



SENIOR DESIGN ORGANIZATION PROJECT DESCRIPTION SPRING 2013

ASME Student Design Competition Remote Inspection

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The purpose of this project is to design, manufacture, and build a remote inspection vehicle to compete at the annual 2013 American Society of Mechanical Engineering (ASME) Student Design Competition. The proof-of-concept robot described in this report is being specifically designed to compete in a simulated chemical/radioactive situation. The task involve in completing the competition is for the Remote Inspection Vehicle to read and record a reading from a gage to determine the level of radioactivity at a specific location, having the robotic arm to press a button to activate a cooling pump, and have it carry and drop a sensor to and from a designated location.

Our final project built mostly from scratch is truly an accomplishment. The robot chassis is built from High Density Polyethylene (HDPE) plastic commonly found in kitchen cutting boards. An Arduino Mega 2560 microcontroller is used to carry out all commands received by the operator. Communication between the operator's laptop and robot are transmitted using Xbee RF Modules. The program uses a switch operation to select the command to be carried out given a specific input from the operator's keyboard. The numeric keypad is used to control the robot's driving motors and the camera position. The alphanumeric keypad controls the robotic arm, the base and the claw.