

# ENGINEERED SOLUTIONS

## CASE STUDY

Enhancing Safety and Reliability  
in Offshore Gas Compressor Systems



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# INTRODUCTION, CHALLENGES & OBJECTIVE

An offshore platform in the Gulf of Mexico faced a critical issue with their gas compression system. Routine maintenance revealed potential dangers, prompting a comprehensive analysis by one of our expert technicians.

## CHALLENGES

**1**

Compressor, Dryer, and Nitrogen Generator Showing Signs of Inefficiency

**2**

Threat for Explosive Outcome was Present

## OBJECTIVE

**1**

Client Needed to Avoid Safety Issues, Downtime, and Substantial Repair Costs

# CHALLENGES

The existing air compressor, dryer, and nitrogen generator (crucial for ballast air and seal gas) were showing signs of inefficiency. High dew points and elevated oxygen levels in the nitrogen supply posed serious threats as potential for an explosive outcome was present.

# OBJECTIVE

The client, unaware of the possible hazards, needed a solution to avoid safety issues, unexpected downtime, and substantial repair costs.



# SOLUTIONS & RESULTS

## SOLUTIONS

1

New Nitrogen  
Membranes  
Ordered

2

New Analyzer  
Installed

## RESULTS

1

Eliminated  
Excessive Strain  
on Compressor

2

Client Avoided  
Costly Repairs  
and Downtime

# SOLUTIONS

Our team initiated a thorough examination. Identifying high dew points in the dryer and excessive oxygen in the nitrogen supply, the team proposed a retrofit. New nitrogen membranes were ordered, and a new analyzer was installed to replace the old, obsolete one. This ensured accurate readings and addressed potential safety risks.

# RESULTS

The retrofit brought immediate benefits. By fixing the nitrogen system, we were able to eliminate excessive strain on the air compressor, preventing the risk of damage. The offshore platform avoided major gas compressor failures that could cost hundreds of thousands of dollars in repairs and millions in lost days of production downtime.

A large offshore oil platform, the West Bollsta Stavanger, is illuminated at night. The platform is a complex of steel structures with various cranes and equipment. The name "WEST BOLLSTA STAVANGER" is visible on the platform. The background shows a dark sea and a twilight sky. The platform is supported by several legs in the water.

# FINANCIAL IMPACT & CONCLUSION

## FINANCIAL IMPACT

**1**

Saved Potentially  
Millions in  
Lost Production

**2**

Safety  
Integrity Level  
Rated SIL 4

## CONCLUSION

**1**

Ensured  
Platform Safety  
and Reliability

**2**

Personnel and  
Production  
Safeguarded

# FINANCIAL IMPACT

The potential cost savings were substantial. In the worst-case scenario, a gas compressor failure could have led to a multi-million-dollar loss in production. The safety integrity level (SIL) for this application was evaluated at SIL 4, emphasizing the criticality of the solution provided.

# CONCLUSION

Our proactive approach not only prevented significant financial losses but also ensured the safety and reliability of the offshore platform. By leveraging our expertise, the platform now operates with optimized gas compressor systems, safeguarding both personnel and production. This case illustrates the value of a comprehensive system analysis in maintaining the integrity of critical processes in offshore environments.



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