

Safety Experience

With over 30 years of project expertise in industry and Functional Safety Engineers on staff (TÜV Rheinland, Machinery), our team offers consulting, safety assessments, and can support the process from engineering/design through to implementation. PCT offers mechanical and electrical engineering services to deliver a comprehensive safety solution to our customers. Whether you want us to work with your team or independently, PCT will strive to create the best result for you – one that is safe, cost-effective, and delivers on performance. As manufacturers of custom equipment ourselves, we specialize in safety support for custom machines and processes. Listed below are the safety services and expertise PCT can provide, as well as examples of the various industries where we've implemented our knowledge.

Safety Expertise

- Functional Safety Engineers certified by TÜV Rheinland in Machinery, on staff
- Radiation Safety Officers (RSO) on staff
- ISO/IEC Standards: ISO 12100, ISO 13849-1, ISO 13849-2, IEC 62061, IEC 60204-1
- NFPA 79 and NFPA 70 (NEC)
- UL 508 panel builder

Safety Services

- Machine safety and risk assessments
- Mechanical and electrical modifications to achieve safety requirements
- Radiation surveys
- Advisement on establishing a radiation safety program
- Radiation shielding design and consulting
- Third party independent review of a safety assessment

Select Project Experience

- **Ebeam Systems**
 - Performed and implemented safety assessments on radiation-producing electron beam (ebeam) machines produced by PCT
 - Standard products
 - Custom variations with unique material handling requirements that add to the challenge of protecting operators
 - Required to meet the highest performance (hazard) level, PL_e
 - Continually improving and upgrading the safety of legacy electron beams
 - Designed safety into newest products to reduce cost and improve performance
 - Advise customers on the safety requirements for ebeams

◆ **Film and Metal Converting Equipment**

- Existing 1970s vintage slitting machines needed safety upgrades
- PCT was part of the end-user's safety team
- Multiple similar machines, reused lessons learned on one machine to the next
 - Perfected one machine
 - Saved time and money with repetition
- Performed safety assessment with end-users and then reviewed and updated it
- Engineered, designed, programmed, and commissioned safety system
 - Added safety PLC processors and safety I/O
 - Added safety fencing with locking gates
 - Setup and programmed laser area scanners
 - Added a safe speed feature to allow thread-up operations
 - Added safety pneumatic valves (safety piloted check valves) to pneumatic system

◆ **Heavy Industrial Equipment**

- 1960s CNC saw with 200hp, 36" saw blades required safety upgrades
 - Designed, installed, and commissioned guarding and brakes to protect operators
- Controls upgrade on a metal degreasing line
 - added safety PLC, safety fencing & guarding, locking gates, and light curtains
- Multiple furnace combustion safety systems
 - Upgraded direct and indirect fired industrial furnaces to meet the latest codes

◆ **Custom Machinery**

- Wide variety of applications including inspection and assembly machines
- Worked with end-user to develop a safety system during the design phase of a positioning system
 - Worked with end-user to make operations easier, even with safety, by integrating safety from the start of the design
 - Integrating safety into the design required fewer safety devices and less programming, making it more cost effective
 - Performed safety assessment
 - Implemented and tested safety assessment
- Added safety to an existing control system without having to completely upgrade the control system
- Installed a plant-wide arc flash system
 - Used SKM to calculate arc flash levels
 - Stickered switches with arc flash ratings