

ENGINEERED SOLUTIONS

CASE STUDY

Revitalizing Offshore Operations:
A Comprehensive Approach to Air Compressor Optimization



FAMILY OF COMPANIES





INTRODUCTION, BACKGROUND & CHALLENGES

In 2018, Relevant Industrial embarked on a transformative journey with an international oil company operating a significant FPSO (Floating Production, Storage, and Offloading) platform off the coast of Nigeria. The FPSO, a cornerstone in the region's oil production, faced crippling challenges related to its air compressor system.

BACKGROUND

1

Located Off
Nigerian
Coast

2

Produces 200K
Barrels of Oil
Per Day

3

Faced Air
Compressor
Meltdowns

CHALLENGES

1

Faced \$300K in
Monthly Costs

2

Recurring
Failures of
Air Ends

The background image shows a complex industrial structure, likely an offshore oil platform. It features a grey metal deck with various pipes, valves, and scaffolding. A worker in a white hard hat and safety vest is visible on the deck. The structure is supported by large, cylindrical legs. The overall scene is industrial and technical.

BACKGROUND

The FPSO, located off Lagos in Nigeria, was a crucial asset for our client, producing 200,000 barrels of oil daily. Despite its significance, the platform encountered a major setback. The air compressor system, commissioned in 2009, had not undergone any significant servicing since its inception. This neglect led to a cascade of issues, including thermal events resulting in catastrophic meltdowns of air compressors.

CHALLENGES

The repercussions were severe. The platform faced monthly costs of \$300,000 on rental air compressors, strategically placed on the deck as contingency measures. The recurring failure of air ends, averaging one to two incidents annually, posed a dual financial threat. Each replacement incurred a cost of \$40,000, and the associated downtime further compounded the financial toll.



EVALUATION, SOLUTIONS & TRAINING

1

On-Site Evaluation

2

Tailored Solution

3

Training Seminar

01 ON-SITE EVALUATION

Relevant sent one of its seasoned professionals with extensive experience to the FPSO to conduct a thorough on-site evaluation. The situation revealed a more dire picture than anticipated. The thermal events weren't merely malfunctions but catastrophic meltdowns, turning air compressors into potential flamethrowers.

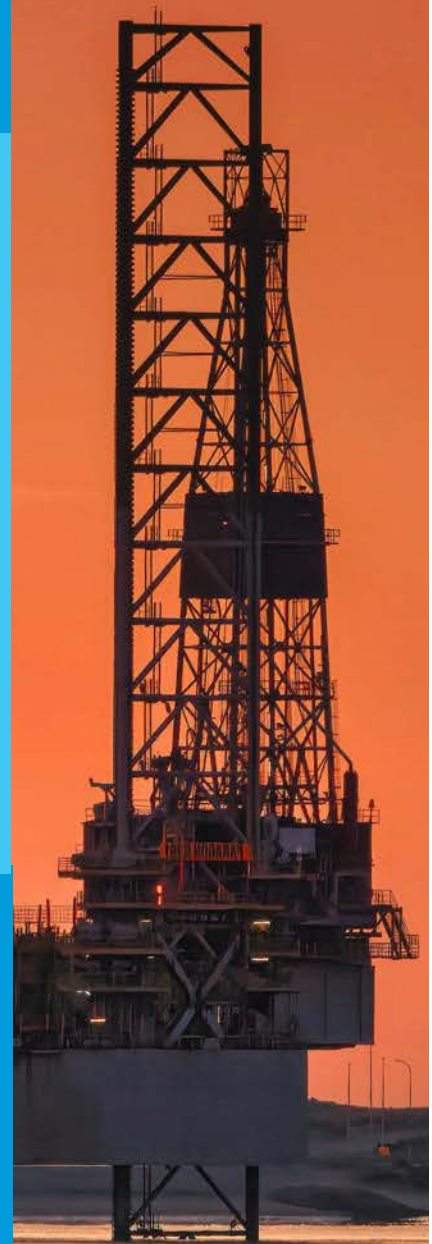
02 TAILORED SOLUTIONS

The challenges were multifaceted. The burnt coolers, tanks, and entire skids demanded immediate attention and replacement. However, the core issue lay in the recurring failure of air ends. The team identified a pressure drop anomaly, an astonishing two bars or 29 psi, across the oil filter. While the client deemed it standard, Relevant recognized the need for a more efficient solution.

The pivotal moment arrived when Relevant decided to transition from a single oil filter to a dual oil filter system. This modification drastically reduced the pressure differential to a nominal 0.7 bar, aligning it with the standard for a machine of that size. The implications were profound. Since the implementation of these changes in 2018, the FPSO has not encountered a single air end failure.

03 TRAINING SEMINAR

Recognizing the importance of empowering the client for self-sufficiency, Relevant set up a comprehensive maintenance schedule and trained the facility personnel on how to better spot potential issues. This initiative was not just about solving the immediate problems, but about ensuring the client's capability to identify and address complications independently.



A large offshore oil rig is shown from a low angle, extending from the foreground into the distance. The rig is illuminated by warm, golden light from a setting or rising sun, creating a dramatic sky with scattered clouds. The ocean is visible on both sides of the rig's walkway. The rig has multiple levels with various structures, pipes, and red lifeboats.

RESULTS

1

Enduring
Impact

2

Financial
Implications

3

Empowering
Clients

The implementation of Relevant Industrial's solution yielded significant results:

01 ENDURING IMPACT

The holistic approach undertaken by Relevant proved transformative. Beyond merely fixing immediate issues, the optimization efforts profoundly impacted the client's operations. The skid replacements and system modifications eliminated recurring problems and significantly enhanced the air compressor system's efficiency and reliability.

02 FINANCIAL IMPLICATIONS

The financial gains were substantial. The elimination of recurring air end failures, coupled with the reduction in pressure differentials, prevented oil carryover into the dryer and nitrogen system. The ripple effect was a substantial cost reduction, not only in terms of equipment replacement and maintenance but also in curtailing the need for expensive rental compressors. The cumulative savings amounted to millions over the years.

03 EMPOWERING CLIENTS

More than a service provider, Relevant emerged as a partner invested in the long-term success of its client. The training seminar was a testament to this commitment. By imparting knowledge and expertise, Relevant ensured that the client's team was equipped to handle routine checks and address minor issues without relying on external support, signifying a paradigm shift in the client's operational autonomy.



CONCLUSION

The FPSO in Nigeria, stands today as a testament to the transformative impact of a comprehensive and tailored engineering solution. Relevant's commitment to excellence, innovation, and client empowerment salvaged a critical asset and positioned the client for sustained success in its offshore operations.



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