

Project Title: [Hydraulic Test Bench](#)
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Area: [Mechanical Engineering](#)
Sponsor: [Steel Dynamics Inc.](#)

Steel Dynamics Inc. (SDI) is an American steel producer based in Fort Wayne, Indiana. It has a production capacity of 13 million tons of steel, making SDI the 3rd largest producer of carbon steel products in the United States. The steel making process involves many moving parts throughout the mill, primarily using hydraulics as the main tool used for moving. These tools include hydraulic valves, hydraulic pumps, and hydraulic motors. Because of all the hydraulic equipment being used, there is bound to be failure in some of the equipment. Therefore, SDI requested a hydraulic bench that is capable of testing these valves, pumps, and motors. For valves, we will be testing that they can withstand a pressure of 315 bar with no leaks, and verify that they are operating properly according to the type of valve. To test hydraulic pumps, we will verify that there are no leaks and verify that it can pump hydraulic fluid at the pressure specified by the type of pump. To test hydraulic motors, we will verify that the output torque properly relates to the input pressure, and to verify that there are no leaks.

The design and development budget for the project is \$20,000. This budget will cover all material and products that are not supplied by SDI such as special fittings, electric motors, and other miscellaneous equipment that will be installed on the test bench; however, the materials on hand at SDI will be free to use.