the third, it is 0.04, and 90% of the workforce has been mobilized.

The Days Away From Work Rate (DAFWR) dropped from 0.16 on the first project to 0.07 on the second. On the third, it is 0.02. As of December 10, 2012, this third project, VGO FCC celebrated the achievement of five-million man hours without incident for the second time.

Not only were the safety records seeing drastic improvements, the projects themselves have been completed with numbers well under industry average, based on numbers by Independent Project Analysis, Inc. (IPA). The VGO HCR project was completed in 28% less time than the industry average, and its cost was 8% less. The VR HCR project also was completed below average cost and time (final numbers have not been released by IPA).

GS Caltex Project Manager, Mr. Kyeong Bok Cho, believes that the *IIF* approach played a large role in these successes.

“I am confident that *IIF* [safety] contributed to a shorter schedule and less cost,” Mr. Cho said. “When we first adopted the *IIF* [approach], our goals were first that we wanted to create a safe site and second that no one would get injured. Our goals in terms of numbers were to make our safety record lower than industry average and within target numbers. The challenge at the onset was that many people didn’t agree that safety helps schedule and cost—many people think it actually gets in the way, so we had a hard time persuading them. JMJ and the *IIF* approach helped a lot in changing the mindset of these people.”

Along with the quantitative statistics, Cho says the culture of safety throughout the company’s projects has dramatically shifted.

“To sum up, at the beginning of the *IIF* engagement many people thought they already knew what they were doing and that a focus on safety was not that important—and that the schedule takes priority. After adopting the *IIF* approach and implementing the various trainings, though, people began to realize the importance of changing the safety mindset.”

Over the course of eight years, GS Caltex management remained firm in their safety commitment, and the result has been a transformed culture with workers exhibiting care and concern for their co-workers, mutual trust and respect, and an environment of looking out for one another. There has been a noticeable shift in ownership of the *IIF* approach as workers across GS Caltex are fully adopting the commitment to safety.

Along with these shifts, facilities have improved. There are more rest areas for workers, rest and welfare facilities have improved, and the overall communication of the culture has shifted from an authoritative culture to a more collaborative culture with open communication, joint safety checks, and safety inspections on site conducted by union and safety leaders.

Not only is this influencing GS Caltex workers, it has also had a major impact on contractors working on the project.



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...one of GS Caltex management's goals was to fundamentally change the culture of the construction industry in Korea by embracing the *IIF* culture.

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Mr. Kyeong Bok Cho
GS Caltex Project Manager

“When our workers go to other sites, they say GS Caltex has higher standards,” said Mr. Heung-Joo Na, General Manager, GS Caltex VGO FCC Project, BumJin Engineering & Construction. “At less safe sites, our workers talk about the standards on GS Caltex projects, so then those other sites’ safety levels improve.”

Because of this, Mr. Cho believes GS Caltex efforts are not just affecting their own projects, but are changing the safety culture throughout South Korea.

“In the beginning, one of GS Caltex management's goals was to fundamentally change the culture of the construction industry in Korea by embracing the *IIF* culture,” Mr. Cho said. “That was about 7 or 8 years ago. Now some dramatic changes have happened.”

As a result of the impact their *IIF* efforts have had, GS Caltex Korea was awarded the first ever *IIF* Success Award by JMJ Associates. This award recognized the significant impact that the GS Caltex *IIF* efforts have had on GS Caltex projects as well as on the safety culture of Korea as a whole.