Phil Weinzapfel, PE

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CAREER THEMES

A broadly skilled Mechanical Engineer with experience in numerous industries including chemical, industrial, automotive, nutritional, pharmaceutical, and product design. An individual motivated by technical knowledge and driven by the continual desire to learn, improve, and optimize all aspects of mechanical and process systems.

- 15 years consulting experience.
- Registered Professional Engineer. Indiana - PE11400002
- Strong analytical skills with a focus on optimizing workflow and efficiency.
- Creative problem solving skills with meticulous detail to drawings, specifications, and calculations.
- A high degree of technical competency with the ability to explain and illustrate concepts easily and effectively.
- Team oriented individual working alongside Project Managers, Designers, and Drafters to lead efforts in producing quality results for clients.
- Excellent written and verbal skills to aid in developing strong client relationships.

TECHNICAL COMPETENCIES

MECHANICAL AND PROCESS COMPETENCIES

- Process Modeling & Optimization
- Material & Energy Balances
- Hydraulic Piping Systems
- Compressible Flow
- Dust/Fume Collection
- Pump Sizing
- Fan/Blower Sizing
- Control Valve Sizing
- Instrument Specification
- Relief Valve Sizing (API 520 & 521)
- Plant Utility Systems
- P&ID Development
- CIP Systems & Cleaning Practices
- Sanitary Processing
- API 650/620 Tanks
- ASME B31.1/31.3 Piping Systems
- Pipe Stress Analysis
- Pressure Vessels (ASME Section VIII)
- Heat Exchangers (TEMA)
- Machine Design
- 3D Modeling
- Skid Mounted Equipment Layout
- Static and Dynamic Analysis (Wind/Seismic)
- Finite Element Analysis (FEA)
- Computational Fluid Dynamics (CFD)
- Code Knowledge: ASME, API, OSHA, NFPA, TEMA, NBIC

COMPUTER & ENGINEERING TOOLS

- AutoCAD
- Autodesk Inventor
- Autodesk FEA/CFD
- COMPRESS/INSPECT
- PV Elite
- Caesar II
- Microsoft Office
- Pipe-FLO Professional
- Pipe-FLO Compressible
- MathCAD

EDUCATION

B.S. Mechanical Engineering - 2009 — Purdue University

ASME BPV Code: Section VIII Div. I Training
Intergraph Caesar II Pipe Stress Training

PROFESSIONAL EXPERIENCE

Professional Consultants Inc.	May 2007 - January 2012
PCI Skanska	Jan 2012 – May 2015
Three i Design	May 2015 – August 2015
PCI Skanska	August 2015 – January 2020
Inzaption LLC	January 2020 – Present

Highlights of Work:

- Improved local refinery final crude preheating exchanger design to recover an additional 2.2 kBTU/hr of heat resulting in a payback time of less than 2 years and hundreds of thousands of dollars a year in continued fuel cost savings.
- Optimized the plenum and associated nozzle design for hot mill air sweep assembly to maximize velocity/flow for water removal.
- Developed cost analysis for total pump energy requirements as a function of potential pipe size and routing to aid clients in making cost effective decisions with future pump operating costs in mind.
- Performed process analysis and sizing of equipment for a 6,000 SCFM skid mounted natural gas fuel train to be delivered to Libya.
- Modeled existing underperforming dust collection system at chemical plant. Improved dust collection of the system by upsizing headers and sizing new canopy hoods to improve capture velocity in accordance with Industrial Ventilation recommended practices.
- Specification of 3,500 GPM vertical turbine pumps located inside a large caisson pumping river water 2 miles to the plant. Performed all associated discharge piping stress analysis of carbon steel and HDPE piping and applicable support load calculations.
- Sized pressure relief devices for numerous systems both liquid and vapor. Work included reviewing mass and energy balances, P&IDs, equipment specifications, identifying overpressure scenarios, and calculating both existing and required relief valve capacities.
- Analyzed over 2 miles of high pressure and high temperature process and steam lines for a new tire plant. This included a complete stress analysis of each line, sizing and specifying of expansion joints & hangers, and determining all reaction forces to aid in the design of structural supports.
- Extensive experience with procuring pressure vessels and shell and tube heat exchangers. Experience with units in corrosive services requiring exotic metals such as Hastelloy, Nickel, Niobium, & Zirconium.
- Proficient with ASME Section VIII & TEMA codes in addition to NBIC to perform vessel/exchanger design and rerate calculations. This includes applicable IBC/ASCE wind & seismic loading.
- Performed FEA on large ducts used to transport fly ash for power plant. Various loading conditions were evaluated to aid in adequate design and necessary reinforcement.
- Leveraged FEA evaluations of numerous designs to reduce material requirements without sacrificing mechanical integrity.
- Performed evaluations and determined load ratings of hoists for automotive manufacturing lines to ensure safe operation by personnel.
- Completed extensive hydraulic evaluation of a cooling tower system to aid in the installation of VFDs to improve overall energy efficiency of the system.
- Completed the design and specification of equipment for numerous closed loop glycol systems for the cooling of large synchronous condensers.
- Very experienced with hydraulic evaluations and capacity studies of many site utility systems. This includes compressed air, nitrogen, cooling tower water, chilled water, glycol, steam, & condensate.