

# “First in mind, first in choice” – the 2011 Atlas Copco Experience

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Each year Atlas Copco in combination with the AusIMM award a scholarship to a student studying a mining related degree within Australia, Papua New Guinea and New Zealand. As the 2011 recipient I travelled to the regional office in Burnie, Tasmania and then to the Underground Rock Excavation, Surface Equipment and Raise Boring divisions in Orebro, Secoroc in Fagersta, Craelius in Marsta and the Atlas Copco Headquarters in Nacka within Sweden. I was also fortunate to experience supplementary excursions through visits to Stockholm, the Orica Factory, Gytorp, the historic Zinkgruvan mine, the Ice Hotel and the LKAB mine in Kiruna. This paper acts to summarize the experience and encourage future students to apply.

The Atlas Copco Group operate in a global context and I was able to experience all aspects of the business. I met and had presentations with not only equipment production and division factories, but also marketing and branding, finance, research and development and human resources. The experience has not only given me a tremendous insight into the Atlas Copco business and ethics but also the global mining industry and is undoubtedly an unforgettable experience that is sure to shape my future career.

## INTRODUCTION

Atlas Copco is a world leading provider of industrial productivity solutions (Atlas Copco, 2012). The company is based in Sweden and comprises of four main business areas; Compressor, Industrial, Mining and Rock Excavation and Construction Techniques. In 2011 the Group had 37 500 employees, a revenue of 9 Billion Euros and a presence in more than 170 countries (Atlas Copco, 2012).

The Atlas Copco Scholarship is awarded in conjunction with the AusIMM each year. It enables a student studying a mining related degree to travel to an Atlas Copco Operation within Australia and then to the headquarters and main operations in Sweden. The recipient is able to develop a greater understanding of the operational applications, products and applications, branding and international business mechanisms of the Atlas Copco Group.

## BURNIE, TASMANIA

For the Australian portion of the scholarship I chose to travel to Burnie Tasmania. John Stanton the regional manager for the Burnie office kindly

organised a comprehensive itinerary which involved several Tasmanian mining operations, a factory tour and a few tourist pit stops.



Figure 1. Kathryn (L) standing with Greg Coster (R) at Rosebery's newly developed South Hercule's Test Pit.

During the four day visit we travelled to MMG's Rosebery Mine, Unity Mining's Henty Mine, Copper Mines of Tasmania's Mt Lyell and BCD Resources' Beaconsfield Mine. I was also able to spend some time at the factory within Burnie where John explained the

ingenious design of the machinery and associated elements. I was impressed by the technology and intelligence possessed by even the most basic apparatus components. I’m sure no one truly appreciates the innovation behind the physical and compositional design of a drill steel, yet it is so often relied upon in contemporary mining.

### **UNDERGROUND ROCK EXCAVATION, OREBRO (SWEDEN)**

Orebro is approximately 200 km west of Stockholm and is the location for the Atlas Copco Underground Rock Excavation Division. Here, I learnt about the various equipment lines available within the Underground Rock Excavation division. I was impressed by both the egalitarian Swedish work culture and the enthusiasm of Atlas Copco employees as numerous line managers took time out their busy schedules to detail their equipment, markets and the developments their products are making.

I was able to learn about the diverse range of products available within the catalogue and see them in various states of assemblage within the production factory. Of particular interest to me was the way in which machines are adapted for country specific applications; for example the long tramming capabilities of the ST1520LP LHD for use in Poland or the automated design of the ST14 LHD used in Finland.

All of the Atlas Copco products were sleek and ergonomic in design. The boomer, Simba and Boltec underground rigs offer RCS (Rig Control System) and various modes of ABC (Advanced Boom Control) for increased productivity and safety. A more recent development are the automatic drill bit changers and “Measure while drilling,” a tool which enables the rock drill to log the surrounding rock strata whilst drilling (Atlas Copco, 2012). The machines are able to “self-troubleshoot;” calculating an alternative hole entry point if the face has areas unsuitable for drilling. It is these advancements in machine design that will enable more efficient and thus sustainable mining practises and lead the industry to benefiting resources once deemed non-viable.

### **SURFACE EQUIPMENT AND RAISE BORING**

Next stop was Eyra, the factory for Surface Equipment. I was taken on a factory tour where I was

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able to see the construction of the surface drills from individual components right through to the fully outfitted drills and I was able to trial the new SmartROC surface drilling rig simulator. The drive for autonomous solutions was clearly evident within the Surface division with talk of the autonomous drilling alliance between Atlas Copco and Rio Tinto. I also met with Hellen Ekefalk, the Communications and Brand manager, who impressed upon me the importance of branding and the efforts made to market the line within the international community.



Figure 2. Kathryn with the completed surface drill rigs ready for shipment at Eyra.

Atlas Copco is a world leader due both to its focus on research and development but also its aggressive approach to competitor acquisition. It is the latter strategy to which Atlas Copco owe their dominance in raise boring. Having acquired the Robbins company in 1993 (Atlas Copco, 2012) Atlas Copco continue to use this technology as existing products such as the raiseborer in both tunnelling and mining applications and to develop new products. The Atlas Copco Modular Mining Machine is a new tunnelling machine made in cooperation with Rio. This machine uses the learnings of the Atlas Copco Robbins Mobile Miner and combines rock cutting; raise boring and roof support technology. Such machine enables fast, flexible development whilst also maximising safety and ventilation and minimises excess manning and additional equipment.

### **ZINKGRUVAN**

The historic Zinkgruvan mine is located approximately 200 km south west of Stockholm and has been producing zinc, lead and silver since 1857

(Lundin Mining, 2012). Due to the good relationship between the mine and Atlas Copco I was fortunate to be treated to a site visit. After a presentation detailing the history, current operations and new developments we descended underground. It was interesting to note the differences in Australian and Swedish mining practice, in particular Swedes use a specialised scaling machine called a Scaletec to scale back their walls and roofs, whilst Australians continue to use the Boomer, in an application out of the machines design specifications.

### **ORICA**

An operational agreement between Atlas Copco and Orica provided the opportunity for me to visit the Orica production facility in Gyttop. I witnessed the various stages of production of detonators, lead in lines and boosters. To assure safety and quality most elements are produced using computer aided robotic mechanisms. The visit provided an insight to the development and ultimate use of explosives, I definitely had not previously considered the many processes it takes so manufacture something as commonly used as a lead in line.

### **SECOROC, FAGERSTA**

Fagersta is 100 km north-east of Orebro is the home of Atlas Copco's Secoroc. Secoroc produces the rock drilling tools that are central to the vast majority of Atlas Copco mining catalogue. It consists of three main product lines, Tophammer, Down the Hole, and COPROD. The factory tour was a lesson in quality manufacturing practices. All of the drill rods, which are the primary element of the Atlas Copco rock drilling catalogue, are made using friction drilling. A practice which ensures the structural integrity and operational life of the product. Interestingly the drill rods are still straightened by hand, a practice that enables higher precision and efficiency than that achievable by a machine.

### **KIRUNA – THE ICE HOTEL, JUKKASJARVI AND THE LKAB MINE**

As an Australian it is a rare opportunity to go within the winter Arctic Circle and the visit to Kiruna was definitely one of the highlights of the trip. After flying nearly 1000 km north, Kicki Stirling (my host) and I arrived in Kiruna to find our dog sled driver waiting

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for us with an over excited pack of dogs for our journey to the famous Ice Hotel. Each year the hotel use a different layout and new artists to sculpt its icy insides, and only build enough rooms for the guests booked for the season. Apart from the frozen chapel and hall the hotel consisted of two main types of rooms; those made of snow, and those of ice. Touring through the rooms it is easy to be astounded by the continual creativity and ingenuity of both the sculptors but also the original creators of the business.



Figure 3. Kathryn (R) with Kicki Stirling (L) at the Ice Bar at the Ice Hotel, Jukkasjarvi.

I found a different type of inspiration at the world class LKAB mine. As the world's largest underground iron ore mine, it possesses a 60-70% iron content and drilling programs have not yet been able to identify its ultimate depth (LKAB, 2012). The operation is the most "civilised" mine I've ever entered. Apart from having two underground restaurants and a movie theatre LKAB has an entire museum below the surface.



Figure 4. Kathryn (R) with Kicki Stirling (L) atop the LKAB mine, Kiruna.

The extent and quality of the ore reserve renders the operation peerless, however this the operation to pioneer many of its own solutions with self designed and specialised LHDs, explosives, train system and are even groundbreakers with respect to mine design and development. This enterprising attitude ensures LKAB remains at the forefront of technology and continues to outmanoeuvre their lower cost competitors.

### **CRAELIUS**

After returning to Stockholm I was off to Craelius, Atlas Copco's Geotechnical Drilling and Exploration division. After an in depth factory tour which included perusing the machines ready for shipment in the yard I met with a number of line managers to learn about their In the Hole, Diamec, Christensen and Explorac presentation. Once again I was astounded by the clarity of the Atlas Copco design particularly in the Explorac. This reverse circulation drill is a top seller in Australia as it is specially designed for exploration in remote areas, whilst also offering reliability and flexibility in drilling options.

### **ATLAS COPCO HEADQUARTERS**

An addition to this year's scholarship program was the opportunity to visit the Atlas Copco Head quarters in Nacka. Amazingly under the statuesque flagship building lives a multi-level test mine. Apart from displaying an Atlas Copco museum the mine enables the staff to test the bolting / drilling / tunnel boring abilities of the various equipment and appears to be the ultimate playground for engineers. The walls are pockmarked with drill holes and explosives are used to continue the mines "development" and thus maintain the required amount of drilling test faces. The rest of the day was spent "upstairs" receiving presentations from human resources, finance and communication, which illuminated a different side to the company than I was familiar with.

### **LEARNINGS**

Ultimately the Atlas Copco Scholarship is not just a scholarship, it is a once in a lifetime experience. I was introduced to a vast array of technology and continually amazed by the innovations that drive the Atlas Copco brand. I look forward to Atlas Copco's future developments and will most likely harbour a

bias towards their equipment for the rest of my working career. Furthermore I was exposed to the international aspects of the business and developed a greater appreciation for the global nature of the minerals industry.

However, I think the most valuable thing that I gained from this scholarship were the people I met. The enthusiasm and passion exhibited by all individuals further confirmed that Atlas Copco believe and enact their "first in mind, first in choice" mentality in all facets of their business.

### **ACKNOWLEDGEMENTS**

The success of this scholarship is largely due to the hardwork of a handful of individuals. Theresa Gustafsson was my main Australian contact, liaison and receiver of my constant calls and emails. Brodie McPherson but even more so John Stanton were the founding reasons for the success of my Tasmanian trip. However it is Kicki Stirling, of Atlas Copco Orebro who I believe is the champion of my amazing experience. Not only did she organise an absolutely ridiculous Sweden itinerary, accompany on our adventure to Kiruna but also invited me to her home is quite the amazing individual. Thanks do not seem enough for all people who played even the smallest part in this Scholarship trip. The experience is sure to shape my future career and is something I will remember for a lifetime.

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