Simple & effective system health monitoring based on operator feedback & extensive experience. Sole interface for a comprehensive solution, integrating design, installation, data management & development.

**Engineering & support:**
- Concept, basic & detail engineering
- Design review & specification design
- Commissioning and start-up
- Operation support & maintenance planning

**System integration:**
- System & sensor installation
- Monitoring Software development & implementation
- System tests, commissioning & training

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**OUR REFERENCES**

- **Netwind – Borsaix**
  In excess of 80 onshore wind turbines retrofitted with vibration monitoring systems and particles counter. Mechanical parts monitoring and predictive maintenance planning.

- **SNEF – STX France**
  Monitoring system integration on offshore electrical substation.

- **Innosea – IFSTTAR**
  Cyclic loading tests for offshore foundation. Instrumentation, simulation and correlation.

- **Valemo – EDHEC ENP**
  Design for Fécamp offshore met mast environmental, structural and data analysis software.

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**HEALTH MANAGEMENT**

**Performance - Integrity - Security**

Maximizing asset output and depressing OPEX on marine renewables systems. Secure your funding via risks mitigation through security, performance & integrity monitoring.

Neopola is a one stop shop for a comprehensive offering on system health monitoring. Expert companies are merging their expertise into a sole and distinctive solution.

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**The solution to address:**

Rotating parts premature wear
Blade erosion, lightning & frost damage
Mooring & umbilical dynamic behaviour impaired by OPB fatigue or biofouling
Foundation behaviour (including grouting failure)
Gravity Base Foundation stability loss
Metal corrosion and ion migration in concrete
Asset security threat by exceptional climatic event & dense traffic
Condition Monitoring System - What are we talking about?

1. Blade
   - Fatigue, crack formation
   - Lightning strike
   - Blade adjustment error

2. Nacelle adjustment
   - Yaw error (drive & motor)
   - Monitoring of the friction bearing
   - Fatigue load

3. Bearing, shafts
   - Wear, defects of bearing shells and rolling elements
   - Fatigue, crack formation in shafts
   - Corrosion

4. Generator / network coupling
   - Winding damage
   - Rotor asymmetries, bar break
   - Overheating
   - Fatigue load
   - Rotation defect

5. Gearbox
   - Wear, break in teeth
   - Displacement, eccentricity of toothed wheels
   - Corrosion

6. Tower
   - System performance
   - Environmental influences
   - Crack formation, fatigue
   - Vibration
   - Fatigue load
   - Corrosion

7. Transition piece
   - Wave height
   - Acceleration
   - Efforts / contraints
   - Inclination
   - Water level in MP
   - Gearing
   - Corrosion

8. Gravity base
   - Fatigue load
   - Wear
   - Pressure
   - Corrosion
   - Impact

9. Monopile
   - Fatigue load
   - Wear
   - Pressure
   - Corrosion
   - Impact

10. Jacket
    - Fatigue load
     - Wear
     - Pressure
     - Corrosion

11. Floating structure
    - Bilge valve and pumps status route
    - Water ingress
    - Water pressure
    - Corrosion

12. Cables and mooring lines
    - Out of plane bending
    - Biofouling
    - Stress

13. Anchor
    - Fatigue load
    - Wear
    - Pressure
    - Corrosion

14. Cathodic steel potential
    - Temperature rising
    - Corrosion potential between a test point and a measuring electrode zinc

15. Seabed
    - Local scouring phenomenon

16. Sea-state
    - Wave
    - Stream

17. Weather
    - Wind force and orientation
    - Temperature and humidity