CASE STUDY

CELBA 2 COMBINED CYCLE POWER PLANT BARCARENA — BRAZIL

BACKGROUND

CELBA 2 is a 629 MW combined-cycle, LNG-to-power plant in Barcarena, Pará, in northern Brazil. It is also known as UTE Novo Tempo or the Novo Tempo Barcarena Power Station. The plant is connected to a Floating Storage and Regasification Unit (FSRU) and marine terminal infrastructure. This setup gives CELBA 2 a direct LNG supply chain for large-scale power generation.

CELBA 2's combined-cycle configuration includes one Mitsubishi M501JAC2 J-Class gas turbine, a Mitsubishi TC2F steam turbine, a Nooter/Eriksen heat recovery steam generator (HRSG), a common generator train, and the associated balance-of-plant systems. The plant reaches combined-cycle efficiency of up to 64% under reference conditions and supplies efficient, dispatchable generation capacity to Brazil's northern power system.

Prismecs was engaged as the Owner's Engineer during the final commissioning, start-up, stabilization, and EPC-to-O&M transition. This gave independent multidisciplinary oversight at the stage when safe integration of the gas turbine, steam turbine, HRSG, electrical systems, controls, water systems, and auxiliary plant was essential to achieving commercial operation.

KEY OBJECTIVES

CELBA 2 CCPP Project was designed to:

- Provide independent technical oversight of commissioning, repairs, inspections, testing, start-up, and stabilization across the complete plant
- Support the safe achievement of COD by supporting readiness decisions, identifying conditions that could cause equipment damage or personnel risk, and monitoring the operating sequence through synchronization and combined-cycle base load
- Close out commissioning and turnover by tracking punch-list items, warranty matters, temporary configurations, open control-loop work, inspection records, test evidence, and commissioning dossiers
- Support O&M readiness through experienced supervision, review of procedures and operating restrictions, and focused mentoring during the early operating period
- Create a traceable technical baseline for long-term reliability, covering future maintenance, troubleshooting, warranty administration, root-cause analysis, and performance assessment



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FROM CHALLENGE TO IMPACT

How Prismecs Delivered

	Challenge	Our Solution	Impact
Complex Integrated Commissioning	GT, ST, HRSG, generator, DCS, water, cooling, electrical, and BOP had to operate as one coordinated unit	Daily field walkdowns and control-room monitoring across all major plant systems	Unit reached combined-cycle base load the same day as initial start-up, producing 552.7 MW gross
Major Equipment Rectification	Boiler pressure-part weld repairs, condenser work, valve issues, and internal inspections	Witnessed inspections and repairs, reviewed root-cause information and OEM recommendations, and issued technical notes	Traceable record of commissioning and turnover issues
Boiler Feedwater Pump Availability	One Torishima feedwater pump unavailable after a mechanical failure, leaving the plant on a single pump	Evaluated equipment condition and reviewed root-cause information and OEM recommendations	Rapid identification of operational risks
Temporary Utility Systems	Temporary instrument air and water services in use during the transition	Maintained visibility of temporary installations, assigning ownership and urgency for follow-up	Strengthened the Owner's visibility and decision-making
Controls and Operational Readiness	Control loops and valves eeding verification, calibration, or tuning	Reviewed readiness conditions and monitored the start-up and load sequence	Plant operated steadily while dispatch increased toward 610 MW
Multi-Party Technical Interfaces	Mitsubishi, Toyo Setal, Nooter/Eriksen, Torishima, OM Power, and other contractors held interdependent scopes	Issued daily supervisory reports, technical evidence notes, and equipment-condition records	Independent technical supervision through the project's most critical transition
Grid and Commercial Milestones	Start-up, synchronization, dispatch, testing, and COD coordinated with client and the Brazilian system operator	Supported during synchronization, steam-turbine admission, combined-cycle operation, and load stabilization	COD declared in August; commercial operation achieved in September 2026

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PRISMECS' OWNER'S ENGINEER SOLUTION

Prismecs deployed a specialized Owner's Engineer team covering commissioning and operations management, mechanical systems, electrical systems, and instrumentation and controls. The team worked alongside client and project stakeholders while remaining independent from the parties responsible for construction, commissioning execution, and plant operation.

Multidisciplinary Field Coverage	Daily field walkdowns and control-room monitoring across the gas turbine, steam turbine, HRSG, generator, condenser and cooling-water systems, water treatment, compressed air, electrical systems, DCS, and balance of plant.
Start-Up and Stabilization Support	Reviewed readiness conditions, monitored the start-up and load sequence, recorded operating data and abnormal events, and supported during synchronization, steam-turbine admission, combined-cycle operation, and load stabilization.
Technical Investigation and Assurance	Witnessed inspections and repair activities, reviewed root-cause information and OEM recommendations, evaluated equipment condition, and issued technical notes where additional action or formal acceptance criteria were required.

Risk, Punch-List, and Warranty Control

Maintained visibility of:

- Open items affecting operation
- Temporary installations and incomplete systems
- Documentation gaps and warranty risks

Management Reporting

Issued concise daily supervisory reports, technical evidence notes, equipment-condition records, and recommendations so project and executive teams could make decisions using current field information.

Operational Transition Support

Assessed O&M readiness, highlighted training and supervision needs, and supported the transfer from contractor-led commissioning to sustained operation by OM Power.



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MEASURING SUCCESS

629 MW

Combined-Cycle Plant into Commercial Operation

Supported client through the transition of CELBA 2 from construction and commissioning into full commercial operation.

552.7 MW

Base Load Reached the Same Day

Following the initial start-up, the unit reached combined-cycle base load the same day, producing 552.7 MW gross at the recorded operating point.

610 MW

Steady Operation

The plant operated steadily while dispatch increased toward 610 MW.

Independent Technical Supervision

Supportedvv through the project's most critical transition with independent technical supervision and rapid identification of operational risks.

Traceable Commissioning Record

Provided a traceable record of commissioning and turnover issues, strengthening the Owner's visibility and decision-making.

Proven Combined-Cycle Capability

Demonstrated Prismecs' ability to mobilize experienced specialists for complex combined-cycle projects and to support owners through commissioning recovery, start-up, COD, stabilization, and O&M handover.





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