



ASSET INTEGRITY MANAGEMENT (AIM)

Oil & Gas Industry



WHAT'S IN THIS ISSUE

Asset Integrity Management


WHY AIM?

Assets must perform successfully and proficiently to guarantee protected and dependable activity and accomplish your targets. Asset integrity management guarantees you have the business forms, frameworks, devices, capability and assets you need to guarantee integrity all through the asset lifecycle. Plan, design, operational, and specialized integrity should all be overseen viably to control costs.



Asset Integrity Management (AIM)

"The objectives of an Asset Integrity Management (AIM) system are the delivery of business requirements maximizing return on assets whilst maintaining stakeholder value and minimizing business risks associated with accidents and loss of production. "



The commonly accepted definition of asset integrity is the ability of an asset to perform its planned function successfully and productively for its intended purposes throughout its service life. The extent of benefit of asset integrity management programs is to anticipate loss of containment and damage typically related to critical structures, safety systems, electrical systems and controls. It also deals with flexible lines, floating and subsurface systems and sub-sea connections, storage tanks and ballast tanks, as well as machinery and processing equipment. The emphasis is on recognizing and decrease safety risks before they escalate (design integrity), maintaining effective hardware barriers (technical integrity) and working within operating barriers (operating integrity).

Trends

After suffering from operating losses for two continuous fiscal years, the only way out for the operating companies is to emphasize on more efficient operations. During 2016-17 most of the oil majors resorted to AIM services, and improved efficiency of their operations by a fair margin, and the pattern will be relied upon and keep on going until 2023, thus, driving the AIM services market. On the contrary, the cost of implementation of effective AIM services, technical challenges, the absence of basic AIM standards, lack of skilled labor, and conservative attitude of operators are some of the factors restraining the significant growth of the market during the forecast period.

India accounts for about 6% of the worldwide oil refining throughput, and 4.5% of global oil utilization. Throughout 2014-16, India's oil utilization enrolled a CAGR of 8%. To meet this demand, the refining throughput also registered a substantial CAGR of about 5% during the same period. The oil consumption of the country is expected to retain this growth trend, due to growth in industrialization, growing population, urbanization, and increasing per capita income. To meet this demand, investment in midstream and downstream sector is expected to witness significant growth, which in turn is expected to drive AIM services market in the midstream and downstream industry in the country.



**"Staying fit for
purpose over the
whole lifecycle"**





In spite of those dangers of claiming major episodes in the oil and gas business might never be reduced to zero, a systematic risk management process can significantly reduce their likelihood and limit their effects. Furthermore, this hazard administration methodology must make the center part of a holistic asset integrity strategy, and not something bolted on to the end of a project plan.

Arrelic helps you secure the benefits of effective integrity management across the entire business: -

Processing - Dodge unscheduled outages

Maintenance - All the more exact prediction of maintenance spends

Management - Manage safe and predictable business performance. Furthermore, improve CAPEX and OPEX

Current practices often follow these phases:

- Identification of critical assets or bad actors, especially where the consequences of failure are high,
- Development of inspection and maintenance plans,
- Execution of inspection and maintenance plans and making it a process,
- Monitoring and managing deviations such as discrepancies in material conditions or overdue integrity tasks,
- Continuous improvement.

In the oil and gas industry, the vast majority of inspection and testing plans focuses on deterioration processes, which are inevitable in harsh and extreme conditions.

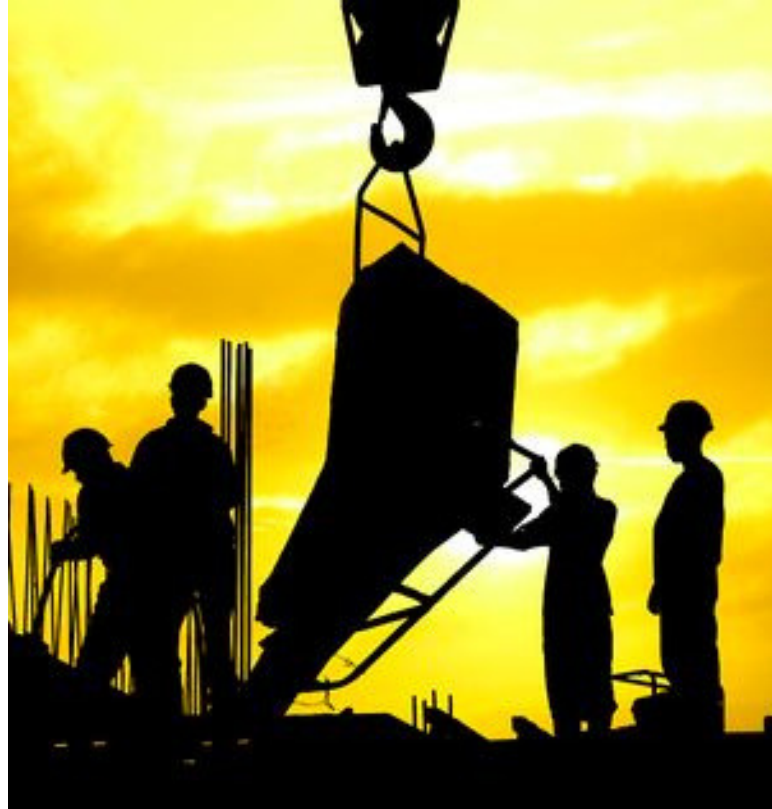
The goal of most inspection and monitoring programs is to minimize business risks connected with safety and loss of production. Today the key question is how to decrease operating costs while maintaining acceptable levels of safety and reliability.

Asset integrity management (AIM) services in the oil & gas industry include performance forecasting of equipment used in the upstream, midstream, and downstream sectors, by using Reliability, Ability, and Maintainability (RAM), Risk-Based Inspection (RBI), and Reliability Centered Maintenance (RCM) analytics for regular inspection and measurement.



In spite the risks of major incidents in the oil and gas business can never be reduced to zero, a systematic risk management process can significantly reduce their likelihood and limit their effects. Furthermore, this risk management process must be a core part of a holistic asset integrity strategy, and not something bolted on to the end of a project plan.

In a study of more than 40 operators conducted by management consulting firm McKinsey, the financial upside from operational performance could be up to 30 percent higher net present value. World-class operators extract more volume and operate at lower costs than average operators in comparable conditions.





World-class operators achieve best practice facility reliability of 95 to 98 percent even at older facilities and have maintenance costs that are 30 percent less than the average. Moreover, the majority of their maintenance hours (more than 70 percent) are preventive jobs rather than reactive.

Oil & Gas AIM market is primarily driven by increasing number of investments in Oil & Gas sector throughout the world to meet the escalating demand. Benefits like improved operations and profitability is also a reason for adaptation of AIM services by Oil & Gas companies.



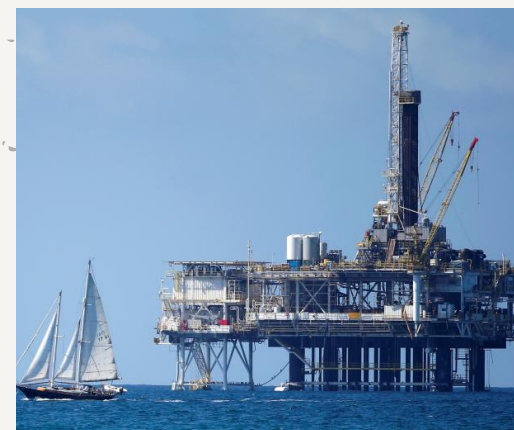
Going through a large number of oil wells around the world that are maturing, Oil & Gas companies now are focusing more on exploring new Oil & Gas fields and to improve recovery rates of existing fields to meet the future demand pull.

But, technological challenges are limiting continuous improvement process and lack of proper support from Oil & Gas companies is also limiting the effectiveness of AIM and thereby effecting AIM services market.

In general, the market demands greater degree of innovation in the field of AIM seeking means to simplify complex work processes and at the same time to have a better understanding and awareness of inherent risks.

The trends for innovative AIM products and services can always be challenged due to such factors as cost, organizational capacity, technological capacity as well as underlying business growth potential of the innovation. Other barriers may arise from financial constraints, regulatory requirements, non-proven technology and clients' conservative perspective to invest in new and revolutionary products.

Non-destructive Testing (NDT) Inspection is a major service type among the other services. This process is broadly applied in numerous in-service application and manufacturing industries. Oil and gas industry is heavily uses asset integrity managed services to mitigate risk and minimize operating costs. These services are apt for subsea, onshore, and offshore oil fields for maintaining safe and quality requirements.





COMPLETE ASSET INTEGRITY SYSTEM AND PROCESS SPANS THE ENTIRE ASSET LIFECYCLE

The process of assuring asset integrity spans over the entire asset lifecycle and requires leadership to drive integrity throughout the organization. Assets are designed and built not only to check if the risks are as low as possible but also to see if it is reasonably practical; in operation, assets operate within integrity windows and are maintained within the technical barriers.

The successful implementation of an asset integrity management (AIM) system requires a holistic, systematic, systemic, risk-based, optimal and sustainable view of how assets are planned and exploited from the inception of an idea to design (commission, operation & maintenance and modification & life extension) and decommission.

In this context, the aforementioned terms are clearly defined in the publically available specification (PAS) (published by British Standards Institution (BSI)) and the PAS provides specification and guidelines for asset management.

However, the specifications provided in PAS 1&2 are prescriptive only to the extent that they define what has to be done, not how is to be carried out. Hence, it is vital that an organization selects the necessary tools to align its assets with its assessed needs.

‘Corporate sustainability’ is an umbrella term for a set of structural changes that impact corporate strategy and performance. In general, sustainability or sustainable development is realized when the industrial asset exploitation level meets the needs of the present generation without compromising the ability of the future generations to meet their own needs. However, within the context of AIM, sustainability does not mean sustaining the integrity of particular assets indefinitely; but rather meeting the needs of the global society safely at a reasonable cost, and with minimal impact on the environment until alternative assets are available, and current assets are decommissioned in a sustainable manner.



Recent reported incidents reveal how unsustainable asset-intensive organizations are in connection with assets deployment. For example, “the deep water horizon had never been to dry dock for shore-based repairs in the nine years since it had been built” and “lack of time in dry dock may have resulted in a lapse in BOP (Blowout Prevention) certification”

This and other factors caused the Deepwater Horizon to suffer a major incident in the Gulf of Mexico. As a result, there was loss of human life, high-level environmental pollution and societal burden to the people living within the proximity. In addition, the leading O&G operator company BP suffered substantial economic losses. The investigations reveal that “the Deepwater Horizon did not go to dry dock because Transocean insisted on being paid its daily rate during repairs”

Apart from that, the asset performance of global companies may differ from region to region as deployment practices differ. The concept of ‘sustainable development’ addresses how to generate a ROI (Return on Investment) without endangering both the natural environment and societal safety, that is making a profit while taking care of health, safety and environment (HSE). In addition, strategic performance management approaches, such as ‘Balanced Scorecard (BSC)’ and ‘strategy maps’, address how managers can keep track of the execution of activities and to monitor the consequences of their actions.

Within the oil and gas (O&G) industry, AIM is generally carried out to maintain the assets fitness for purpose. Basically, in service inspections are carried out to recognize the integrity failures at plant level. Furthermore, it is crucial to carry out continuous integrity assessment in order to assure that the data from inspection, monitoring and testing are evaluated against the need for mitigation, intervention, or repair. If it is possible to assess the integrity, then it can be managed. However, this is not always done.

The concepts of sustainable development and balanced scorecard (along with strategy maps) are possible candidates for framing the AIM process with balanced performance.

GETTING IN TOUCH

If you have any question or would like further information on Asset Integrity Management (AIM) please feel free to contact us.

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About Arrelic

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