The Institution of Engineering and Technology

Lobitos is a small, remote town in the northern district of Piura, in Peru. In their short but rich 130-year history, they have rapidly changed hands: from an English oil settlement, then to a Peruvian military base in the War against Ecuador, and now to a predominantly fisherman orientated town. This instability, and their distance from any major town or city, has resulted in some of the poorest rates of access to health, water and energy in South America.

The unique coastline, perfect waves and fantastic culture of Lobitos makes it a potentially huge surf-tourism town. But for the community to draw visitrs and the locals to benefit, access to commodities must first improve.

Four years ago, Lobitos was at the centre of the Engineers Without Borders (EWB) Design Challenge in partnership with a local NGO, *EcoSwell*. In this competition, University teams research and propose technical solutions to sustainability problems in the field of water, reforestation, health and renewables. I was then in my first year of university, and our Strathclyde team proposed a desalination unit. We did well to reach the semi-final: but the real take-away was working remotely with EcoSwell.

This Summer, before starting my final year of an electronic and electrical Masters - and having spent multiple summers at SP Energy Networks with the IET Power Academy, or as a software engineer at the University of Strathclyde - I was keen to apply the technical knowledge I have accumulated for the benefits of others. I contacted EcoSwell and applied to join their Renewable Engineering team.

So, this June, I organised a trip to join the team in Lobitos. On the energy front, they run a series of projects: cookstoves, desalination research, household PV fitting: but at this time, their focus was in a neighbouring town called Suyo.

In a typical summer month, Suyo spends 72% of time without grid energy. This equates to an average of twenty blackouts, each lasting twenty-six hours. In the UK, its unthinkable: and in Suyo's only hospital, it spells disaster. Without reliable energy, basic medical care can't operate, vaccines go to waste, and the health of the population deteriorates.

From day one, the workload was monumental. My most critical responsibility was to design the energy distribution system: carrying energy from supply to lights and sockets. After reviewing previous volunteers work, consulting the National Code and performing a range of analysis I proposed key protection equipment and safe wiring schemes. With this information and the help of new volunteers, the medical post will be fully operational within the next two months.

Our Renewables Team also spent a lot of time in the field: maintaining and fixing pre-existing infrastructure in Talara and Lobitos. When problems arise, the limited resource

available to charities can make it significantly more difficult to troubleshoot and solve problems. Through this, I learned what it *really* means to be an engineer: not to have all the answers, but to have the initiative to go and figure them out. I gained key technical skills with selecting system settings on inverters, PV panels and solar optimizers whilst gaining physical skills in installing large power banks, maintain equipment and wiring protection equipment. My single proudest moment was in fixing a system fault in the Talara Medical Post which was causing nightly blackouts.

Not all our impact was technical. For example, the Junior World Surfing Championships came to Lobitos: a huge opportunity to put the little town on the map. I was invited to the launch conference to represent the EcoSwell and, as a team, promote the importance of sustainable development in the community. Alternatively, our team frequently visited households in the community to run Energy Consultations: reviewing energy expenditure to help families improve efficiency (and the cost!) of their energy.

From a soft skills perspective, this trip was monumental. I was responsible for managing a small team in the field; sticking to time, budget and safety standards in the Suyo design project; and communicating my findings with a variety of stake holders. I developed my Spanish when around locals and navigated in a completely unfamiliar culture and country.

I made connections with dozens of like-minded, hard-working students from across the globe. Not all were engineers: and I had the opportunities to pass on knowledge from my field and receive knowledge from others. I have a huge thank you to extend to Hugo, my mentor and Andres, our Director: who alongside three friends, quit his established day job to set up Eco Swell ten years ago. Their impact and the opportunity for personal growth they present to students is phenomenal.

As a team we had the weekends, and a short stint at the end to explore the vast, vast country: the rainforests of Canchaque, the beaches of Lobitos and the mountains of Cusco. Off-the-clock, I learned to surf and spent time exploring the local area: like the caves of Capayunas or the beaches of Piedritas. I was very, very fortunate that the IET offered and awarded me with the Travel Bursary: without them, on a student budget, the travel or living costs would not have been feasible. I am grateful for their donation, and I worked fantastically hard to make sure their money went a long way.

Sean Doherty


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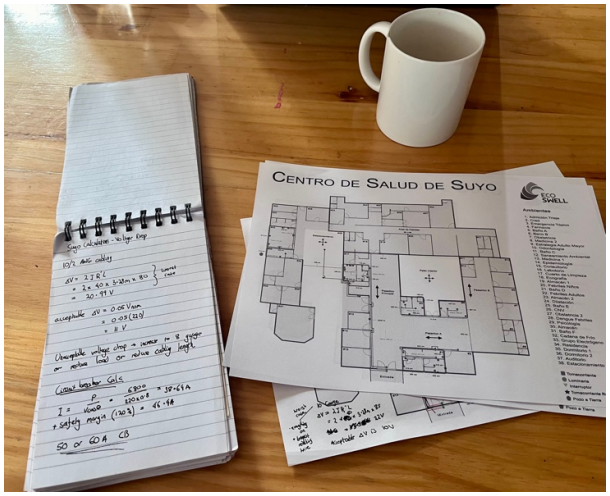
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