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Design and Fabrication of an Ultra-Low Capacitive Pressure Transducer

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The goal of the Capacitive Pressure Sensor project is to redesign the Alpha Instruments 168 series capacitive pressure sensor sold by Dwyer Instruments. The primary objectives of the new design will be to eliminate the use of welding in the assembly of the sensor components and to eliminate stray capacitance in the system measurements through the use of dielectric boundaries. Additionally, the sensor housing will be a stamped design in order to avoid expensive machining steps. The electrical components of the system will be tailored to accept a capacitive signal and transfer it to a voltage reading. This voltage will be used to obtain a proportional loop current that can then be calibrated as a pressure differential and displayed onto a digital read-out device. The project is set to be completed by the end of spring semester 2013.

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Justin Brown, Armand Gagne, Stephen Charnley, and Anna Wint are undergraduate mechanical engineering students. Kyle Devlin, Ryan Finley, and Jenan Almishari are undergraduate electrical and computer engineering students. Dr. Shahin Nudehi is a mechanical engineering professor and senior design team faculty adviser.

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