

Where energies make tomorrow ●

Asset Lifecycle Excellence

Breaking boundaries with our clients
to achieve excellence in asset operations.

T.EN

**TECHNIP
ENERGIES**

Delivering operational excellence

Technip Energies is a leading engineering and technology company for the energy transition with a 60-year history executing large and complex projects. We offer an extensive portfolio of technologies, products, projects and services.



Your ideal partner to steward your Operations and Maintenance activities

Our proficiency is evident by our diverse project references. Through our Consulting & Products focused business line, T.EN X, we support our clients to achieve operational excellence across multiple markets.

WE WORK CLOSELY WITH CLIENTS TO ACHIEVE OPERATIONAL EXCELLENCE, LEVERAGING:

- Proprietary process technologies and equipment
- Cost-effective O&M strategies based on asset design and digital tools
- Long-lasting relationships with vendors
- Access to a global pool of resources
- Valued partnerships with notable general maintenance contractors

EXTENSIVE MARKET POSITIONS

-  Agritech
-  CO₂ Management
-  Ethylene
-  Fertilizers
-  Hydrogen and Ammonia
-  Life Sciences
-  LNG and Gas Monetization
-  Mining & Metals
-  Nuclear
-  Offshore
-  Petrochemicals
-  Refining
-  Sustainable Chemistry

STRIVING FOR EXCELLENCE



OPTIMIZING PRODUCTION



BOOSTING UPTIME



REDUCING OPEX



+60
years successfully delivering large and complex projects



+500
operating plants delivered globally, giving us valuable asset knowledge



+15,000
employees in 34 countries providing a global pool of resources



+20,000
Construction and operations support personnel via our Global Construction Hub

Operations and Maintenance capabilities

Technip Energies provides operations and maintenance (O&M) services for any type of energy related asset. We leverage advanced digital expertise to pursue smarter ways to design, build, monitor and optimize the performance of assets.

We are proficient in providing services to Asset owners in every stage of the operating lifecycle, from commissioning and start-up through to decommissioning. With Technip Energies, you have a trusted partner for the life of your asset.



ENGINEERING TECHNICAL SERVICES

- Operations & maintenance engineering
- Asset performance optimization
- Asset Integrity Engineering
- Environmental footprint & energy management



TRAINING & STAFFING SERVICES

- O&M organization design
- Mobilization planning and recruitment services
- Competency assessment
- Training design, planning and execution
- Training & competency assessment system
- National content program



SITE INTERVENTION SERVICES

- Asset Operations Support
- O&M services
- Shutdown & turnaround management
- Integrity and inspection services
- Decommissioning support



DIGITAL SERVICES

- Asset performance monitoring
- Asset remote inspection
- Operational digital twin and visual intelligence
- Robotics based O&M
- Smart maintenance



PROCUREMENT & SPARE PARTS SERVICES

- Spare parts management
- Procurement services including proprietary equipment
- Obsolescence management



LOGISTICS SERVICES

- Warehousing services design & provision
- Logistics services – provision and optimization
- Full yard deployment

Solutions tailored to your needs

We understand the operational needs of our clients differ. Our Asset Lifecycle Teams are ready to prescribe solutions specifically tailored to your goals. Our focus is to work hand-in-hand with our clients to create value through operational excellence.

WE OFFER THREE UNIQUE SOLUTIONS THAT ENSURE FLEXIBILITY TO COVER OUR CLIENTS REQUIREMENTS:

- Selective model
- Integrated model
- Design-to-maintain model

	SELECTIVE MODEL	INTEGRATED MODEL	DESIGN-TO-MAINTAIN MODEL
CLIENT LOOKING FOR...	A solution to a specific need	An O&M sub-contractor to support client self-managed asset operations	An operating partner from cradle to grave
CLIENT ASSET OPERATIONS	Client self-managed	Client self-managed supervision, outsourced execution	Outsourced
DESCRIPTION	Stand-alone, flexible and ad-hoc services	Multi-year integrated O&M services agreement	Multi-year duty holder agreement from design to operations

Case study: Coral SUL floating LNG

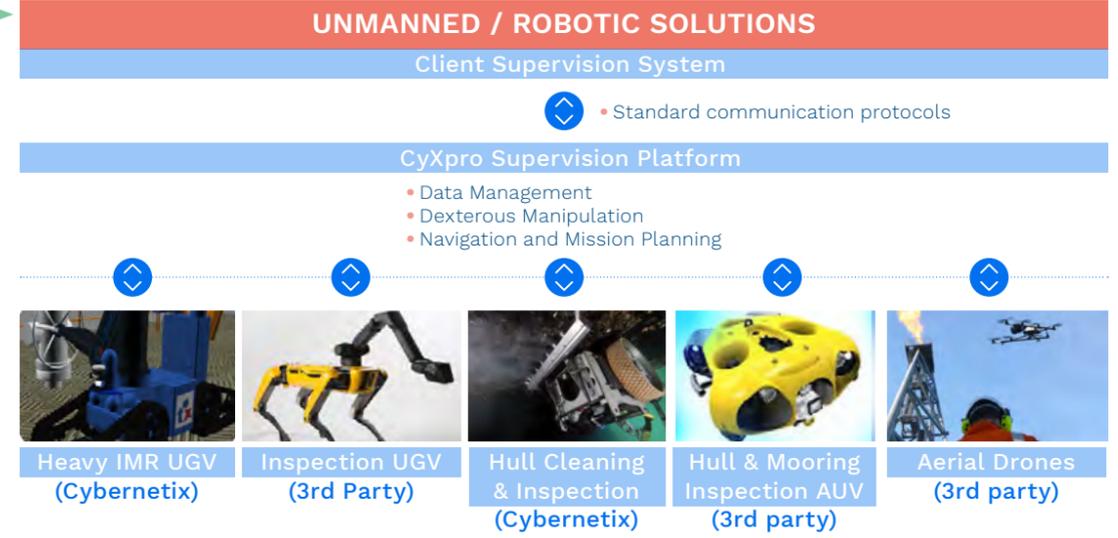
The Coral SUL FLNG turnkey contract covers a floating facility and SURF in deep water offshore Mozambique. It is the first FLNG project arranged with project financing. The O&M scope was defined from the FEED phase with a preliminary study to estimate OPEX, then during the engineering phase with the development of O&M engineering leading to operations for which Technip Energies will mobilize an O&M team and operate and maintain the FLNG until provisional acceptance criteria.

DATABASE DEVELOPMENT

- Reliability, availability and maintainability (RAM) > simulate the entire lifetime performance of the asset to identify the main loss contributors and to calculate the facility efficiency.
- Asset Register > tag hierarchy and attributes
- database developed for the implementation of CMMS.
- Maintenance (reliability centered maintenance (RCM) and inspection risk-based inspection (RBI) engineering and studies for implementation of computerized maintenance
- and inspection management system (CMIMS)
- Capital, startup, and operating spare parts
- Development of the dynamic simulator
- Development of the 3D model as built

DIGITAL SERVICES

- Cybersecurity: Continuously secure the FLNG by deploying on-premise and remote security operating center (SOC) to prepare, prevent, detect, respond and recover from cybersecurity threats and incidents.
- OTS and ITS (proprietary technology): Provide field and control room operators and maintenance engineers with access to OTS and ITS to continuously train to operate and maintain the plant.



ENGINEERING SERVICES

A multidiscipline engineering team to perform O&M activities such as:

- Develop global maintenance and inspection plan
- Prepare the shutdown plan
- Study operability, maintainability, accessibility
- Develop up-to-date digital twin of the plant, including “as built” at any time
- Plan, optimize and assist shutdowns, turnarounds and outages (STO)
- Perform continuous maintenance engineering activities to optimize inspections and reliability

PERMANENT SERVICES

- Permanent operations and maintenance services onshore/offshore
- Warehouse management
- Development of competency assessment system with strong national content
- Procurement and preservation of capital and operating spare parts

LOCAL CONTENT

- Leverage and capitalize on our local engineering centers to ensure a smooth transition from project to O&M services.
- Develop local organization with a pool of resources to support engineering and O&M services.
- Mobilize future operation and maintenance team in early development phases.
- Develop training plan.
- Deploy continuity and transition from early development phases to post startup.
- Measure progress of local content indicators such as training and percentage of local mobilization.
- Encourage local partnerships for maintenance services when applicable using a strong selection and prequalification process.

- and manage spare parts quantities to promote best possible OPEX
- Analyze performance of on-demand studies and calculations
- Develop operating and maintenance manual

TRAINING AND STAFFING

- Augmented reality training simulator for O&M personnel
- Competency assessment system and training courses

Our selected references

CLIENT	PROJECT DESCRIPTION	COUNTRY	SCOPE	SOLUTION
ENI	CORAL SOUTH FLNG	MOZAMBIQUE	O&M Engineering, commissioning, start up and O&M execution up to Provisional Acceptance	Integrated Model
QATARGAS	NORTH FIELD EAST	QATAR	Preservation and Inspection Engineering, O&M Execution.	Integrated Model
BAPCO	REFINERY MODERNIZATION	BAHRAIN	Commissioning and start up. O&M engineering and execution	Integrated Model
MIDOR	REFINERY EXPANSION	EGYPT	Commissioning and start up. O&M engineering and execution	Integrated Model
LONG SON	OLEFINS PLANT	VIET NAM	Commissioning and start up. O&M engineering and execution	Integrated Model

CLIENT	PROJECT DESCRIPTION	COUNTRY	SCOPE	SOLUTION
SHELL	Prelude FLNG	AUSTRALIA	O&M Technical Assistance during commissioning, start up and operations.	Selective Model
SABIC -PKIII	AL JUBAIL ETHYLEN PLANT	KSA	Cracking Furnace operation analysis	Selective Model
GALP	SINES H ₂ PLANT DECARBONIZATION	PORTUGAL	Decarbonisation Study for H ₂ U, FCC & Cogen	Selective Model
ROMPETROL	H ₂ PLANT MAINTENANCE	ROMANIA	Supply of H ₂ U Outlet subheaders and supports	Selective Model
DOW CHEMICALS	ETHYLEN PLANT UPGRADE	SPAIN	Study for convection section replacement	Selective Model





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