

# E&P - EXPLORATION AND PRODUCTION

How can suppliers support Petrobras in repair and maintenance demand?

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**1 – Importance of FPSO Repair and Maintenance**

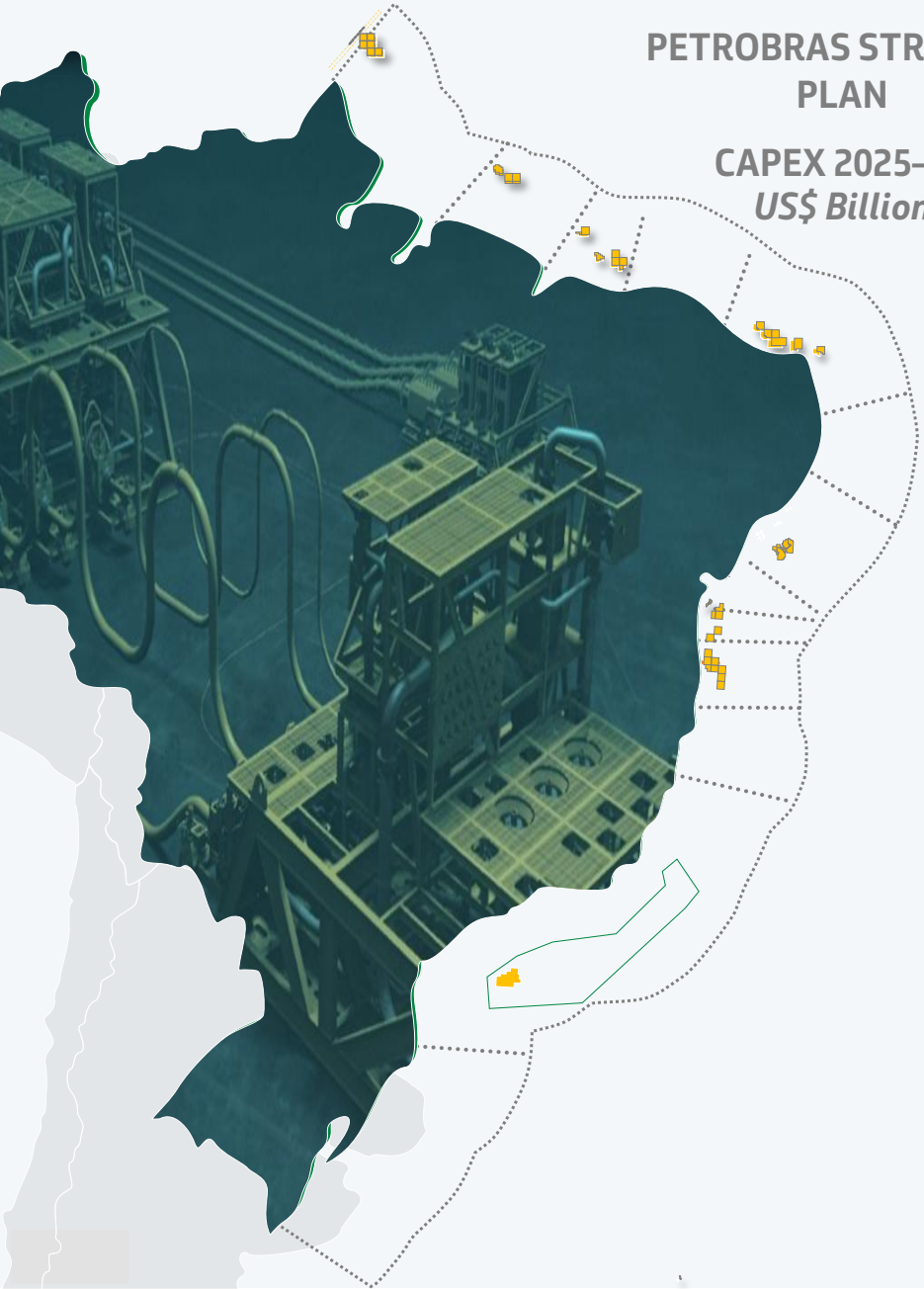
**2 – Opportunities and Demand**

**3 – Solutions and Challenges**



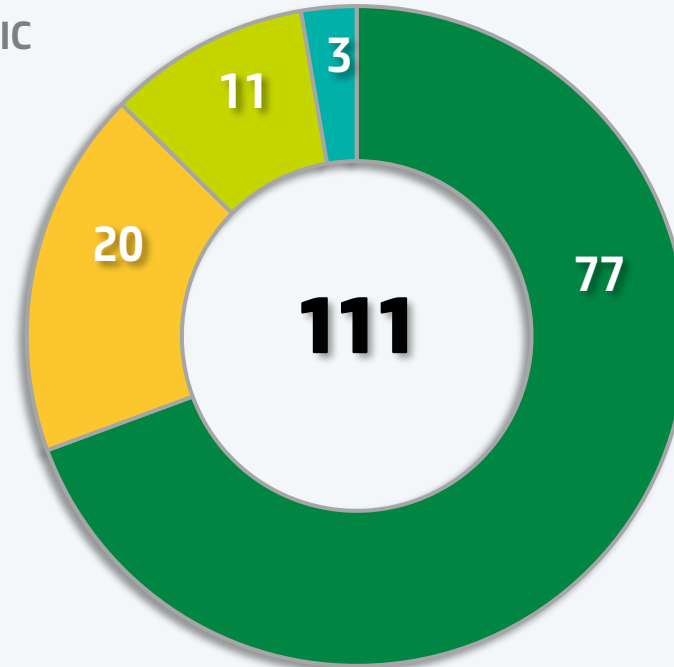


# E&P Investments in the next 5 Years



## PETROBRAS STRATEGIC PLAN

CAPEX 2025–29  
US\$ Billion



- Exploration & Production
- Refining, Transportation and Marketing
- Gas and Low Carbon Energies
- Corporate



# 37

FPSO  
Operation

37 + 10 = 47



~3.500 Km

Production Pipes



~85

Subsea Vessels



~6.000 km

Rigid and Flexible Pipes



# 10

New FPSOs



# Our FPSOs operate in a complex scenario

Production System composed of



High CO2 and Pressure



POB Limited



Corrosive environment



Complex Logistics



**SAFETY**



**ENVIRONMENT**



**REGULATORY COMPLIANCE**



**EFFICIENCY**



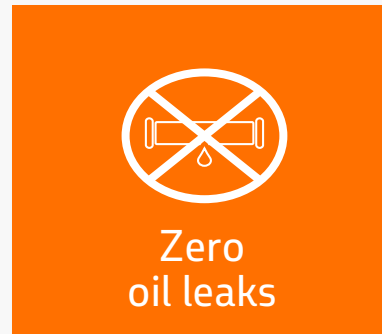
# FPSO

Floating Production Storage and Offloading



# Why FPSO Integrity Management is so important?

A well-preserved FPSO provides



*Managing FPSO Integrity for long-term performance*

# Supply Opportunities

Integrity management means repair and replace lots of equipments



**Rescue Equipment**



**Auxiliary Structures / Floor Gratings**



**Pressure Vessels  
300**




**FLARE**



**Pipes and Valves**




**Compressors  
50**



**Engines  
50**



**Electrical, Instrumentation, and Automation**



**DROPS**



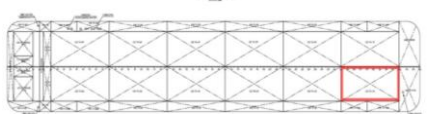
**Heat Exchanger  
270**



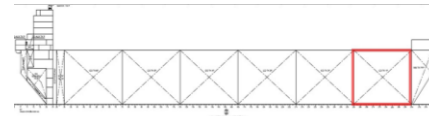
**Pumps  
370**




**Structures**



**Inner Hull**



**Outer Hull**



**Painting Area  
400.000m<sup>2</sup>**

\* Average quantity on one FPSO in operation


















# Opportunities for Providing Services

Besides repair and replace lots of equipments, there is a huge demand for services on board

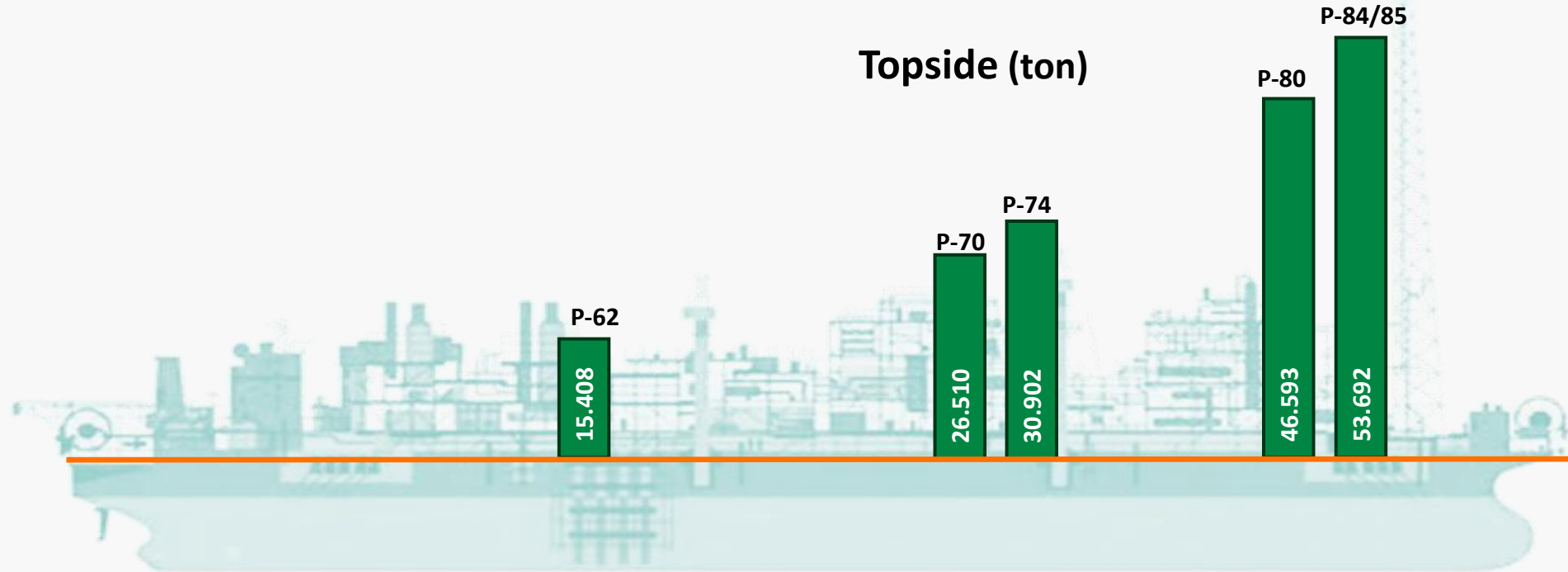




## POB – People on Board



-  Catering, Seamanship, and Radiotelephony
-  Cargo Handling
-  Inspection and Calibration of Instruments
-  Technical Support Team
-  Engineering Projects
-  Remote Monitoring and Support
-  Chartering of UMS (Maintenance and Safety Unit)
-  Maintenance of Static and Dynamic Equipment
-  Supply of Materials, Tools, and Equipment
-  Passive Protection; Refractory Insulation
-  Mechanical and Non-Mechanical Repairs on Metallic and Non-Metallic Pipelines
-  Inspection and Repairs on Equipment
-  Maintenance and Calibration of Valves
-  Civil Construction and Maintenance
-  Equipment Rental

# New FPSO increases the Repair and Maintenance demand



	Generation 1	Generation 2	Generation 3
 TOPSIDES DRY WEIGHT	10 - 15 kt	20 - 30kt	40 - 60 kt
 PROCESSING CAPACITY (O&G)	<180 kbpd <6 M Nm <sup>3</sup> /d	150 – 180 kbpd 7 M Nm <sup>3</sup> /d	180 – 225 kbpd 12 M Nm <sup>3</sup> /d

# What Petrobras has done to face repair and maintenance challenges?

Focus on technology and Reliability

## Elastomeric Coating



High resistance to impact and abrasion with easy application

## Digital Twins



Real-time simulation of complex offshore scenarios



## Asset Management Tools



Automation of data with AI for monitoring and structural analysis increasing preservation of assets

## Inspections in Areas With Difficult Access



Continuous inspection and reduced human exposure to risk

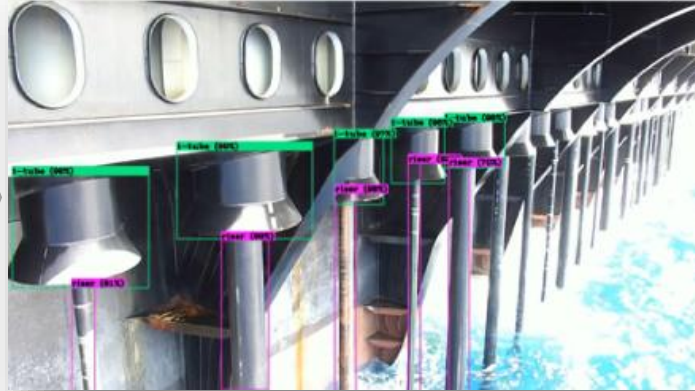




# What Petrobras has done to face repair and maintenance challenges?

Other examples

## Drone Inspections



Higher quality of data acquisition and reduce climb operations

## UMS (Maintenance and Safety Unit)



Increase People on Board



## Efficient Painting Methods



New treatment and painting equipment  
Increasing usability/applicability of coatings

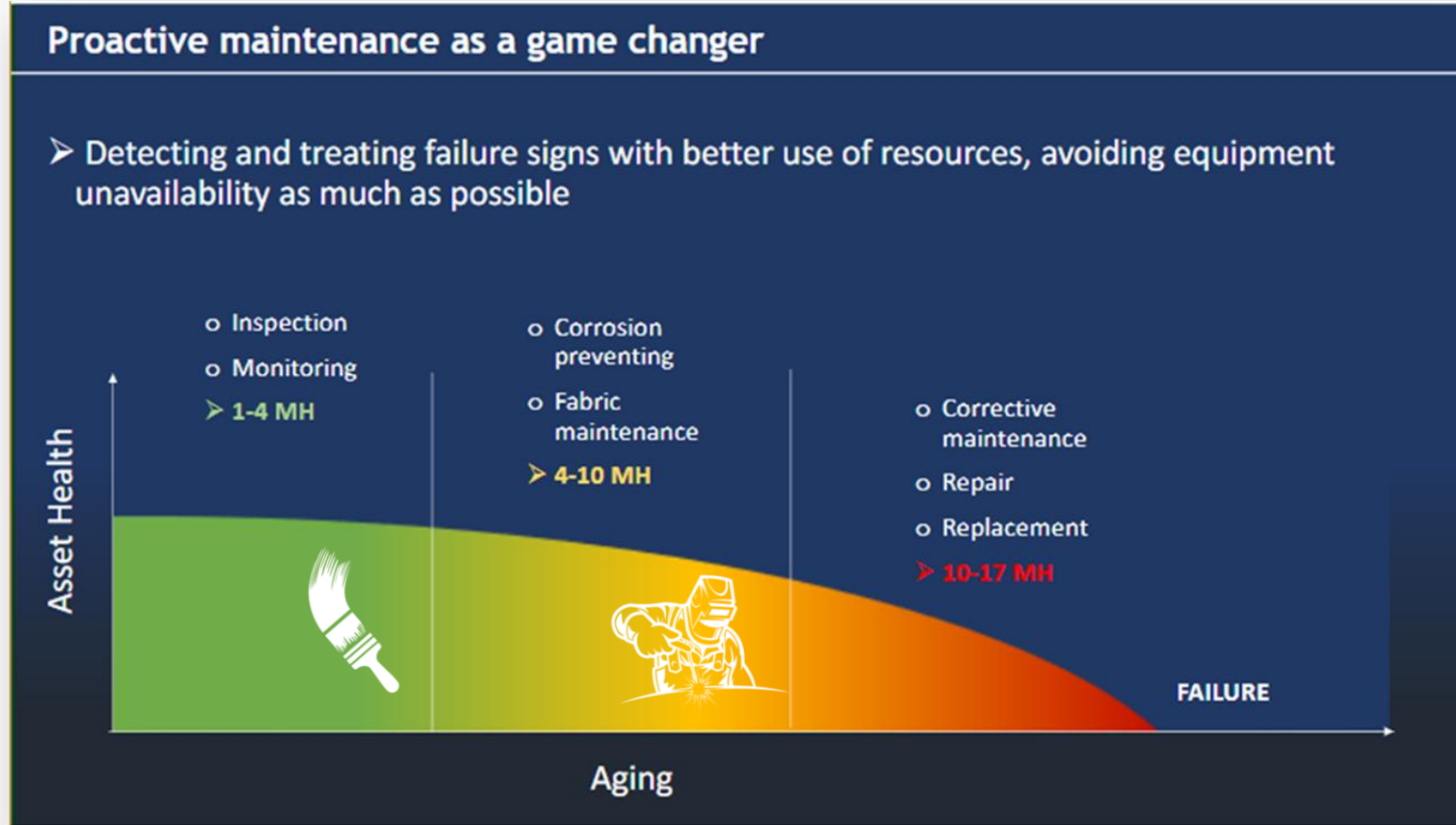


Petrobras Remote Integrated Operations  
and Maintenance Center



# What Petrobras intend to evolve in repair and maintenance?

Develop a preventive maintenance culture



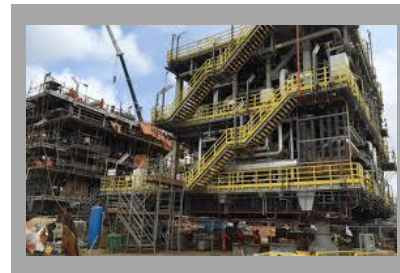
**Preventive Maintenance**

**Corrective Maintenance**

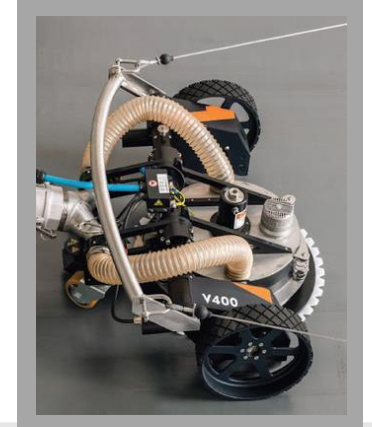
# What Petrobras expect for the supply chain?

It means, which are the solutions to be adressed?

- Condition-Based Monitoring
- Proactive Integrity Technologies
- Preventive Maintenance
- Increase Productivity
- Materials with a Longer Useful Life.



Robotic techniques for inspection and treatment of structures.



Techniques for more *productive* surface treatment.

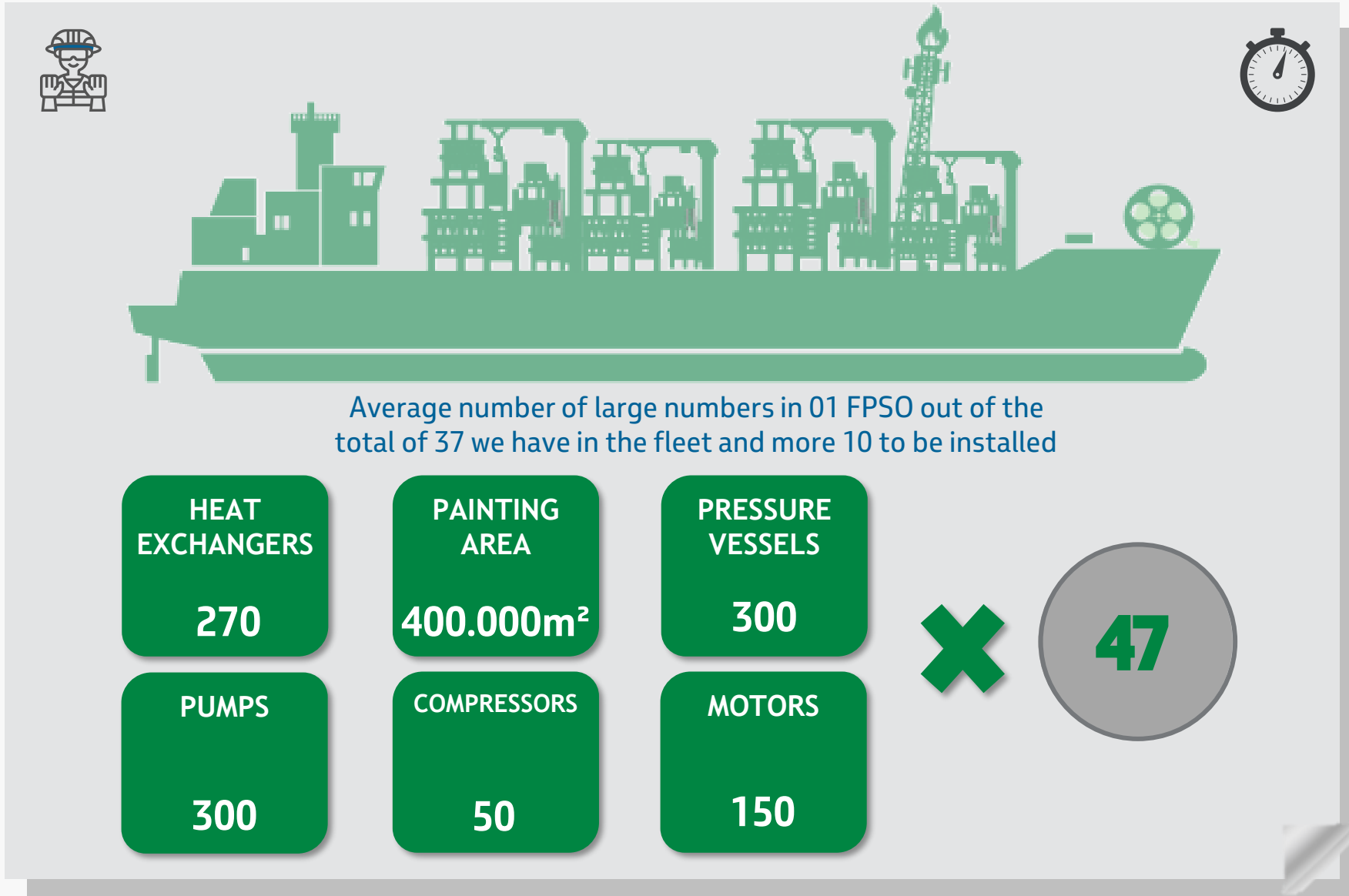
Vibration monitoring techniques for pipelines and equipment.





# Our Challenge is a Journey and we Need Partners

The challenge in operation and maintenance is an ongoing journey. We need good partners to support us with new solutions and integrated work.





**A different future  
can only be built  
with action and  
imagination today!**

**Thank you!**

**Felipe Matoso**

*E&P Operation General Manager*