The 2009 Atlas Copco Scholarship Experience

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Abstract:

Each year Atlas Copco, in conjunction with the AusIMM, awards the Atlas Copco Scholarship to a student studying a degree relevant to the minerals industry. As part of the 2009 Scholarship I was lucky enough to gain an insight into the Atlas Copco Construction and Mining Technique business division. After visiting the sales company of Atlas Copco in Perth, I travelled to the division headquarters in Örebro, Sweden, to tour local production facilities and meet with product line managers. After many presentations from some very passionate people, I learnt a great deal about mining, marketing, international business and gained an understanding of their extensive range of innovative products. In Örebro I visited the Underground Rock Excavation group, the Surface Drilling Equipment group and the research and development unit; Rocktec. I was also able to tour Orica's detonator production facilities as well as visit the Secoroc and Geotechnical Drilling and Exploration groups. Other highlights included a trip to Kiruna, in the Arctic Circle, for a tour around Europe's largest and most technologically advanced underground mine, having a few drinks at the Absolute Icebar in the Icehotel at Jukkasjärvi, watching a rather intense local ice hockey game and experiencing Stockholm's nightlife. Upon reflection, it was an amazing experience, but it was the people I met and their enthusiasm that really made my trip, and I would strongly encourage others to apply for this scholarship in the future.

Introduction

Atlas Copco is an industrial group with world-leading positions in compressors, construction and mining equipment, power tools and assembly systems. Based in Sweden, it has a global reach spanning more than 170 countries, and in 2009 had revenues of 6 Billion Euro and over 30 000 employees (Atlas Copco, 2010). Each year, Atlas Copco, in conjunction with the AUSIMM, awards a very unique scholarship to one student studying a degree related to the minerals industry. It enables the recipient to travel overseas, and gain a real insight into the company's operations, with both the sales unit in Australia and the production facilities in Sweden. In 2009 I was lucky enough, or they were misguided enough to pick me. At the time I thought I had a rough idea about what the company did – they made a few drill rigs and their compressors weren't bad either - I would soon turn realize I had a lot to learn.

Let The Travels Begin

After being put in touch with Sue Goc, I was informed that Atlas Copco would host me for one week in any Australian office and then show me around its Swedish operations for two weeks, it was just a matter of picking where and when I wanted to go. Well I hadn't been to Europe since I was very small and decided; to go in the Swedish summer would be great. Unfortunately, the Swedish summer is great, so much so, that nearly everyone takes holidays at that time, and there would be no one there to show me around. So winter it was going to be – that meant snow and skiing were one the cards.

Atlas Copco were more than generous with my trip and agreed to pay for an around the world ticket; I just had to give them the dates and inform them where I wanted to go. This in itself was absolutely amazing to me, not only would I be going to Sweden but I would also be able to visit some other countries. Having been to the states a few times for the mining games and travelled to a few countries in Asia, I decided that a trip back home to Africa would be a nice change and give me a chance to catch up with family and friends before seeing a bit of Europe. Diane Peisley in the Blacktown office was extremely helpful in organising my trip and nothing was ever too much of an issue.

In early December I set off to from Perth to Johannesburg and onwards to Harare, Zimbabwe. After spending a month catching up with friends and family, fishing for tiger fish on the Zambezi River, chasing lions around Mana Pools National Park, and a five day long New Year's party it was time to head to Europe. I arrived in London to the 'worst snow', or best snow depending on your perspective, in 18 years, with up to 10 inches on the ground. This made travelling a little tricky, but after seeing some family, I was off to Geneva, where I met up with friends from Australia and we headed over the border into France for a week of skiing. The conditions were amazing and after spending the first two days perfecting the art of the perfect stack, I really started to enjoy myself. Three universities were also having their annual ski trips at the same resort which made the après ski side of things a blast. I then flew to Sweden to be hosted by Atlas Copco for two and a half weeks. After the 'business end' of my trip was over, I spent some more time in London and visited family in the Isle of Man before doing a road trip through Italy and the south of France. This featured a well loaded Nissan Micra humming along the Italian Autostrada at 130 km/h sounding like it was about to blow up, as we travelled from Rome to Nice. After many casino visits, including the Monte Carlo, and some great nights out the fun and games were over and I headed home.

Örebro

Atlas Copco is comprised of three divisions: Compressor technique, Industrial Technique and Construction and Mining technique or CMT, and it is the later that I went to visit in Sweden. My flight from Geneva touched down to a frosty 1°C in Stockholm, and I was met at arrivals by a driver, who would be talking me on the two hour drive to Örebro - the headquarters of CMT. Although virtually everyone I met in Sweden spoke amazing English, unfortunately the driver didn't speak any, so my hopes for intimate discussions about my love of opera and fine cigars were quickly dashed. Getting my first look at the countryside out the window, it looked like a bit of an arctic wasteland and I sat there wondering what I had gotten myself into, but I was soon to realize that there was far more to Sweden than empty snow covered fields.

Figure 1 - Örebro Castle in the centre of town

Once we arrived in Örebro, I checked into my hotel across the road from Atlas Copco headquarters – the so called Hamburger building. The next day I was shown around Örebro town after being given my new woolly mammoth winter jacket which I was extremely grateful for, as wearing my light jumper in January wasn't the most pleasant experience. We had lunch at the Örebro Castle (figure 1) which forms the centre of the town, and was built in the thirteenth century, and is currently the residence of the county governor – tough gig. That night I was taken out to dinner by one of the line mangers, which would become a regular occurrence during my time spent with the company. After a great meal, Marcus proceeded to give me a tour of the local watering holes, which involved us bumping into the Swedish striker for Barcelona in one of the Bars.

Over the next week I spent time with different line managers and received some very informative presentations about their products and current projects. Whilst in Örebro I visited the Underground Rock Excavation (URE) and Surface Drilling Equipment (SDE) production facilities, as well as the research and development unit, Rocktec, and the distribution centre. The production unit names are all abbreviated to three letters just to ensure everyone that everyone is kept nice and confused; to the point where it becomes almost another language. For example just within URE, you will find TME, LHD and RBE: which stands for Tunnelling and Mining Equipment, Load Haul Dump and Raise Bore Equipment respectively. The R&D unit, Rocktec, being one of the only units without any abbreviation is obviously still undertaking research to find the three most confusing letters.

Underground Rock Excavation and Surface Drilling Equipment

First up was Underground Rock Excavation. After hearing all about the underground products in various presentations, it was time to go for a factory tour. Having done most of my vacation work in underground, this is where my interest lies and was one of the highlights of my trip. The factory was amazingly clean and efficient, with different Boltecs, Cabletecs, Trucks, Loaders, Simbas, and Boomers all in various stages of production, along the factory floor. It was crazy to think that a machine of so many different components could be hand assembled in one place. Every bolt and screw for each component arrives when it is needed, giving a whole new meaning to the word planning. For me it was the big Boomer face drills that really stole the show. Weighting over 43 tonnes, with three 9.3 m booms and a basket, fully automated drilling and the ability to drill 6.4m rounds with 198m² of face coverage, in a single pass (Atlas Copco, 2010); the XE3C Rocket Boomers is one amazing machine. The different levels of ABC automation, featured by the Atlas Copco Boomers, allow for face specific drill plans to be uploaded via a wireless network or PC card, enabling each hole to be drilled to a planned orientation in space. The rigs also log all drill data and the use of the Measure While Drilling function, that records parameters such as percussion and impact pressure, can give an indication of geology of the rock being drilled (Nord, 2005). Also of interest was the Scooptram ST7LP low profile loaders which are aimed at the South African platinum market and can operate in seams where back heights are as low as 1.6m (Atlas Copco, 2010). All of the units are built with a 'just in time' attitude in mind to reduce holding costs and unproductive capital. Once units are built they are checked and tested at Atlas Copco's Kvarntorp test mine before being shipped to customers around the globe.

Figure 2 - Completed XE3C Rocket Boomer in the snow outside URE production facilities

That evening Peter, an Australian line manager for TME, took me to see a local ice hockey game: Örebro vs. arch rival Västerås, which attracted a lot of support with a packed out stadium. The game got very heated and before we knew it the gloves were off and a fight broke out right in front of us. One player ripped the other's helmet off and they both proceeded in an attempt to rearrange each other's faces, with the helmetless player finding out the hard way that punching another helmet wasn't the best plan. With Örebro clenching victory, we headed into town to meet up with some other Atlas Copco employees for the traditional mid week night out, 'Lilla Lördag', or in English 'little Saturday', which is turned into an enjoyable night.

Early the next morning, with a hangover that could take down a rhino, I crawled into the taxi that would take me to the Surface Drilling Equipment offices. The taxi driver obviously considered himself quite a contender for the world rally championship and on arrival proceeded to head sideways around the snow covered car park, making the most of his handbrake. Needless to say, I was not the most appreciative audience for all of this; and although he didn't realise it, he came rather close to having the interior of his taxi redecorated, free of charge. After bring brought up to speed on the different crawler rig products and their applications, mainly in grade control and presplit drilling, there was another tour of a high efficient production line. Of particular interest was the Silenced Smartrig Roc D9C which features an encapsulated drilling system to reduced noise output by 10dB, enabling it to work 1km closer to settlements based on a 50dB limit (Atlas Copco, 2010). The rig also features advanced GPS and automation. Whilst touring the factory floor I was made aware of how local regulations and customer tastes have a large impact on the ordered specifications such as electrics, emissions and the level of automation.

Having dinner with some travelling sales managers from Africa and Europe that evening, who spend up to 200 days a year on the road, it was interesting to hear their stories. They made me realize just how diverse the world's mining markets are; a product that is very successful in one country may have minimal sales in another due to factors such as the cost and availability of skilled labour and people's attitudes towards doing things in a certain way. The reps didn't seem all that keen on China where business deals often require large quantities of alcohol to be consumed before any deal or negotiation can take place, which obviously becomes rather strenuous when visiting many customers in a short time. After being shown around the distribution centre which had recently installed a new paperless picking system, and ships up to 10 000 parts per week by the next business day, I had the weekend to myself to look around Orebro. One evening I was invited around to someone's house and ended up playing Trivial Pursuit in Swedish of all things. One thing that is highly commendable of Swedes is that when they are around someone who doesn't speak their language, they make the effort to speak English, even if it is not their strong point. This made me feel very welcome and included, although my knowledge of Swedish literary greats and politicians obviously required some work.

Kiruna and The Icehotel

With the weekend over it was back to business. The research and development division Rocktec forms the heart of the CMT business line and is responsible for developing the performance rock drills for which Atlas Copco is renowned. I was shown the laboratory where new prototypes undergo speed tests, drilling through Swedish granite and endurance tests, on ball bearing suspended in oil, which has been found to simulate the properties of rock. I was also shown the advanced laboratory for determining material compositions and properties. Early the next day, Kirsi from Raise Boring, and I were picked up and taken to Arlanda Airport to catch a flight for a much anticipated trip to Kiruna. It is a town of close to 20 000 people located in the Arctic Circle and let's just say it's not the warmest place I have been too. We arrived to a 'warm' -15°C and a lot of snow. After doing my usual trick of leaving my phone and book on the plane, we drove through town to the infamous Ice Hotel. It was here that I saw the only reindeer of my whole trip – there it was hiding amongst the greens, on my plate, at the very extravagant restaurant attached to the Ice Hotel. After the amazing buffet lunch we went for a look around the hotel suites. Each suite was themed, featuring amazing ice sculptures and it's always a rather frosty -5°C inside, making me rather pleased that that we would be heading back to a warm hotel in Kiruna that night. One of the best suites was themed the 'doll room' which featured a large somehow very menacing dolls head with large blue glowing eyes staring forebodingly over the bed. I doubt anyone who stayed there ever got to sleep. The hotel is built from of a snow and ice composite referred to a 'snice', with 900 tonnes of ice for the sculptures and some walls harvested from the nearby Torne River. The river's water depth, oxygen content and flow rates, result in rare thick crystal clear ice, of which several thousand tones is exported every year to Absolut Ice bars around the world. After the tour we had a few drinks at once such bar in the hotel, complete with glasses sculpted from river ice which was quite an experience. Watching others have their first sip, I was secretly hoping their lips would get stuck to the glass and provide me with some amusement but unfortunately it never happened as the glasses weren't cold enough.

Figure 3 - Absolute Icebar at Jukkasjärvi

LKAB

The next day we woke up to a low of -34°C which I found rather uncomfortable but today we were going to see something special. We headed to the edge of town, the location of the largest and most technologically advanced underground mine in Europe – the LKAB iron ore operation. With over 300km of underground development, employing over 900 people underground, and producing 25Mtpa of pelleted iron ore product by sublevel caving, it was an amazing experience to be able to tour such a massive and efficient mine. The mine is planned to continue operations until 2033 at this stage, which will also involve relocating most of the town of Kiruna due to subsidence caused by the cave. We put on our underground gear at the massive administration building and headed down the twin lane tarred decline to the tourist Infomine on the 540L level. Here to my disbelief we found a full size cinema, a comprehensive museum featuring all kinds of machinery, a café and even mobile phone reception! After looking around for a while, our guide informed us that we would go and see the production drilling. Expecting to head off the decline into a drive, we instead pulled up to a roller door. This opened to reveal a modern office block. Slightly confused I walked in to find an operator at his computer desk; sipping his coffee and simultaneously running the mine's five fully automated production drills using a wireless network. The mines loaders and ore locomotives, on the transport level, are also operated using automation. After visiting an Atlas Copco raisebore we were able to jump in the cab with an operator of a M2C Boomer using ABC automation as he finished drilling the face. The operator was changing drill bits as we arrived and informed me that it was not unusual to use 10 bits to drill one face in the extremely hard rock. Finally it was time to head to the crib room for lunch – although in this mine it is referred to as the restaurant. There was no rough furniture or tea bags hanging from the shotcrete on the backs here, instead you could easily be fooled into thinking we were at a café on the surface. With a choice of three hot meals and refreshments it was hard to believe we were 775m below ground. Leaving the snow cover forests, phantom reindeer and the mine and the behind we headed back to the airport.

Fargesta and Gyttorp

Back in Orebro it there was still more to see. I visited Orica Mining Services in Gyttorp 40 minutes away. I was able to tour the production facility for Orica's electric and non-electric detonators. The vast majority of the manufacturing is carried out by robotics and I quickly learned that there were some very complicated processes and massive safety precautions required for the production of even the most seemly simple detonator. I now have a new respect for something that is usually plugged into a booster and lowered down a blast hole without much thought. Then it was off to Fargesta to visit the Secoroc group which produces a huge range of consumables such as drill rods, hammers and drill bits, as well as raise bore cutters. Once again I received several enthusiastic talks about their product range and application, before seeing the factory, and what a factory it was. Having recently invested heavily in the latest industrial lathes and robotics I felt like a little kid as I walked around the massive workshops. Watching a robotic arm grab a cylinder of high grade steel, insert it into the chuck of a five axis CMT lathe and seconds later remove a shaped drill bit was mesmerising to watch. The robotic arm even had the audacity to turn the bit upside down and shake out the remaining cuttings into a bin before placing it neatly on a rack. Secroc also manufacture their own tungsten carbide buttons to be pressed into drill bits, as well as friction welding and heat treating their drill steels for improved performance.

Stockholm

Upon saying farewell to everyone in Orebro, I visited Craelius, part the Geotechnical Drilling and Exploration (GDE) division in Märsta. Here exploration rigs and diamond core drill bits as well as specialist rigs and grouting units are manufactured, with some interesting applications such as geothermal well drilling and casing. I then headed into Stockholm for the weekend, checking into a rather ritzy hotel. After making the most of the Stockholm's reputable night life, with great detriment to my wallet; I went into tourist mode. I walked around the city taking in the old architecture and cultural ambiance for which Stockholm is famous. I visited the Royal palace, the old town, Gamla Stan with its small cobbled street and the Vasa museum, holding the world's only 17th centaury ship. At the time Vasa was the largest Swedish warship ever built; it was a feat of engineering with two gun decks and was the pride of the Swedish fleet. On the day of its launch in 1628, the regal ship left the harbour and headed out to sea. The waves splashed against her majestic bows as the wind began to blow, ruffling the great ships sails, which promptly caused her to rollover and sink. The mammoth task of raising and restoring the 70 meter ship was then undertaken over 300 years later, and it is definitely worth a look if you are ever in Stockholm. After a great weekend, of sightseeing and meeting some interesting people, my time in Sweden had come to an end and I sadly headed back to the airport one last time.

Get Involved

As students studying degrees related to minerals industry we are very privileged to receive support from industry and representative bodies such as the AusIMM. Whilst we are extremely fortunate that financial scholarships are widely available to us, this scholarship holds something immensely more valuable - something that cannot be bought or sold: an experience. I would strongly encourage others to apply for this unique opportunity. Atlas Copco is an amazing company, with a business culture like I have never seen. The employees I met seemed to truly feel valued and satisfied and held a strong sense of loyalty and pride in the company. I would gladly work for them in the future and I must admit that I now hold a strong bias towards their equipment. Whilst this trip has served to broaden my perspective on mining and international business, I have had a ball along the way. I meet some terrific people and I will definitely return to Sweden although probably in the summer for obvious reasons. I understand applications for 2010 have recently closed, but I would encourage you all to make the most of your opportunities and you may find a few hours spent filing in an application form will yield immense rewards.

Acknowledgements

I would like to that Atlas Copco, whose boundless generosity and hospitality made this experience something I will never forget. I would like to extend my sincerest gratitude to Diane and Sue in the Blacktown office for all the trouble they went to as far as organising my trip and sorting out my flights. I would also like to thank those who took the time out of their day in the Perth office to show me around and took me out to meet customers in the Australian part of my trip. To everyone in Sweden, including Kiki Stirling, who organised my itinerary, I can thank you enough. Your enthusiasm and passion made my trip and I am sure this experience will be of great value to me during my role in the industry. For me, Atlas Copco has definitely lived up to its business motto of '*First in mind, first in choice*'.

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