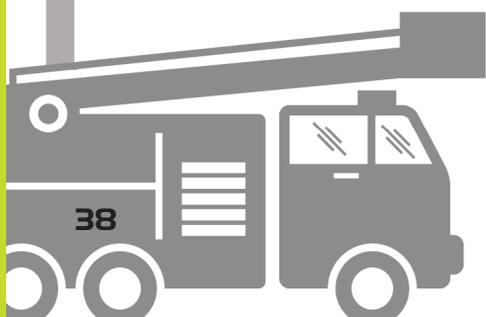


The Key To Integrated Security Solutions & Latest Technological Systems

• SUBMITTED BY a&s TEAM

With the merger of ONGC and HPCL the oil and gas industry in India is anticipated to witness new avenue. a&s India has examined oil & gas security solutions market and explored the opportunities emerging with the merger.



Amidst growing industry concern and market uncertainties, the government has apparently decided to go ahead with the mega merger of India's oil sector as was proposed in the Budget.

A merger of Hindustan Petroleum Corp. Ltd (HPCL) with Oil and Natural Gas Corp. Ltd (ONGC) would have been a neat structure, combining both businesses with the full benefits of integration available to claim. There would be no cash to be paid or debt to be raised. Instead, ONGC plans to acquire the government's 51% stake in HPCL.

For integrated oil companies, a lot depends on oil price levels and how best companies are able to hedge against price movements. With oil prices likely to remain low given a

Meanwhile CEO & Director at Aditya Infotech Ltd, Aditya Khemka says, "Manned surveillance isn't always enough and more needs to be done to protect such critical facilities. Coupled with a vigilant security force, state-of-the-art surveillance equipment also needs to be deployed. Care needs to be taken to ensure that the equipment used is explosion proof, heat and oil resistant, tamper proof and anti-hazardous."

Further adding he said, "Also, in the process, the crude oil travels from its source of exploration, through pipelines and transported to the retail distribution of its derivatives. The product undergoes varying environment. In each process, design requirement of the surveillance changes.

This is a major challenge and opportunity at the same time. The sector offers many opportunities for the CCTV equipment for researchers. There are requirements at the material level and feature levels," he added.

According to Harsh Garg Director, Aska, "The oil sector has tremendous scope for fire extinguishers and fire suppression system in electrical panels, switch gear rooms, control rooms and are looking forward for a Halon replacement solution. Corrosion and maintenance of the conventional extinguishers is on going issue. Also, oil industry is looking forward to a solution to neutralise toxic gases. Aska Equipments Ltd is equipped to provide HDPE extinguishers, non pyro based aerosol technology and solution to neutralise H2S and other gases.



Ashish P. Dhakan,
CEO & MD, Prama Hikvision



Aditya Khemka,
CEO & Director, Aditya Infotech



Harsh Garg,
Director, Aska



Jim Simon,
Senior Director of
Asia-Pacific Marketing, Quantum

slowdown in the global economy and excess supply, a merger with HPCL would give ONGC much-needed growth. Similarly, for HPCL it would need to lock its oil supply as it goes on an expansion spree.

When asked Prama Hikvision MD & CEO, Ashish P. Dhakan said, "The oil and gas industry is amongst the six core industries in India. This industry is a major factor for the growth being witnessed in the Indian economy today. The natural gas and petroleum sector, which is inclusive of refining, transportation, and marketing of these products, contributes about 15% to India's GDP. There is a huge opportunity for security and fire safety solution providers as India's oil & gas sector is growing in the midstream, downstream and upstream segments."

He further said, "India's oil consumption grew 8.3 per cent year-on-year to 212.7 million tonnes in 2016, as against the global growth of 1.5 per cent, thereby making it the third-largest oil consuming nation in the world. Amidst all these growth signals there are many challenges staring at Indian Oil & Gas sector. These challenges include internal and external risks."

“ In Oil & Gas sector, a strict adherence to standard operating procedures (SOP) and protocols can ensure complete security for Oil & Gas establishment. A different set of guidelines has to be made for downstream, midstream and upstream operations. ”

Ashish P Dhakan,
MD & CEO,
Prama Hikvision

IOCL and ONGC have started adopting the same.

According to Future Fibre Technologies Country Manager – India, Sanjay Oberoi, "One of the key challenges of India's Oil & Gas Industry is securing the significant amount of infrastructure that is vulnerable to security breaches. India has over 40,000 kms of operational pipeline carrying crude oil and other refined products. The country has over 22 oil refineries and every refinery has a perimeter. Every pipeline has oil terminals, which are located in and near major town and cities. Every oil terminal has a perimeter. Pipelines have SV stations and booster stations and which again have parameters that need to be secured."

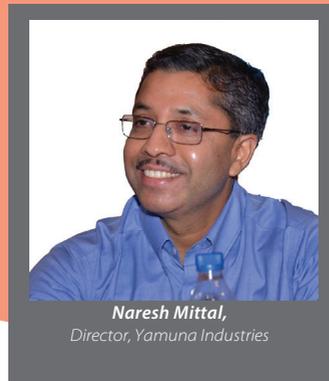
Hari Om Sharma, Solus Director & Co-Founder says, "Oil & Gas operations face multiple challenges in their operations. Compatibility between various individual physical devices and software, information overload, interoperability and collaboration between different sites across diverse geographical conditions are common challenges that are faced by this sector. Addressing these issues with an advanced

system presents a huge opportunity for companies catering to the security needs of this industry.”

Sparsh Director, Sanjeev Sehgal emphasises, “The security system required within the oil and gas infrastructure is required to be explosion proof thereby requiring certain mandatory certifications. Only a few MNC’s thus have been able to provide with such security management systems. If this challenge can be overcome by Indian companies, then there is immense scope of growth in this sector.”



Hariom Sharma,
Director, Co-Founder,
Marketing and Sales, Solus Security
Systems



Naresh Mittal,
Director, Yamuna Industries

EMERGING THREATS

Ashish P. Dhakan said, “Despite recent debacle of ISIS (Daesh) in Iraq, terrorism continues to be the biggest threat to oil producing, procuring and processing countries around the world. India’s Oil & Gas sector is more vulnerable to terror groups and extremist factions.

Apart from traditional geopolitical challenges, other new challenges include organised crime, insurgency, vandalism, piracy, adulteration, pilferage, manipulations in measuring devices, spurious fuel racket, sabotage and cyber security breaches.”

Meanwhile Aditya Khemka said, “Oil & Gas plants and installations are under constant threat of vandalism and attacks. That’s not all; the slightest heat or spark can cause major fire outbreaks leading to loss of life and assets. Dousing fires of such magnitude are usually challenging for firefighters, as they take a long time to be controlled. Hence, such hazardous facilities require constant monitoring.”

While the oil industry is looking forward to a solution to neutralise H2S, SO2, Chlorine and other gases, the corrosion and maintenance of the old technology is a big ongoing issue in offshore and remote area petrol pumps viewed Harsh Garg.

Jim Simon, Senior Director of Asia-Pacific Marketing, Quantum Corporation said, “The oil and gas sector faces some important challenges. Besides the risk of fire, there is

the threat of espionage and of course terrorism as we have seen time and again. Remote, sea-based platforms are especially susceptible to terrorism so high camera counts utilising high resolution cameras and threat-identification analytics are key.”

“There are two main types of threat. The more traditional threat is theft of the fuel by digging to reach the pipeline, making a small puncture in the pipe and attaching a valve controlled device to create a

low discharge rate that avoids the leak detection system. A new emerging threat relates to thieves trying to extract vital pipeline information directly from Oil & Gas Company staff. Blowing up a pipeline or damaging a refinery can cause long-term harm by triggering an energy shortage in some

regions in addition to the loss of lives and infrastructure,” said Sanjay Oberoi.

Moreover in Hari Om Sharma’s view, “Any growing industry needs to excel at adaptability and need to be able to integrate their operations in a manner that overall efficiencies can be multiplied. Reducing reliance on manual systems and using technology to clear bottlenecks are just as important. Failure to adapt leaves companies vulnerable and translates into a threat.”

Explaining about the labour sector Naresh Mittal, Director of Yamuna Group said, “The lack of skilled labour maybe causing the next big trouble for such labour intensive sector.

Moreover due to extreme work environment the new generations are not coming forward to pursue the oil and Gas sector. Thus Oil and Gas should work towards the betterment of one’s working environmental welfare,”

Further emphasising on the threat issue Sanjeev Sehgal said, “There is an ever rising threat to the oil and gas sector due to the increasing terrorism. This sector hasn’t been targeted yet but remains a soft spot and a vulnerable part of the critical infrastructure of the country. Thus there is a dire need for security systems to protect this sector.”

BEST PRACTICES ADOPTED TO SECURE THE SECTOR IN INDIA

Highlighting on the issue Ashish P. Dhakan said, “The best practices include 100% compliance of security strategy, plan and HSE guidelines to mitigate risks in Upstream-to-Downstream operations. This involves an integrated security solution based on smart risk mitigation through real time Video Surveillance, Access Control, Intrusion and Perimeter Security. In Oil & Gas sector, a strict adherence to standard operating procedures (SOP) and protocols can ensure complete security for Oil & Gas establishment. A different set of guidelines has to be made for downstream, midstream and upstream operations.”

In Aditya Khemka’s view, “While a robust security system utilising integrated fire & alarm systems is indispensable for an Oil & Gas facility, it is only half the job done. Companies need to further educate their staff and employees on why security is important and how the system at hand can be put to best use with a little vigilance and discipline. The personnel managing the security system need to be trained for both day-to-day monitoring as well as disaster management. These together need to be enforced through a compliance policy.”

According to Harsh Garg, OISD plays a very important role and have laid safety guidelines along with PESO. But Oil industry needs to adopt latest technology where OISD has to implement timely new technologies. The mind set is to have minimum as per OISD guideline and not open to adopt latest technology till listed by OISD. MOPNG should look into beyond MB LAL Committee now, I guess. For quality 1-must pay.

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Aditya Khemka,
CEO & Director, Aditya
Infotech



"A disruption to an oil and gas drilling site, refinery, or storage facility could cost lives and literally billions of dollars. To this end, security should be as strong as possible. Security is not a place to cut corners as even the best-available security solutions cost a fraction relative to the value of the personnel, facilities, and inventory the security solutions protect," said Jim Simon.

In Sanjay Oberoi's opinion, "The key to securing perimeters is to utilise a multi-layered approach. There is no individual or single technology in the market that will take care of perimeter security on its own. The CCTV cameras, the fence along with the fence-mounted and open area sensors and the response mechanism each play a role in the final solution. The weakest point in any of these layers will ultimately determine the effectiveness of the total security solution. So, it requires careful planning and a thorough understanding of the site specific

characteristics, selection of the individual security elements, and knowledge of how each component or layer plays a role in securing the site."

"While at an operational level Oil & Gas companies follow strict safety and protocols, they need to be protected from external risks from unauthorised visitors. Taking care of perimeter security, installing watertight visitor management systems and access control are important. Since these operations depend on large manpower, installing physical security measures like turnstiles, bollards and scanners is important. Constant video surveillance and responsive systems will help reduce incidents and enable people to take immediate action," cautioned Hari Om Sharma.

Furthermore Naresh Mittal of Yamuna explained, "Working on a low cost and high productivity are the key winning factors for all the industries. O&G sector should work towards the betterment of their talent as well as their labourers, who work in an extreme environment, be it hot or cold. Proper safety equipment along with the climate control apparels should be implemented to keep them healthy and safe. People have to be more cautionary towards one's work environment and health so that they can be motivated to work and also help reducing the labour cost by increase in productivity." However, according to Sanjeev Sehgal, "Perimeter protection is the foremost requirement to secure the oil and gas sector. Limited access to critical areas will ensure safety at the core. The standalone security systems should be integrated into a single unit."

APPLICATION OF LATEST SECURITY SYSTEMS AND SOLUTIONS IN THE SECTOR

According to Ashish P. Dhakan, "Hikvision's new range of explosion-proof cameras utilize 304 and 316L stainless steel housings for maximum corrosion and explosion resistance, and are IP68 water/dust ingress rated. For any surveillance requirement within hazardous environments, or environments where the camera is required to operate within areas with combustible sources, the new explosion proof cameras provide a high-performance and safe imaging solution. Typical applications are in potentially hazardous or explosion risk areas, such as gas & oil processing and storage plants."

Ashish P. Dhakan further added, "Hikvision's range of ultra-low-light explosion-proof camera models boast Hikvision Darkfighter technology, providing minimum illumination as low as to 0.005Lux in colour mode and 0.0005Lux in B/W mode. The result is crystal-clear colour and monochrome images in conditions that would defeat conventional low-light models. The range also comes with progressive scan 2MP and 4MP CMOS image sensors, full HD 1080p video at up to 60 fps, triple video streams, 3D DNR and 120dB WDR. These new cameras support the latest Hikvision H.265+ smart codec technology. Hikvision also has the integrated security solution for Oil & Gas sector, which has an all in one panel including Intrusion Alarm, Access Control and IP solutions."

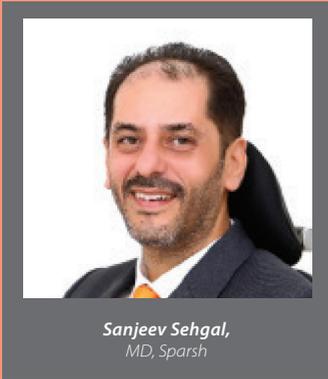
According to Aditya Khemka, "The latest technology in use is the integrated security solutions. The major components of this system include, perimeter security fencing, access control, gates and barriers, intercom systems, intrusion detection, public address and maintenance support. All of them can largely be secured with CCTV surveillance with latest in

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built features, like intrusion detection, alert notification features, remote access, HD Quality, and so on."

With reference to adopting latest technologies Aska said, "As per OISD accident rates are coming down and requirement are being implemented by the oil companies, I would still say latest technologies have to be adopted. Carbon



Sanjeev Sehgal,
MD, Sparsh



Sanjay Oberoi,
Country Manger-India, FFT

Fibre Vessel for high pressure water mist is the latest and useful technology and HDPE extinguishers as per EN standard (ABC and FOAM TYPE WITH ELECTRICAL FIRE APPROVAL UPTO 1000V) will help users in oil industry reduce the risk.

Highlighting on real-time analytics Jim Simon said, "Cameras are becoming smaller while resolutions are dramatically improving—4K is now even possible. At the same time, analytics are improving and can alert security personnel to potential threats better than traditional human security personnel monitoring security cameras. A complete security system also includes high-performance storage to handle multiple, simultaneous

streams of video while enabling real-time analytics and long-term video retention." Sanjay Oberoi added, "In terms of the intrusion detection layer, there is a marked preference amongst asset owners, users, and consultants to adopt the fiber optic sensor over other technologies including electro-mechanical and piezo electric sensors, taut wire fences, electric fences, strain sensitive and microphonic

strain sensors, electrostatic or strain sensitive sensors, buried pressure tube sensors, leaky coaxial cable sensor, buried geophone sensor etc. Fiber optic cable is the preferred sensor because it is an extremely cost effective solution and simple to

install, with no power required in the field and no field based analysers or electronics. It is also:

- Highly reliable and immune to EMI/RFI with zero in-field maintenance
- Pinpoints the location of theft events regardless of distance
- Provides consistent sensitivity over very long distances, and
- 100% intrinsically safe - can be used alongside petrochemical & gas pipelines or installations."

BEST OIL & GAS SECURITY MANAGEMENT COMPANIES IN INDIA

Ashish P. Dhakan explained, "It is not an easy task to guess the role model in the Indian context, but it is inspiring to

witness the increasing level of competence and security compliance at public sector and private sector Oil & Gas companies."

In Aska's view ONGC is open to adopt latest technology as compared to other OIL Industry till date. The though process is clear OISD has given minimum guidelines and they adopt the same also and latest technologies.

Briefing about the O&G industry Sanjay Oberoi said, "Many Oil & Gas Companies in India have already adopted fibre optic based intrusion detection systems like Cairn, IOCL, MRPL, ONGC, HPCL, GAIL, BPCL and Reliance. It seems to us that HPCL has the most experience in deploying fibre optic

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Sanjeev Sehgal,
MD, Sparsh



based intrusion detection systems on their pipelines. HPCL has also released a tender for the deployment of a fibre optic based perimeter intrusion detection system on one of their refineries in Western India."

“One of the key challenges of India’s Oil & Gas Industry is securing the significant amount of infrastructure that is vulnerable to security breaches. India has over 40,000 kms of operational pipeline carrying crude oil and other refined products.”

Sanjay Oberoi,
Country Manager-India,
Future Fibre Technologies

WAYS TO UPGRADE LEGACY SECURITY SYSTEMS

Elaborating on the issue Ashish P. Dhakan said, "The Oil & Gas sector's security requirements are mission critical in nature, so before planning an upgrade one needs to have a back-up plan. An integrated approach to physical security systems can help the cause of security in a big way. One needs to keep the track of fast evolving security requirements and technology trends."

"The usage of the latest technological systems in the integrated security solutions is the best way to upgrade the system. The major components of this system include, perimeter security fencing, access control, gates and barriers, intercom systems, intrusion detection, public address and maintenance support. All of them can largely be secured with CCTV surveillance with latest in built features, like intrusion detection, alert notification features, remote access, HD Quality, and so on," explained Aditya Khemka.

Jim Simon emphasises that the oil and gas sector should audit themselves with the following questions:

- Is there visibility to everywhere that the security team desires? If no, add cameras. They are setting new marks for small size and low cost.
- Is the quality of video streams the best available such as 4K? If no, upgrade cameras. They are setting new marks for low cost.
- Is surveillance video transmitted in real time to a central Command (eg. sea-based platforms to headquarters)? If no, start as surveillance video lost in an incident has no value.
- Are analytics being used to identify real-time threats (intruders, fires, etc.) as well as identify suspicious patterns (eg. multiple visits by a car that is not on a list of known/expected visitors)? If no, institute analytics. Humans cannot come close to analytics in identifying threats. That said, analytics + humans are the ideal combination.
- Last but not least, is the current storage system able to record simultaneous video streams (possibly in the thousands) at full resolution (30 fps, 4K), allow for real-time analytics, and retain video for years to come at the lowest cost possible? If no, a tiered storage solution from Quantum may be called for.

Sanjay Oberoi pointing to some solutions said, "Most Oil & Gas facilities already have perimeter CCTV and video surveillance installed. These sites can be easily upgraded with a fiber optic sensor based, fence mounted perimeter intrusion detection system. The Central Alarm Monitoring Software of the fiber optic sensor based solution can then be integrated with the security information management (PSIM), security management (SeMS), video management (VMS), access control (ACS) and other security interfacing systems already installed. Such a solution will have a multiplier effect with minimum investment. This system will use the already deployed CCTV to validate intrusion attempts and will integrate the existing CCTV into one seamless end-to-end solution with the OFC PIDS system."

Hari Om Sharma believes, "The sector needs to migrate to advanced platforms that can effectively integrate multiple systems on one common platform ensuring all these systems talk to each other and act in tandem based on set protocols. iSolus is one such platform that shoots the problems faced by

security administrators like systems not talking to each other, no central database, system incompatibility and so on."

Sanjeev Sehgal said, "Analog systems can be converted to IP using video encoders and web servers. Using network cables in security systems can upgrade the security structure. The system should run on an integrated software platform to ensure complete protection."



SUGGESTIONS FOR IMPLEMENTING SECURITY SOLUTIONS IN O&G PROJECTS

In Sanjay Oberoi's opinion, "Oil & Gas Companies should consider appointing a consultant that has extensive experience (in India or overseas) in this field so that they can carry out site surveys, conduct detailed risk analysis and define the security objectives that they are looking to achieve with a perimeter or pipeline intrusion detection solution. The consultant must be knowledgeable about solutions available in the market."

Ashish P. Dhakan viewed, "Common issues associated with petrochemical, oil and gas facilities, which are often multi-site, include health and safety, managing access levels and securing the facilities against the ever present threat of terrorist attack. These challenges can be met with an integrated solution of video surveillance, access control and intrusion detection solutions from Hikvision. Today's petrochemical operators need solutions offering flexibility, scalability and a secure approach to managing employees, contractors and visitors. This security solution must be one that works with their existing physical security infrastructure and ensures compliance with the latest regulations."