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In the summer of 2014, I completed an internship in Panama City, Panama working for Compañía Climatizadora. The International Association for the Exchange of Students for Technical Experience (IAESTE) provided me with this opportunity. They have representatives in over 80 countries worldwide and each local group liaises with companies in the country to provide students from other countries with internships of varying length and entry requirements.

The application process for an IAESTE internship involves first registering your interest in the program and providing the organisation with details including what you are studying and what languages you speak. The next step is to select up to five placements you are interested in once IAESTE sends out the list of available internships. For each internship you select, you must write a short statement on why you are a suitable candidate. A panel from IAESTE then reviews your application and compares it to all others they have received. If they consider you to be the best candidate for one of your chosen internships above all other applicants for that job, you are informed of this and, if you choose to accept this recommendation, you must then write a cover letter directly to the company you have been recommended. The company must then give final approval of your application and officially offer you the job. Overall, this is a lengthy process but is necessary considering the vast number of applications submitted each year.



Panama is the most southerly country in North America with its eastern border with Colombia being the point at which north meets south. There are two airports in Panama City: Aeropuerto Internacional de Tocumen and Aeropuerto Internacional Marcos A. Gelabert. The total travel time from Edinburgh to Tocumen was around 18 hours which includes a transfer in New York. Spanish is the official language in Panama but many people speak English. Accepted currencies are the US Dollar and the Panamanian Balboa; the exchange rate between them is fixed at 1:1.

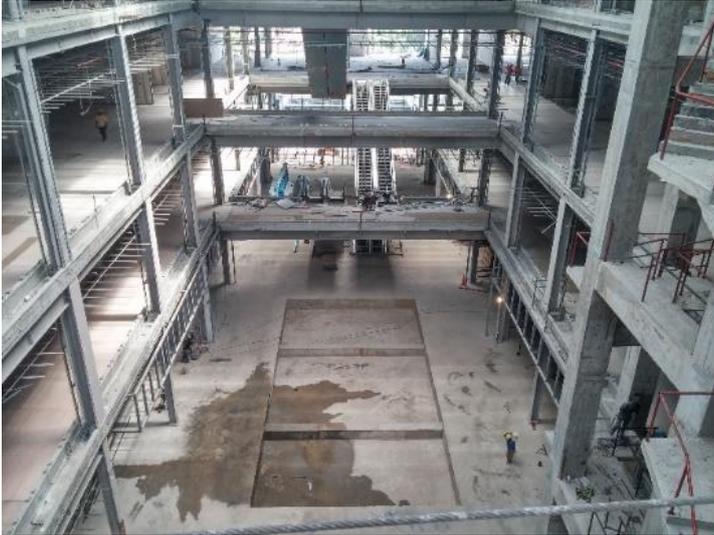


Panama itself has a vast array of attractions, one of which is the skyscrapers. All 14 of the tallest buildings in Central America can be found in Panama City and even more are currently being built. Some of the most striking ones are the Torre Revolucion (pictured top-right) and the Soho Mall project (currently under construction, pictured centre-right). As I was initially assigned to the Soho Mall project, I was given a unique view of the city skyline from the 42nd floor of the south tower (pictured below-right).

Aside from the skyscrapers, there are countless other reasons to visit Panama, perhaps the most well-known one being the Panama Canal. In addition to this, the natural beauty of places such as Colon, Coronado, Chiriquí and Bocas Del Toro provides plenty incentive to visit before even considering the history that can be found in many of them; much of the rich history of the country comes from past events such as the successful Spanish colonisation and the failed Scottish colonisation. Perhaps the most interesting place in the country for its history is Casco Viejo, built in 1673 after the Governor set fire to the previous city before it was attacked by pirates.



Climatizadora is a company concerned with the HVAC (heating, ventilation and air conditioning) industry and employs around 250 people on a small site in Panama City. Primarily, they act as a distributor of products from Carrier, Evapco, Wardflex, Macro-Air, Systecon and Polyguard. The products they distribute include but are not limited to water chillers, air handlers, condensers, evaporators, cooling towers and industrial fans. In addition to the distribution of these products, they also provide a consultation and design service, whereby a client approaches them with a project and they determine the requirements by way of a thermal analysis then design a system which fulfils those requirements. The client can then choose whether or not to purchase the components through Climatizadora and whether or not to have Climatizadora install them. Additionally, they manufacture ventilation ducts on site (pictured bottom-left).



One of my tasks within the company involved working on the Soho Mall project. I was provided with the floor plans for the buildings to see where equipment was installed and the quantity required of each component. One part of this was to create a spreadsheet detailing which units within the mall were already sold to retailers and for each retailer show details of any HVAC components they wished to purchase through Climatizadora. Another part of this involved looking into control systems used to monitor the condition of each location and enable end-user control to either increase or decrease the temperature or humidity of the room in question.



I was also taught to use a piece of software called the Hourly Analysis Program (HAP) which takes various user inputs and determines the thermal load on a HVAC system installed in the building. The specifications of the building are input into the software along with geographical information such as the location of the building so that weather information can be obtained. Once details are provided for the weather the building will experience as well as information such as sizes, wall types, roofs, and quantity of windows, the thermal load can be calculated. This produces a number quoted in TR (tonnes of refrigeration, can be converted to kW) which then enables the engineer to specify a system which can provide that load.



Through these tasks I learned how to interpret large technical drawings created for construction and from reading background material about each of the HVAC components, I learned a great deal more about psychrometry and more generally thermodynamics. Much of what I learned will put me in a good position for continuing my study of thermodynamics this year at university.

In addition to the experience I gained which will directly assist my studies, I also gained important life experience. The 15 weeks I spent in Panama are the longest I have ever been in any other country, let alone one that doesn't speak English as a first language. This presented a number of challenges in everyday life as people struggled to understand me and I could rarely understand them. However, this taught me the importance of keeping explanations as simple as possible. Additionally, working with people from a different culture and with a different education to mine helped me improve my ability to adapt to a different culture in order to work efficiently with my colleagues and to be considerate of the fact that they may think differently from me as they have been taught engineering through a different education system.

Unfortunately, during my internship I had a number of issues with my employers. They appeared to be unaware that Spanish was not my first language which resulted in me being given very little work to do and frequently being left to work alongside people who spoke no/very poor English. Furthermore, they were not providing me with work which matched the description they provided IAESTE prior to my acceptance of the offer. When I was given work, it was never a substantial task and I had to repeatedly ask for more work only to be left with nothing to do. I overcame these issues by dealing only with people within the company which spoke good English and asked them what they were working on and if I could help in any way. This led to me being taught to use the HAP software and learning more about how the company operates. I still gained useful experience from this as it gave me experience in how to react to a conflict between myself and people in management positions who had little desire to assist me and how to resolve it. I also gained some experience in adapting to a difficult situation in order to ensure that my time is not wasted.

Aside from the engineering and life experience which are enough in their own right to make this placement an invaluable and unforgettable trip, seeing most of the attractions mentioned previously have simply added to that. As none of this would have been possible without the assistance of the Hammermen scholarship, I must extend my sincerest gratitude to them for selecting me and enabling me to make the most of my opportunity.