



PROJECT EXPERIENCE

Section 5. Project Experience

Organic Chemical Processing Projects
Scrubber System Projects
Off-Gas Handling & Combustion Projects
Bulk Material Handling Projects
Metallurgical Projects
Energy Projects Projects
Waste Compliance Projects
Wastewater Reduction Projects
Turn-Key Projects
Paper Plant Projects
OSHA/EPA AUDIT Projects

PROJECT EXPERIENCE

The following data summarizes the experience of PPC in this industry.

ORGANIC CHEMICAL PROJECTS

| CLIENT | PROJECT | Responsibility | REMARKS |
|--|---|--|----------------|
| Amoco Performance Products, Inc. Alpharetta, GA | Carbon Resin Pilot Plant | Process design, piping design, and piping stress calculations. | |
| Cryotech, Inc. Kingsport, TN | Carbon Dioxide Purification and Liquefaction Plant Eastman Kodak Chemical Kingsport, TN | Process evaluation, process design, pilot plant testing, cost estimate, equipment selection, detailed engineering, procurement and inspection. | |
| INDSPEC Petrolia, Pennsylvania | Recovery Building Sound Control Crude Tank Rehabilitation | Detailed Engineering | |
| Petrowax PA, Inc. Smethport, Pennsylvania | Crude Oil Wax Refinery Field modifications | Detail design and procurement. | |
| Energy International Rawling, Wyoming | Ammonia/Urea From Underground Coal Gasification Project | Process development. preliminary engineering, capital cost, third party process quality assurance. | |

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| Rhone-Poulenc Oil City, Pennsylvania | Distillation Unit | Piping redesign. | |
| Callery Chemical Company Callery, Pennsylvania | KTB Facility Expansion | Structural and instrumentation design utilizing DCS system. | |
| United Refining Company Warren, Pennsylvania | Diesel Hydrotreater and Sulfur Recovery Unit | Process and project evaluation of bid documents and responses to evaluate for completeness, pricing and schedule. | Owner construction rep to monitor and direct construction approvals for work completed |
| United Refining Company Warren, Pennsylvania | General Engineering Projects | Supervision of all process department activities at the refinery. | |

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|---|-------------------------------------|--|--|
| United Refining Company Warren, Pennsylvania | Sulfur recovery Project | Owner's construction supervision. Interfaces with engineer/constructor to monitor all field activities, including schedule, delivery of engineering and equipment, inspection of work and verification of change order requests. | |
| INDSPEC Petrolia, Pennsylvania | Resin Hold Tank/ Reactor Project | Detailed design and engineering. | |
| Callery Chemical Company Callery, Pennsylvania | Diborane, PYB and DMAB Project | Process Development, Detail Engineering, Procurement, Construction Management, 5MM Turnkey Project | |
| United Refining Company Warren, Pennsylvania | Reformer Unit Modifications Project | Detail design and procurement. | |



Sunoco

Designed and built barge unloading system, Tank Farms, and truck and rail car loading and unloading systems.

PPC provided maintenance and all engineering for capital projects over a 5 year period.

**Ashland Chemical Company
Neville Island, Pennsylvania**

Various Projects & Detailed engineering and definitive cost estimate.
PPC provided maintenance and all engineering for capital projects over a 7 year period.

PROJECT EXPERIENCE

The following data summarizes the experience of PPC in this industry.

Scrubber Systems

| CLIENT | PROJECT | Responsibility |
|---|---|---------------------------------------|
| Ferro Washington, PA | Scrubber Chimney system for fugitive emissions. | Process Design |
| Menominee Paper Co. Menominee, MI | Chlorine and chlorine dioxide wet scrubber system. | Process Design |
| INMETCO Ellwood City, PA | Solvent recovery system from resin plant. | Process Design |
| Callery Chemical Company Callery, PA | Process Vent scrubber and building vent scrubber. | Process Design |
| Molycorp Washington, PA | Fluorine Scrubber. Direct contact SO ₂ /SO ₃ scrubbers. | Process Design |
| PPG Industries Natrium, WV | Bleach scrubber | Process Design ** |
| Saudi Pecten (Shell) Saudi Arabia | H ₂ scrubber/cooler | Process Design ** |
| Ferro Washington, PA | Baghouse | Process Design |
| Koppel Steel Ambridge, PA | Baghouse Modifications | Structural and instrumentation design |

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OFF-GAS HANDLING AND COMBUSTION PROJECTS

| CLIENT | PROJECT | Responsibility |
|--|---|--|
| Callery Chemical Company Callery, Pennsylvania | Thermal Oxidation. Thermal Oxidizer of organics in off-gas (100 SCFM) | Preliminary study. |
| Arco Chemical Company Monaca, Pennsylvania | Off-gas Processing. Styrene Recovery from off-gas | Preliminary study. |
| Arco Chemical Company Monaca, Pennsylvania | Combustion Process. Pentane Burn from off-gas | Engineering |
| Arco Chemical Company Monaca, Pennsylvania | Combustion Process. VOC's Incineration | Engineering |
| Energy International Rawlins, Wyoming | Combustion Process Flare System. | Detail engineering. |
| Zinc Corporation of America Monaca, Pennsylvania | Combustion Process. Sulfuric Acid Recovery Plant | Engineering, procurement, construction management. |
| Menominee Paper Company Menominee, Michigan | Power Boiler Bark Boiler | Preliminary study. |
| Advanced Recycling Systems Ambridge, Pennsylvania | Power Boiler. Refuse derived fuel boiler. | Preliminary study |
| U.S. Steel Dravosburg, PA | Reheat furnaces using coke oven gas. | Engineering, specs & start-up. |
| Pennzoil Rouseville, PA | Crude pre-heater using coke oven gas. | Engineering and specifications. |
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OFF-GAS HANDLING AND COMBUSTION PROJECTS *Continued*

| CLIENT | PROJECT | Responsibility |
|-----------------------------------|--|---|
| Molycorp Washington, PA | Combustion Process. Sulfur Burner | Engineering, procurement, construction management. |
| Duquesne Energy Pittsburgh, PA | Developed process, total design, procurement and construction of E Fuel plants for Tarentum, PA and for the Roanoke Rapids, NC facility. | All the work above was completed except construction. |
| Sunoco Neville Island, PA | Designed and built barge unloading system, Tank Farms, and truck and rail car loading and unloading systems. | PPC provided maintenance and all engineering for capital projects over a 5 year period. |

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BULK MATERIAL HANDLING

| CLIENT | PROJECT | Responsibility |
|--|---|--|
| INDSPEC Chemical Co. Petrolia, Pennsylvania | PPC has designed and built truck loading & unloading system | Engineering, procurement, construction management. |
| Nalco Corporation Elwood City, PA | PPC has designed and built truck loading & unloading system | Engineering, procurement, construction management. |
| Cemex Wampum, PA | Continuous conveyor system. | Engineering, procurement, construction management. |

PPC has designed and built barge unloading system, Tank Farms, and truck and rail car loading and unloading systems. Designed engineered continuous conveyor system and performed Maintenance to many clients.

- Changed 2 major transfer points and three conveyor load zones for 45° and AR steel to 70° round, ceramic lined, state of the art load zones. (Plant on our temp system for 3 months) (\$450 K).

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METALLURGICAL PROJECTS

| CLIENT | PROJECT | Responsibility | Remarks |
|---|---|---|----------------|
| North American Höganäs Johnstown, PA | Stack up at furnace discharge | Design and Structural | |
| INMETCO Ellwood City, PA | Ni, CO, Rare Earth seperation from Bacteria. | Process Engineering and pilot plant appropriation | |
| INMETCO Ellwood City, PA | Cobalt Hydrometallurgical facility. Production facility for cobalt and copper | Engineering design, procurement and construction. | |
| North American Höganäs Johnstown, PA | | | |
| Zinc Corporation of Amer Monaca, Pennsylvania | High Pressure Projects | Preliminary engineering and cost study. | |
| INDSPEC Chemical Co. Petrolia, Pennsylvania | High Pressure Projects | Engineering design, procurement and construction. | |
| Neomet Corporation West Pittsburgh, Pennsylvania | Advanced Metal Processing Facility | Engineering, procurement and construction management. | |
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| North American Höganäs Johnstown, PA | Gas fired furnace with longbed roaster | Engineering & design and construction management. | |

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ENERGY PROJECTS

| CLIENT | PROJECT | Responsibility |
|--|---|---|
| Stone Container Coshocton, Ohio | Single extraction 6,500 KW turbine generator. | Engineering, procurement, construction management. |
| Cemex Corporation Wampum, PA | Vexor Synthetic fuel system. Feed system, storage and fuel systems. | Study design, cost estimate, engineering, procurement, construction management. |
| Menominee Paper Company Menominee, Michigan | Coal/wood boiler, fuel storage and feed system. | Study design, cost estimate. |
| ARCO Chemical Company Monaca, Pa | Chiller unit for bulk polystyrene storage. | Design, cost estimate. |
| Callery Chemical Company Callery, Pennsylvania | Chiller units for +42F and -10 F contained systems | Engineering, procurement, construction. |
| Callery Chemical Company Callery, Pennsylvania | Liquid storage system for -210 F using liquid nitrogen and methane. | Engineering, procurement, construction. |
| Molycorp Washington, PA | Gas-fired boiler up-grade and refurbishing | Engineering, procurement, construction. |
| Waste to Energy Projects at Cement, glass and chemical facilities. | Projects to produce steam & electricity and stack gas heat. | Study, Cost Estimate and preliminary engineering. |

Duquesne Energy

Tarentum, PA

Developed process, total design, procurement and construction of E Fuel plants for Tarentum, PA and for the Roanoke Rapids, NC facility.

All the work above was completed except construction.

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Environmental- Residual Waste Compliance Projects

Zinc Corporation of America
Monaca, PA

presently Horsehead Corp



- High Purity Zinc Powder Plant
- Ore Dryer, Scrubber, Clarifier and Pump
- Tank Cleaning System
- 500 GPM Waste Water Treatment Plants Alterations to comply with new EPA regulations
- Installation of major piping systems and reclamation systems
- Construction management, planning and scheduling, managing design, procurement of equipment and sub-contractors.



These projects can be discussed in more detail or in outline in our project qualifications.

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Wastewater Reduction Projects

| CLIENT | PROJECT | Responsibility |
|--|---|---|
| Double Eagle Steel Coating Company Dearborn, Michigan | Electro galvanizing Line | Computerized plant mass balance model, plant testing and process development for zinc recovery from wastewater. |
| Double Eagle Steel Coating Company Dearborn, Michigan | Automatic Electrolyte Solution Control | Process engineering for an automated system. |
| Bethlehem Steel Corporation Sparrows Point, Maryland | Hot Strip Mill Waste Water Treatment Plant | Preliminary engineering and cost estimate |
| LS2 Project LTV/Sumitomo JV Columbus, OHIO | Electro galvanizing Line | Process and mechanical equipment design and start-up manuals. |
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| Zinc Corporation of Am. Monaca, PA | Process Water Treatment Upgrade | Study and Design Engineering |
| International Paper Company Erie, Pennsylvania | Process Plant Water Study Evaluation existing plant and make recommendation for Treatment Upgrade | Detail engineering |
| Meade Paper Company Chilicothe, Ohio | Wastewater Treatment Plant Upgrade | Study and Design Engineering |
| Shenango Pittsburgh, PA | Wastewater Treatment Plant | Engineering and cost estimate |

We would enjoy meeting with you to present our capabilities in greater detail and assure you of our interest in working with you on future projects.

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TURN-KEY PROJECTS

Process Plants Corporation has performed numerous projects on a turnkey basis. Listed below is a representative listing of these projects.

Kosmos Cement Co.
Neville Island Plant
Project: Slurry Line

PPC designed the slurry pipeline and developed all specifications for this outdoor line that would plug and freeze in the wintertime after a short power failure. The line was designed with flush connections, was insulated and electrically traced. PPC issued lump sum subcontracts for mechanical installation, electrical installation and insulation installation and managed the construction.

Dravo Lime Co.
Miami Fort Station
Cincinnati, Ohio
Project: SO₂ Spiking System

PPC designed an SO₂ spiking system for the Dravo Lime Co.'s lime scrubbing pilot plant that maintained constant concentration of SO₂ in the feedstream. This was required to run

Energy International Co.
Carbon County, Wyoming
Project: Pilot Plant Data Acquisition System

Energy International's Underground Coal Gasification Pilot Plant needed a system view, receive and store data, additionally, they needed immediate access to some valves calculated from the data. PPC designed and procured the system on a fast-track basis, which used MMI and spreadsheet software.

Duquesne Light Co.
Cheswick Generation Station
Project: Control Panel Replacement

PPC has performed numerous small maintenance projects for Duquesne Light, including control panel replacement, piping and in-line instrumentation modifications and lime makeup design revisions.

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Paper Plant Projects

PAPER PLANT

Client projects for:

Menominee Paper Co, Menominee, Michigan; Stone Container, Coshocton, Ohio & Florence, South Carolina and Scott Paper at Chester, PA facilities.

Projects varied with Wood/Coal Boilers, Coal Co-generation plants, Paper Machine and Evaporators, Chlorine Dioxide Scrubbers, Waste Recovery Boiler and Dust Collection Systems are examples.

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OSHA/EPA AUDIT Projects

| CLIENT | PROJECT | Responsibility |
|--|---|---|
| U.S. Steel Co. Clairton, PA | By-Products and Coke Oven-Gas Pipeline Areas | OSHA/EPA Audit |
| LTV Steel Company Hazelwood, PA | By-Products and Barge Facilities | OSHA/EPA Audit |
| Dupont Company Parkersburg, WV | TFE Production Unit | OSHA/EPA Audit |
| American Refining Group Indianola, PA | Oil Refinery | Field Verification and P&ID Update |
| American Refining Group Indianola, PA | Fire Water Line | P&I Diagram and Insurance- Flow Rate Calculation |
| BP Oil Company Lima, OH | Liquefied Petroleum Gases Plant | OSHA/EPA Audit |

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CONTROL SYSTEM PROJECTS

| CLIENT | PROJECT | Responsibility |
|---|---|--|
| Gulf Oil Company Cincinnati Refinery Cincinnati, OH | PLC Allen-Bradley Model 1 | Specified PLC and programmed |
| Gulf Oil Company Port Arthur Refinery Port Arthur, TX | PLC Allen-Bradley Model 2 | Specified PLC and programmed |
| U.S. Steel Clairton Works Clairton, PA | PLC Off-gas handling | Specified PLC and programmed |
| Shell Oil Company Deer Park, TX | PLC Allen-Bradley PLC-3 | Specified PLC and programmed |
| Shell Oil Company Belpre, OH | PLC Modicon 540 | Programmed |
| Timken Steel Canton, OH | Ultra sonic system with SAAB computers | Programmed interface system with Modicon 540 PLC |
| Timken Steel Company Canton, OH Faircrest Mill | PLC Modicon 540 | Billet inspection/conditioning Programmed |
| Daily Juice Company Pittsburgh, PA | PLC TI-5 Bottling and mixing lines | Programmed inventory control system |

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The following data summarizes the experience of PPC in this industry.

AMD PROJECTS

AMD ST. MICHAEL AMD PILOT PLANT

DEP RECLAMATION OF ABANDONED MINE LAND AMR-05

DEP RECLAIM MINE LAND/METAL RECOVERY AMR-04

MHB PHILLIPS MINE SITE

MHB Development



PPC and the work for MHB was part of a case test study with the University of Pittsburgh. PPC process was central to the work and presentations by Dr Neufeld at Mine water treatment technology conferences.



Accelerated Ferrous Oxidation Accelerated Ferrous Oxidation with a Multiple Orifice Spray with a Multiple Orifice Spray Reactor

PPC provided engineering, technical and field support to MHB, Inc. commercializing the Turbojett System ®.

- An active treatment of mine discharge - AMD situations.
- A patented system to Mix, Aerate and Neutralize in "Moments - not Months".
- While installed, reduces cost, small footprint with NO system shutdown time.

Turbojett ®

MIG Group a Division of MHB, Inc.



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Construction Management Projects

This is accomplished through the implementation of formal project specific constructability plans which provide the framework for conceptual and detailed design reviews from start to design completion. We then implement the Construction Execution Plan taking the completed design package and performing all activities required to solicit construction bids, select the contractors, construct the production facility and pre-commission the facility for start-up

Most of PPC's business has been repeat business; our mission statement, our philosophy is to give the client what they want at a reasonable price.

Zinc Corporation of America
Monaca, PA

- Four Sulfuric Acid Storage Tanks 450,000 gallons, installation included piping and anodic protection systems
- Design, detail engineering, estimating, planning and scheduling, procurement and construction management.

Zinc Corporation of America
Monaca, PA

- Environmental-Residual Waste Compliance Projects
- High Purity Zinc Powder Plant
- Ore Dryer, Scrubber Clarifier and Pump
- Tank Cleaning System
- 500 GPM Waste Water Treatment Plant, Alterations to comply with new EPA regulations
- Installation of major piping systems and reclamation systems
- Construction management, planning and scheduling, managing design, procurement of equipment and subcontractors.

We are a full service group providing process development, engineering, procurement, construction and maintenance management expertise for the process industry. We provide single point responsibility in performing engineering, procurement, and construction (EPC) for projects.

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Construction Management Projects

| CLIENT | PROJECT | Responsibility |
|--|--|---|
| Molycorp Washington, PA | Sulfuric Acid Plant Re-commissioning 125 TPD | Process evaluation inspection, design, instrumentation, procurement, subcontractor bid packages, construction management and start up. |
| Fifty-One Systems, Inc. Rachel, WV | Coal Washing & Reclamation Plant | Process design, layout, equipment selection, cost estimate, detail design, procurement and construction. |
| United Refining Company Warren, PA | Sulfur Recovery Project | Owners construction supervision. Interfaced with engineer/constructor to monitor all field activities, including schedule, delivery of engineering and equipment, inspection of work and verification of change order requests. |
| Callery Chemical Company Callery, PA | Diborane and Diborane Products Facility | Process, detail engineering, procurement, construction management and start up of a grass roots facility. |
| Mannesmann DeMag Corporation Warren Consolidated Industries Warren, OH | Continuous Slab Caster Supervised 700,000 man-hours in 8-month period. | Construction Management |
| Zinc Corporation of America Monaca, PA | Sulfuric Acid Plant 300 TPD, Zinc Oxide Plant. One-month maintenance turnaround projects | Design, detail engineering, estimating, planning and scheduling, procurement and construction management. |
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As the engineering design team we provide constructability through detailed design, ensuring design deliverables that are very constructable in the field.