A digital transformation journey for a mature field using production technologies and innovation principles

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The world is changing

1920

1970

2010

Now

$1M* Cost Saving
in Nigeria via IoT sensors & connectivity

6%* Production Increase
in US via Ambyint’s AI-powered artificial lift solution
Adapting to Oil and Gas Industry

Agora
- Startup created and incubated by Schlumberger
- Think big, prototype small, and scale fast
- IIoT platform—edge computing with ML/AI

Sensia
- JV between Schlumberger and Rockwell
- Process automation + Petrotechnical Expertise
- 1,000+ experts serving customers globally

Sensia reduces risk, drives efficiency, and optimizes performance, so our clients and their stakeholders can achieve the full potential of their oil and gas assets.
Problem Definition

**Challenge**
Mixed equipment and Opex concerns

- **Assets**
  400+ (ESP, Meters, SRP etc…)

- **Field Visit**
  5,000+ Field Visit/Quarter

- **Driven**
  ~72,000 km Driven/Quarter

**Vendors**
Lack of integration

**Operator**
Declining production and increasing costs

Manage production decline (29%)
Proposed Solution

Digital Production Approach

1. Smart Physical Assets
- 259 x Producers
- 3 x Injectors
- 1 x Flare
- 1 x Vx Spectra

2. Automation & Control
- Automation
- Edge Computing

3. Production Workflow Orchestrator

Excellence in Execution
Reduce downtime and improve people efficiency

- Contextualized data aggregation, transmission, and visualization for multiple vendors
- Early Events Detection (Change manual process)
- Provide edge AI at the well site with smart alarms
- Decrease field visits for operations support
- Reduce kilometers and CO₂ emissions
Moving to the next Level - Annular Gas Handling

Problem

- Manual bleed off annulus
- ~100 trips/month/well to optimize production
- High PIP fluctuation – ESP performance
- Non-optimized wells

Solution

- Production Optimization
- ESP Power Consumption Reduction
- Reduce driving to location (connected, no valve manipulation)

Previous Operation

- Manual bleed off annulus
- ~100 trips/month/well to optimize production
- High PIP fluctuation – ESP performance
- Non-optimized wells

Current Operation

- Production Optimization
- ESP Power Consumption Reduction
- Reduce driving to location (connected, no valve manipulation)
Production Workflows Orchestrator

✓ Concept Selection
✓ Design
✓ Define Plan
✓ Deploy
✓ Well Construction

✓ Surveillance
✓ Analysis
✓ Diagnostics
✓ Optimization
✓ Decisions

Well (Performance) ➔ Network (Debottlenecking, Integrity) ➔ Facility (Optimization) ➔ Reservoir Management

Excellence in Execution
Production Workflows Orchestrator

1. Operational Data
2. Scada System Data
3. Software Integration
4. Machine Learning Algorithms
5. Model Analysis Results
Created Value

Production Workflow Orchestrator

Control & Automation

Smart Physical Assets

Silos Breaking (Zones Distribution)  Asset Built (“Build Your Own”)

- Well Production Optimization: 14%
- ESP Power Consumption Reduction: 11%
- Driving to Location Reduction: 95%
- Annular Valve Manipulation Reduction: 96%

- Early Events Detection: >100%
- Well Uptime: 42%
- People Efficiency: 17%
- Field Visits: 264 (20%)
- T-CO2 Emissions/month: 2.50

Excellence in Execution
Conclusions

1. Remote centers expansion
2. Reduce operational costs
3. ML and AI unlock production
4. Personnel Exposure
5. Environmental Commitment
6. Digital Production Approach
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