

c-Link Systems, Inc.



Forager-QT-x

Quad-Tracked Omni-Chassis and Payloads

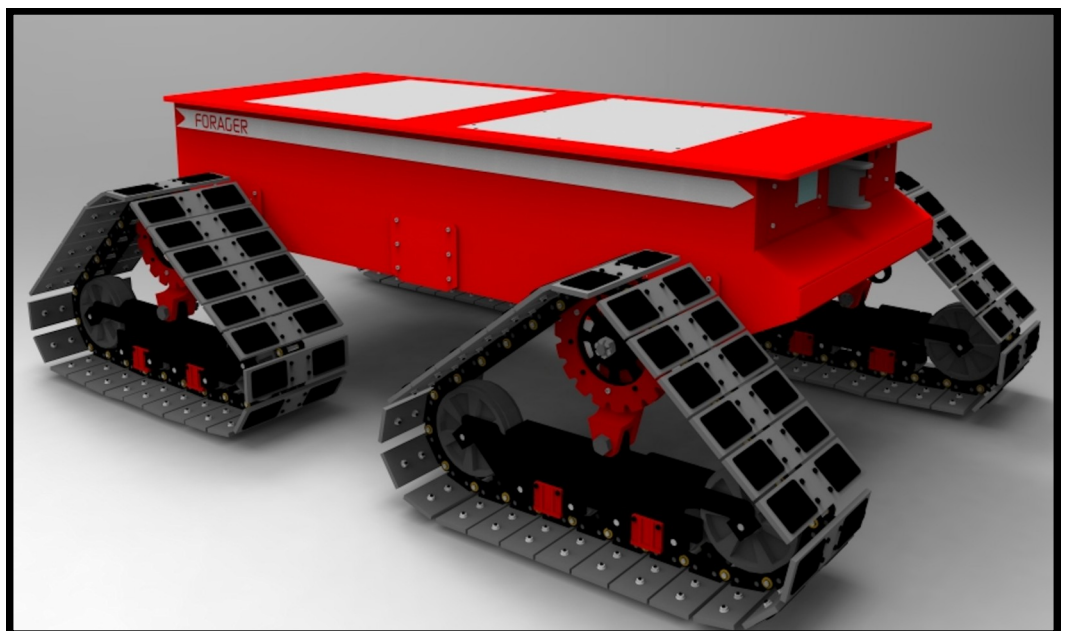
Product Brief—Revision B

20 March 2011

System Highlights

- Omni-chassis
- Quad-Tracked
- "Green" Electric drive system
- 24VDC PMDC motor/gearbox drive
- 12" (304.8mm) wide tracks
- Power distribution/battery charger board
- ABS Battery Boxes for easy removal
- All aluminum
- Standard Sealed Lead Acid (SLA)
- Future option of LiFePO
- Overall Length: 87 inches (221cm)
- Overall Height: 27.5 inches (69.8cm)
- Overall Width: 56.5 inches (143.5cm)
- Vehicle Weight: 900lbs. (408.3Kg)
- Total Vehicle Weight: 2000lbs. (907Kg)
- Ground clearance: 13 inches (33cm)
- Speed: 2.5mph (4kph)
- Ground Pressure: 1.6psi at max weight

Forager-QT-x



This is the basic autonomous robotic vehicle (ARV) Omni-chassis. An Omni-chassis can be equipped with a variety of attachments or payloads. The overall system can be preprogrammed for a job via wireless computer link or network connection. Jobs can be taught via a remote control. This is accomplished by Forager me "driven" through it's path, the ARV constantly records position information. Once complete it becomes a looped playback but with collision safety's. Forager also handles the communications and partial control of all payloads.

The unit contains a distributed multi-processor system. That system contains a full inertial navigation system, LiDAR, periphery range sensors, GPS, wireless communications, battery charging/monitoring system and cameras. A cable connection to the attached payload is brought out through the front panel. The electronics are draw mounted to facilitate field upgrade/repair. The track pods are articulated for increased stability. The pods can be tipped forward/back and twisted left/right. They are independently controlled.

The unit is due to release late 2011.

Forager-QT-DUMP

A dump body payload can be attached to the Omni-chassis. The container is approximately 1.5 cubic yards or a maximum weight of 1000 pounds (453.6Kg). This is ideal for around the clock hauling and during more quiet times the all electric system generates little noise.

System Highlights

- Omni-chassis Payload
- 1.5 cubic yard (1.147 cubic meters) dump container
- Hauling weight: 1000 lbs. (453.6Kg)
- Forager-QT base chassis
- Electric lift actuation

The dump box is constructed of a re-enforced composite material making it light weight and unaffected by chemicals, ideal for toxic clean-up. There is no tail-gate



door which allows for drive along dumping used in terrain buildup.

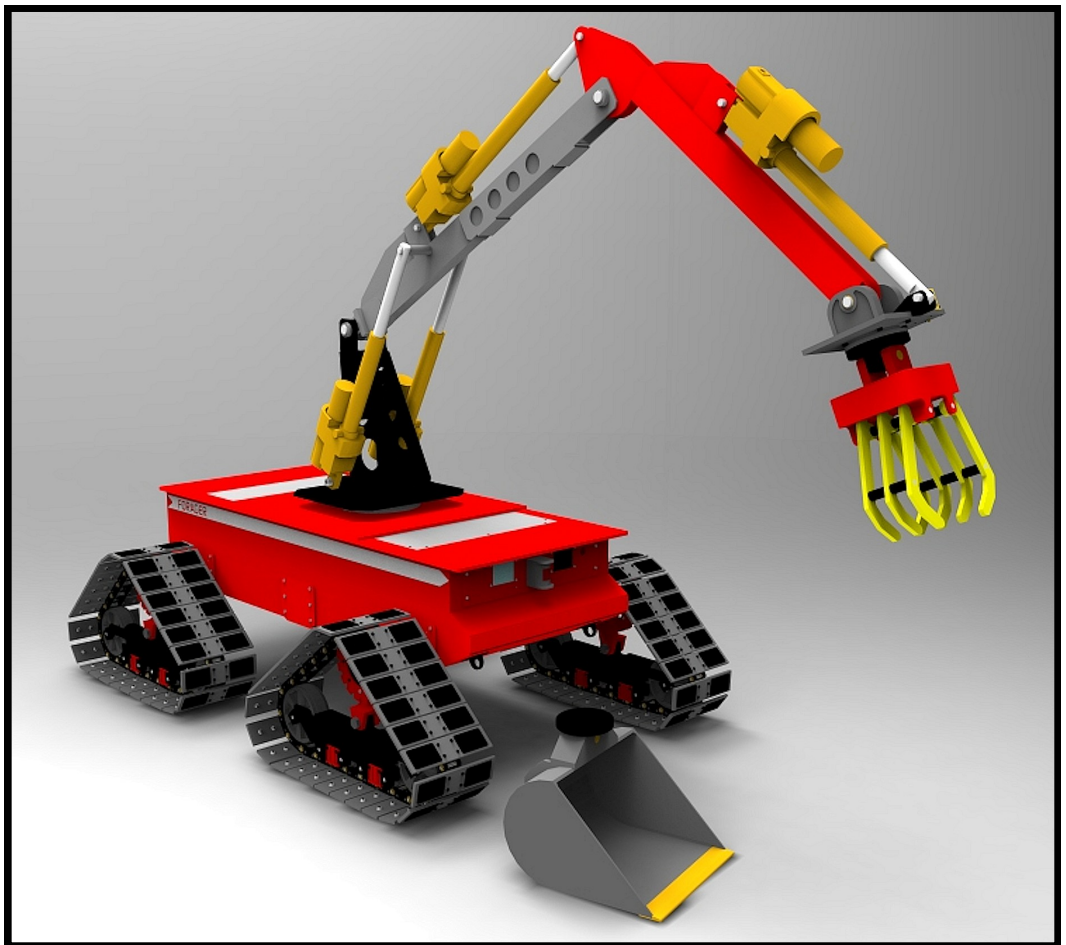
Forager-QT-ML

The Medium Lift arm is ideal for clean up, repetitive tasks, block wall construction and can even be used for terrain grading. The arm is capable of 800 pound lift with an optional upgrade for 1200 pound lift. The end-effector is job oriented and can be designed with almost any function in mind. Current end-effectors are debris claw, landscape wall stack block claw and scoop. Because the end is changeable the scoop can be fitted as a loader position or track-hoe.

System Highlights

- Omni-chassis Payload
- 800lbs. (362.8Kg) Lift Arm
- Optional: 1200lbs. (544.3Kg) Lift arm
- 5-DOF (Degrees-of-Freedom) motion
- All electric actuators
- Changeable end-effectors
- Debris claw
- Scrap/digging scoop
- Landscape wall block claw

Onboard sensors will stop all motion if the current arm action endangers the ARV by sensing an over-weight lift or tilt angle. Another feature is that the payload can be mounted any place on the mount deck. An operator is required to input the reference distance from the front for accurate position motion.



Reach Out	72in. (182.9cm)	From base rotating center
Reach Down	24in. (60.9cm)	Below the track level
Reach Up	84in. (213.4cm)	Measured from track bottom
Base Rotation	360°	
End-effector rotation	270°	Control cable limitation

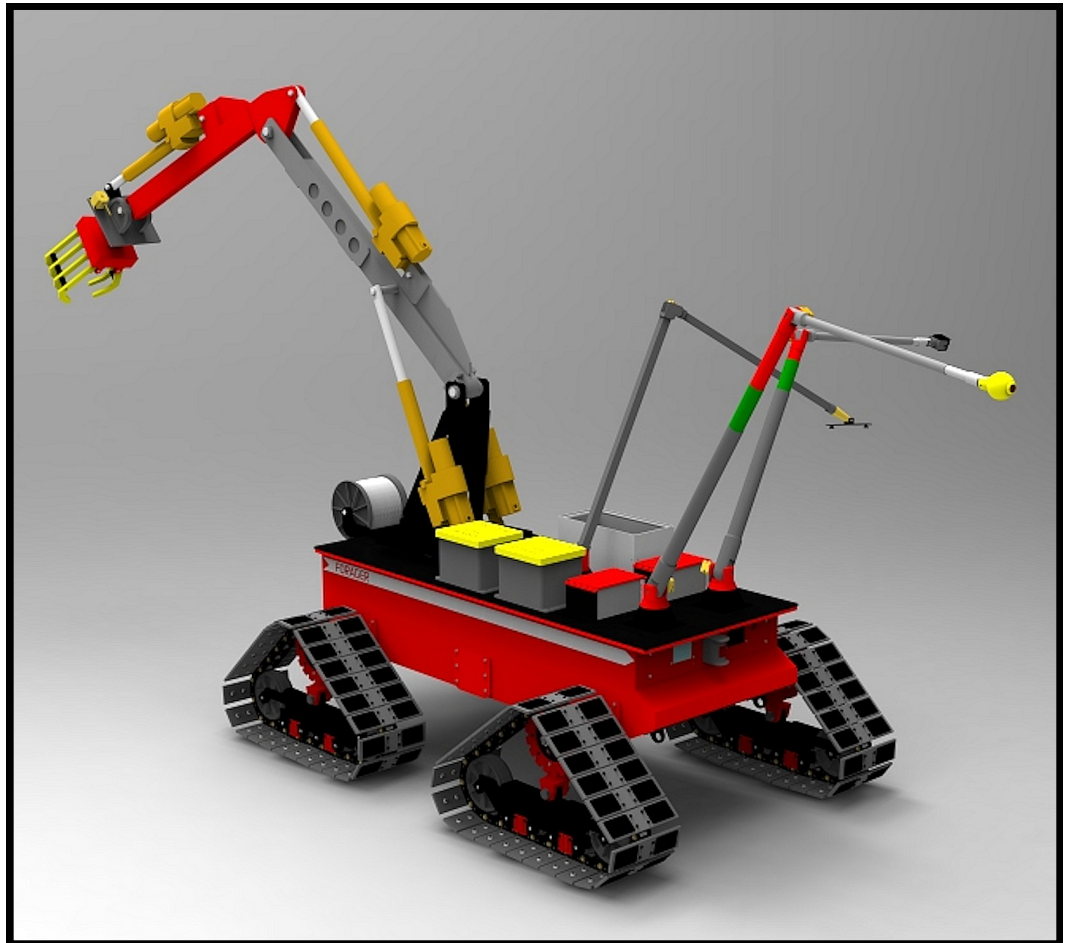
Forager-QT-ADSRS

System Highlights

- Omni-chassis Payload
- Medium Lift arm (see prior sheet for specs)
- 2 LiPO battery banks
- Expandable Multi-Tower industrial case
- Extendable boom arm with camera/sensor pod (144in., 365.8cm)
- Extendable boom arm with FLiR (144in., 365.8cm)

System Options

- Vole-bot with storage/charging rack and deployment arm.
- Fiber Optic deploy/retrieve reel, 650ft (198m)



The Autonomous Disaster Search & Rescue System (ADSRS) is one of the most advanced payloads within the Forager product line. This unit has a multi-function role in the disaster relief arena. The ADSRS is combined with Forager-QT Omni-chassis functions autonomous as a remote control system.

ADSRS utilizes a basic 3-arm configuration; bulk lifting arm, camera/sensor boom and a infra-red camera boom.

The sensor pod on the end of the arm is used to detect chemical leaks. This keeps rescuers out of harms way until the last possible second. The end-pod is bullet shaped to allow it access into the debris area without fear of damage, the camera has a wide angle field of view.

The ADSRS is predominately self-contained, there is a secondary power connection to the chassis power system to extend the usage time. Communications between the payload and the chassis system is done via a cable to limit outside interference.

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For updates check

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Corporate Brief

For the past seven years c-Link Systems, Inc. has focused on industrial control/automation of process lines in metal rolling and paper mills. Out of this emerged our expertise in Industrial Robotics and high speed fiber optic communications. A previous background in mechanics, dynamics and satellite guidance systems has positioned the company to support our customers in the growing field of robotics as it relates to autonomous robotic vehicles (ARV) with numerous commercial/industrial applications.—
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