AUTONOMOUS NAVIGATION SYSTEMS

Sea Machines DP-NXT™

Sea Machines DP-NXT Autonomous Control System shown integrated with OEM hull

SYSTEM COMPONENTS

Processor Cabinet
- Primary Processing, Propulsion Control, Steering Control, and Communications Electronics

Navigation and Situational Awareness Sensors
- Inertial Navigation System / GPS, 4G Radar, AIS, EO/IR Camera, Sonar

Communication Antennas
- Maritime Broadband Radio, Hardened Wifi, High Bandwidth Sat Com, Iridium

Control Interfaces
- Main Base Station
- Mobile (Shipboard) Base Station
- Belt Pack Controller

SEA MACHINES - AUTONOMOUS CONTROL SYSTEM

The Sea Machines DP-NXT Autonomous Control System upgrades traditional manually piloted vessels to now be operated with a reduced or zero on-board crew. It is designed to be integrated into company-designed Sea Machine USVs or other commercial production hulls. The DP-NXT system allows for seamless transition between unmanned and manned operations and can be integrated into modern electronic-control vessels or those with analog/mechanical controls.

Sea Machines DP-NXT is currently being offered for vessels up to 24 meters in length but can be configured for larger craft operations. The system can be integrated to various propulsion and steering configurations including Electric, Gas/Diesel, Diesel-Electric, Inboard, Outboard, Sterndrive, and Water Jet and can be augmented by maneuvering thrusters.

Modes of Operation
- Line of Site (LOS)
- Over the Horizon (OTH)
- Joystick via Belt Pack
- Traditionally Piloted
- Manned/Unmanned Vessel Collaboration

Capabilities
- Waypoint Following
- Collaborative Following
- Station Keeping
- Obstacle Avoidance
- Sea State Adaptation

Applications
- Tug Work / Vessel Handling
- Hydrographic Survey
- AUV Positioning
- Seismic Acoustic Source
- Vessel Escort / Follow

www.sea-machines.com
Sea Machines Robotics
jbartkowski@sea-machines.com
info@sea-machines.com

Sea Machines

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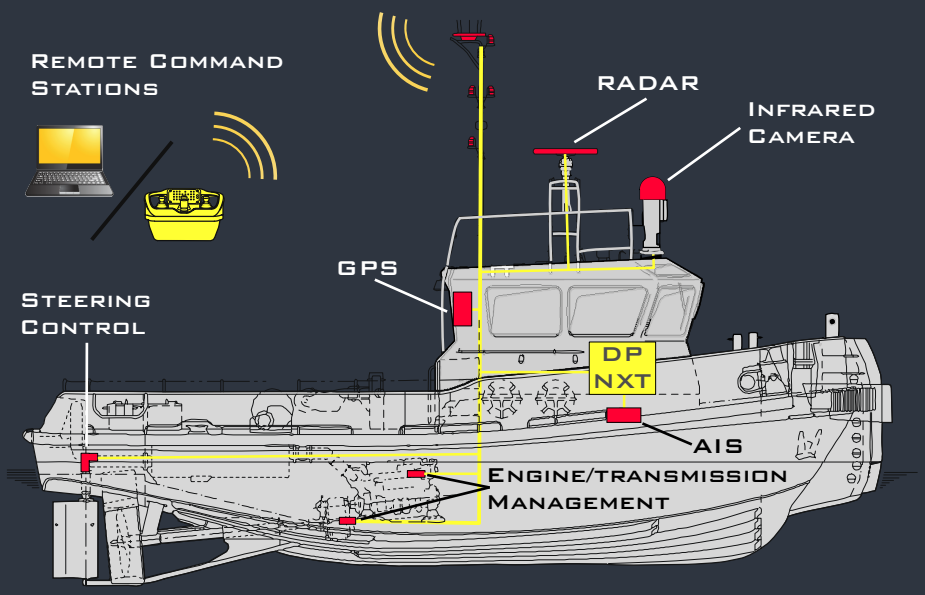


DP-NXT Architecture

Water Resistant (IP67) enclosures and Industrial Grade Siemens PLCs (-40° C to +85° C) allow our systems to provide the utmost reliability while enduring harsh marine environments.

RADAR and AIS based collision avoidance capabilities.

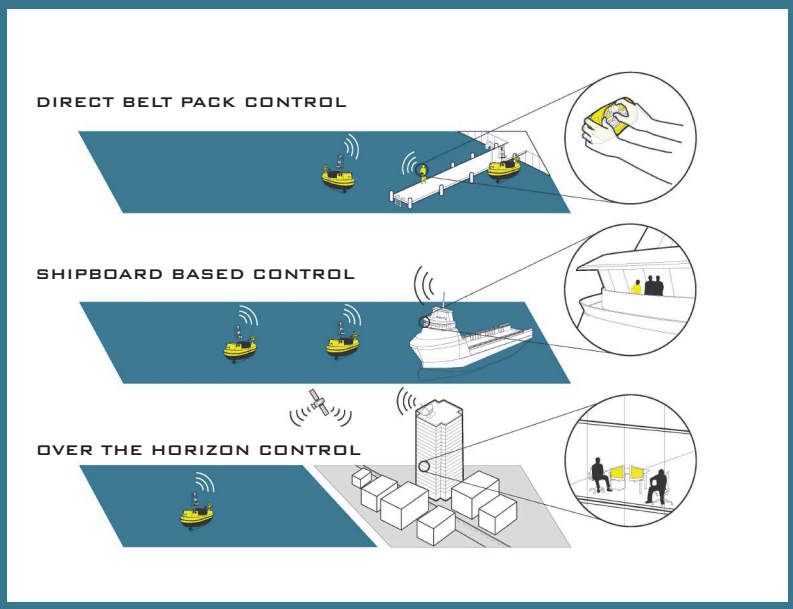
Collaborative modes allows the autonomous DP-NXT enabled vessel to work directly with manned vessels for applications including Barge Handing, Tender lead/follow, and Survey.

Sensor information is relayed to shipboard or land-based control stations for mission control, situational awareness, and environmental monitoring.

Programmable safety triggers such as hold station, engine stop, or return to safe-zone protect the vessel in case of loss of communications, prohibited zone entry, unyielding traffic, or system failures.

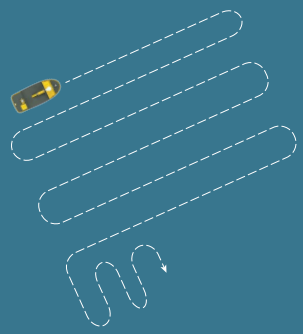
With Sea Machines' DP-NXT autonomous control system, vessels can operate in Line of Sight, Over the Horizon, Collaborative, and Direct Belt Pack Control modes. The Sea Machines User Interface includes a mission planning module or, if preferred, we can integrate a 3rd party user interface.

Control Methods

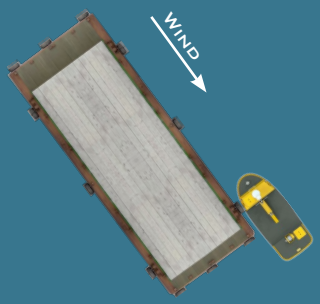


Collaborative Following

Collision Avoidance



Unmanned Survey



Station Keeping

Autonomous Capabilities

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info@sea-machines.com

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