The manufacture of marine vessels is a large-scale operation with various welding procedures being carried out throughout the production timeline. To ensure sound structural integrity it is vital that there is a presence of Non-Destructive Testing (NDT) during this time, from the assessment of raw materials entering the site to final measurements on a completed structure. As a result, there is a demand for high accuracy, automated NDT inspection of large industrial structures. The objective of this project is to develop universal automated deployment tools which require minimal input from the operator to carry out an inspection.

Steps towards this have been taken through an introductory project involving the inspection of incoming steel plates. The important factor here is the development of a general-purpose localization and path-planning system for the given inspection. The current design, *Figure 1*, combines a robotic 4-motor chassis, integrated encoders, depth sensing camera, and Lidar unit to aid in the positional determination of the crawler as it traverses the plate in accordance with PI NDE 009[2].

Figure 1 Plate Inspection Crawler

The standard details the receipt inspection of the plate involving static thickness measurements and scans for laminations and inclusions along a set path. The scans will be made using a dry-coupled ultrasonic wheel probe housed on the crawler.

In future work, it is planned that aspects of the crawler described above are taken forward into a second crawler designed for weld inspection. It will combine a small articulated arm, such as the Meca500, *Figure 2*, with a magnetic chassis allowing for remote phased array inspection of welds.

Figure 2 Meca500