

Safety first for SEPC



People, safety, productivity and profitability are the key fundamentals an organisation should aspire to integrate into its culture, explains Raj Singh, Chief Executive, Safety@Work.

People, safety, productivity and profitability is the prevalent ethos at Safety@Work (S@W), an oil and gas industry focused consultancy, which has made its presence felt by working with top industry players within the Asia-Pacific and Middle Eastern regions, including Shell, Aker, Sea Production and Rubicon Offshore.

S@W has recently completed work on a major Shell Eastern Petrochemicals Complex (SEPC) construction project in Singapore, comprising three installations – a new world-scale 800,000 t/y ethylene cracker complex (ECC); a 750,000 t/y mono-ethylene glycol (MEG) plant; and modifications and additions to Shell's existing refinery on Pulau Bukom.

From a safety perspective, the SEPC project presented a number of challenges. Singapore generally has a good reputation for providing safety training (mostly classroom-led), however, with the growth of the construction industry in the region, the availability of skilled workers, including first line supervisors and safety managers, was severely limited. Further, the project required a workforce of up to 15,000 people and included a number of contracting companies, representing a wide array of cultures and backgrounds, and with varying levels of experience of working on a complex construction project.

At a very early stage, Shell identified the need to increase the number of competent, trained safety supervisors to work

on the project – it was recognised that raising the profile of safety skills and professionalism would also help promote a strong safety culture across the wider construction industry. S@W was therefore employed to assist in the development of a multi-level training programme for employees on the site, including contracting companies. The key goal was to ensure that employees across the board were aligned with Shell's aim to enhance and integrate a strong and meaningful safety programme.

The three projects all had induction and training centres. Once the workforce had received initial mandatory training, Shell and the engineering, procurement, construction and management (EPCM) team required all personnel entering the projects to undergo an induction programme. The induction programme already operating on the ECC and MEG was reworked to incorporate mandatory training required by law, and was then submitted for accreditation to recognise it as an equivalent to the national level. This process bypassed a training bottleneck, saving two weeks of lag time for each worker to receive legal certification from Singapore's Ministry of Manpower, and ensured the safety training provided to workers was relevant, comprehensive and to Shell standards.

Two key areas for further improvement were identified in order to improve safety. Through regular HSE manager meetings, the relatively young age of the

workforce was identified as a key opportunity to achieve safety goals – if the young workforce could fall into a high level of safety culture now, they would likely maintain the level long term. In addition, working to engage first line supervisors (predominantly contractors), was also important to deliver the results on site, not just for quality and productivity, but for safety.

Improving cultures

In the workplace, scaffolds, cranes and mobile equipment do not pose a risk to people unless they are misused and expose workers to danger. Given that people can change situations, what can be done to educate them to improve safety?

The three waves of safety for reducing incidents over time are probably a familiar sight to those involved in this part of the industry (see **Figure 1**). Each wave improves safety and helps to reduce incidents, with the fall in incidents leveling off over time as the limits of improvements are reached. The first wave reduces the exposure of people to risk through improved hardware and technology, the second wave introduces improved management systems, and the third and most recent wave focuses on developing a continuously improving safety culture within an organisation.

In theory, the way that people behave in relation to safety depends on an organisation's level of safety culture. The goal is to get people to work safely even when nobody is looking – and not cutting corners even if the job is urgent. It is about developing this safety culture among all employees from top to bottom, so that both the organisation and those working in that organisation intrinsically make safety their top priority. Incidents cannot be stopped simply by telling people not to get hurt, so whilst classroom training can be useful in explaining theories, this style of teaching does little in making safety a priority.

Since 2003, Shell has utilised the Hearts & Minds (H&M) toolkit as a means to engage and enable teams to proactively improve safety culture. It includes tools for managers, leaders and people of different levels to use. Whilst the tools enable groups to easily facilitate workshops at a local level, utilising the tools to facilitate change is not that simple – change takes time and effort, and the best methods for maintaining change are not yet an exact science. Both the programme to train contractors, and the Shell-sponsored Trainee Safety Advisor Programme (TSAP) drew upon the toolkit

TSAP trainees at the Shell project, Singapore

as a training resource. The use of H&M tools within Shell is not a mandatory requirement, but two out of the three development projects committed to utilising the toolkit as part of their plan to develop contractor safety.

Contractor H&M programme

First line supervisors are critical to any project. They help to translate and cascade the message through the workforce. Workers listen to and relate to good first line supervisors, so they can make or break the overall performance of a project or installation. Contractors were encouraged to engage their own trainers to train their supervisory staff – the best trainers would be the ones from the contractors themselves because they could share and relate with each other. Trainers were ‘recruited’ from contractors and these were safety personnel who already engaged in, or wanted to do, training.

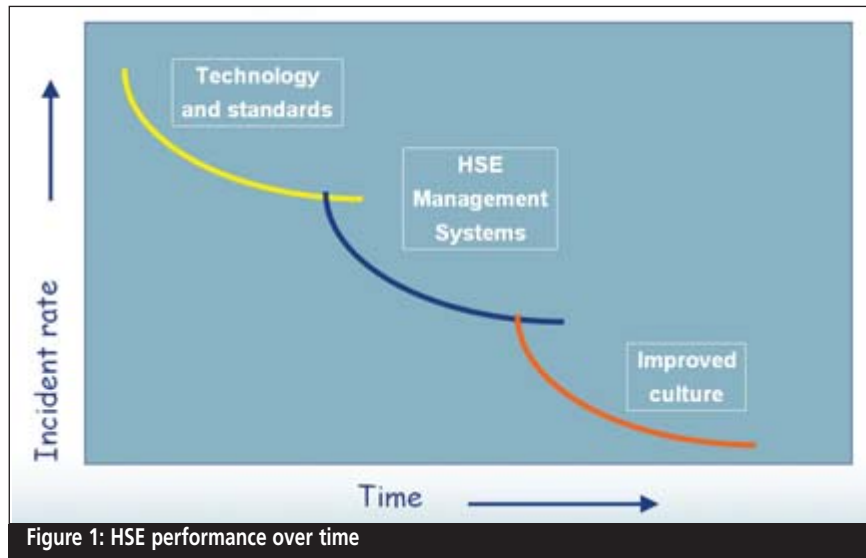
Shell initially brought in a Shell E&P training professional to deliver the first workshop for supervisors in Singapore. S@W was engaged in the programme to ensure that it matched local needs. The initial four-day workshop covered topics on the nature of incidents; the supervisor’s role and improving supervision; understanding HSE culture; risk assessment and hazard analysis; and managing rule breaking. A further six days of workshops trained the trainers to present the same modules, which had participants presenting the modules to each other to get them used to running the course.

The commitment from the Shell management team was demonstrable and visible. In conjunction with training front line staff, an awareness session was organised for the more senior managers of the independent contractors, and for each and every H&M workshop, someone from the Shell management team made time to share and engage with the participants. Some participants saw real value in H&M and became advocates by engaging with management in the benefits of the programme.

Catalyst for change

With the Singaporean industry facing a significant shortage of competent safety supervisors, there was a pressing need to develop a comprehensive training scheme to train a pool of skilled safety professionals and leaders. Shell sponsored the first industry driven scheme, the TSAP, to develop motivated safety supervisors to create high standards and to improve and promote a strong safety culture in Singapore.

There were 2,300 applicants for the course. Eighty-seven candidates were accepted and put through a professional training programme that was designed



to cover safety behaviour and culture, project leadership, and technical awareness through classroom sessions as well as on-site practical experience. During the first two weeks of the course, trainees worked through the H&M tools. This improved their skills and helped shape their approach to dealing with issues.

It was recognised that classroom-based training would not provide the necessary skills for intervening or entering into a dialogue with workers in real working conditions, so trainees were assigned to the SEPC project to learn and contribute to the on site activities, with each student allocated a mentor. Proactive engagement with the Shell management team during workshops again proved invaluable in maintaining a high commitment to the programme. The trainees’ influence on SEPC and their positive interaction amongst workers also created a catalyst for highlighting safety as a priority.

Trainees who successfully completed the TSAP (nearly 80% of the intake) received local and international accreditation, including NEBOSH certification (National Examination Board Occupational Safety Health). The TSAP is also certified by OPITO. Most trainees who successfully completed the course have been able to find jobs with contractors, with some staying back to finish the construction project.

SEPC results

What was achieved at SEPC? Shell had a target of no fatalities and less than eight recordable incidents per 10mn man-hours of work. Reports suggest that the MEG part of the project achieved 13.5mn man-hours lost time incident (LTI) free, and had a total recordable frequency rate of 0.6 incidents per million man-hours. This was thought to be a record for a Shell project of this scale, and was a record for

the managing contractor Foster Wheeler. Other reports indicate, as of October 2009, that SEPC achieved 35mn man-hours overall without an LTI, and had only five LTIs and 60 recordable incidents against 75mn man-hours of work, which is on target, or better than target for the project.

Whilst these statistics are impressive, could the SEPC project have achieved better results? We know that companies with a pathological culture want to get the job done and tick the boxes, and companies with a reactive culture will only do things that are instructed by clients or authorities. The SEPC project certainly laid the foundations for a long-term generative safety culture with the use of the H&M tools enabling the general workforce to engage with safety issues in a proactive and inclusive way. Even organisations with generative cultures recognise the need for continuous improvement, so what lessons were learnt along the way?

The ideas and the concepts of rolling out the H&M workshops were well thought of. Implementation, however, was another challenge. Though some contractors rolled out the workshops for their own personnel, there was no full buy-in by all the contractors and most of the workshops were still conducted by S@W and Shell’s own facilitators. It was also frustrating to see some of the trainers choose not to stand up and deliver – falling back into the shadows and not wanting to rock the boat.

It is perhaps almost too soon to judge the success of the programme and if the high level safety culture at the Shell complex in Singapore is persisting, or whether supervisors are beginning to slide back into ‘old habits’. However, the experience has been very valuable – improvements could have been made, but that is all part of the learning process. ●