



# **OIL & GAS**

Measure. Monitor. Control





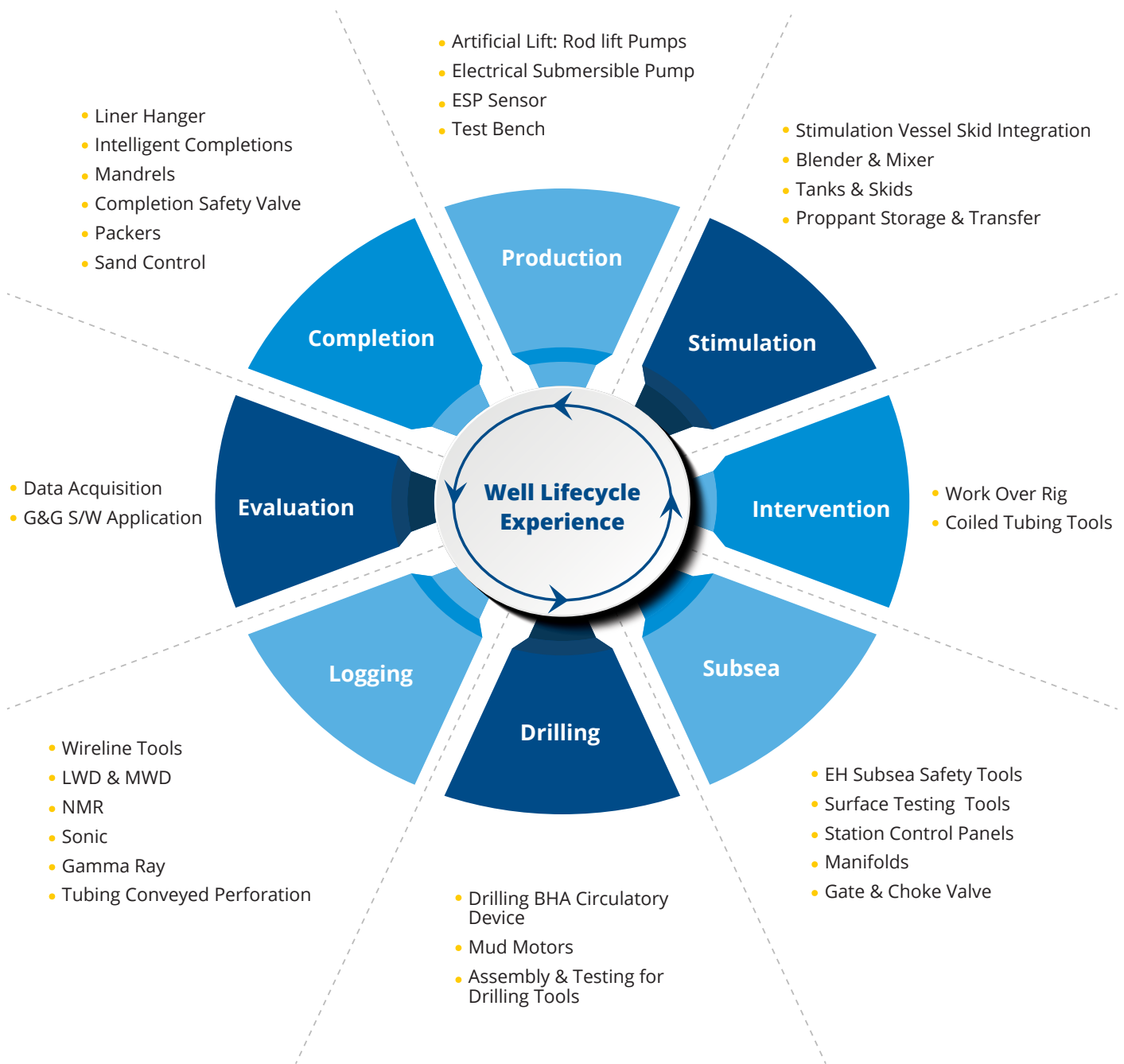


Oil & Gas companies worldwide are tasked with the challenge of addressing a host of concerns, ranging from fluctuating prices and environmental responsibility to cost containment and regulatory pressures. Striking a balance between all these areas while driving optimum growth and production is a critical task that is only compounded by the mammoth scale of operations. To improve efficiency and profitability, therefore, it is essential to deliberately incorporate measures throughout the value chain that are driven towards realizing these goals.

L&T Technology Services (LTTS) has inherited an 80+ year legacy of engineering excellence in the Oil & Gas industry. Supported by a rich understanding of IT-OT and complex oilfield machinery across all stages of the well lifecycle, LTTS is in a unique position to implement disruptive solutions for enhanced productivity, operational efficiency, reliability, spill control, and safety.

# OILFIELD EQUIPMENT

## OUR KEY SEGMENTS



# WHAT WE OFFER

We have multi-disciplinary specialization in engineering the oilfield equipment.



## PRODUCT DESIGN

- Automation
- Condition Monitoring
- Structural Engineering
- Simulation



## CONNECTIVITY

- Telemetry solutions
- Cloud Connectivity
- Fiber Optics



## SOFTWARE

- G&G Mapping
- Well & Drilling Data Management
- O&G Applications Plugin



## HARDWARE AND FIRMWARE

- Architecture
- PCB Design & Analysis
- Prototype & Production
- BIOS



## PRODUCT SUSTENANCE

- Benchmarking
- Change Orders
- Reverse Engineering



## INSTRUMENTATION AND CONTROL

- Motor Controls
- Signal Conditioning
- Modularization



## TESTING

- Virtual Validation (FEA/CFD)
- Test Equipment Design



## SENSORS AND TRANSDUCERS

- Induction Coil Arrays
- Accelerometers
- MRI

# SUCCESS STORIES



## Design and development of Acoustic Downhole Transmitter

- Complete functional and performance verification at 185°C temperature
- 400+ hours of continuous testing with periodic power cycling



## Design of Pressure Test Cell for Equipment Testing

- Designed Pressure Test Cell that could withstand over 80000 Lbs. impact load
- Design practicality that ensured that the bottom floor was designed to collect spill over at single drain point
- 3D modelling and manufacturing drawing was made for in suit construction



## Redesign of Drilling Communication Skid

- Drilling Footprint reduction achieved by following modifications:
  - Reorientation of piping to reduce rig floor space consumption
  - Inlet and Outlet repositioning made to be inline
  - Achieved low center of gravity for stability after modification
  - Achieved 40% cost reduction and 50% of drilling footprint reduction

# OWNERS AND OPERATORS

## OUR KEY SEGMENTS



### ENGINEERING AND CONSTRUCTION

- 3D Modeling
- Cost Engineering
- Document Management
- Project Planning, Monitoring and Control



### REGULATORY COMPLIANCE

- Process, Electrical and Safety Studies
- Structural Stability
- LEED Certification
- Carbon Footprint Management



### OPERATIONAL EXCELLENCE

- Lean Management and Six Sigma
- Supply Chain Management
- Warehouse Optimization
- Low Cost Factory Design



### GLOBAL ROLL-OUTS

- 3D Design Platform Migration
- Modularization & Skid Design
- Process Simulation Studies
- Packaging Design (Machine/Material)



### PLANT SUSTENANCE

- Plant Health & Remediation Programs
- Decommissioning & Plant Relocation Support
- Product Lifecycle Management
- Laser Scanning

## SUCCESS STORIES



### Field data verification

- Identification and removal of obsolete equipment – up to 4% of total assets
- Generation of as-built drawings incorporating various change notes & mark-ups
- Standardization of symbols



### Smart Plant implementation, integration, and customization

- Prepared Detail Function Design Specification (DFDS) as per the standards for handover
- Converted hardcopy documents into SmartPlant tools
- Integrated SPF, SPI, SP P&ID, SPEL and SP3D & SPF deployment for handover from EPC to O/O



### CMMS Implementation for Petroleum Plant

- Timely compilation of all asset information, RCM, and CMMS data, which involved coordination with multiple agencies
- Enabled the petroleum major to complete documentation and data gathering well ahead of plant commissioning

# DIGITALIZATION

## OUR KEY SEGMENTS



### DIGITAL MACHINES

- Cloud Connectivity & Automation
- Condition Based Monitoring
- Autonomous Robots
- Sensor Engineering



### DIGITAL OIL WELL

- Reservoir Characterization
- AI based Data Digitalization
- Drilling Automation
- EHS Management



### DIGITAL OPERATIONS

- Smart Asset Tracking
- Real Time Remote Asset Management
- Smart Worker Safety
- AR-driven Service Support

## SUCCESS STORIES



### AI based document comparison

- Machine learning (ML) and artificial intelligence (AI) approach to extract generic and domain specific rules for comparison
- Swifter document creation and elimination of tedious manual processes
- Estimated 15% cost savings through automation



### Automated capture and digitalization of Geo Metadata

- Metadata enriched and an easily searchable soft copy repository created
- Logs, Maps, and Seismic sections made available for interpretation as workstation ready documents
- Smart tagged and OCR searchable PDF reports created



### Well Data Management

- Analysis of well reports and preparation of knowledge database
- Reduced decision time of Well Engineers & Geophysicists
- Improved the quality of drilling/work over activities



 Headquarters

 Offices

 Delivery Centre

India | USA | Canada | Germany | Belgium | Denmark | Finland | France | Italy | Israel  
Netherlands | Norway | Poland | Sweden | United Kingdom | UAE  
Japan | South Korea | Singapore | Malaysia | South Africa | Australia

 *L&T Technology Services*

 **ENGINEERING THE CHANGE** 