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The Home-O-Nize (HON) company was formed in 1944 to provide employment opportunities for returning vets. They first began producing kitchen cabinets and today are one of the top 3 manufacturers of office furniture in the world. Oak Steel was the first production plant and began full-scale operation in 1947. Today HON operates under the parent company HNI.

HON Oak Steel specializes in manufacturing metal storage units. While their claim to fame has been the production of filing cabinets, they also produce many diversified storage options. Most of the parts for these units start as coil stock that is then stamped to form and shape by large hydraulic presses. Metal dies are used to form and shape the metal parts.

Problem - When material does not move smoothly through a die, damage can occur that must be repaired before the die can be used again. Sensors are used to monitor the progress of the material. What is the best sensor to use given the part type and process used to form the part? Will the sensor work correctly 100% of the time?

The project will be introduced once we have completed a basic robotics movement unit. Students will apply that knowledge to create their “press”.

Project - Students will build a simplified “press”, research sensor options, and test a variety of sensors to see if they can detect a part exiting their “press”. If a part does not exit then their “press” should stop to prevent damage.

New knowledge will begin with research into “real world” sensor types, functions, and applications. Once that knowledge is gained they will experiment with our sensors to see if they can develop a solution to the problem given the options available to them. A solution may not be reached but they will be expected to document their progression through the Design Process.

HON has assigned a member from the Tooling and Die Shop to specialize in sensor applications for die protection. He oversees with all sensor repairs, replacement and eventually adding die protection on dies that have none at present. He also works closely with the press operators to solve problems with a die sensor when they arise on the floor.

The educational background at HON Oak Steel varies from a high school diploma to a 4-6 year college degree. What was more commonly mentioned was the need for 21st century skills such as problem solving, communication, and initiative. Unless you work in a vacuum, your education plus “soft skills” are necessary to be a productive member of any team.