

Neale Young – Hammerman scholar 2008

IAESTE summer internship at the Advance Optics Manufacturing Centre Hong Kong Polytechnic University

In the summer of 2008 I completed an eight week placement at the Advanced Optics and Manufacturing Centre (AOMC) - a research and development lab operating out of the Hong Kong Polytechnic University. Due to my degree course being Mechanical Engineering I was assigned the task of carrying out a thermal analysis of the AOMC's award winning Light Emitting Diode (LED) Street Lamp prototype. This prototype street lamp designed at the AOMC potentially offers huge energy savings when compared to conventional filament street lighting. The Performance of an LED is directly related to its operating temperature and if not correctly managed will affect the performance and longevity of the LED. Therefore when considering an LED for any application it is essential that the accompanying thermal management system is adequate for the task it is employed to do. The aim of the thermal analysis I carried out was to assess the thermal management system employed in the AOMC's street lamp and to compare the results with manufacturer temperature ratings for the LED's. This was also the first thermal analysis that had been carried out at the centre using Cosmos software. Prior to taking up my placement with the AOMC I had no Solid Works or Cosmos finite element analysis experience (FEA), therefore before I could conduct any analysis I had to first learn both packages. Gaining a proficiency in Solid Works and Cosmos analysis is very advantageous and they are two very commercially viable tools to possess and now complement my CV well, along with the experience of working in an international environment.

Working at the AOMC meant working in a manufacturing environment whilst still being part of an academic institution. This gave me the feeling I was doing real and valued work for a company whilst still maintaining a lot of the social aspects of attending university. This mix of industry and academia made the entire work experience very enjoyable and rewarding.

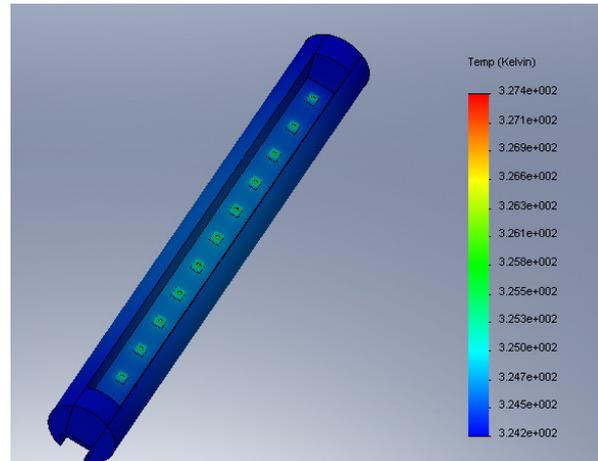


Figure A: SolidWorks Drawing with thermal Analysis

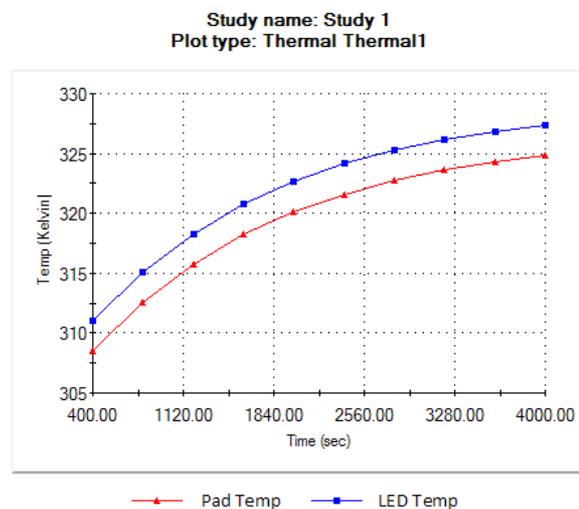


Figure B: Transient thermal Plot carried out using Cosmos

The AOMC also sponsored a number of fourth year project students, this gave me the chance to interact and learn a little about people my age studying similar degrees. A number of the staff at the AOMC and the fourth year students also took the opportunity to practice their English, though there was some misunderstandings we were able to get by, all it took was a little perseverance and a few drawings. I also managed to learn some basic phrases that were useful whilst out and about, for instance, when getting a taxi back to our accommodation it's always handy to know how to say "Lei guang dia hok hok saang sok sai" which means polytechnic student halls or when down temple street market "Peng di la" which means cheaper. Like everywhere the people of Hong Kong were very receptive to anyone trying to speak Cantonese and were very surprised and even appreciative when I tried.

Though working at the AOMC was very enjoyable the high light of my day was going for lunch with two of the technicians that I worked beside. We never went to the same restaurant more than twice and sampled a wide verity of excellent foods in restaurants that seemed to be known only to the locals, likely the Cantonese equivalent to the British "greasy spoon" only better. As there was seldom an English menu my friend and work college David always ordered for me and never once got it wrong. Thanks largely to David I am now also expert in the art of chop sticks.

The IAESTE local committee in Hong Kong accommodated all summer interns in the Polytechnic student halls. This gave everyone the chance to interact and mix with over 20 other IAESTE interns from all over the world. Over the eight weeks we spent a lot of time together and managed to pack in tonnes of sight seeing, travelling and eating out. We even managed a few nights out. With the approval of our employers we also took a long weekend off work to travel to Bangkok. This was an amazing three days which included visits to the golden palace, the chacktuchat market (the worlds largest out door market), Ayathuya (the ancient former capital) and the bridge over the river Kwi. We also went by ferry to Macau one weekend to do the world's highest bungee.



Above: Me with Fellow IAESTE interns Ohio Dan and Irish Dan and Austrian Pet in Macau after doing world's highest bungee

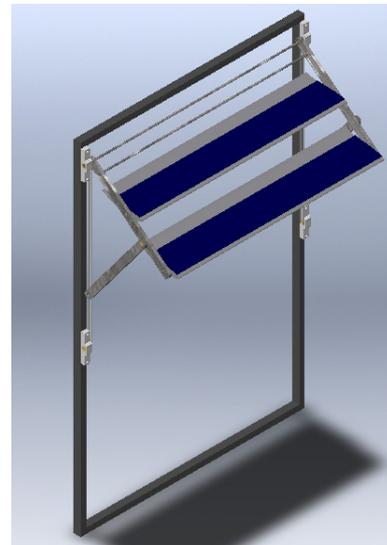
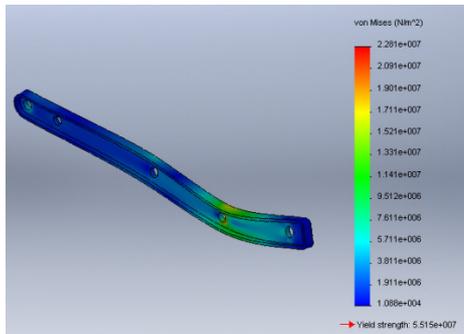


Above: View from the Peek overlooking Hong Kong Island and Kowloon. Below a view from up a temple in Ayathuya

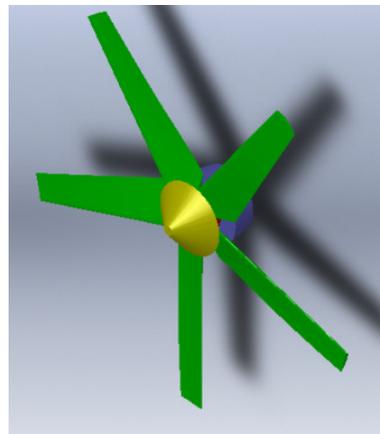
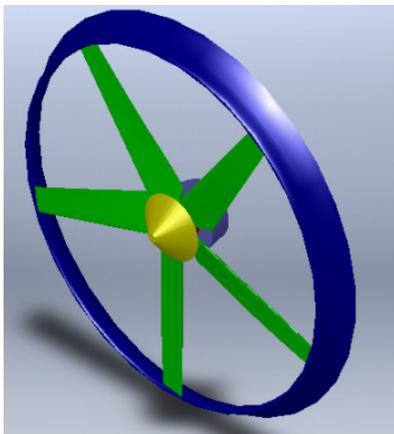


How I continue to benefit from my experience

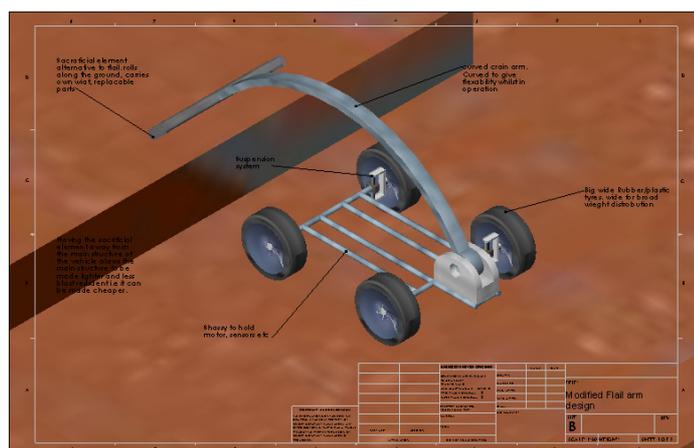
Upon returning to university I have been putting to good use my newly acquired skills in SolidWorks and Cosmos by using both packages to design, model and simulate a number of university group and individual projects. These projects include my 4th year design for manufacture group project shown below:



Also my major 4th year project on ducted or un-ducted wind turbines shown below



And has also been used to portray my idea for a concept for my major 5th year project which is to design build and test an autonomous mine clearing vehicle, which is shown right.



Summary

Had this placement been with a company inside the UK I would not have had the same curiosity about the place I was living and working in or the people I was working with, likewise the people I was working with would not have had the same curiosity about me. It was this element of the unknown that made my placement so enjoyable and educational. Not only was I learning new and valuable skills I was learning how to diversify and communicate with a people that were culturally and ethnically very different to myself.

Spending eight weeks living and working in Hong Kong as part of an international community of more than twenty interns has given me a great desire to travel. In all, my placement in Hong Kong was an excellent experience and is to date the best summers I've had and I would warmly recommend the IAESTE programme, Hong Kong and the Polytechnic University to anyone.

Finally I would just like to thank everyone involved in giving me the opportunity to take up this internship and give a special thanks to the Edinburgh Hammerman for their support.

Appendix 1

IAESTE (The International Association for the Exchange of Students for Technical Experience) is now in its 60th year of organising degree-related, work experience placements for undergraduate students of science, engineering, architecture and related fields across over 80 different countries worldwide.

This employer-led programme provides UK employers with hard-working, highly motivated international students. For companies looking to expand into new international markets, IAESTE is a great way to build contacts and cultural links. These students are ideally placed to carry out short-term projects and to help develop new business opportunities overseas. They are hand-picked through a stringent selection process and previous IAESTE trainees have worked on award winning projects, been credited in published academic research and been offered employment upon completion of their placement, either in the UK or their home country.

IAESTE UK takes care of visas, work permits and accommodation, leaving the supervisor free to get the most from having the student with them. The service that IAESTE UK offers, in sourcing the student and taking care of the administration, is completely free. The only cost to the company is the student's salary, which must adhere to at least minimum wage.

IAESTE is a reciprocal programme so this is also a fantastic opportunity for students in the UK to gain relevant experience abroad. All traineeships are paid and normally last 8-12 weeks over the summer months, although longer term ones are also available. Each country also offers a social programme that allows the students to meet other trainees from all over the world and take part in cultural activities. Returning IAESTE trainees come back with great experience to put on their CVs, increased confidence and renewed motivation and enthusiasm for their field.

IAESTE UK is administered by the British Council. Please see the website for more information and case studies www.iaeste.org.uk