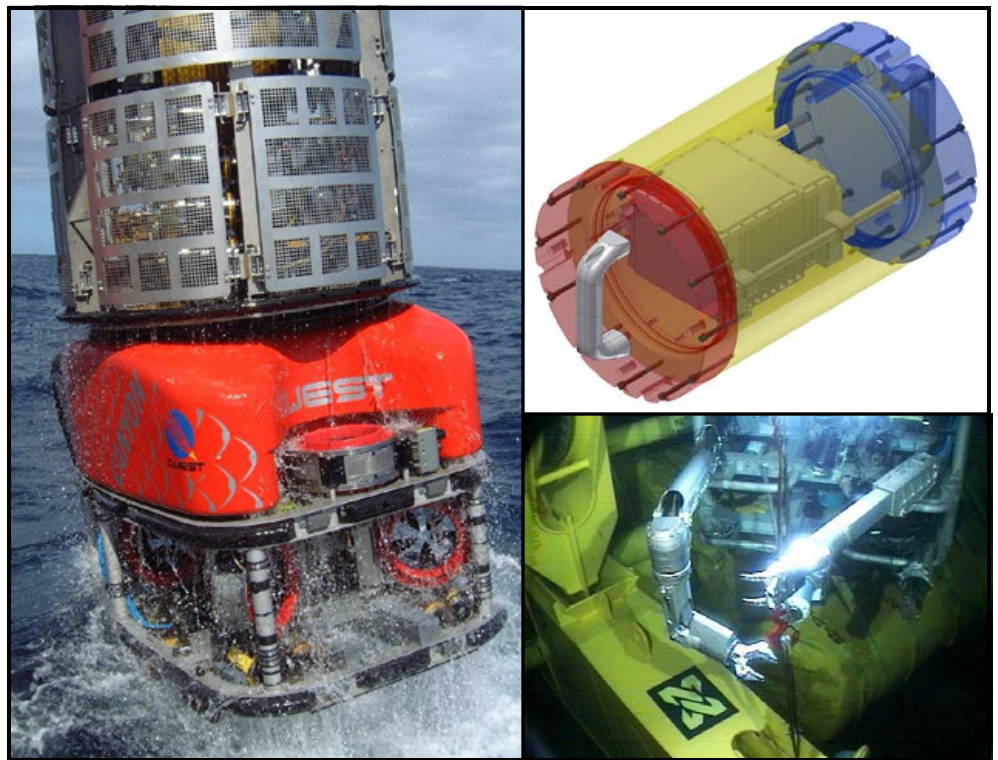




**Solutions - Service - Support**

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## ***Subsea Precise Inertial Navigation System (C-PINS ROV)<sup>TM</sup>***



**Zupt delivers operationally aware inertial technologies to improve the productivity associated with high cost operations for oil and gas exploration and field development. These capabilities are offered and supported worldwide.**

# Subsea Precise Inertial Navigation System (C-PINS ROV)<sup>TM</sup>

**C-PINS<sup>TM</sup> is a survey tool specifically designed to provide precise positioning and navigation for most offshore subsea marine construction operations.**

**C-PINS<sup>TM</sup> delivers the same precision as conventional underwater positioning systems while consuming much less spread time for deployment, calibration and operations.**

C-PINS<sup>TM</sup> is a fully integrated system including:

- High-performance inertial sensors
- Data fusion software
- I-O hardware interfacing multiple aiding sensors
- Subsea housings and interconnecting cables
- Real time position, attitude, velocity at 50Hz
- Job design and post processing software

C-PINS<sup>TM</sup> has applications in:

- Metrology – jumper, spoolpiece
- Field layout – manifold, SSIV, PLEM installations
- Pipeline and Umbilical installation
- Pipeline out-of- straightness surveys
- USBL smoothing
- Decommissioning

In addition to developing a solid architecture during the design of C-PINS we have focused on specific limitations that we believe exist within other subsea aided inertial systems:

- Tightly coupled LBL observations allowing dynamic use of lines of position (LoPs) or very sparse LBL
- LBL time of validity (tov) through sampling of LBL Tx pings
- DVL is coupled at the beam level - more reliable solution
- USBL is used to aid the inertial not the other way around
- Navigation processing on the vehicle – significantly reducing issues due to slip ring outage and bandwidth demands
- IMU flexible – select IMU based on error model requirements

Part Numbers: Subsea Precise Inertial Navigation system C-PINS ROV<sup>TM</sup>

## Capabilities:

C-PINS can be configured to integrate any or all of the following aiding sensors:

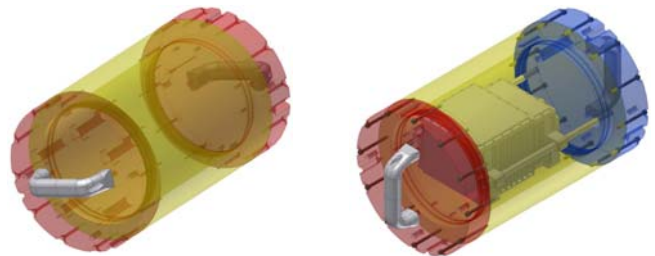
- Navigation grade Inertial Measurement Unit (IMU)
- Doppler velocity Log (DVL) beam data
- Long Baseline lines of position (LoP)
- Precise pressure (depth) transducer (dual freq quartz)
- Ultra Short Baseline acoustic positioning (USBL)
- GPS range and time data (1PPS to UTC)
- Speed of sound - real time sound velocity profile (SVP)
- Seawater Temperature (PRT)

## Options:

- Various IMUs depending on overall error budget
- Various water depth packaging
- Configurations for towfish, AUV as well as ROV

## Specification:

- Two subsea housing configuration for high end marine construction tasks
- 3,500m rated system
  - 32.5cm dia by 40cm long
  - Weight in air 85kg per housing
  - Weight in water 55kg per housing
- 1,000m rated system
  - 25cm dia by 34cm long
  - Weight in air 52kg per housing
  - Weight in water 38kg



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The information given herein is believed to be reliable. Zupt, LLC makes no warranties as to its accuracy and completeness. These specifications are subject to change without notice.