

Redefining Offshore Connectivity in Malaysia with Resilient Microwave Technology

■ Background

Deploying long-distance private communication networks across dispersed offshore oilfields is highly challenging under extreme marine conditions. To address this, PROSE developed a customized 1.8-meter high wind-resistant microwave antenna, successfully deployed in Malaysia's offshore oilfields. With scenario-specific performance parameters and robust adaptability, the antenna created a stable and efficient "offshore communication bridge," opening a new chapter in oilfield communication security.

■ Challenges

As the nerve center of offshore production, the private communication network of Malaysia's coastal oilfields supports critical functions such as real-time data transfer, remote monitoring of key equipment, and field personnel coordination. However, the oilfields are geographically dispersed and subject to harsh marine conditions, which pose severe challenges to traditional communication systems:

- **Dispersed Oilfield Layout:** Long-distance coverage is needed between scattered wells.
- **Harsh Marine Conditions:** Strong winds caused antenna misalignment; high salt corrosion shortened equipment lifespan.
- **Performance Limitations of Traditional Systems:** Insufficient gain hindered long-range transmission; frequent outages disrupted real-time monitoring and command.

■ Solutions

PROSE introduced a custom-engineered 1.8m microwave antenna with precision features:

- **Frequency & Polarization:** Operates in 4.9–5.8 GHz with $\pm 45^\circ$ dual polarization to minimize interference and ensure low-latency transmission.
- **Custom Connectors & High Gain:** RP-SMA connectors ensured durability and compatibility; optimized feed gain extended coverage over 20% beyond conventional antennas.
- **Wind & Salt Resistance:** Structural reinforcement with triangular supports withstands Category 12 winds; 316L stainless steel with PVDF coating passed 1,000-hour salt-spray testing, extending service life beyond three years.
- **Efficient Delivery:** Full cycle from design to deployment completed in just 10 weeks to meet the strict lead time, covering optimization, production, international shipping, and onsite installation guidance.



■ Benefits

After the implementation of the customized wind-resistant microwave antenna, the network performance of the offshore oilfields has been significantly increased:

Reliable Connectivity: Real-time transmission of data (e.g., pressure, flow) to central control with stable voice communications.

Operational Efficiency: Remote monitoring enabled proactive maintenance; emergency response time shortened to under three minutes.

Cost Reduction: Enhanced durability reduced maintenance costs by over 60%.

Environmental Resilience: Antenna maintained full performance in extreme winds and salt-rich environments, ensuring uninterrupted communication.

■ Conclusion

The successful deployment of PROSE's high wind-resistant 1.8m microwave antenna has resolved the long-standing challenges of offshore oilfield communications—providing reliable, efficient, and durable private networks in one of the most demanding environments. Moving forward, PROSE will continue advancing customized microwave antenna technologies to support global critical infrastructure, delivering solid communication assurance for complex scenarios worldwide.

