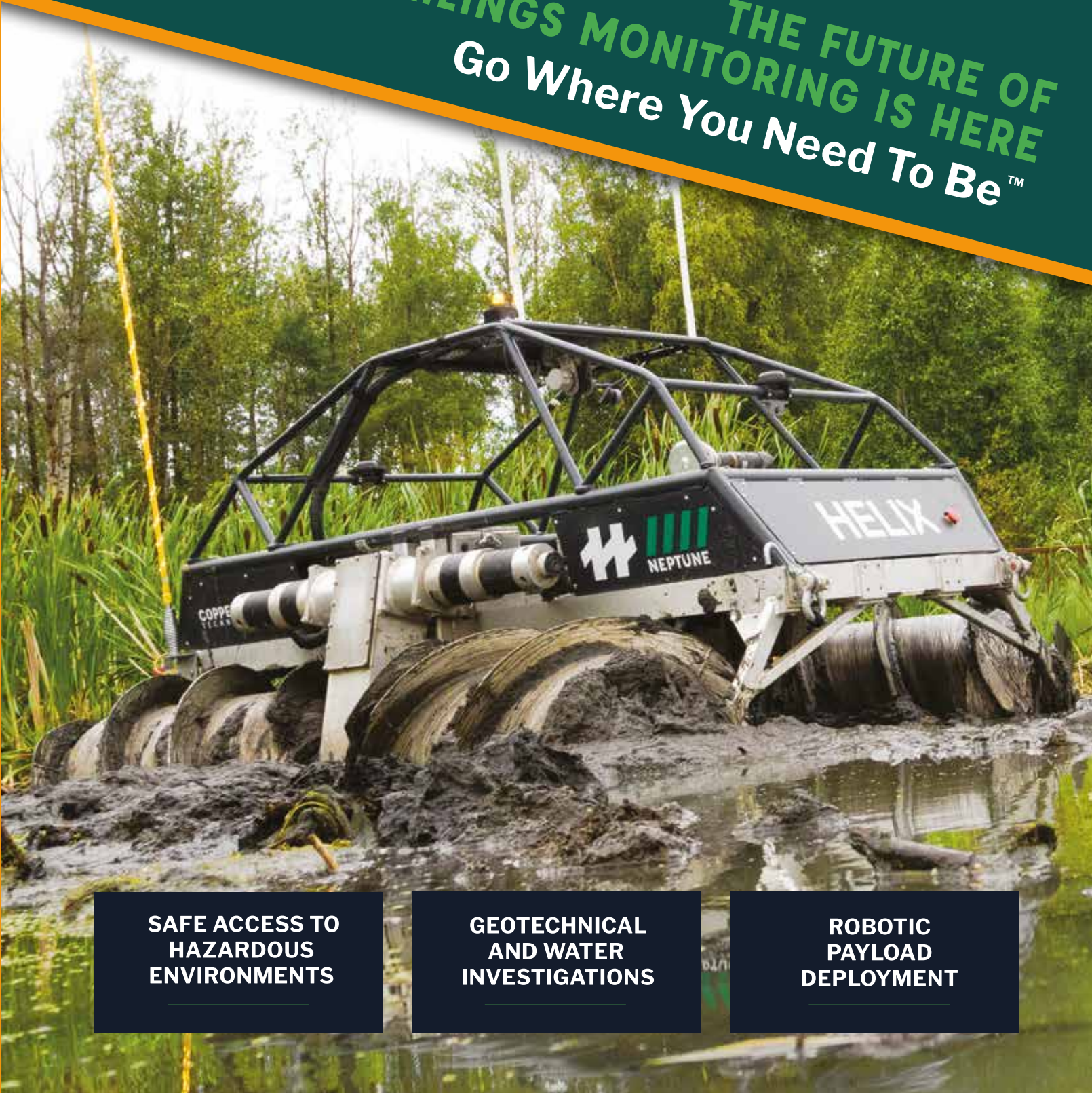


**THE FUTURE OF
TAILINGS MONITORING IS HERE**
Go Where You Need To Be™



**SAFE ACCESS TO
HAZARDOUS
ENVIRONMENTS**

**GEOTECHNICAL
AND WATER
INVESTIGATIONS**

**ROBOTIC
PAYLOAD
DEPLOYMENT**

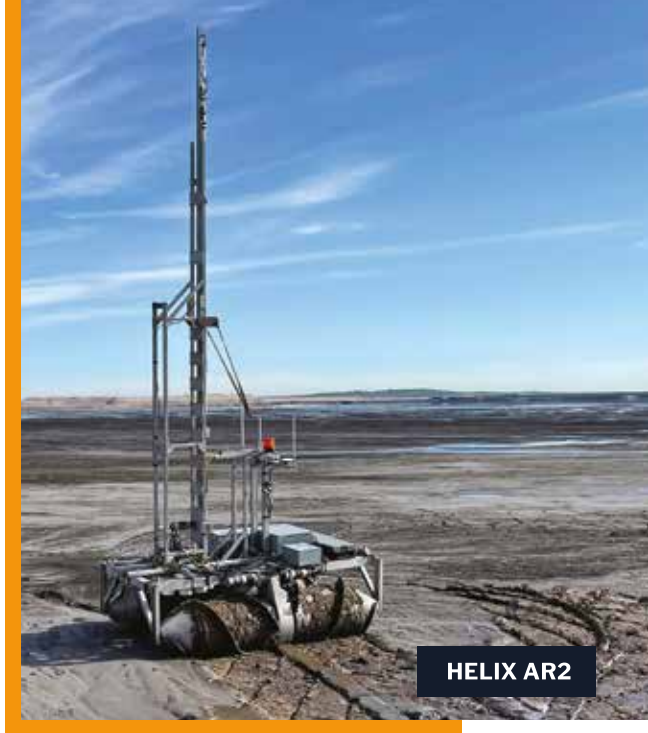
AMPHIBIOUS | AUTONOMOUS | SCREW-DRIVE PROPULSION



INTRODUCING **HELIX ROBOTS**

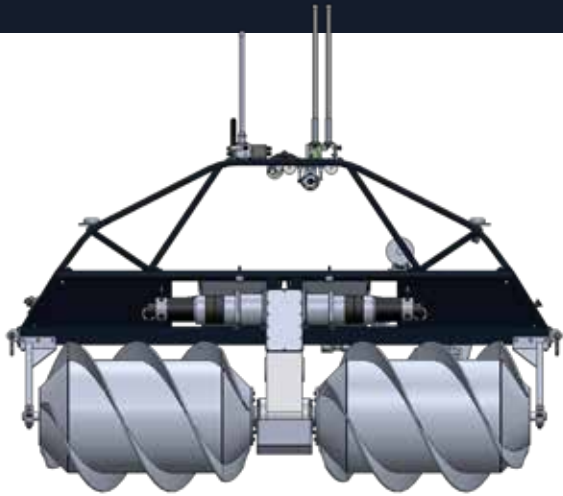
Copperstone has developed HELIX, a family of autonomous field robots to collect mission critical data in hazardous environments.

Copperstone has modernized the screw-drive vehicle and adapted it to work as a robotic platform specifically for environmental monitoring and tailings investigations. The patented screw-drives are pontoons that enable flotation, with a helical grouser acting as a propeller when spun at high speed in water. At low speeds, the vehicle can crawl through soft mud deposits, or act as a wheel on hard ground. HELIX has many advantages over other modes of propulsion and is perfectly suited to the variety of terrain and seasonal conditions encountered on tailings.



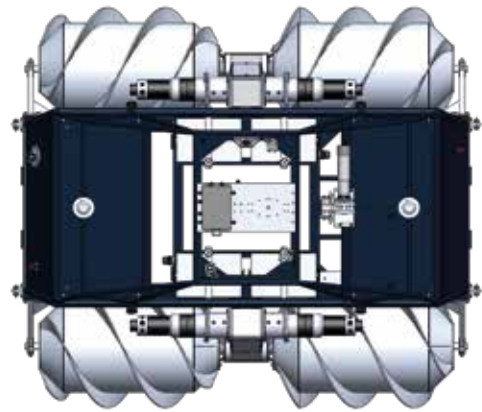
HELIX AR2

**REMOTE & AUTONOMOUS
OPERATIONS KEEP PEOPLE SAFE**



**MULTI-FUNCTIONAL WITH A
VARIETY OF PAYLOADS TO SUIT
CLIENT NEEDS**

**HELIX ROBOTS ARE DESIGNED TO
BE RUGGED, RELIABLE, AND
REDUNDANT**



**PATENTED PROPULSION SYSTEM
ENABLES ALL-TERRAIN,
AMPHIBIOUS ACCESS**

HELIX NEPTUNE



OUR SERVICES

HELIX Robot-as-a-Service is an easy, low risk way for clients to experience the benefits of advanced robotic site investigation. HELIX comes as a complete solution, including trained operators, to collect the data and samples when and where you need it most.

USE CASES

BATHYMETRY • WATER SAMPLING • IN SITU WATER CHARACTERIZATION • CPTu DIGITAL CONE PENETROMETER • VANE SHEAR • TAILINGS SAMPLING • SEDIMENT SAMPLING • BEACH INVESTIGATIONS EQUIPMENT RESCUE • GEOPHYSICAL INVESTIGATIONS • UNDER WATER IMAGING • ICE ASSESSMENTS

OUR ROBOTS

HELIX AR2

- Length 125in / 3.2 m
- Width 87in / 2.2 m
- Height 285in / 7.2 m
- Base weight 1320 lbs / 600 kg
- Payload Capacity 880 lbs / 400 kg
- 18.2 kWhr LiPo battery pack. Available with NiCd, NiMH or LiFePO4 options
- Top speed on water 2 kts
- Top speed on ground 4.5 mph / 7.25 kmph
- Range 8 hours, 12.5 mi / 20 km
- Ellipse-D, Dual Antenna RTK Inertial Navigation System, $\pm 0.2^\circ$ heading, 1 cm RTK GNSS Position

HELIX NEPTUNE

- Length 93 in / 2.4 m
- Width 82 in / 2.1 m
- Height 55 in / 1.4 m
- Antenna Height 78 in / 2.0 m
- Base weight 875 lbs / 397 kg
- Payload Capacity 200 lbs / 91 kg
- 9.1 kWhr LiPo battery pack. Available with NiCd, NiMH or LiFePO4 options
- Top speed on water 2 kts
- Top speed on ground 9 mph / 14.5 kmph
- Range 8 hours, 12.5 mi / 20 km
- Ellipse-D, Dual Antenna RTK Inertial Navigation System, $\pm 0.2^\circ$ heading, 1 cm RTK GNSS Position

COMMON FEATURES

- Autonomous waypoint navigation & survey path planning
- Industrial handheld remote control with E-Stop
- Computer controlled ground station with live streaming video, data and mapping
- Remote control range LOS up to 1.3 mi / 2 km
- Remote control frequency, 900 MHz or 2.4 GHz
- Data Telemetry Range LOS up to 1.3 mi / 2 km
- Wifi and onboard video range LOS up to 0.7 mi / 1 km
- Range may be increased with licensed radio hardware
- Satellite and cellular control options for BLOS

KEY FEATURES

- ALL TERRAIN AMPHIBIOUS
- ELECTRIC DRIVE & BATTERY POWERED
- GEOTECHNICAL OR WATER SURVEY PAYLOADS
- LONG RANGE RADIO, REMOTE AND AUTONOMOUS
- ALL SEASON, ALL WEATHER CAPABLE
- AVAILABLE GLOBALLY



**AWARD WINNING ENGINEERING
TEAM, BRINGING
TECHNOLOGY AND INNOVATION TO
THE MINING INDUSTRY**

**INDUSTRY-LEADING ROBOTIC
SERVICES FOR HAZARDOUS SITE
INVESTIGATIONS AND WATER
SURVEYS**

ABOUT **COPPERSTONE TECHNOLOGIES**



We're a Canadian-based engineering firm specializing in the design, production, and operation of HELIX, an amphibious robot developed for environmental monitoring. Inspired by space robotics and advanced remote sensing, Copperstone envisions developing innovative tools and exploratory methods to help Earth's most challenging environments. HELIX is used for site investigation services which may include measuring geotechnical parameters of mine waste tailings ponds, collecting samples, and conducting bathymetric surveys.

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