**Team 520: Simulated Assembly Line and Processing Workstation**

**Abstract**

Tallahassee Community College (TCC) requires an assembly line system to be used in their Advanced Manufacturing and Training Center. It will be used as a Mechatronics certification tool. TCC needs their students to examine and diagnose different challenges they may encounter in real world situations. In this case, the machine will detect size and material, sorting the objects into bins. Another important requirement of this project is TCC’s educational need for the machine. This requires the team to design a system that has toggleable problems. The students will need to evaluate and these problems. The team will accomplish this by designing an assembly line system that can be separated and recombined. This offers a degree of flexibility for the system, allowing for errors to be intentionally placed in separate functions of the machine. The basic parts of the system are as follows. A cube is placed at the starting end of the assembly line, the system then scans the cube to determine the size and material. It then sorts and transports the object into a bin that stores objects of the same size and material. The instructor will then set a mode of failure and the students must then find and solve the problem in the system. The need for systems like the one required by TCC is widely available in multiple industries, including the food industry, the environment industry, and even the travel industry. In these industries, the discovery and removal of foreign materials is crucial to the success of production, and even for the lives of the people who use the product.