Project Description
The mission of the WSU senior design group was to create a cost effective belt washer that could be used to clean off chicken debris from the DSI Accura portioning system.

- At the end of the Accura portioner’s daily working cycle, the stainless steel belt is covered with pieces of meat and debris that needs to be cleaned.
- The washer must utilize a high-pressure pump (60 ksi) that powers the portioner.
- Currently, workers use brushes to scrub down the belt and they spray it with relatively low-pressure water.

Specifications
After meeting with DSI / FMC Foodtech, our design team produced a list of needs and metrics for the belt cleaning device.

- Washer must clean the entire width of 18”.
- Design for use in a food processing operation in accordance with USDA standards.
- Belt cleaning system has to be easy to use and reduce the current cleaning time.

Testing
We coated our sample belt with a mixture of raw chicken and tomato sauce to simulate the conditions under which the washer will operate.

- Recipe: 2 chicken breasts, 1 can of tomato paste, blend thoroughly, apply to belt, 24-hour cure time
- For the single fan jet testing, a pressure of 50 ksi was used.
- For the double angled fan jet testing, we were only able to obtain a maximum pressure of 25 ksi due to pump limitations.

Final Results
- Double angled design worked the best because it was able to attack the belt at two different angles.
- A problem with the single fan jet is that it is only able to directly impact the top surface of the belt.

Recommendations
- Further research could be done with the Hornet nozzles due to their extensive industrial use in surface preparation.
- We also believe that a manifold would be a useful design because it would be able to clean the entire belt width with little to no actuation.
- The efficacy for our concepts will only be enhanced when double intensifier pumps are used, instead of the single intensifier pump that we used in our testing.

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