QES

QES Technology Philippines, Inc.

CHCNAV

Elevating Mining Operations through CHCNav Solutions

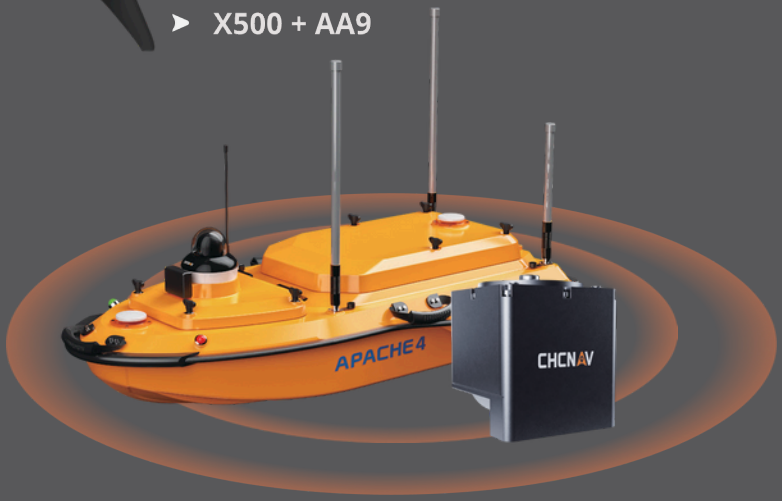
From hydrographic mapping to real-time deformation monitoring, CHCNAV's integrated technologies empower mining companies to optimize safety, efficiency, and decision-making across every stage of operation.

Monitoring Solutions

- H3 GNSS Receiver
- PS2000 Radar

M3D (3D Mapping)

- RS10
- X500 + AA9



Marine Solutions

- Apache 4
- HQ-400

+632 8771 1248
qtpmarketing@qesnet.com
www.qesnet.com

U507, Page 1 Bldg., 1215 Acacia Ave., Madrigal Business Park, Ayala Alabang, Muntinlupa City

CHC NAVIGATION: Integrated Geospatial Systems for Enhanced Efficiency and Risk Mitigation in Modern Mining Operations

From the vast open pits to the sediment-filled settling ponds, a mining operation is a landscape in constant, measured motion. For the Philippine mining industry, mastering this motion; the movement of earth, water, and infrastructure, is the key to unlocking new levels of efficiency, safety, and environmental responsibility. At the heart of this transformation is a comprehensive technological approach that builds a single, unified digital reality of the entire site.

Imagine a mining manager who no longer has to rely on fragmented reports. Instead, they view a living digital twin of their operation, where data from drones, autonomous boats, and ground sensors flows into one coherent picture. This is the integrated ecosystem that CHC Navigation (CHCNAV) is bringing to the field, weaving together marine, terrestrial, and monitoring technologies into a seamless workflow.

The journey often begins at the water's edge. Siltation in tailing ponds and reservoirs is more than an operational headache; it's an environmental imperative. Here, CHCNAV’s Apache series Unmanned Surface Vessels (USVs), like the Apache 4 and Apache 6, are taking on the task. These fully autonomous vessels navigate pre-programmed routes, using advanced echo sounders to map the underwater terrain. For particularly challenging areas, the HQ400 multibeam echo sounder can be deployed, painting a high-resolution, three-dimensional picture of the sediment buildup. This isn't just a map; it's a precise volumetric calculation that tells engineers exactly how much silt has accumulated, enabling proactive dredging and preventing compliance issues before they start.

But a mine is more than its reservoirs. The material dredged from the water is tracked as it moves to stockpiles, and then as ore is extracted from the pit. This is where CHCNAV’s Mapping solutions create the next layer of intelligence. In the air, the X500 UAV conducts aerial surveys, capturing the vast, changing topography of the site through photogrammetry and LiDAR. On the ground, the workhorse

RS10 measurement system provides Centimeter-level accuracy for the nitty-gritty of daily operations. It's used to validate the volume of a truckload, perform a final check on a stockpile calculation, and ensure that what was moved matches what was planned. This seamless data handoff from the UAV to the RS10 closes the loop on material tracking, eliminating discrepancies and giving management a trustworthy, real-time view of production efficiency.

Yet, a mine is a dynamic and sometimes unstable environment. The final, critical layer of this digital twin is real-time vigilance. The same high-walls being mapped from the air and the massive stockpiles being measured from the ground need to be monitored for the slightest sign of movement. This is the domain of CHCNAV's monitoring solutions. Strategically placed around the site, the PS-2000 radar and H3 GNSS receiver act as a silent sentinel network. They continuously track points, feeding data to a platform. If a slope begins to deform beyond safe parameters, the system doesn't just record it, it alerts site managers instantly, allowing them to evacuate an area or initiate corrective action before a minor shift becomes a major incident.

What makes this approach revolutionary is not just the power of each tool, but their synergy. The bathymetric data from the Apache USV informs the sediment volume added to a stockpile, which is measured by the RS10 and monitored for stability by the PS-2000. It's a continuous, closed-loop of geospatial intelligence.

For the Philippine mining industry, this integrated, end-to-end solution marks a pivotal shift. It moves beyond reactive problem-solving to proactive, data-driven management. By building a single, undeniable truth about the mining operations, from the bottom of the tailing pond to the crest of the open pit; mining companies are now empowered to achieve the highest standards of productivity, safety, and sustainability.

About CHC Navigation

CHC Navigation (CHCNAV) develops advanced mapping, navigation and positioning solutions designed to increase productivity and efficiency. Serving industries such as geospatial, agriculture, construction and autonomy, CHCNAV delivers innovative technologies that empower professionals and drive industry advancement. With a global presence spanning over 140 countries and a team of more than 2,000 professionals, CHC Navigation is recognized as a leader in the geospatial industry and beyond.

For those who are interested, QES Technology Philippines invites mining companies to schedule a demonstration onsite. QES offices are located at: **Metro Manila** Unit 507, Page 1 Building, Acacia Avenue, Madrigal Business Park, Ayala Alabang, Muntinlupa, 1780 and **Mindanao** National Highway, KM. 4, Brgy. Luna, Surigao City

Consultations, demo scheduling, and quotation requests are available through

+632 8771 1248, via email at qtpmarketing@qesnet.com, or by visiting www.qesnet.com