Expression of Interest (EOI) Document

Subject:

EOI for Engine–Alternator Coupling Modification and Alternator Control Upgrade for Dual Operation as Synchronous Condensers to Improve Operational flexibility, Efficiency, Load factor and Power factor of Engine–Alternator Sets in conventional drilling rigs of ONGC Assam Asset

1. Introduction and Background

ONGC, Assam Asset operates multiple Drilling Rigs powered by Caterpillar 3512B 1MW diesel engines coupled with 1430KVA 600V, 1000 rpm BHEL Alternators. ONGC intends to explore the feasibility of converting **Two** existing engine–alternator sets for dual operation as synchronous condensers (Syn-Con) to provide greater Operational flexibility. In Syn-Con mode, the Engine will be disengaged and shut down after synchronization, however the disengaged alternator would keep running as a synchronous condenser. This will improve Efficiency, Power Factor and Load factor of the other sets operating in alternator mode.

This EOI is intended to identify competent technology providers, OEMs, engineering firms, and research institutions with proven experience in engine–alternator coupling, clutch design, and electrical control system integration for synchronous condenser applications.

2. Objective of the EOI

1. To identify technically qualified vendors capable of providing an air-cooled clutch mechanism to couple a Caterpillar 3512B engine with an alternator.
2. To obtain conceptual solutions and technical approaches for control and protection modifications enabling alternator operation as a synchronous condenser.
3. To assess vendor capability, technology maturity, indicative costs, and implementation timeframes prior to floating a formal tender.

3. Scope of the EOI

The EOI aims to gather information, concept designs, and vendor insights on:

- Air-cooled clutch and coupling mechanism suitable for Caterpillar 3512B.
- Mechanical interface and alignment solutions.
- Control and protection scheme enabling synchronous condenser operation.
- Vendor experience, capabilities, and past project references.
- Preliminary cost estimates and implementation schedules.

(Tentative Technical Specification is provided in **Appendix-I** and Tentative Scope of Work in **Appendix-II**.)

4. Eligibility Criteria (Indicative)

- Proven track record in engine-generator coupling, clutch design, or Alternator/Motor/Synchronous-condenser systems.

- OEM authorization or partnership with recognized equipment manufacturers.
- In-house design and testing capability for mechanical and electrical systems.
- Valid ISO 9001 or equivalent quality certification.

5. Information to be Submitted

Interested vendors shall submit the following details:
1. Company Profile – Name, registered address, year of establishment, and ownership.
2. Technical Credentials – Details of past relevant projects and technical capabilities.
3. Concept Paper / Technical Proposal – Outline of the proposed clutch and control system.
4. Commercial Inputs – Approximate cost range, delivery time, and support services.
5. Compliance Statement – Confirmation on ability to meet technical requirements (Appendix-I).
6. Value-added Suggestions – Innovations, digital control features, or operational improvements.

6. Evaluation of EOI Responses

EOI responses will be evaluated by ONGC. The evaluation will emphasize:
- Technical soundness and feasibility of the proposed solution.
- Vendor capability, experience, and prior performance.
- Inputs helpful in defining the final tender specifications.

EOI Reference Number: 2025/EOI/2672196
Last Date for Submission of EOI: 13.12.2025
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Address: Drilling Services, ONGC Assam Asset, Sivasagar Assam
Date/Venue for EOI Meet: 16.12.2025/Virtual mode

Note: This EOI is exploratory and does not constitute any commitment by ONGC for commercial negotiation or award. ONGC reserves the right to reject any or all responses without assigning any reason.

7. Validity of EOI

Validity of this EOI and its outcomes shall remain effective for three (3) years from the date of publication.

8. Confidentiality

All information shared by ONGC and submitted by participants will be treated as confidential and used solely for evaluation and planning purposes.

9. Disclaimer

This EOI is issued for the purpose of market exploration and does not constitute an offer or invitation to bid. ONGC shall not be responsible for any costs incurred in the preparation or submission of the response.

Appendices
- Appendix -I: Tentative Technical Specification
- Appendix -II: Tentative Scope of Work

Appendix – I

Tentative Technical Specification

Engine Model: Caterpillar 3512B, 1 MW, 1000 RPM, diesel-fired

Alternator Rating: 1430 KVA, 600 V, 3-phase, 50 Hz brushless alternator

Clutch Mechanism: Heavy-duty air-cooled clutch assembly capable of engaging/disengaging alternator; torque capacity ≥120% of engine rated torque; designed for continuous tropical operation. (3512B Engine Rated Torque: 10350 Nm @ 950 rpm)

Coupling Arrangement: Flexible coupling with torsional dampers; alignment within 0.05 mm; compatible with Caterpillar flywheel housing SAE #0.

Cooling: Air-cooled, self-ventilated or fan-assisted; designed for ambient 45°C operation.

Safety & Protection: Clutch temperature monitoring, mechanical guards, and interlocks with engine/alternator control system.

Control System Interface:

a)Integration with Caterpillar EMCP 4.4 or equivalent; provision for manual/auto clutch control with alternator/Syn-con mode of operation.

b)Integration with BHEL Alternator control OR equivalent; provision for synchronous condenser mode operation.

Documentation: GA drawings, coupling layout, interface details, torque curves, control logic, electrical drawings and maintenance manuals.

Appendix – II

Tentative Scope of Work

1. Engineering & Design: Evaluate existing Caterpillar 3512B engine–alternator setup; design mechanical and electrical interface drawings.
2. Supply: Provide clutch assembly, coupling components, sensors, and accessories as per approved design.
3. Installation & Integration: Perform mechanical coupling, alignment, clutch installation, and integrate with alternator control systems for synchronous condenser operation.
4. Testing & Commissioning: Conduct functional tests of clutch operation and alternator in synchronous condenser mode; submit performance reports.
5. Reduction in Engine Run Hours: Provide calculation of estimated reduction in cumulative Engine run Hours due to syn-con mode of operation.
6. Training & Documentation: Provide onsite training for ONGC engineers; submit as-built drawings, O&M manuals, and test results.
7. Warranty & Support: Provide minimum 24-month warranty and ensure 5-year post-commissioning service support.