

Flour Handling & Storage: Efficiency and Safety Processes

FOOD & BEVERAGE | ENGINEERING SERVICES & TURNKEY SOLUTIONS

TAI VALUE PROPOSITION

Redundancy design provided ability for frequent cleaning without impact to production time



Highlights

- Gap assessment during project scoping
- Redundancy design provided ability for frequent cleaning without impact to production time
- Upgrades to space conditioning and explosion mitigation devices improved safety & quality
- Modifications that reduced pressure drops, improved blower efficiency, eliminated dead legs and isolated airborne dust.
- EPC included additional scoping, FEL and commissioning to improve quality, safety and consistency across four manufacturing locations.



Flour Handling & Storage: Efficiency and Safety Processes

CLIENT: CONFIDENTIAL
LOCATION: Various locations
MARKET: Food & Beverage
TAI SERVICES:

- Process Engineering
- Electrical, Controls and Instrumentation
- Site Safety
- Construction & Project Management
- Construction Documents

VALUE CLASS: \$3.5MM

VALUE PROPOSITION:
Redundancy design provided ability for ease of cleaning without impact to production time

ABOUT: *The Client is a global confectionery leader known for bringing goodness to the world through its chocolate, sweets, mints and other great-tasting snacks.*

CHALLENGE

The Client identified the need to improve the quality and consistency of incoming food ingredients to better align with the FSMA. This project considered flour receipt, storage and handling because inconsistencies had been identified across manufacturing location. TAI provided an EPC approach including additional scoping, FEL and commissioning to improve quality, safety and consistency across four manufacturing locations.



SOLUTION

Addressing Raw Material Consistency and Quality to Processing. TAI implemented several key enhancements across four production facilities to create a standardized and robust flour storage and delivery system. Redundancies were designed into the systems through new and converted storage silos and piping to allow frequent cleaning without impacting production uptime. Robust and easily maintainable inline sifters were specified and installed to facilitate uniform material quality to processing and ease of maintenance. To improve product quality and safety, space conditioning and explosion mitigation devices were upgraded in storage facilities. Finally, piping was modified and streamlined to reduce pressure drops which led to improved blower efficiency, the elimination of dead legs and isolation of airborne flour dust.

Handling Combustible Dust. Systems and equipment specified for use for bulk storage and conveyance of flour had to be specified and designed with the knowledge that flour creates highly combustible dusts and is an explosion hazard when airborne, even at a relatively low concentration. TAI engineers worked with the client and additional industry experts in order to develop specific, cost effective solutions for each site. Considerations and calculations had to be made for new and re-purposed silos, airlocks, valves, sifters and instrumentation.

Additional Services. TAI's structural group created construction documents to support foundations, building modifications, roof supports and pipe supports. Our process engineering team performed blower and flow calculations, specified equipment and designed efficient piping. The electrical, controls and instrumentation division incorporated new equipment into existing site infrastructure, designed and modified new panels, specified instruments and modified and created new PLC and HMI code.

RESULTS

TAI worked with varied local and corporate stakeholders to reach consensus on the project scope, schedule and budget. To successfully execute this project, TAI engaged a wide cross section of staff including multiple engineering divisions, project and construction management, procurement and automation and controls team. By being intimately involved from the early stages of project scoping through commissioning and start-up, TAI was able to execute a successful project that met the client's needs and satisfied quality and safety governing bodies.

ABOUT TAI: *TAI is a full-service engineering, management and technical services firm, headquartered in Baltimore, MD, with offices in Dallas, TX and Wilmington, DE. TAI has completed over 10,000 projects since 1989, specializing in chemical, power, food & beverage, pharmaceutical, consumer goods, commercial, and government sectors. TAI's diverse skill set in these markets positions the firm as an industry leader.*