EXCURSION MONITORING SYSTEM
POSITION MONITORING, POSITION REFERENCE

1 - Data acquisition
- Vendor neutral
- Multi-protocols support:
  NMEA-0183, Gill ASCII, TSS1, TSS3, OMC2900

2 - Data quality checks
- WGS-84 to UTM
- Snail Trail Display
- Data archiving
- Alarms

3 - Multiple clients
- Simultaneous live data display

KEY FEATURES
- Simple User Interface
- Snail Trail Displays
- Roll And Pitch Compensation
- WGS84 To Local UTM Conversion
- Inner And Outer Excursion Alarm Limits
- Movement Data Analysis
- Dual Redundant GNSS Receivers
- High Resolution Historic Data Log
- Industry Standard Computer And GNSS Hardware
- NMEA-0183 Communications
- LAN/WAN Network Support
- Easy Systems Integration With Others
- RUPDB SCADA Database Engine
- Alarm Monitoring
- Email Notification
- Multiple Platform: QNX, GNU/Linux, MS Windows
- High Reliability
- Low System Management
- Remote Access Support
- Small Resource Footprint
- Customisable / Modular / Scaleable
- Cost Effective

APPLICATIONS
- FPSO Excursion / Movement Monitoring
- Position Reference / Data Server
- Anchor-chain Integrity Monitoring
- Weather System

The RUP Excursion Monitoring System, EMS, combines high performance GNSS sensors and RUPDB SCADA & RUPEMS software packages to provide reliable and accurate position monitoring for various offshore and oil & gas floating vessels like FPSOs, FSUs and semi-submersibles.

The EMS monitors the position of a floating vessel relative to its mooring centre and its excursion envelops. The position and orientation of the vessel is determined using data from GNSS sensors and a Motion Reference Unit, MRU. The system will generate an alarm to indicate a potential failure of the mooring system or an equipment failure.

The EMS provides both short-term and long-term position monitoring functions: the short-term function answers the question "where are we now?" and can be used to determine gross failure of the mooring system; and the long-term function is used to determine partial failure of the mooring system which can cause a small offset in the vessel's position.

Software Development
Consultancy Services
Computer Systems

RUP LTD
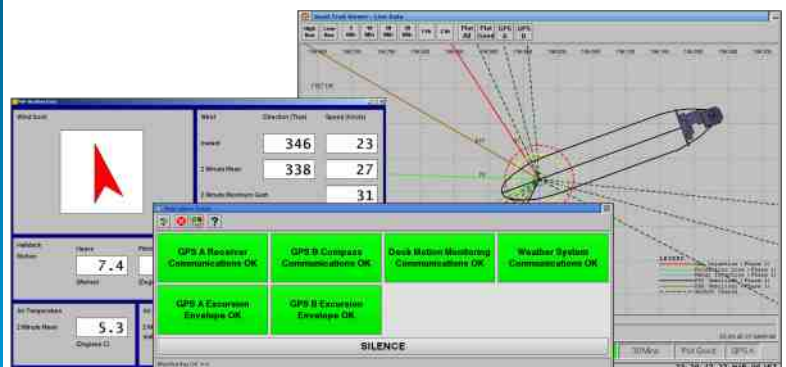
HOW IT WORKS

The EMS computer receives position and heading data from the GNSS sensors and motion data from the MRU. The RUPEMS software processes the GNSS data and displays the vessel's position on a screen. The system monitors the position of the vessel and generates an alarm if the vessel's position moves out of the excursion envelopes set in the system configuration.

DATA CALCULATIONS

The EMS processes the GNSS data in the following principle steps:
1. Convert GNSS sensors's latitude and longitude from WGS84 to local UTM grid co-ordinates;
2. Calculate the vessel's turret position while taking into account the vessel's heading, roll and pitch; and
3. Determine the vessel's excursion status.

The vessel's excursion status is determined using computational geometry to check if the vessel is within the excursion envelopes. The excursion envelopes are defined in the EMS as irregular polygons.

GNSS SENSOR PERFORMANCE AND ACCURACY

The accuracy of the EMS depends on the accuracy of the GNSS equipment and heading signal. By careful selection of equipment and antenna location, the EMS can deliver position accuracy of 0.25m for a typical installation.

SYSTEM INTEGRATION

The EMS supports a wide variety of communications and interfacing options. It is easy to integrate the EMS with third party systems with Modbus, NMEA-0183 and volt-free alarm contacts.

ABOUT RUP LIMITED

RUP Limited was founded in 1991 to provide computer system consultancy services. Our strengths are with high reliability, real time performance and network communications applications.

RUP can supply complete systems based on our own embedded SCADA product, RUPDB. RUPDB includes a suite of software modules for building SCADA type systems with an emphasis on network data distribution.

Our RUPEMS software package is designed for the Excursion Monitoring System and similar applications. The RUPEMS package builds on top of RUPDB and adds functions required for marine environments.

RUP is ISO 9001 certified.

ISO 9001
REGISTERED FIRM
Certificate No.: 14130604

TECHNICAL SPECIFICATIONS

All specifications provided are current at the time of publication. However, due to our continual product improvement policy, we reserve the right to make changes at any-time without notice.

EMS SERVER

- Shallow Depth 1U Rackmount Industrial Computer**
**We also supply custom hardware to meet client's requirements.

EMS SOFTWARE

- Data Protocols: NMEA-0183, Gill ASCII, TSS1, TSS3, OMC-2900
- NMEA Sentences: GGA, HDT and custom sentences.
- Gill ASCII Formats: Mode 1, Mode 2
- TSS Formats: TSS1 Format, TSS3 Format
- Modbus Protocols: Modbus ASCII/RTU/TCP, Modbus RTU over TCP
- OPC: OPC support via Modbus servers
- Others Protocols: NTP, SMTP, SNMP (versions 1,2,3), SSH

RECOMMENDED GNSS SENSOR: TRIMBLE® BX982 GNSS RECEIVER

The Trimble® BX982 supports GPS L1/L2/L5, GLONASS L1/L2/L3 and BeiDou B1, B2 signals.

POSITION SPECIFICATION

- DGPS: 0.25 m + 1 ppm Horizontal; 0.50 m + 1 ppm Vertical
- SBAS: 0.50 m Horizontal; 0.85 m Vertical
- RTK 0.008 m + 1 ppm Horizontal; 0.015 m + 1 ppm Vertical

HEADING SPECIFICATION

<0.09° (with 2m separation between antennae)
<0.05° (with 10m separation between antennae)

ORDERING INFORMATION / OPTIONS

The EMS is available in a variety of configurations and options. Please contact RUP Limited for more information.

REMOTE ACCESS SUPPORT

Remote access support options: SSH, VPN (OpenVPN) and VNC over SSH tunnel.

ON-GOING ANNUAL SUPPORT AND WARRANTY EXTENSION

Covers technical queries, trouble-shooting and software updates. Also includes hardware warranty extension for the life of the system.

ONSHORE DATA SERVER

The onshore data server provides data archiving and display functions. This option helps in minimising data traffic over satellite links usually found in offshore applications.

CONTACT INFORMATION

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