Process Plants International

Capability Statement

Who We Are

Process Plants International [PPi] is a company founded in 2010 by leading industry specialists from the fields of Chemical, Process and Maintenance Engineering. The objective was to close a wide gap in the industry by offering a specialist single source service provider to global resource commodity organisations.

What We Do

PPi specialises in the design, construction, commissioning, operation and maintenance of complex mineral processing facilities. These facilities are located worldwide and while we specialise in Pressure Oxidation (POX) and High-Pressure Acid Leach (HPAL) Autoclave technology, we are not limited to this market alone. We have been, and continue to be, involved with some of the world's largest and most recent mineral processing projects including both greenfield and brownfield developments. PPi is a world-leader in its class.

Who We Service

PPi is a single sources service provider to companies operating, or intending to operate, technologically advanced hydrometallurgical process plants. Our clients, have engaged us in countries such as; Australia, Laos, Madagascar, PNG, New Zealand, Turkey, USA, Finland and New Caledonia.

Our Mission

Our mission is always to build integrated business-partner working relationships. We do this by being directly engaged and embedded into our clients' organisation. PPI will demonstrate this commitment by donning our clients' uniform where required. Where others are engaged to support specific hard-lined development phases, our approach is to support our clients continuously across all project phases. This approach ensures a smooth transition of critical start-up knowledge with our stakeholders.

Our People

Our personnel have been involved with project phases from design through commissioning, to operations and maintenance for over 25years. We develop and execute operational readiness programs, commissioning strategies, handover certification and ramp-up profiles. We also support operational and maintenance requirements including physical planning and execution of shutdowns or day-to-day maintenance. Our teams are supported from our West Australian head-office and our Queensland operations facility.

We recognise there can be staff constraints in early phases of project development. Our site teams are typically structured to perform autonomously without reliance on client departments or limited staff availability.

PPI has, and continues, to develop strong relationships with industry specialists in many of our core functions. Such relationships include patented technology as an example and we will always challenge the status-quo to ensure our clients have access to the most advanced suite of options.

Through each phase of engagement, we will, if required, tailor training programs to match the client needs.

Specific to project requirements, our engagement can be tailored in its entirety or in part as;

- Principle Contractor
- Area Lead
- Client Integrated Project Team

Why is PPI Different?

We identify the need before you know its required! We educate you on the shortcomings and the benefits of our solutions. We will manage the task from concept to completion using in-house engineering and trade expertise to "make projects work". PPi is focused on making your project a success.

Process Engineering

PPi can provide process engineering services to support a new design, re-design, de-bottlenecking or general day-to-day operations. Our projects, while not limited to, have included commodities of copper, gold and nickel. Specific capabilities include;

- Definition of scope, implementation and supervision of test work studies
- Designing and supervising pilot plants particularly for autoclave pressure oxidation.
- Interpretation of data including complex heat and mass balance calculations as an example
- Extensive refractory gold process development for all oxidation technologies. These processing options are applicable to base metals including;
    - Pressure oxidation
    - High pressure acid leaching
    - Albion fine grind/ferric leach
    - Bacterial oxidation
    - Roasting
    - Fine grinding

Process & Design

Integral to the PPi business model is the engagement of industry experts to deliver a better result. Our senior personnel are typically engaged by our clients as subject matter experts (SME) for key aspects of our projects. Our core capabilities stem from a foundation of Chemical, Process, Control Systems, Mechanical & Maintenance Engineering. Typical design deliverables include;

- Test work management and reporting
- Process and mechanical design criteria
- Process flowsheets
- Heat and mass balances
- P+IDs (development and redlining)
- Environmental licenses
- Plant layout and optimisation
- General arrangements
- Specifications
- Datasheets – mechanical, electrical and instrumentation
- HAZOP studies
- Scope of work documents
- Bid review, analysis and recommendations
- Equipment lists development
- Process control philosophies
- Quality assurance with suppliers and contractor

When requested as part of the service, PPi may perform small scale procurement on behalf of clients. PPi works routinely with numerous suppliers in the hydrometallurgical market. We can bring our own suppliers or work with client established vendors.

Construction

PPi can offer Structural, Mechanical & Piping (SMP) construction services to ensure the plant is constructed to the standard necessary for successful commissioning and ramp-up.

PPi will provide site supervision (area manager, area superintendent, area engineer) to ensure client engaged service providers do construct according to design and as contractually obligated. Where absent, we will implement Management of Change (MoC) processes to ensure design variations are formally managed.

In the overseas market where expatriate labour rates are high, PPi employs many third country nationals (TCN's) for site administration and trade field labour. Depending on project labour requirements and location, the number of personnel assigned may be a few or many hundred.

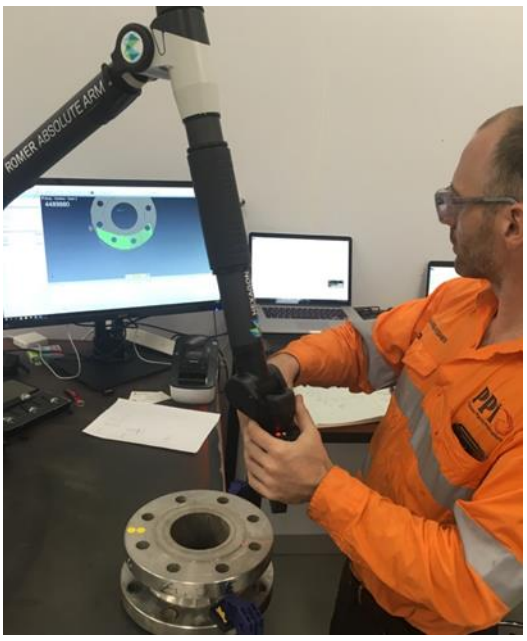
Specialised Alloy Welding

Developed out of need while complimenting the single source service, PPi has established a team of exotic alloy welders matched to a suite of PPi owned welding procedures. Our welding inspectors and supervisors are internationally accredited. Our team are qualified to weld; titanium, super duplex, duplex and Inconel stainless steels variants. Other aspects we can tackle include; tantalum and alloy linings of piping and dissimilar clad metal plate work.

Embracing Technology

PPi continues to challenge the status quo and look for emerging technologies to complement the effectiveness of our deliverables. In addition to our standard fare of engineering machinery, our Queensland facility employs such technology as;

- 3D Romer Arm Coordinate Measuring Machine (CMM)
- Ultrasonic cleaning baths
- Vapour grit blasting equipment
- Climate controlled oxygen cleaning and assembly room
- Dot peening name plate engraver
- API certified valve hydro-testing facility to 10'000kpag



Commissioning and Ramp-up

PPi personnel have been involved with the start-up of 22 autoclaves across 5-projects. We have developed a five-stage systemised approach to deliver safe commissioning and ramp-up deliverables. Each stage is bound by toll gates and constraints before proceeding to the next stage. This process is managed by our own proprietary document management tool; Project Integrated Commissioning Software (PICS).

- Stage 1 - Construction Testing - Inspection and Static Testing of Equipment
- Stage 2 - Pre-Commissioning - Excitation and Dynamic Testing of Equipment
- Stage 3 - System Commissioning
- Stage 4 - Plant Commissioning
- Stage 5 - Ramp Up

Operational Readiness

PPi's operational readiness team consists of engineers and tradesman with many years of operational experience. This team can compile the information that is required to build a successful system capable of transitioning a plant into commercial operations. Our operational readiness team can leverage off the project database to ensure consistent information is used to build a robust operational system.

Typical tasks for operational readiness will include;

- Commissioning spares
- Operational and capital spares
- Define first fill
- Lubrication schedules
- Warehousing systems
- Special tooling requirements
- Workshop size and fit-out
- Mobile equipment including crane studies for maintenance tasks
- Operating manuals
- Operating summary targets
- On-site laboratory analytical requirements
- Compliance with operating license conditions
- HAZOP close out
- Safe work practices [if not in place] – tagging and lock out, work permits, JSA, risk management, and HAZOPs

Maintenance

Post ramp-up we will work with client personnel to ensure the handover to maintenance includes a transition phase. A shutdown program is initiated that focuses on establishing confidence in critical components. The time between shutdowns is progressively optimised based on the fastest wearing components.

Our Projects and References

First Quantum Minerals, Ravensthorpe Nickel Project, Western Australia

PPi's scope was the refurbishment and commissioning of the two HPAL trains. This included applying PPi's world-leading commissioning protocols for autoclaves. Ravensthorpe Nickel also benefited from the advanced process control PPi now implements on autoclaves.

"Ravensthorpe was acquired as a decommissioned nickel operation in February 2010. During the following 18 months, we made significant modifications to the processing plant focusing on the redesign of the crushing, conveying, storage, reclaim and rejects area. The achievement of commercial production and its internal performance benchmarks, ahead of schedule, is a major technical success for First Quantum Minerals."

Source - www.first-quantum.com, 2nd Quarter Financial Report 13/14

Newcrest Mining Limited, Lihir Million Ounce Plant Upgrade, Papua New Guinea

PPi's scope included: construction completion, all commissioning activities, ramp-up followed by process optimisation for all the MOPU scope of work. Other tasks included: design review, pressure oxidation piloting and engineering support.

"Newcrest's two major expansion projects, comprising Cadia East Development and the Lihir Million Ounce Plant Upgrade [MOPU], both achieved major milestones during the quarter…… The Lihir MOPU project is in the final stages of commissioning which is expected to be complete by the end of January 2013, after which production ramp up commences. Both projects have a forecast final cost within 8% of their budget. The successful completion of these two major projects represents a significant milestone for Newcrest."

Source – Newcrest Mining Limited, Quarterly Report 31 December 2013

Polymetal International PLC, Amursk, Russia

PPi's scope included: construction completion supervision, all commissioning activities, ramp-up of the first POX autoclave in Russia. Other tasks included: design review, pressure oxidation piloting and engineering support.

"2013 Highlights……
+ 21% year on year production growth. Original guidance exceeded by 7%.
+ Strong free cash flow despite challenging market conditions
+ Amursk POX plant achieved design throughput and recovery, an important strategic milestone which now presents a unique competitive advantage in the FSU…."

Source – Polymetal International PLC, Investor Presentation January 2014.

Contact Details

Todd GIRAUDO
CEO and Technical Director
todd.giraudo@processplants.com.au
+61 4 1796 5870

Adam Hamer
General Manager – Operations
adam.hamer@processplants.com.au
+61 4 1898 5675