Where energies make tomorrow (

# Asset Lifecycle Excellence

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



## 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
- G Fertilizers
- ற 🛛 Hydrogen and Ammonia
- S Life Sciences
- LNG and Gas Monetization
- 📄 🛛 Mining & Metals
- 🔆 Nuclear
- A Offshore
- Petrochemicals
- A Refining
- 🖄 Sustainable Chemistry



#### STRIVING FOR EXCELLENCE







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

### $\square$



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.





#### SITE INTERVENTION SERVICES

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



#### 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 Lifecyle 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

1 1 A

• Design-to-maintain model

-	SELECTIVE MODEL	INT
CLIENT LOOKING FOR	A solution to a specific need	An O& to sup self-m operat
CLIENT ASSET OPERATIONS	Client self-managed	Client superv outsou
DESCRIPTION	Stand-alone, flexible and ad-hoc services	Multi-y O&M s

#### NTEGRATED MODEL

O&M sub-contractor support client f-managed asset erations

ent self-managed pervision, csourced execution

lti-year integrated M services agreement

#### DESIGN-TO-MAINTAIN MODEL

An operating partner from cradle to grave

Outsourced

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 Mozambigue. 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.

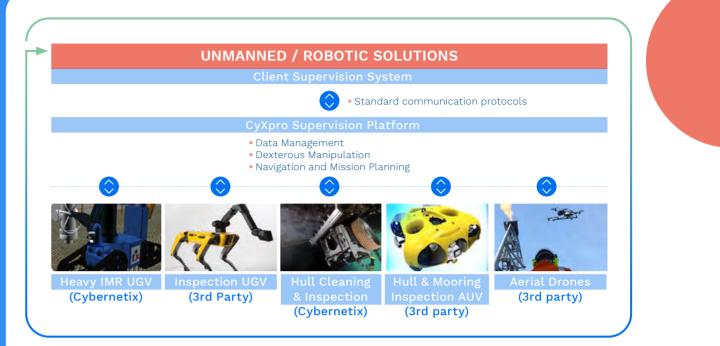
#### DATABASE DEVELOPMENT

- > simulate the entire lifetime performance of the asset the facility efficiency.

- operating spare parts
- Development of the dynamic
- model as built

#### DIGITAL SERVICES

 Cybersecurity: Continuously secure the FLNG by deploying on-premise and remote security operating (SOC) to prepare,



#### 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

#### PERMANENT SERVICES

- Permanent operations and maintenance services onshore/offshore
- Warehouse management
- Development of competency

#### 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.

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8 • Asset Lifecycle Excellence

- twin of the plant, including "as built" at any time • Plan, optimize and assist shutdowns. turnarounds and
- Perform continuous maintenance engineering activities to optimize inspections and reliability

outages (STO)

- assessment system with strong national content
- Procurement and
- preservation of capital and operating spare parts

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
- 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 pregualification process.

# 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 Provisionnal Acceptance	Integrated Model
QATARGAS	NORTH FIELD EAST	QATAR	Preservation and Inspection Engineering. O&M Exécution.	Integrated Model
ВАРСО	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
SHELL	Prelude FLNG	AUSTRALIA	O&M Tech during co and opera
SABIC -PKIII	AL JUBAIL ETHYLEN PLANT	KSA	Cracking operation
GALP	SINES H2 PLANT DECARBONIZATION	PORTUGAL	Decarbor for HMU,
ROMPETROL	H₂ PLANT MAITENANCE	ROMANIA	Supply of subheade
DOW CHEMICALS	ETHYLEN PLANT UPGRADE	SPAIN	Study for section re

#### SOLUTION

M Technical Assistance ring commissioning, start up d operations.

acking Furnace peration analysis

ecarbonisation Study r HMU, FCC & Cogen

pply of HMU Outlet

udy for convection ction replacement Model

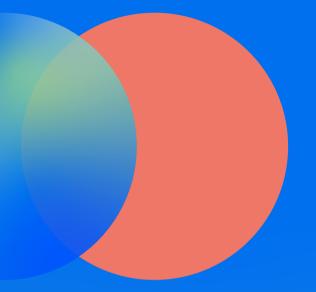
Selective Model

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