

"It is more than the fuel matters – The Full Picture
integrated solutions"



Image: Qatar Gas

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Presenter



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Briefly about **Kongsberg Maritime** ©



- A division of the Norwegian based Kongsberg Group
- About 4,200 employees in 55 offices in 18 countries (31. Dec. 2012)
- 60 years of experience in marine operations based on the foundations created by Norcontrol, Autronica, Simrad and Albatross.
- **Key products:**
Marine Automation Systems, Dynamic Positioning, Navigation, Cargo Monitoring & Control, Maritime Training Simulators, Position Reference Systems, Hydro-acoustics & Sub Sea applications.



KONGSBERG's MARITIME History



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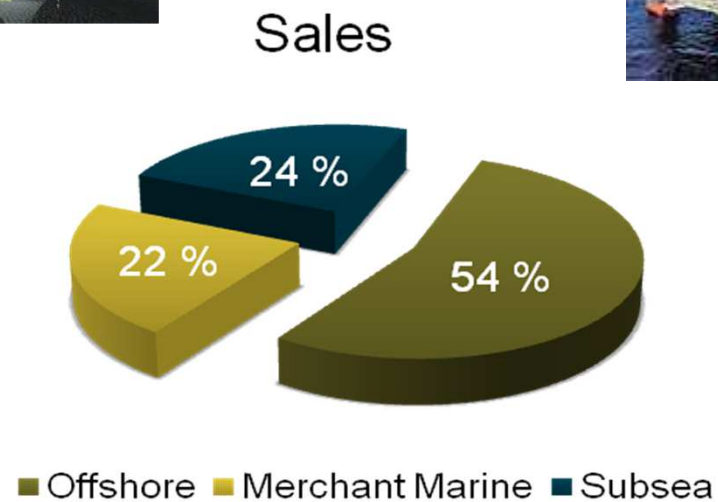
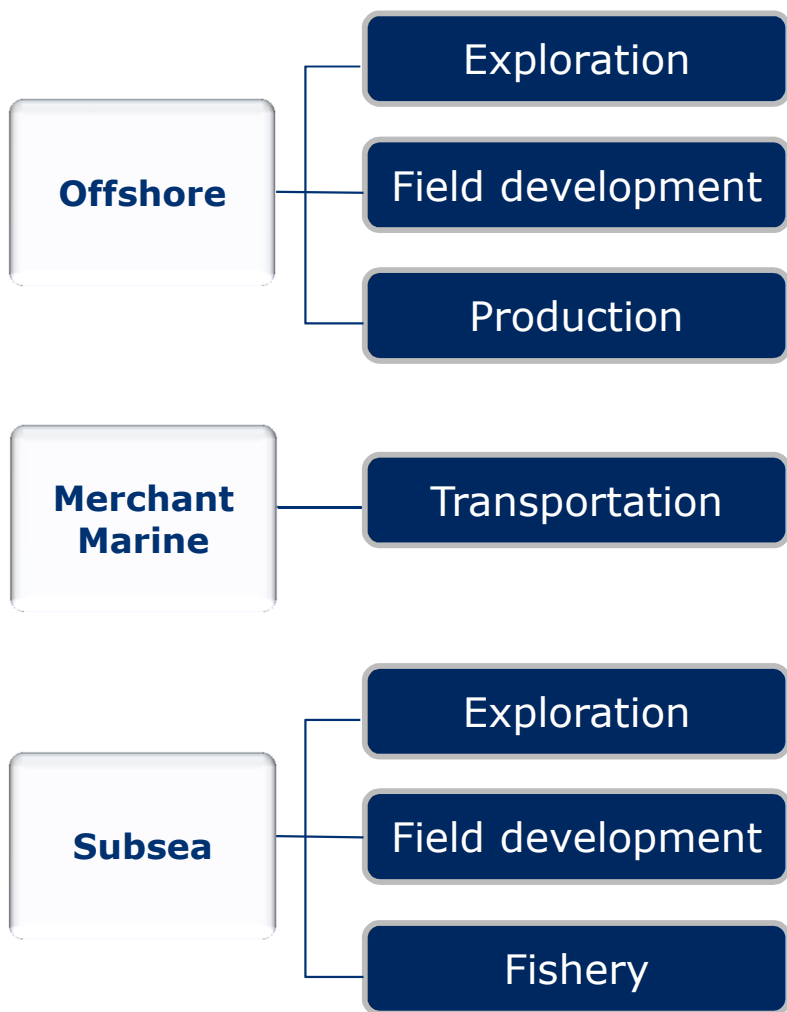
- 1624 – 1814 The discovery of silver in Kongsberg
- 1814 – 1955 Kongsberg Våpenfabrikk and the maritime community in Horten
- 1955 – 1987 Industrial locomotive
- 1987 – 1992 Crisis and revitalization
- 1992 – 2005 Maritime campaign, stock exchange listing and growth
- 2005 – 2013 Yachting business sold. Improved growth and market positions. Acquisitions, expansions and new establishments.
- 2010 Kongsberg Maritime Poland Ltd.



Business segments



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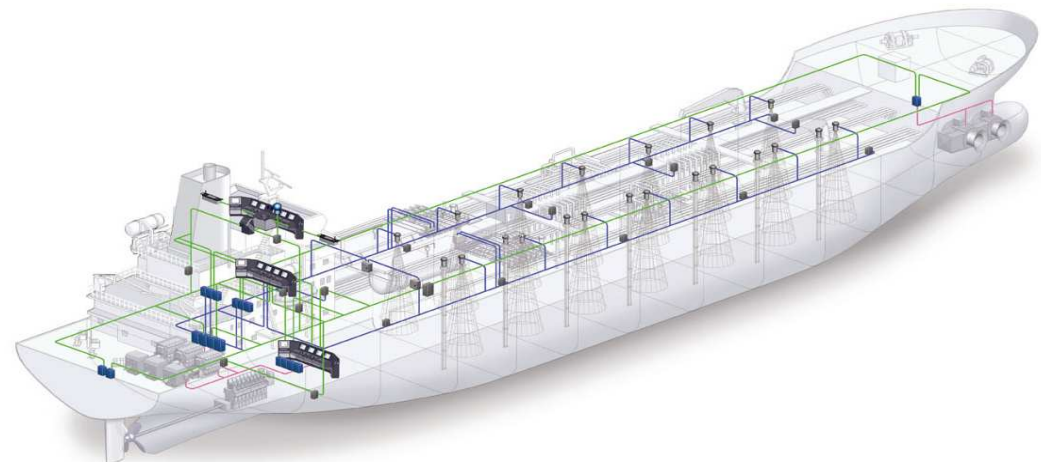


Integrated Vessel Management – The Full Picture



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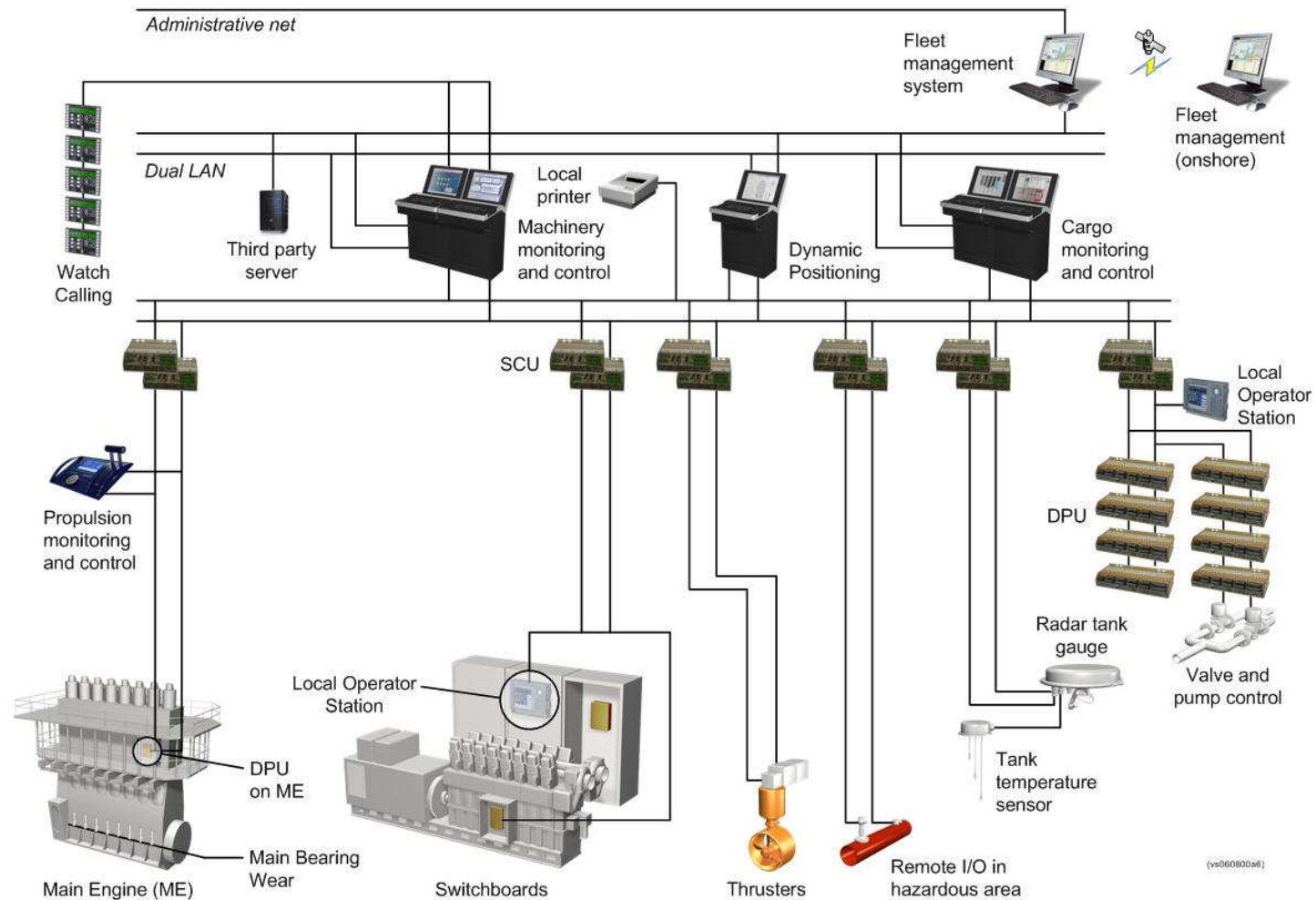
- K-Bridge
 - Navigation system
 - Steering control
- K-Pos
 - DP and joystick system
 - Automatic manoeuvring
- K-Thrust
 - Thruster and propulsion control
 - AutoChief propulsion control
- K-Chief
 - Marine automation system
 - Cargo and ballast automation
- K-Gauge
 - Cargo tank gauging
 - Ballast and service tanks
- K-Safe
 - Safety management system
 - Emergency shutdown system
- Sensors
 - Bearing Wear / Bearing Temperature
 - Pressure / Level / Temperature Sensors
- Hydro Acoustics
 - Multi Beam Echo Sounders
 - Sonar
 - Fishery
- Camera
 - CCTV
 - Special applications



Integrated Automation



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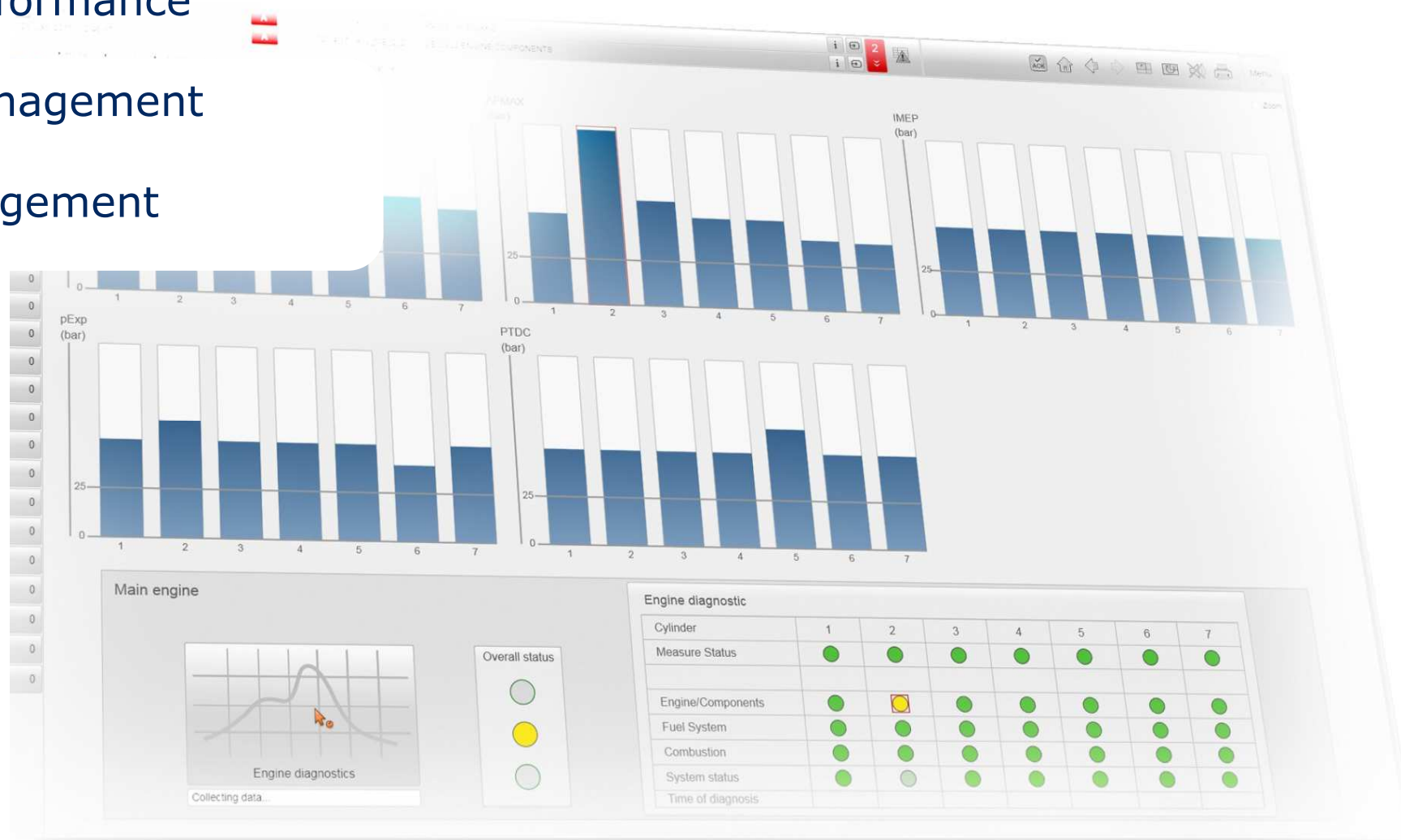


Vessel Performance Monitoring



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- Fuel Performance
- Engine Performance
- Energy Management
- Fleet Management



Engine performance monitoring

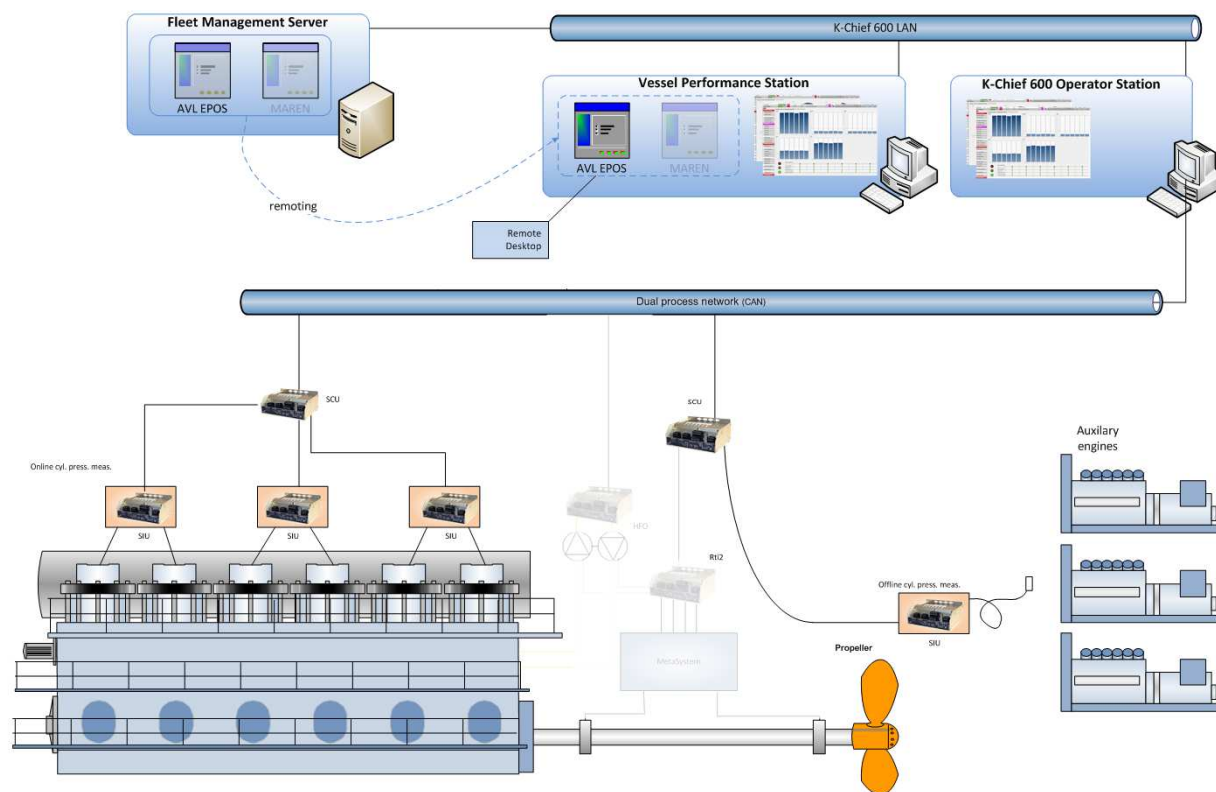
EPOS (engine performance & optimisation system)

EPOS is a software application for the monitoring and automatic diagnosis of large-bore combustion engines

EPOS displays the engine status via a simple traffic light style indicator.

If fault patterns are identified, the system can provide an appropriate warning and guidance - **preventing**

- fuel injection system
- combustion process
- liner/piston behaviour
- exhaust valves



Trend Analysis 1



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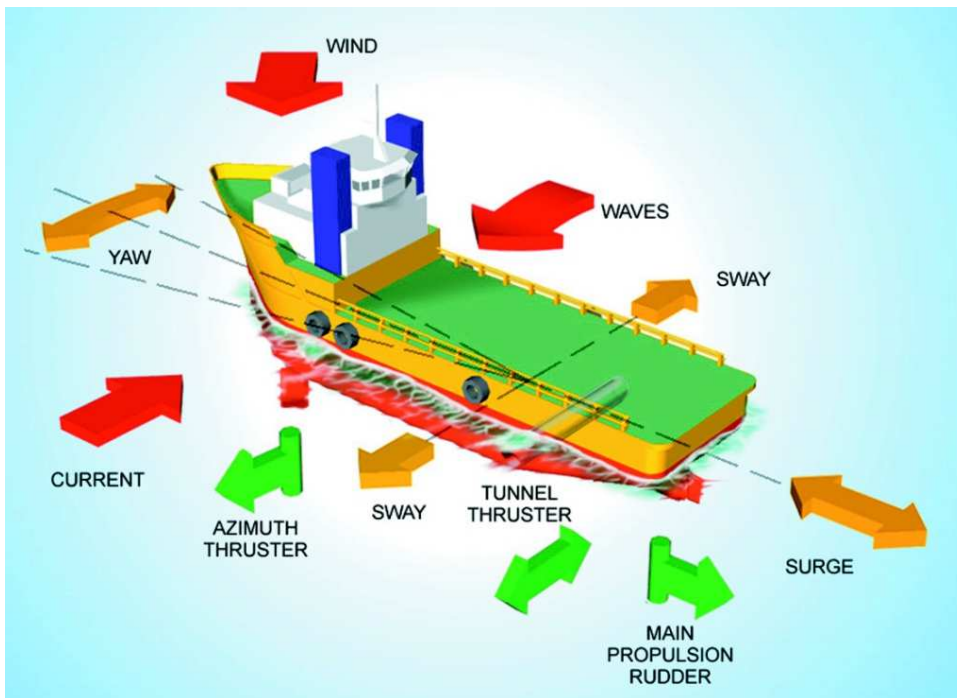
Green DP[®] control



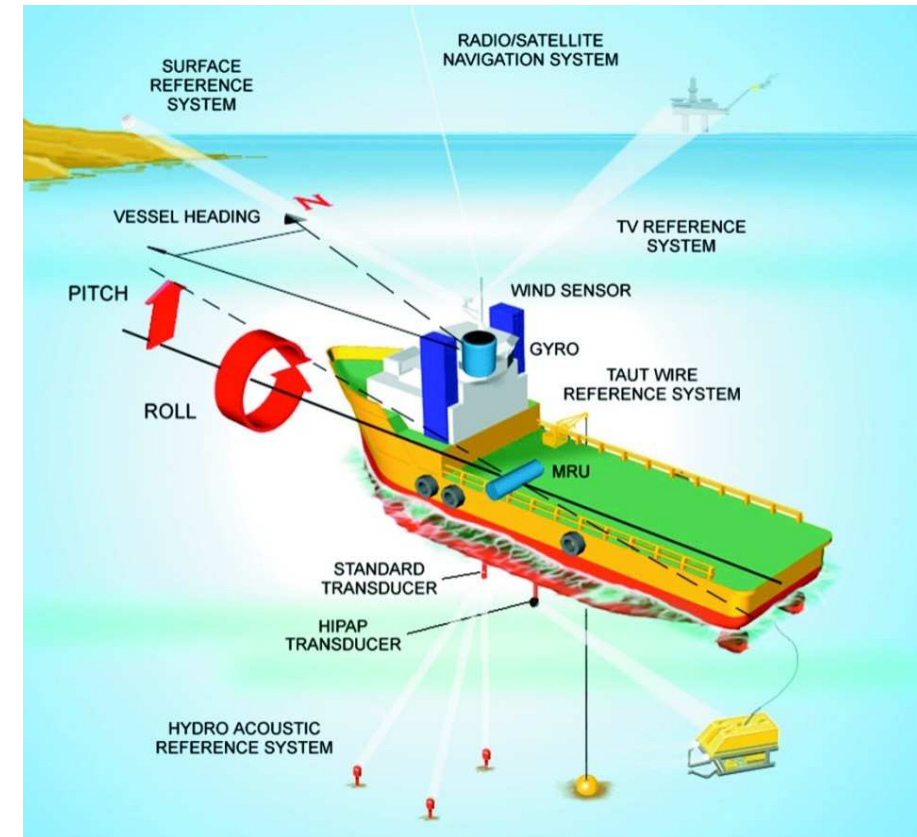
KONGSBERG

K-Pos Controller can work in several of the following modes, all with special characteristics:

- High Precision control
- Relaxed control
- Green DP[®] control



Sensors and position reference systems



Forces and motions

More than **2500** dynamic positioning systems have been supplied

... it is more than fuel it is about...

...Full integration



Gas Combustion Unit
Automation System



LD/HD Compressors/
Gas Management
Automation System



Boiler
Automation System



Reliquefaction Plant
Automation System



Regasification Plant
Automation System



Ship Integrated
Automation
System
(K-Chief 700)



Ship Integrated
Navigation
System
(K-Bridge)



Benefits

- Common technology and common platform, easy to interface.
- Reduced engineering cost and saving of time.
- All hardware can be factory tested as one system and delivered for installation in 3rd party cabinets, switchboards, etc.
- Simple installation with significant cable reduction and installation cost.
- Common operating procedures and presentation improves crew familiarity, improves safety and minimizes training costs.
- Redundant solutions providing optimal protection against single point failure.
- All data available for presentation, storage and trending.
- Common spares across most sub systems, reduced spares stock.
- Single support network, full support on all product lines.

WORLD CLASS—

through people, technology and dedication

