DBT Travel Award - Trip to FIRA Robotics show in Toulouse

Report on behalf of the Harper Adams Engineering Society

Dear Douglas Bomford Trust and Trustees,

Introduction

A few months ago, I wrote to you asking for financial support in enabling a group of 14 keen engineers to attend the FIRA Global Agricultural Robotics show in Toulouse, France in February to which you very kindly responded confirming the financial aid that made this fantastic trip a possibility.

Following the trips success, I write to you now in thanks and admiration for all the support and kindness the trust and it's trustees has shown the society in our development and particularly in being a crucial enabler of trips such as these. On behalf of our members, particularly those who attended this trip, we would like to thank you for your support and to report the key happenings, learning and impact of this trip.

Note: I will structure this letter with headings based on the trust values served and build on these to provide more details.

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Trip Details and Trust Values Served

Research, Innovation and Education

A key objective for this trip was for attendees to learn and become increasingly aware of developing technologies, solutions and companies leading our industry in Automated agricultural systems and precision agriculture equipment.

Right from entry into the event, attendees were surrounded by exciting new technologies and exhibitors with whom they began engaging with. Although there was a minor language barrier, we were still able to discuss their works in detail and ultimately determine how the technology functions, the impact/applications it might have and some further areas of development.

Figure 1 - Attendees discussing the challenges of automated weeding units and the application/effectiveness of precision laser weeding with a representative from Weedbot Ltd

“Personally, the stand [indoor] I found most interesting was SMC components, a French components manufacturer who already serve much of the precision agriculture market but specialising in a variety of pneumatic systems. They are looking to expand their products into the fruit picking market and were exhibiting a pneumatic grabbing/picking attachment capable of picking/handling a variety of fruit products without damage or spoil. What I loved about it was how simple yet effective this solution was. We discussed the labour challenges currently experienced by the fruit market and the engineering challenges / room for innovation in this sector. “(Eric Murray, 2023)

Figure 2 - SMC Components demonstrating one of their pneumatic grab designs

Students also experienced a range of innovative machinery in the outdoor demonstration area where they spent the majority of their time viewing autonomous equipment, engaging with company representatives/researchers and witnessing the autonomous machinery working in a field.

Figure 3 - Meropy crop monitoring robot / roamer

"I found the Meropy crop monitoring system the most interesting in that data collection forms the basis of any precision agriculture system and the fact that this roaming unit can monitor a variety of crops quickly and without damaging or spoiling their produce. This unit also covered ground at an impressive rate while looking for a variety of crop metrics used to analyse growth stages, crop requirements and disease/infections present. The unit was also more financially accessible than some alternatives we've seen due to it's simple, lightweight construction." (Tasha Brazier, 2023)

Figure 5 – Naïo Technologies vineyard tractor unit currently set up for intra-row vine weeding

Figure 4 – Farm Driod – Autonomous weeding, cultivation and sowing unit reliant fully on solar power / batteries

Travel and Personal Development

Students rarely get the chance to travel to other countries and experience different cultures and environments. This trip gave students the opportunity to broaden their horizons and experience, albeit briefly, French culture and environment for the first time.

'The most notable and, at times comical, struggle was that only a few of us remembered much of the French we were taught at school making the daily interactions interesting from a communication point of view. However, we did make an effort to speak and learn French as much as possible and the locals who we interacted with were all very patient, helpful and accommodating of us.' (Ferdie Brooks, 2023)

Most of the conference was held in French with English presentations being few and far between. However, some of us were able to gain a general understanding of what was being said by piecing together some of the French we did know with the technical language / key words shared between languages. Most stands also had English speaking representatives who welcomed our questions and helped us gain the most from our discussions.

While we initially found the language barrier slightly intimidating, many of us developed the skill of communicating/interacting with people who might not speak the same language as well. *"I'm excited to utilise this new skill in my work placement next year as I will be working with colleagues across the world"* (Eric Murray, 2023)

Many of the attendees realised a new interest in travelling to new places, learning about other cultures and interacting with locals. I think we will see more students being excited to travel both in a personal capacity and as part of their careers.

Figure 6 – Evening meal at a local restaurant / pub – Delicious food

Support, Collaboration and Networking

From interacting with different exhibitors/representatives, students were able to gauge the professional landscape of the French Agri-Robotic sector and how many of the companies work together while gaining an appreciation for the benefits and opportunities of cross-pollinating solutions between different companies and sectors to better each other. I think students became more open minded about how they tackle projects in future and might now look to other industries who experience similar challenges to see how they have tackled comparable issues.

Final Thanks

Ultimately, the trust enabled us to provide a fantastic, accessible, travelling experience to aid the professional and personal development of 14 young engineers soon to enter the agricultural industry. This tripped reinforced the passion many attendees already felt for precision agriculture machinery and practices and enthused them to take more travelling opportunities in the future.

On behalf of all the attendees, society members and the wider university, thank you for your fantastic support on this and all the other contributions you make to our community.

If there are any photos, you'd like us to send to you for your own or media use, please do contact us. We are happy to provide these if you would like.

Attendee list:

1. Rhodri Williams – Lead Organiser
2. Eric Murray – Assistant Organiser
3. Bronte Latham
4. Ferdie Brooks
5. Natasha Brazier
6. Robert Johns
7. Lucas Brooks
8. Matthew Carlisle
9. Alexander Fuller-Shapcott
10. Charles Cooper
11. Elian Evans
12. Elliot Lack
13. Joe Treadgold
14. William Davis