

OIL AND GAS

# Advanced FPSO solutions

Automation, electrification and  
telecoms

—  
ABB Energy Industries

[abb.com/oilandgas](http://abb.com/oilandgas)



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**We enable safe, smart and sustainable projects and operations.**

**Safe because we support the highest industry standards and always focus on risk reduction.**

**Smart because our integrated electrification, instrumentation, control and telecommunication solutions optimize production.**

**Sustainable because we know that efficiencies make the difference – environmentally and operationally.**

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## **Table of contents**

<b>04</b>	<b>Large complex projects</b>
<b>05</b>	<b>Embedding sustainability in everything we do</b>
<b>06</b>	<b>Adaptive Execution™</b>
<b>07</b>	<b>Boost efficiency with digital transformation</b>
<b>08-09</b>	<b>Simplifying complexity</b>
<b>10-11</b>	<b>Partnering as your service provider</b>
<b>12-13</b>	<b>Illustration of a project in Brazil</b>
<b>14-15</b>	<b>Global references</b>



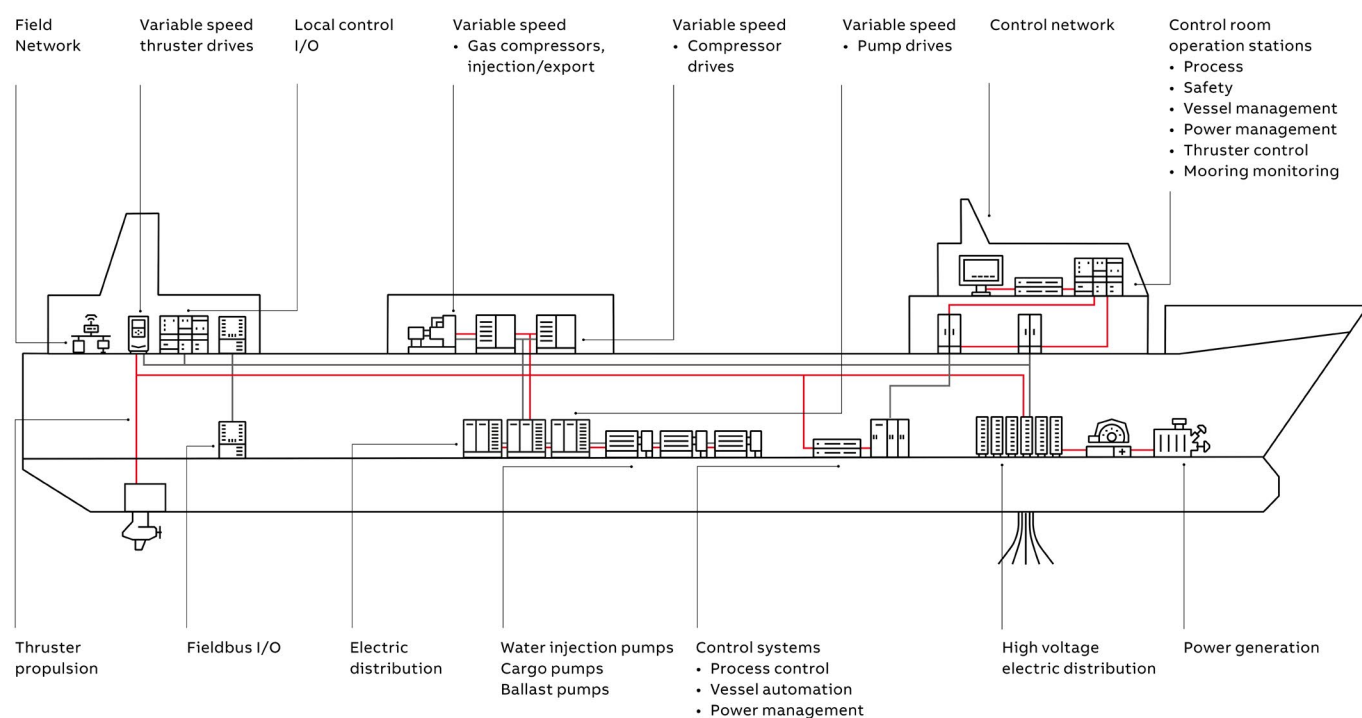
## Large complex projects

A core competence of ABB

From floating production units to subsea, ABB can provide innovative, next-generation solutions to help you succeed.

ABB's solutions for floating production units bring safe and reliable power and automation to your vessels, lowering costs of engineering by up to 30%. Innovative systems and reliable solutions ensure your vessels work at maximum efficiency.

Illustration of FPSO



EMBEDDING SUSTAINABILITY IN EVERYTHING WE DO

ABB is helping energy companies operate more efficiently and reduce their environmental impact, while enabling new, clean-energy value chains to fuel our future. With integrated and digitalized operations, we are able to sense, monitor & control, creating opportunities to consume less energy and produce less waste. Our solutions are enabling new value chains to transition the world's energy while reducing today's carbon footprint.



# Built to adapt

## Adaptive Execution™

FPSO installations have made exploration and production of oil and gas in difficult to reach, remote and harsh environments possible. As such, FPSO installations are typically complex, requiring highest availability and reliability, and routinely goes into cost and time overruns.

To help customers achieve shortest time-to-market without compromising on quality and cost, ABB has developed Adaptive Execution™: an agile method to industrial project execution. Through expert teams, new technology, proven methodologies and integrated infrastructure, Adaptive Execution™ helps energy customers adapt to changing and challenging market conditions.

This extremely flexible approach streamlines integration of packaged units and electrical equipment, setting a new standard in the execution of automation, telecommunications, electrification and E-house solutions for FPU projects. Together with our life cycle services, it makes us the ideal partner throughout the entire life cycle of an off-shore installation.

Large, complex projects in energy industries often include delays, cost increases and inefficiencies. In fact, 64 percent of projects have budget overruns and 73 percent of projects go through scheduling delays.



### Capabilities

Global project teams provide expert advice throughout the entire project lifecycle.



### Methodology

Tech-enabled, standardized processes help accommodate change and drive effectiveness.



### Technology

Pre-tested project deliverables drive efficiency and minimize issues.



### Infrastructure

Connecting disparate systems and implementing project management tools accelerate collaboration and boost productivity.

# Boost efficiency with digital transformation

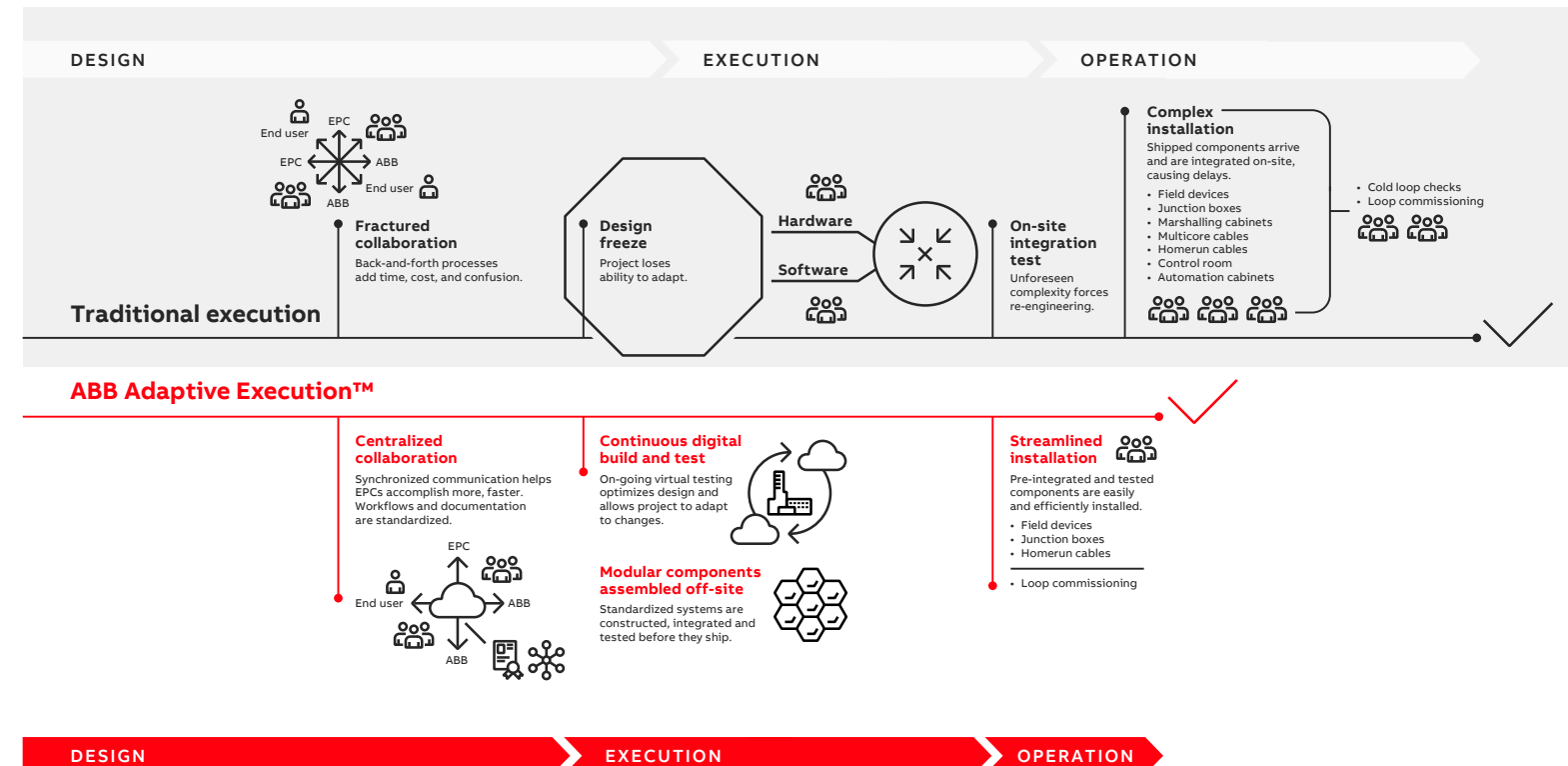
## ABB Ability™

Our proven approach and technological capabilities are in place to help customers analyze data more intelligently, optimize production, boost productivity and enhance profitability while reducing risks to schedule and safety, a paramount factor in a FPU installation. ABB is a clear partner to help companies exploit the promises of digitization.

### What does ABB Ability mean for the energy industry?

The ABB Ability range of digital solutions helps energy companies manage complexity. From electrical condition monitoring in the Barents Sea to developing the world's largest industrial computer network for plant integration in Saudi Arabia, ABB Ability infrastructure offers tried and tested solutions for each stage of your operational life cycle.

Transforming data into actionable insights takes ability. ABB Ability™.





# Simplifying complexity

## Maximum benefit beyond traditional approach

As one of the world's leading engineering companies, ABB works continuously to create and support a comprehensive range of products, systems and services to suit the dynamic oil and gas market.

These cutting edge solutions go beyond traditional approaches, in order to minimize complexity and attain maximum benefits.

### E-house solutions

The main advantage of ABB's E-house solutions is that all systems within the house or module are wired, tested and commissioned before shipment to yard, reducing costs, risk exposure and onsite work.

In several FPU projects, ABB has successfully delivered topside E-house solutions, pre-installed with all electrical systems (process power management system; high, medium and low voltage switchgear; motor control centers; and transformers); integrated control and safety systems (process control system, process shutdown system, emergency shutdown system, fire and gas system), and telecoms systems. In addition, vendor supplied third party packages are also installed and integrated by ABB in the house or module before shipment to yard.

### Subsea solutions

ABB is an innovator in subsea solutions, critical in powering, controlling and monitoring of subsea processing equipment vital to stimulate subsea oil and gas reservoirs effectively.

Since entering the subsea market in 1980, it has continued to launch and deliver proven solutions, complementing FPU in expanding capacity, extending lifespan and reducing cost for oil and gas fields.

### Collaborative Operations

ABB, as a pioneering technology leader in digital, has proven solutions to help customers develop an end-to-end digitalized ecosystem where people, equipment and systems talk the same language and are integrated into one centralized, often remotely controlled operation.

Collaborative Operations delivers timely, manageable data-driven insights to optimize decision making through intelligent integration of data across engineering, infrastructure, applications and services, leading to reduced risk, schedule and costs.

### Platform

Collaborative Operations utilizes the ABB Ability platform and cloud infrastructure. The platform enables you to securely integrate and aggregate data, apply predictive analytics, and generate insights that can help drive profitability.

### People

Collaborative Operations harnesses people and information. It uses technology to bring your high industry, application and operational expertise with ABB's electrical, automation and digital expertise to drive power of collaboration.

### Places

ABB today delivers digital services from many locations around the world. We are now taking this approach to the next level by investing in our Collaborative Operations Centers, staffing them with additional expertise and deploying new technologies. This network provides expertise, connecting ABB and you.

### Profitability

The highest value ABB can offer is to help you optimize operations and increase productivity. The more efficiently you operate, the more product you make and sell profitably. Cost reduction is important too; Collaborative Operations helps identify opportunities to reduce raw material, energy and maintenance costs, so more of your money flows to the bottom line.

For the FPSO Anna Nery, located in Campos Basin, Brazil, ABB leveraged on its ABB Ability™ System 800xA control system with Select Input/Output (IO) to integrate all the production modules onboard the vessel into a combined Integrated Safety and Control System (ICSS).





# Partnering as your service provider

## Maximizing the lifetime of your assets

The extensive and proven experience of ABB's service team ensures the right maintenance mix, processes and tools are implemented so as to allow for full life extension of your assets.

We are here to solve your toughest challenges through the vast resources and knowledge in our local, regional and global organizations, helping you to:

- Better comply with environmental, health and safety regulations
- Improve asset life by full restoration, upgrades and/or modernization
- Improve plant reliability and financial performance
- Conduct maintenance management with a business mindset
- Increase the reliability and life expectancy of your process equipment
- Manage change and create a service culture

### Full range of services, customised to your needs

ABB is constantly working to improve asset return that clients can expect from the systems we deliver. We do this by providing the best value proposition that can range from spare parts to undertaking repairs, commissioning and consulting through to complex services such as optimization, modernization and migration.

#### Rapid maintenance and field services

Over time, normal wear and tear degrades the reliability and accuracy of even the most robust system. ABB has a range of flexible and scalable service packages that allows for proactive, preventive and predictive maintenance, thus ensuring maximum uptime throughout the lifecycle of your plant.

Condition monitoring is one example of predictive maintenance. Monitoring can be done locally, centrally and remotely to ensure that equipment is performing as planned, resulting in reduced cost of maintenance.

#### Repairs

The global set-up ensures that technical experts are available 24/7 to provide quick and competent troubleshooting support when carrying out on-site repair work.

#### Life cycle management

##### Spares and consumables

Keeping an optimal inventory of spare parts is a balancing act. Too large a stock adds to the cost of maintenance, but too little increases the risk of a shutdown.

ABB analyzes assets, identifies risks and offers strategies that optimize costs. We also keep critical spare parts available for selected equipment, and they can be conveniently ordered via [www.abb.com/partsonline](http://www.abb.com/partsonline), which provides 24-hour access to information about ABB's factory-certified stock, including the option to place immediate orders.

#### Replacement

When equipment becomes obsolete, or has reached the end of its life cycle, ABB will be able to offer replacement solutions. Our wide product portfolio adds to the ease of selecting an optimal replacement with the correct features for your application, and may be fully interchangeable with the original units, no matter whether the original was from ABB or another manufacturer.

#### End-of-life services

ABB products are mostly made from steel, copper, aluminum, oil and plastic. Approximately 90 per cent of this material is reclaimable after the end of a product's useful life. ABB's Environmental Services group offers compliant recycling solutions for PCB-contaminated equipment and takes care of the disposal or recycling of installed or returned parts.



For ABB's switchgear, we offer decommissioning, disposal and recycling of material, including the management of sulphur hexafluoride gas.

### Maximizing the lifetime of your assets through collaboration to improve equipment effectiveness, reduce energy use and minimize maintenance costs

#### Operational efficiency

##### Remote services

Provision of remote services allows fast response to emergency call-out. ABB offers remote services for electrical, instruments, control and safety systems, as well as telecom systems.

##### Training

Operations and maintenance personnel play a key role in plant performance. ABB's standard courseware and customized training will equip them with the skills they need to extract the highest possible productivity and returns from their technology.

#### Performance improvement

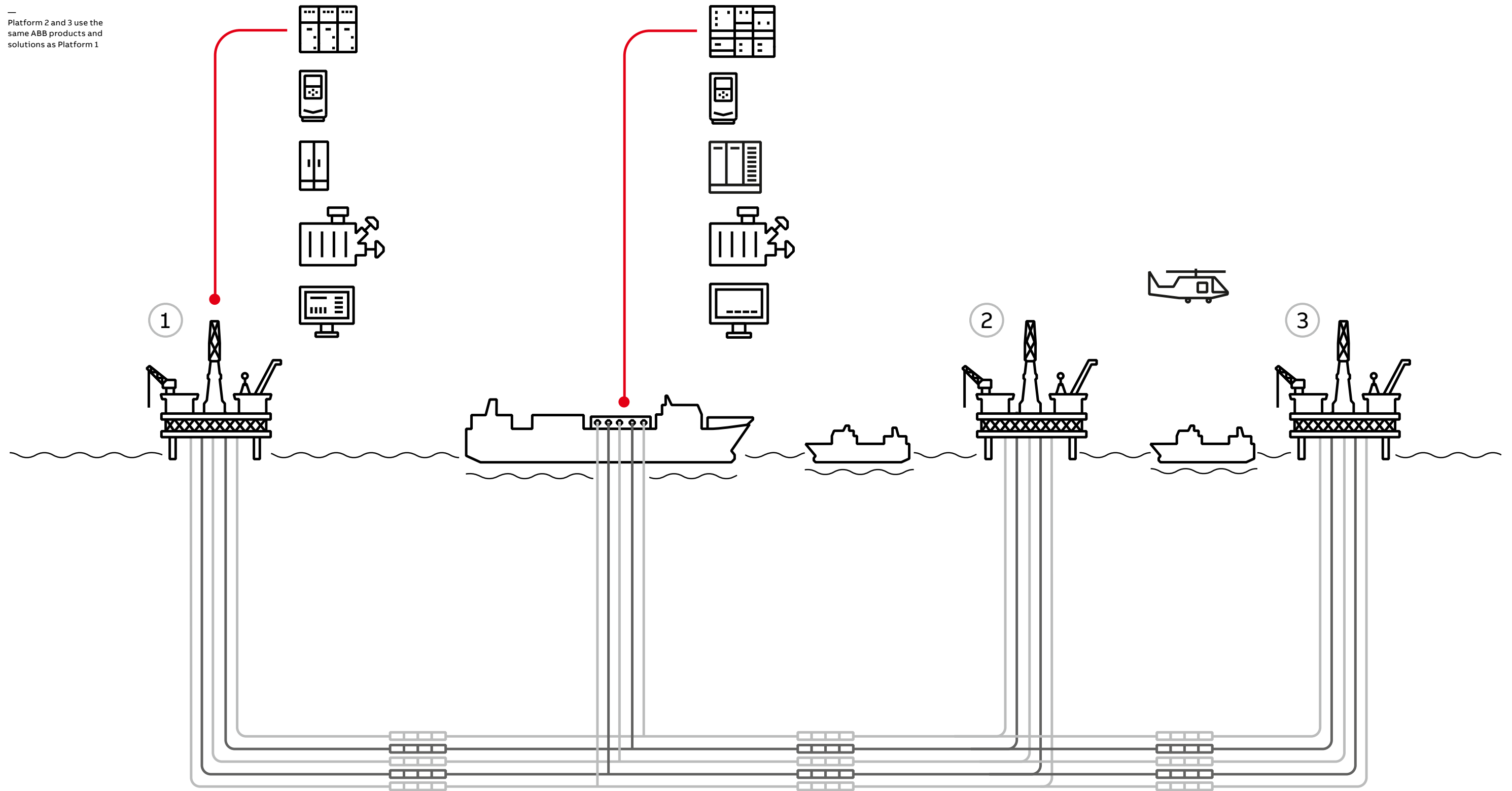
##### Extensions, upgrades and retrofit

Today's demands on plant availability, efficiency and maneuverability are increasing continuously. In many cases, older systems from previous generations of technology cannot meet these requirements.

Modernization through upgrade or retrofit offers numerous benefits, such as enhanced functionalities through upgrades of a DCS (distributed control system), including improved data collection, monitoring, alarm management and safety functions. Either a step-by-step or a full-scale retrofit, including replacement of outdated equipment, can be done depending on your plant's maintenance schedule.

ABB offers low-risk migration strategies for a broad range of products and systems to assure maximum return on investment while enhancing equipment availability and performance.

— Platform 2 and 3 use the same ABB products and solutions as Platform 1



2D ILLUSTRATION OF A PROJECT IN BRAZIL

Case example of an optimized solution with integrated power and automation systems for floating production unit, drilling and wellhead platforms and subsea solutions

# Global references

Selected reference list



Format: Project; Owner

- 1. Hebron; ExxonMobil
- 2. Peregrino; Equinor
- 3. Kraken; Bumi Armada
- 4. Johan Castberg; Equinor
- 5. Goliat; Eni
- 6. Anna Nery; Yinson