R.T. Patterson Company, Inc.

Engineers and Consultants

CLIENT

General Motors Powertrain
Bedford, IN

PROJECT

Small Gas Engine Robotic Process Cells and Lines in Die Cast North

PROJECT SCOPE

General Motors was buying casting and pre-machining equipment for small gas engine blocks in Die Cast North including 3 die cans machines with robotic cells, rotary heat treat furnaces with robotic cells, robotic deburr cells, casting chillers, 16 CNC machines with overhead robotic loading, 2 robotically loaded washers inspection and marking lines, with conveyors and CNC coolant system, RTP provided plant layout, robotic cell layout, installation scope of requirements-drawings and construction engineering assistance. RTP provided design for 7 fall arrest systems (PE certified), 3 overhead cranes, safety enhancements (PE Certified), 4 coolant fume exhaust system, special coolant piping system, 12 casting conveyors and PE certification of OEM gravity safety devices and under the hook lift devices.

RTP SCOPE OF WORK

RTP provided the following engineering services:

- Assist in the development of the Scope of Work for OEMs.
- Develop multiple concepts for Robotic Die Cast Cell and post process line arrangements and plant layouts for an older plant building with tight column spacing.
- Prepare detailed specifications and Scope of Requirements for OEMs and install contractor.
- Develop design drawings for:
  - Develop Robotic SGE Die Cast Cell process layout at floor and basement level for large group of advanced aluminum transmission cases and housings.

RTP SCOPE OF WORK - Continued

- Mechanical, Piping, Ductwork and Electrical utilities installation on two plant levels for equipment on three 3500-Ton clamp capacity Die Cast Machines with robotic cells on two floor levels in the Die Cast North Buildings NM2 and NM3, 2 heat treat cells, 2 rough deburr cells, 4 process lines of 4 premachine CNCs each with overhead tender robots, Centralized CNC coolant filter system, 2 Final deburr cells, 2 wash cells, 2 pressure test cells 2 laser marking cells and 2 pack out cells, 7 jib cranes and 4 overhead cranes, safety fencing and a casting impreg center.
- Provide PE certification on OEM elevator gravity safety device and Trim Press lift rig.
- Develop additional safety guarding, platforms and handrails for die cast machines and robot cells.
- Revise structural steel for 98-year-old building NM1 to allow furnace installation.
- Develop CNC fume exhaust hood and duct system replacement for 16 CNC machines and 1 filter.
- Analyze of 50 ton die loading path in and between die cast machines
- Fabrication and installation of four overhead casting cranes with PE certification.
- Fabrication and installation of six fall arrest systems in tight fit areas.

- Provide on-site construction assistance engineering during installation for 2-year period.