Overview
SEKISUI SPI has six lines that run simultaneously to produce plastic polymers. The problem exists when there is a roll change on Line 5. The oil in the roll of Line 5 leaks out during the roll change process. Workers have to quickly cap off the leak in an attempt to minimize the amount of oil spilled. This extra precaution on Line 5 causes roll changes to take longer, meaning that it is the least efficient of the 6 lines.

Objectives
The goal of this project is to eliminate oil leakage and decrease the time required to change rollers on Line 5. The project will design new attachment mechanisms and deliver a working prototype, along with descriptive SolidWorks model.

Approach
- The team visited the Sekisui facility and clarified the project objectives
- According to the requirements, the team generated several initial ideas
- The team did a background search and a patent search to improve the initial design.
- From the sponsor’s feedback, the team started to consider check valve as the primary design.
- The team conducted theoretical analyses of drag coefficients and fluid properties to determine the spring constant
- The team used SolidWorks to demonstrate the working aesthetics of the device.
- The team produced 3 prototypes to improve the function of the device.
- The team designed a test to check the functionality of the prototype.

Outcomes
- The roller exchange time is to be reduced by fifty percent, since the device is inserted internally and can function without any worker input.
- Since workers will not be spending time cleaning up oil spillages, they can spend this time on a variety of other productive tasks.
- The device is easy to install and does require any changes to the existing mechanism.
- The device is inexpensive and durable.