Web Guiding Slot Array Sensor

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Banner Engineering Corporation will produce products and perform services that meet or exceed the expectations of our customers through the total involvement of our people and our commitment to continuous improvement in everything we do.

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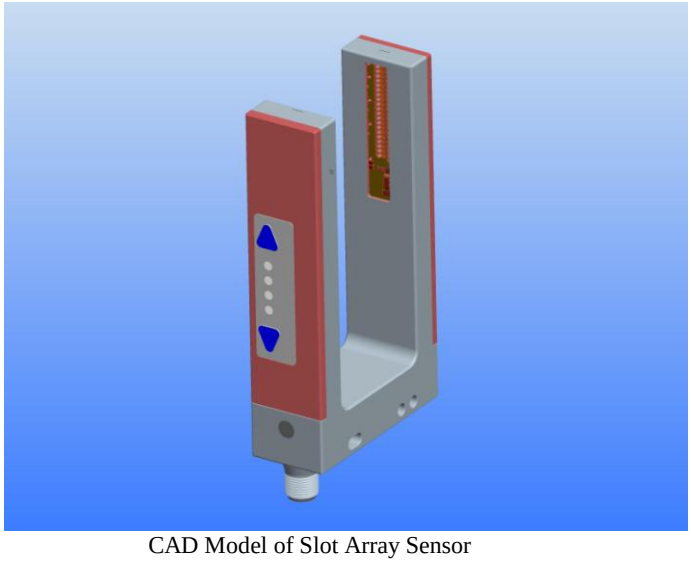
Senior Design Clinic I-II (ENGR 480-1) 2005-6 Project Mission Statement:
Develop a web-guiding sensor prototype capable of high-speed, high-resolution detection of opaque webs outputting a near real-time location of the web relative to the sensor.
Major Design Requirements:

1. Must meet CE and UL Light Industrial specifications
2. Must be able to detect opaque material
3. Meet or exceed Environmental Rating of IP67
4. Protect against short circuit, continuous overload, transient over voltage and false pulse on power-up
5. Capable of both a web edge guiding mode (current output), and high speed parts counting mode (discrete output)
6. User interface for production floor sensor adjustment
7. Sensing Resolution of better then .100"

Senior Design Project Summary: The Project required the multidisciplinary engineering design team to gain a broad knowledge of photoelectric sensor technology, this was accomplished through: technology journal research, knowledge dissemination with experts in the field and competitive analysis. The team's first milestone was bridged with the concept generation, comparison and technology selection of the optical design for the sensor. The optical design for this project is the foundation upon which the electrical and mechanical design is based. The electrical design focused on integrating: the photoelectric elements, CE Light Industrial specifications, Customer Specifications and the existing Windows based Banner G.U.I. A few of the major tasks accomplished by the Electrical Engineers were: emitter and receiver board circuit design, post-design circuit optimization and software de-bug. Mechanical design focused on: meeting Environmental Ratings, exceeding CE Light Industrial Mechanical specifications and optimizing the design for manufacturability. Major tasks accomplished by the Mechanical Engineers included: housing design, documentation, system testing and manufacturability analysis.


CAD Model of Slot Array Sensor


Slot Array Sensor Prototype