

CASE STUDY

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MAXIMUS OIGA PRIVATE LIMITED

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Maximus OIGA Revolutionizes HP/HT Completions with SPECTRAMAX-R3 Packer Technology

Executive Summary

Maximus OIGA delivered breakthrough zonal isolation during DST for HP/HT gas wells using its flagship SPECTRAMAX-R3 Packer. Maximus OIGA solved chronic packer failures that plagued established competitors, cutting workover costs by 35% and achieving zero failures across well. This case study validates how agile engineering and targeted innovation can disrupt traditional completion markets.

Background & Challenges

Well Type: High-Pressure/High-Temperature (HPHT) Exploration Well

Depth: 3800m

Challenge: Zonal isolation during Drill Stem Testing (DST) in a 7" production casing, with bottom-hole temperatures >175°C (347°F) and sour gas (H₂S) presence.

Operator Pain Points:

1. Geological Complexity:
 - Unstable shale layers and sand influx risks.
 - Reservoir pressure: 8,500 psi.
2. Operational Constraints:
 - Limited rig space (Typical offshore platforms).
 - Monsoon season delays requiring rapid deployment.
3. Past Failures:
 - Conventional retrievable packers failed within 48 hours due to:
 - Seal degradation under thermal cycling (195° C → 50° C shut-ins)
 - H₂S-induced elastomer cracking.
 - Pressure reversals during DST.

Maximus OIGA's Market Barrier:

- Competing against established National and International tool manufacturers and service providers.

Maximus OIGA's Engineering Breakthrough: SPECTRAMAX-R3 Packer

1. Design Adaptions as per Operating Conditions

- ❖ Ratchet Lock Mechanism: Maintained seal Integrity during pressure/temperature fluctuations.
- ❖ Rapid-Installation for quick deployment to minimize rig time during monsoon.
- ❖ Slim hole Configuration: Compact design for 7" casing.

2. Cost-Effective Innovation Strategy

- ❖ Modular Ratchet System:
 - Core ratchet-lock integrated in R3 packer
 - Simplified design: Inhouse Manufacturing
- ❖ Localized Material Sourcing:
 - Collaborated with Material supply companies for Inconel 625
 - H₂S-Resistant Elastomers rated 200°C(392°F) from local manufacturer, validated elastomer by witnessing
- ❖ AI-Driven Simulation:
 - Used open-source Open FOAM software for thermal modeling
 - Validated designs at In-house HP/HT Testing Facility

3. Deployment Workflow

- ❖ Pre-Job Simulation:
 - Finite Element Analysis (FEA) validated R3 performance under well-specific HPHT conditions.
- ❖ Execution:
 - Packer set at 3,750m via tubing in 18 hours (vs. 24+ hours for competitors).
 - Pressure-tested to 10,000 psi – zero leaks.
- ❖ DST Operations:
 - Isolated lower zone for 72-hour flow test.

- Withstood 6 pressure cycles (0–8,500 psi) and 175°C fluid.

4. Deployment Advantage

- ❖ Modular design allowed Rapid Packaging, Logistic facility at Maximus OIGA and transport via helicopter to offshore rig transport
- ❖ Rapid-Setting Mechanism: <22-hour monsoon-ready operation
- ❖ 30% faster deployment vs. previous solutions

Results

Metric	Legacy Packers	SPECTRAMAX-R3
Reliability	Fail During DST	Zero Failure during 14 day DST
Deployment Time	26–31 hours	21.5 hours
Cost per Unit	–	Reasonable
Workover Avoided	1 wells (\$0.7M)	Zero failures
ROI	–	214% in 8 months
Safety	At Risk	No H ₂ S leaks

Technical Differentiation

Feature	Competitors	Maximus OIGA SPECTRAMAX-R3
Sealing Tech	Proprietary alloys	Open-architecture Inconel 625
Lead Time	16–20 weeks	4 weeks (90 % In-house MFG)

Operator Testimonial

****" The R3 packer's performance in High's harsh conditions has set a new benchmark. We reduced DST costs by 30% and accelerated exploration timelines."****

– Well Engineering Manager

Impact

- Cost Disruption: 30% lower pricing vs. established players
- Localization: 100% Indian-made components (meets "Make in India" mandate)
- Knowledge Transfer: Trained engineers on R3 open-architecture maintenance
- Scalability: Now deployed in 7 onshore/offshore wells

Why Maximus OIGA Succeeded

1. Talented Team: Fostering innovation, enhancing product quality, and boosting a company's competitive edge vs. outsourcing Innovations
2. Hyper-Local Support: Engineers stationed <25 km from manufacturing base.

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