



Acknowledgments | Academic Advisor: Dr. Mostafa Yakout | Project Sponsor: Dr. Ahmed Qureshi | Course Instructor: Dr. Tetsu Nakashima

## Project Scope

### SCOPE STATEMENT:

Robust Robotics will design an AMR Platform to perform additive manufacturing (AM) and welding using the Yaskawa GP-50 in rugged outdoor terrain.

### PURPOSE:

- Autonomous Welding & AM
- Fill market gap in const., Oil & Gas

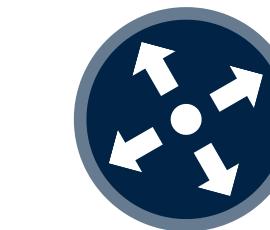
### DESIGN OBJECTIVES:

- Replace skilled welder
- Develop AMR Platform for critical components
- Rated for Canadian weather

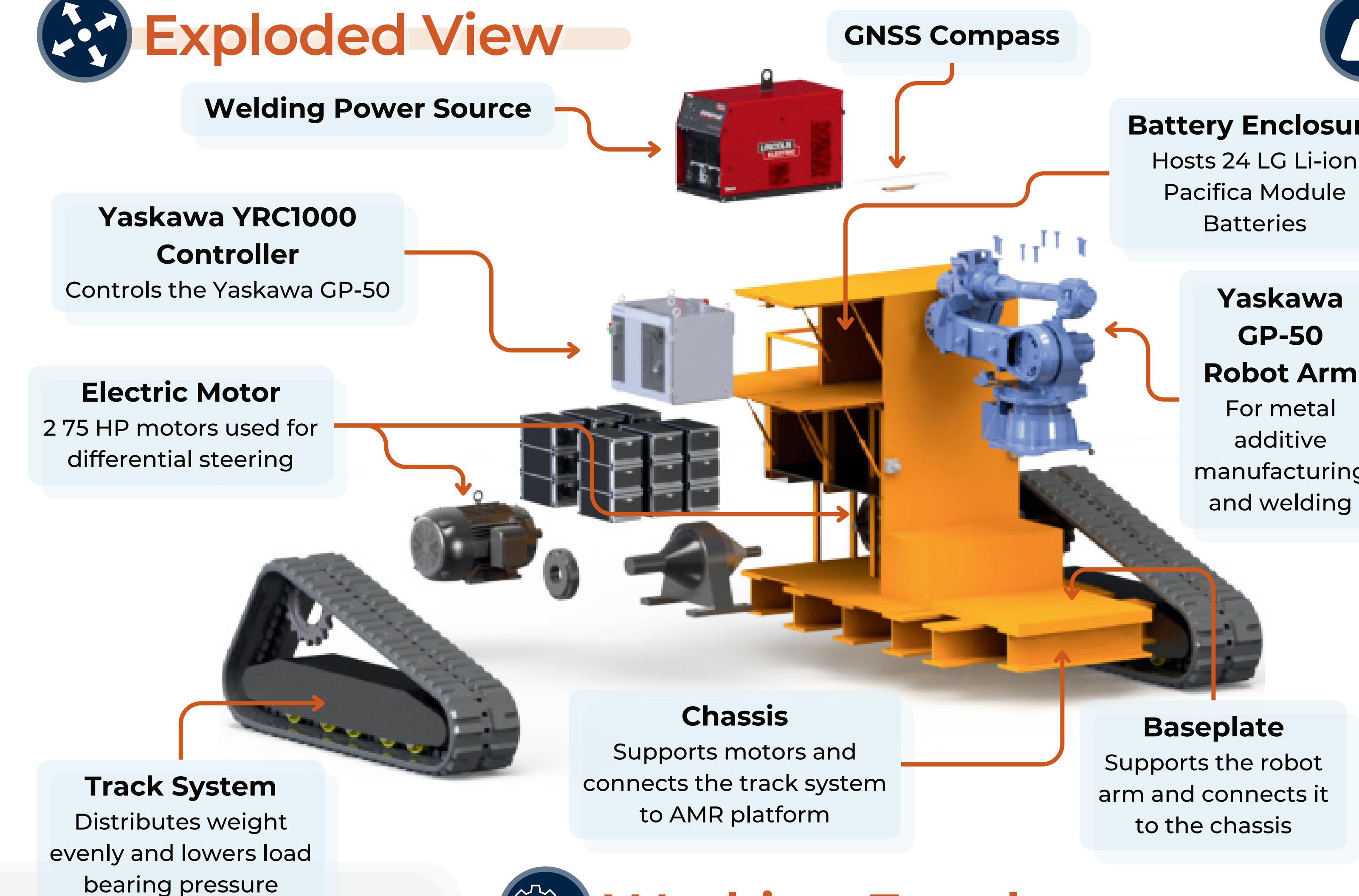
## Key Features

- Rated for use on concrete or packed dirt, on slopes up to 15%
- 6 hr battery life with optional range extending portable generator
- Integration with GPS, 2D Lidar, Cameras, & Sonar
- Weatherproof construction for work outside in any conditions
- Functionality for full autonomy or manned operation

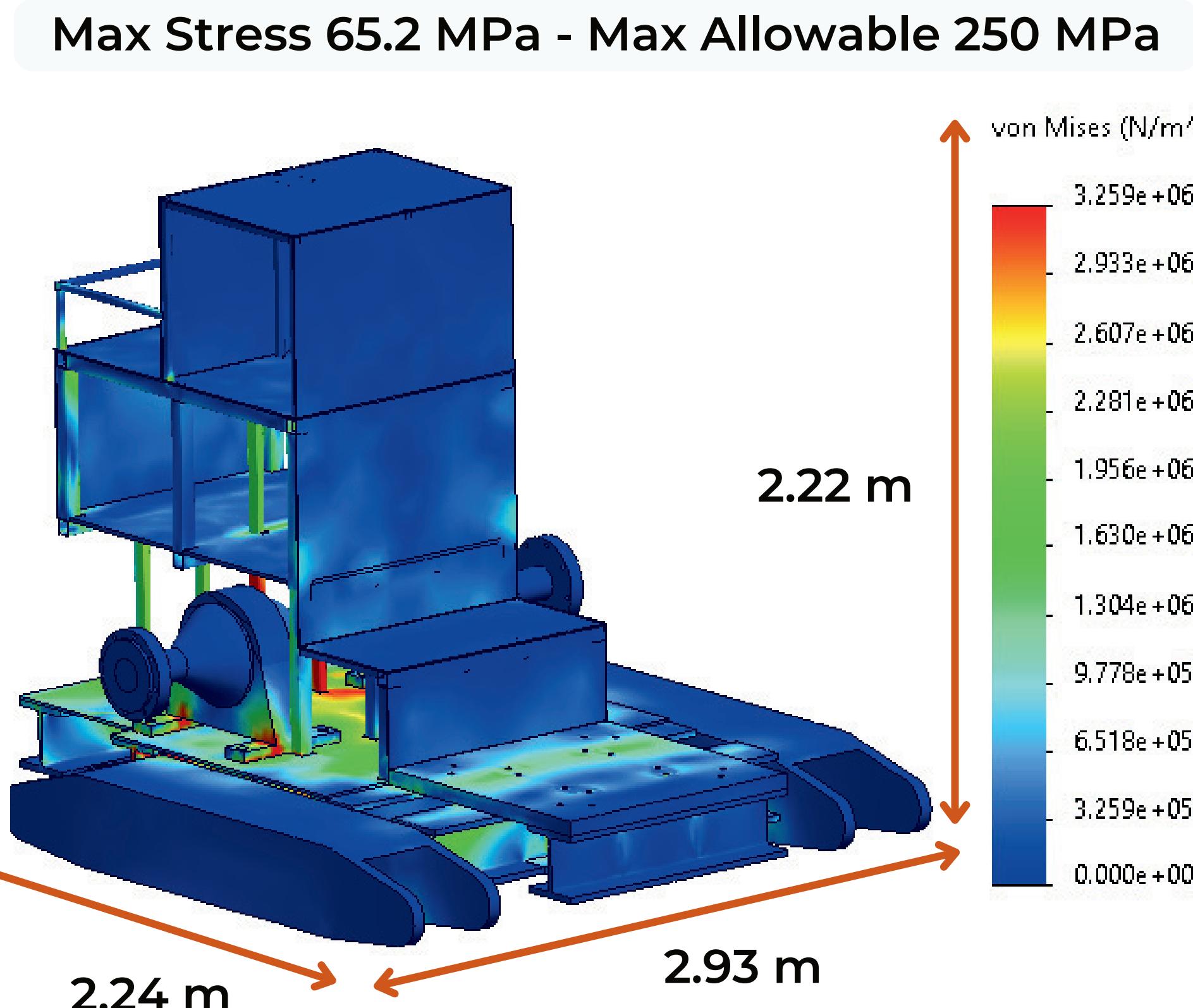
Battery Capacity:	62.4 kWh
Maximum Payload:	500 kg
Cost:	\$92K
Return on Investment:	1.31 Years
Dry Weight:	5480 kg
Min Travel Distance:	3.5 km
Maximum Speed:	12 km/h
Operable Temp Range:	-20°C to 40°C
Ground Clearance:	9"
Enclosure Ratings:	IP 67
Motors:	75 HP @ 1750 RPM



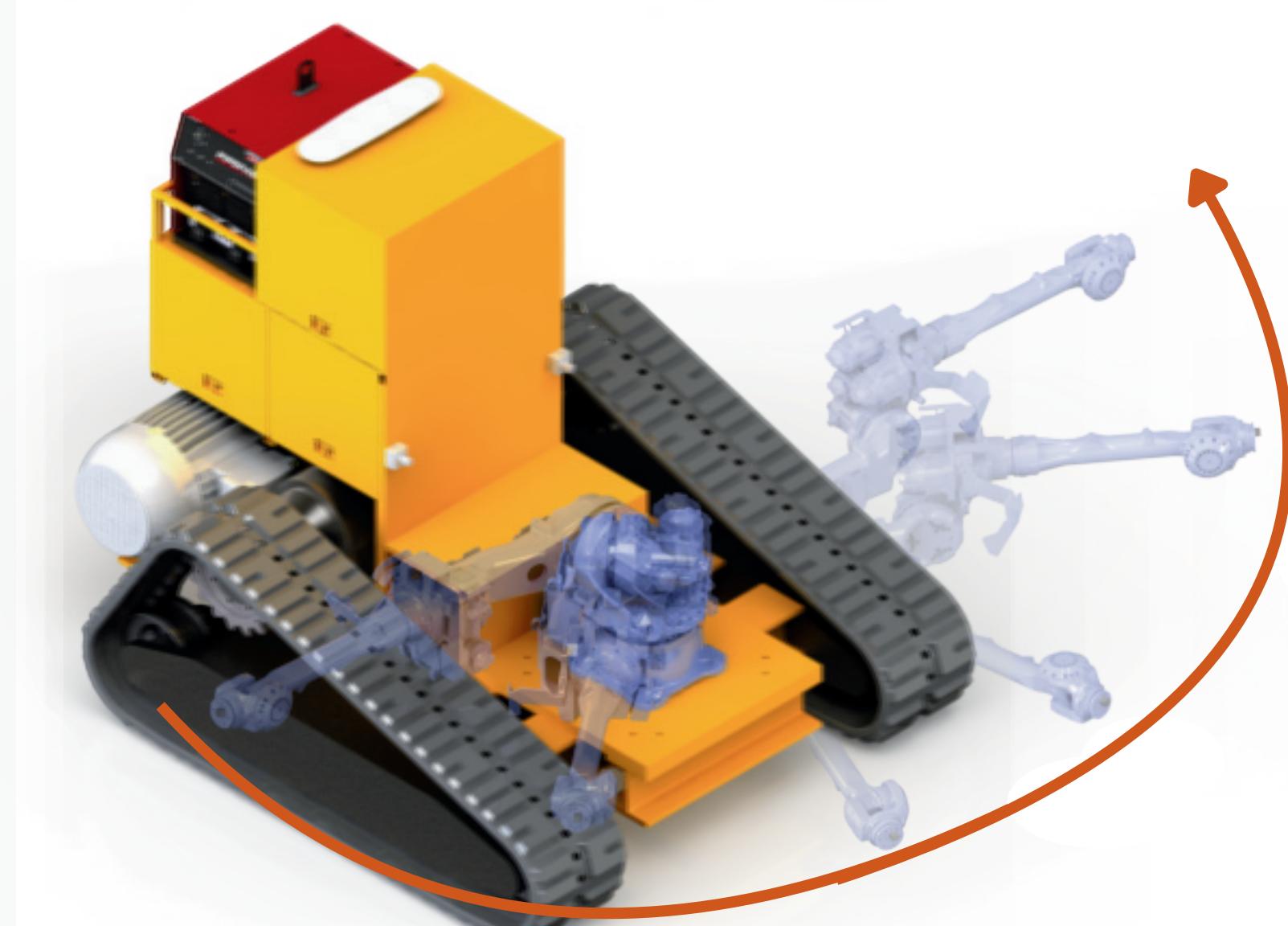
## Exploded View



## Platform Strength



## Working Envelope



### Vertical - 230 Degrees



## Checks

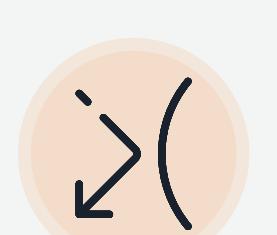
Supports 3x Max Tool Weight



Battery Heat 90°C Lower than Max



67.8 microns < 2.5x Allowable Deflection



Movement All Rated for 15% Gradient

