Structural Design of the Automated Parts Washer (APW)

This poster presents the structural design of the Automated Parts Washer (APW), a senior capstone sponsored by Mary Kay and developed by engineering students at Texas Christian University. The APW is designed to provide an automated ultrasonic cleaning solution for cosmetic manufacturing components such as nozzles, caps, and trays. All structural components of the system have been modeled in Autodesk Inventor to enable a fully integrated digital design environment that supports visualization, dimensional coordination, and verification of system layout prior to fabrication. The washer frame utilizes 80/20 aluminum structural members, selected for their strength, modularity, and ease of assembly. This material choice provides flexibility in frame configuration, allowing rapid design iteration and future modification while maintaining robust structural support for the fluid-filled wash tank, ultrasonic hardware, and plumbing systems. The resulting design balances structural integrity, manufacturability, and adaptability for prototype construction and testing.