



Company Information

Company Name	<i>Wanzl North America</i>	Date Submitted	<i>11/29/2022</i>
Project Title	<i>Development of a drop test impact fixture (WANZL_DROP)</i>	Planned Starting Semester	<i>Spring 2023</i>

Faculty Mentor

Faculty Mentor will be assigned to the project. If you have been previously working with a faculty mentor and want to continue that relationship, then enter their name here _____. We cannot guarantee that faculty mentor will be available, but we will try to make that assignment if possible.

Senior Design Project Description

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills.

Discipline	Number	Discipline	Number
Mechanical	4	Electrical	
Computer		Systems	

Company and Project Overview:

Wanzl North America’s vision is to be the leading entrepreneurial player in terms of market share, agility, and game-changing solutions. WNA is a solution provider, creating value along the supply chain of our customers, from the online purchase to the delivery to their customers. WNA, which includes the Technibilt, French Company, and Cari-All brands, is headquartered in Newton, North Carolina. With nearly 500 employees and 160 MUSD of sales, WNA focuses on the retail, distribution, and airport market segments with marquee customers such as Walmart, Amazon, and most large grocers and retailers. In addition to being the largest manufacturer of shopping carts in North America, WNA has three (3) additional main product segments as well as



a service business, providing turnkey solutions for asset protection and point-of-sale, as well as materials handling.

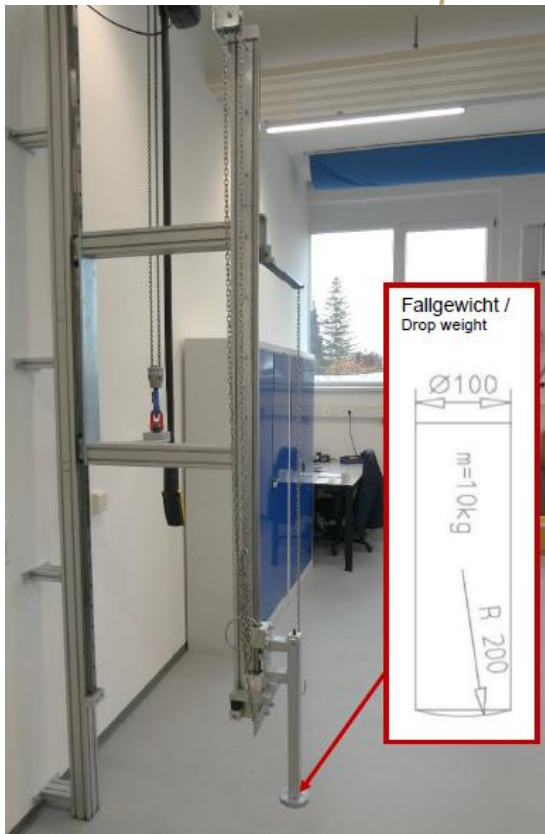
WNA is part of the Wanzl GmbH & Holding KGaA, headquartered in Germany and has 12 plants in 8 countries and more than a dozen sales and distribution centers worldwide, providing comprehensive, solutions-driven service and expert knowledge of local markets for customers across the globe through their 360° service.



This project involves developing and building a drop test impact fixture that will be used to test structural integrity of products.

Project Requirements:

Submit a completed working drop test fixture capable of accommodating 60" x 60" x 60" test sample and adjustable impactor drop height from 0" to 60". Test fixture should be mobile (lockable casters, floor locks), fully adjustable for varying drop heights and weights, equipped with accelerometer and DAQ to measure impact force, and base plate for locking test sample. The intent is to replace the existing test fixture designs shown below.



Expected Deliverables/Results:

- A summary report of the project (PDF or PowerPoint).
- Cost analysis
- 3D CAD models, 2D drawings
- Hand calculations and Finite element analysis (FEA)
- Complete working test fixture with automated data reporting (drop height, impact force)

Disposition of Deliverables at the End of the Project:

Students are graded based on their display and presentation of their team's work product. It is mandatory that they exhibit at the Expo, so if the work product was tested at the supporter's



location, it must be returned to campus for the Expo. After the expo, the team and supporter should arrange the handover of the work product to the industry supporter. This handover must be concluded within 7 days of the Expo.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- Finite Element Analysis
- Solidworks CAD software
- Sensors and data acquisition
- Travel to the Wanzl NA Facility in Newton, NC.