The Role of Autonomous Systems in Offshore Wind Construction and Maintenance

Advanced Energy Conference, New York, NY

28 March 2018 / Mike Passaretti – ULC Robotics
ULC Robotics partners with industrial and utility companies to develop robotic systems, inspection technology, unmanned systems and sensors that enables remote inspection and remote operations in real-world applications.
Unmanned Vehicles Overview

- Unmanned systems are safer and more economical to operate
- Whether remotely operated or full-blown autonomy, there are many benefits.
- The core goal is to reduce the need to put people in harms way
- Reduce costs, increase availability of high quality data
Submersibles

- **Underwater Operations – Structures**
  - Pre-Construction Survey
  - Monitor & Support Construction Activities
  - Monitor Diver Safety As They Work
  - Inspect Foundations

- **Benefits –**
  - Highly Maneuverable
  - Perform Inspections Faster
  - High Quality Data
  - Subject Matter Experts Can View Data from Anywhere
Submersibles

- Underwater Operations – Cable Inspection
  - Monitor Cable Position
  - Inspect Seabed for Debris
  - Varies robotic arms and tools are available
  - New tools can be developed

- Benefits –
  - Highly Maneuverable
  - Perform Inspections Faster
  - High Quality Data
Surface Vessels

- **Surface Operations**
  - Support Construction, O&M
  - Deploy Sensors For Surveys
  - Carry Equipment & Other Cargo from Shore
  - Provide Landing Docking or Landing Zone

- **Benefits** –
  - Virtually no limit on amount of cargo
  - Efficiently Operate for Extended Periods of Time
Unmanned Aircraft

- Fixed wing, multirotor or hybrid systems:
  - Pre-construction Surveys
  - Inspection of Structures
  - Turbine blade defects
- Platform For Advanced Capabilities
  - NDT Testing of Blades/Structures
  - Installing Sensors
- Benefits –
  - Rapid Deployment
  - Safely access very hard to reach areas
  - Opens up pathway for new inspection methods
Unmanned Aircraft

- Heavy Lift Capable Systems Are Emerging
  - Cargo Transport
  - Construction Support
- Unique Payload Systems That Spray Liquids
  - Cleaning
  - De-icing
- Benefits –
  - Similar to Small Unmanned Aircraft
  - Greater lift capacities will open up many new operations
Thank you

Mike Passaretti
Program Manager, Aerial Services
ULC Robotics Inc., Hauppauge, NY 11788
mpassaretti@ulcrobotics.com