



## First Quarter Newsletter 2020

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### Featured Projects

#### SLAG GRINDING SYSTEMS



## **Brownfield Projects – Engineering of Ground Blast Furnace Slag Grinding Systems**

[PENTA](#) was retained to help develop concepts for a slag [grinding plant](#) (GBFS) in a major US port. This project was developed on a fast-track basis with PENTA closely collaborating with the customer's team and the construction company.

After acceptance of conceptual engineering, PENTA provided equipment specifications and detail engineering for the system. The slag is unloaded from ships onto trucks, which transport the slag to the grinding plant site. The slag is then processed, dried and stored with the ability to dispatch in bulk either by truck or rail.

An industrial equipment company retained PENTA to provide detail structural and mechanical engineering for a 500,000 tons/year GBFS grinding system at a brownfield site. The new grinding system would have to be located inside of an existing concrete and steel building requiring PENTA's structural engineers to evaluate the existing building to allow for modifications needed to accommodate the new system and ensure the building met all applicable codes. PENTA also completed 3D scanning and design using BIM Software. Design included site preparation, underground utilities plan, stormwater drainage, excavation and backfill, rough and finish grading plans and repairs to existing roadways. PENTA also provided an Issued for Construction drawing package that included structural drawings, and detail drawings for chutes, piping (process water, fire water, sewage, fuel and compressed air), and dedusting ductwork.

### **COAL ASH PROJECTS**



Concern regarding the availability and cost of clay and dry fly ash prompted our client to hire [PEC Consulting Group](#), the Consulting arm of PENTA, to complete a study to utilize ponded ash as a raw mix component. The study included equipment utilization and barge and truck unloading options. As part of the study, PEC Consulting provided conceptual general arrangements, process flow diagram, equipment list a capital estimate.

Three separate studies were performed by PENTA to examine different options to transport and receive fly ash allowing the client to evaluate and select the best option. This included reviewing barge and truck loading via pneumatic conveying systems. PENTA provided flow sheets, general arrangement drawings, equipment lists, structural steel and concrete quantities, a capital estimate and preliminary project schedules.

PENTA is also currently engaged on power industry at Power Plants [reclaiming and processing ash for use in other beneficial applications](#). This not only helps the utility remove a waste product from its site, but also converts what was once waste into a useful product for other industries.

## **ALTERNATIVE FUELS**





PENTA performed a study of a Tire Derived Fuel (TDF) firing system for a cement client, which included 3D scanning, conceptual engineering and a capital estimate. This study allowed the client to approve the project, and PENTA to continue to support the project by providing Electrical [Engineering, Procurement and Construction](#) services for the system.

### **DUST SHUTTLING**



Commercial and Industrial Solid Waste Incineration (CISWI) provides guidance for handling mercury emissions. PENTA helped a cement client comply with

CISWI regulated mercury emissions by assisting with the design and installation of a dust shuttling system. The system transported cement kiln dust (CKD) via dilute phase pneumatic conveyance from existing electrostatic precipitators to a new CKD bin that metered the CKD into two existing finish mills. PENTA completed [basic and detail engineering](#) including mechanical, structural and electrical design, procurement assistance (bid document preparation, supplier proposal evaluation and recommendation) and site electrical and communications assistance during commissioning.

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### **LOOKING FORWARD TO 2020**

PENTA Engineering welcomes the New Year with projects in a variety of industries.

- Engineering for the implementation of a plant to be built in the Southeastern United States for treating power plant coal ash. The system will process the landfilled ash for beneficial use in other industries.
- 3D scanning of a Midwest storage facility to help determine the cause of the structural failure of storage in a warehouse for a food and beverage client.
- FEED Engineering for a fly ash recovery system at a power plant in the Southwestern United States. The new fly ash handling system will reclaim fly ash from landfills where millions of tons of fly ash and bottom ash have been stockpiled. The system will recover the ash, dry it and classify it to produce a material that meets the ASTM C-618 specification.
- Design of a mechanical safety system at a Southwestern United States metallic mine that will isolate screens from a conveyor belt below allowing maintenance staff to work safely.
- Visual structural inspection of preheat tower at a cement plant, and a stack inspection of a steel stack for another cement client.
- Structural engineering support and review for the preheat tower superstructure as part of a cement plant improvement project.
- Detail electrical engineering for a Midwestern industrial minerals client. The client originally selected PENTA to study and provide recommendations to improve the existing electrical infrastructure at the plant. As a result of the study, PENTA has been retained to complete the detail electrical engineering associated with those recommendations. The improvements will help minimize

unplanned downtime and outages. PENTA will provide engineering to design replacement substations, switchgears and transformers, and develop bid packages for procurement and installation of the new equipment.

## Employee Spotlight

### Prasanna Seshadri, Ph.D



Growing up in the Far East, I was fortunate to have been under the care and guidance of some incredible teachers right from grade through high school. During the last two years of high school, I joined a pre-university program at a technical institute where I met like-minded classmates with primary interest in math and science. Upon graduating from high school, I enrolled as an undergraduate student to study Chemical Engineering at University level.

To further my research interests, I moved to the United States and started graduate school to pursue a Masters degree in Environmental Engineering. This opportunity gave me first-hand experience to conduct research work and upon graduation I decided I wanted to continue doing academic research work, especially in the field of energy. This prompted me to enroll in a doctorate degree program and I subsequently graduated with a PhD in Energy Engineering.

Prior to joining PENTA, I spent over 6 years in a R&D environment developing technologies and new products for the electric power industry. I had the opportunity to work with some of the brilliant minds in the industry who were extremely humble and always willing to help younger engineers to succeed in their endeavors. This place felt like it could be home for the next so many years of my professional career. However, due to sluggish industrial activity in the electric power sector, I started exploring other industrial opportunities and can consider myself to be extremely fortunate to have been offered my current role at PENTA. Change, for most of us, is never easy, but PENTA made sure they went every length of the way to make this transition as smooth and seamless as

possible. That was the first sign which made it clear PENTA cares about its people and that gave me a lot of self-assurance about this career change.

While my background in R&D is not the typical profile for a Senior Engineer at PENTA, the leaders had already put together some well laid out plans for my role. And I was delighted when one of the senior Principals discussed the aforementioned plans and even solicited feedback. I was encouraged by the complete transparency and everyone's willingness to help me adapt and settle in the new environment. And I have some very talented and hard-working co-workers around me to help with any queries and who are always ready to step-up to assist in times of need. I look up to my coworkers, I have mentors, I learn from them, sometimes I teach things I know and most importantly, I share happy thoughts and laughs with them. It's a family like feeling and everyone is considerate and compassionate towards others. Everything combined makes PENTA a very special place.

I am very confident PENTA would continue to help me to grow both as a person and as a professional engineer during the next so many years of my life. And, as a PENTA Engineer, I look forward to helping our clients help solve their problems and also grow PENTAs already lofty image across diverse industries.

## **Ney Linares, P.E.**



Sometimes, the personal making of a career starts at an early age. Sometimes, it does not. Parents try to figure out their children's inclinations. Is it science, mechanics, nature, sports that might interest their offspring? In my case, there were no questions asked -- I always wanted to be an engineer. The truth is that I always liked to draw, design and build; it came easy to me, so did numbers.

The satisfaction of watching the big structures that I had engineered going up made me realize that I am in the right place.

I grew up in Tarapoto, a city in the Amazon forest of Perú, surrounded by rivers, fertile soil, and abundant nature. Needless to say, the main industry in Tarapoto is agriculture -- rice, cacao, coffee are some of the main crops. My parents had

instilled in my siblings and me the importance of education and of being self-sufficient at an early age. So, I always looked forward to going to school, but I also liked to be involved in sports, especially soccer. I started playing soccer when I was 5 years old and continued playing for my school all the way through high school. Being an avid soccer player was eventually what opened doors for me.

When I was still pretty young, around 12, I started learning about construction. Our family home needed expansion and remodeling and starting with the floor slab, I learned to place brick on top of brick and plumb a wall, etc. When that project was finished, another one followed for the house of one of my brothers.

At the time when I enrolled in the Engineering School of Lima, there was political unrest in Peru and the university went on strike during the first semester of my studies. The desire to continue my education brought me to the USA, and I was lucky enough to be scouted while playing soccer and was offered a scholarship at Bethany College, West Virginia. An offer that I accepted immediately. However, Bethany College did not offer a degree in Engineering. I graduated with a Bachelor of Science in Physics. Still wanting to pursue an engineering degree, I applied and was accepted to the structural engineering graduate program at Washington University in St. Louis. I graduated in 1998 with a Masters' Degree in Structural Engineering.

I am glad that in my position at PENTA I can utilize my skills and knowledge and that I am trusted with the engineering of challenging projects. Seeing the results of hard work is indeed very rewarding.

## New Hires

### **Cathy Fueller**

Cathy Fueller is an Electrical CAD Designer. She is a former employee of PENTA Engineering and we are glad that she decided to re-join PENTA's Electrical Department. She has 25 years of experience in electrical drafting and design of





electrical lighting and power systems using AutoCAD and Revit. She has an Associates Degree in Electrical Design.

## Wayne Amptmann



Wayne is an electrical automation engineer with extensive experience in control systems related to conceptualization, estimating, proposal development, system design, assembly, installation, system commissioning, post project support management for applications of manufacturing, process control and instrumentation in various industries. He has a Bachelor of Science Electrical Engineering from Missouri University, Columbia. Welcome to PENTA, Wayne!

## PENTA Bulletin



### Ryan Haas

Ryan has been promoted to Assistant Department Manager



### Ethan Murphy

Ethan has been promoted to Assistant Department Manager

**At the PENTA Holiday party, achievement awards were presented to the following employees:**



### **Patrick Darmody, P.E.**

#### ***The Charles Ruprecht Award***

Presented to the individual who best exemplifies Business Excellence through customer service, planning, business development, organizational skills, financial awareness.



### **Dr. Abdulsalam Al-Janabi, P.E.**

#### ***The Michael Von Seebach Award***

Presented to the individual who best exemplifies technical excellence through technical innovations, knowledge and technical reliability, coursework or certifications earned in 2019, ability to transfer or acquire knowledge within PENTA.



### **Robert Nevenner**

#### ***The Thomas Hedrick Award***

Presented to the individual who best exemplified excellence in execution through planning, technical reliability and customer satisfaction.

### **Ryan Haas**

#### ***The Richard A. Thompson Award***

Presented to the individual who best exemplified dedication



through responsiveness to clients, reliability, and consistently going beyond regular expectations.

Something you'd like to see in the next issue? Email us at [busdev@penta.net](mailto:busdev@penta.net)



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