2015 SME Annual Conference

What an experience this year's SME Annual Conference was. The city of Denver and its very large convention center acted as a wonderful host for the gathering of companies and consumers alike all talking about one thing: Mining. The conference began with a day involving student participation where we were able to converse and learn things from other SME student chapters. Monday began with a large kickoff meeting, involving a Q&A board of influential mining minds of the world followed by the convention proper with tables and booths for 600 plus organizations. Finally Tuesday ended our experience with a brief meeting with other Minnesotans and friends of our great state.

The first day at the meeting consisted primarily of events geared towards student chapter involvement. We had arrived in the morning, registered and talked to Mona Vandervoort about the day's events. After this encounter, we attended a student chapter subcommittee meeting. Here, officers from many different chapters around the nation (even around the globe as Delft University chapter was in attendance) and discussed the current status of SME in the college environment. It seemed that each chapter was encountering very different problems. For instance, the Kentucky chapter has too many members. However, they have issues with upperclassmen being the only participants in activities. The Arizona chapter has plenty of members, yet few of them are from non-mining engineering programs. Montana Tech has issues with fundraising and how to get money for their activities. And many others, like our own chapter have had problems recruiting young people. Most of the chapters agreed that students who are not in mining and interested in the field, disapproval of mining and public perception is what is keeping many from advancing into SME and beyond into the industry. Later that day we attended the student keynote meeting where the student chapters had more time to bond together. On Sunday we noticed that student involvement in SME is very much concentrated in the Rocky Mountains and the Appalachian states.

We had attended the Plenary Meeting first thing on Monday. Here, there was a panel of industry leaders discussing the current situation of mining throughout the world. Represented were Rio Tinto, Freeport-McMoRon, Peabody Energy, Heidelberg Cement, and Caterpillar. First, a Rio Tinto representative addressed the audience. In his presentation, the use of autonomous mining and real time monitoring of mining operations was discussed. With real time monitoring, the issue of transparency was elaborated. Rio Tinto plans to build trust and engage the stakeholders in activities. Next, FreePort-McMoRon took the stage. Two main discussion topics here were the sustainable development approach and working with communities when mining. If communities are involved in mining operations, the fluidity increases while potentially decreasing the impact of the mine on the surrounding citizens and environment. Peabody Energy, a global leader in coal mining, discussed sustainable mining. Further, how if you can efficiently mine more minerals while decreasing your mining footprint with huge mines through places like their Wyoming mine that produced 118 million tons of coal in 2014. The representative also discussed their rebuilding of the natural habitats after mining has completed. Heidelberg Cement, a leader in aggregate, then began to talk about the business of cheap materials (less than 1 cent per pound for aggregate). Heidelberg has begun using hard rock quarries rather than sand gravel. They had also brought up their efforts of environmental remediation with a biodiversity competition they host every year. Finally, the world's leading constructor of mining equipment, Caterpillar, talked about big data and how the industry can keep up with the growth of the automated mining operations. Once again, environmental sustainability was a hot topic.

Throughout the whole of the plenary meeting a common thread continued to be reminded to us, the image of mining in the public eye. The public sees mining as a destructive act that ruins natural habitats; while the initial impact of mining cannot be disputed, the industry is working to make the long term effects of operations minimal. In some cases, the industry actually makes the habitats better than they were before mining. Every one of these organizations had at least brought up the topic of sustainability within the industry. In order for mining to be seen as sustainable and not destructive, campaigns such as the one that we have put forward will be a necessity.

That afternoon, we had begun spreading our outreach program cards throughout the massive congregation of everything mining. There were many booths that I visited, and some highlights will be listed here. I had first stopped by the Itasca Consulting Group booth where one of the representatives was actually from Minnesota. I talked about how Dr. Fairhurst, one of the founders of Itasca, had given a speech at last year's SME luncheon. Next, I talked to a representative who was selling scanners that could be used to determine the consistency of a mining product down to the elemental level. When doing this, a more efficient mine can be completed, obtaining more product with less of an impact. Another booth of note talked about new functions of a new foam based light-weight cement used for the lining and floor of an operation. This could reduce transportation cost and weight of shotcrete. There were many more booths that I had stopped by at many of which I had handed mining awareness campaign cards to.

Later in the day we had attended three paper discussions. The first, "The Value of Good Hydraulic Conductivity Data for Mining Industry Groundwater Flow Models" by M. Gozdor, was a paper regarding groundwater flow and how knowing the hydraulic conductivity of watershed areas is important for the advancement of mining. One test of hydraulic conductivity near Tampa, Florida revealed that the methods of measurement gave inaccurate values, resulting in an area where a mining project was abandoned. The next paper we attended, "Shale Gas Recovery Modelling of Heterogeneous Systems" by D. Gabeva, discussed the extraction of natural gas from shale. Some fracking companies use computational models that are inadequate for complete extraction of gas trapped beneath the low permeability shale layer. As the layer is heterogeneous, Gabeva attempted a more complex model to more accurately draw out as much natural gas as possible. A third and fourth paper we attended were complements to each other. The first, "A Geological Overview of Frac Sand in the United States", presented by M. Benson, and the second, "Where in the United States is the Naturally Occurring Frac Sand?", presented by A. Wilson. Both of the authors collaborated and worked for the USGS. M. Benson discussed the ideal makeup of frac sand. It has a high silica content (~99% quartz), is anywhere from 0.1-2 mm diameter, should be well rounded and uniform. I learned that the main producer of frac sand today is from the St. Peter Sandstone and Jordan Limestone near my hometown of Onalaska in southwestern Wisconsin. There was also other well-known geologists in the room who kept shouting out more and more areas where frac sand would be ideal in the nation, making the presenters rather frazzled.

In summary, the experience I and my colleagues were able to attend was absolutely beneficial for our current view of mining and our future careers in geological engineering. Meeting representatives from so many different backgrounds all devoted to the essential practice that mining is, meeting in one place surely will change how I view the industry into the future. I hope that my generation will soon see mining for the essential practice that it is. Both the awareness campaign that we support and the urgency towards sustainability can change the future of mining in America and we have the Society of Mining Metallurgy and Exploration to thank for that.