CASE STUDY

Drilling Automation Control Systems

Client	Industry	Solution
Offshore Drilling Contractor in Gulf of Mexico	Offshore Oil Gas Drilling	Drilling Automation Advanced Control Platform

Challenge

Offshore drilling contractor managing deepwater drilling operations faced complex drilling operations requiring constant manual adjustments, difficulty maintaining optimal drilling parameters in challenging deepwater conditions, limited automation capabilities for routine drilling functions, challenges coordinating drilling activities across multiple drilling systems, and high personnel requirements for 24/7 drilling operations in offshore environment.

AI Consulting Approach

• Drilling Automation Assessment: Drilling technology consultants analyzed existing drilling control systems, operational procedures, and automation opportunities to identify enhancement possibilities using drilling automation and advanced control technologies.

• Advanced Control Platform: System integrating drilling automation, control algorithms, and operational coordination to optimize drilling performance and reduce manual intervention requirements.

AI Solution

• Drilling Parameter Automation: Platform automatically controlling drilling parameters including weight on bit, rotary speed, and mud pump rates based on formation conditions and drilling objectives

• Wellbore Stability Management: System monitoring downhole conditions and automatically adjusting drilling parameters to maintain wellbore stability and prevent drilling problems

• Drilling System Coordination: Platform coordinating multiple drilling systems including top drive, drawworks, and mud pumps with synchronized operation and safety interlocks

• Operations Monitoring Dashboard: System providing real-time drilling operations overview with automated alerts for parameter deviations and system malfunctions

Implementation (28 weeks total)

• Automation Assessment (6 weeks)

• Control System Development (12 weeks)

• Integration Testing (8 weeks)

• Commissioning Training (2 weeks)

Key Results

Drilling Automation:
• 65% reduction in manual drilling parameter adjustments, improved drilling consistency and performance, enhanced wellbore quality and stability

Operational Efficiency:
• 50% improvement in drilling system coordination, reduced personnel requirements for routine operations, enhanced offshore drilling safety

Business Impact:
• Substantial drilling cost reduction, improved drilling performance and safety, 185% consulting ROI, enhanced competitive positioning in deepwater drilling market

Technologies:
• Drilling automation systems
• advanced control platforms
• drilling parameter optimization
• system coordination tools
• operations monitoring dashboards