



PROJECT PROFILE

MACHINE DESIGN – FABRIC FESTOONING

CLIENT CHALLENGE

A machine build company, in an effort to improve line efficiencies in running fabric rolls was determined to establish a method of loading the line continuously, eliminating the necessity of shutting down the line to reload after each roll was processed. Continuous operation of the line would increase productivity by some 25%, allowing the company to stay competitive in the growing global trade of finished fabrics. Prior to the incorporation of Palladium Product Development & Design several current Palladium personnel were retained to design and build a high-speed festooning machine with a reciprocating motion of 700 ft/min.

The work included:

- Perform calculations and Finite Element Analysis on standard and custom components for the dynamic forces resulting from the high-speed operation.
- Component selection, design electrical controls and PLC for the machine.
- Perform various mechanical and electrical calculations for safe and reliable operation of the machine.
- Evaluate the influence of the high speed on the machine operation, material behavior and working environment.
- Analyze kinematics and dynamics of the system and dimension parts accordingly.
- Design a crank drive with a vertically positioned flywheel to initiate high speed reciprocating motion.
- Deliver a complete set of assembly and detailed drawings, manufacturing specifications, quality requirements, and operation manuals.
- Co-ordinate, oversee and commission the manufacture and testing of the machine.

PROJECT HIGHLIGHTS

Design and build of a blanket festooning machine for high dynamic forces and vibrations with average material speed of 700 ft/min. Complete mechanical and electrical design as well as detailed kinematics and dynamic calculations for all moving parts.

The client was able to successfully patent the device, based on the original concept design.

MANUFACTURING MACHINE DESIGN

Manufacturing Machine Design Engineering of this nature is provided by Palladium Product Development & Design on an ongoing basis for many products, industries and companies such as the case history described above. Many of the same personnel (some with over 20 years industry experience) are still active and providing services to past clients they have served, with continued upgrades and product improvement programs. Design modifications related to manufacturing/machine design, packaging and transportation efficiencies, researched product quality improvements and implementation of client/user feedback are routinely implemented as a result of these analyses and design engineering services.

