

## YEAR OF AUTONOMY 2017 EVENT 5: ENERGY MANAGEMENT



Delivered in partnership by a working group comprised of:

- Plymouth City Council (PCC) – Sheldon Ryan
- Plymouth Marine Laboratory (PML) - James Fishwick
- South West Centre of Excellence in Satellite Applications (SWCoESA) – Steven Rice
- Transport Knowledge Transfer Network (KTN) – Ian Stock

### **Planning**

Regular teleconferences held between all partners throughout the year, co-ordinated by PCC. Speakers, hosts, compares and panel chairs each approached by separate partners as co-ordinated actions.

### **Marketing**

Sector networks and social media were all employed by the working group to promote the event; reaching out to companies and the research sector.

- Twitter
- Linked In
- KTN network
- SWCoESA network (Apogee)
- Plymouth University Marine Institute network
- Plymouth Marine Laboratory website and various networks
- Personal contacts of working group

## Venue

Plymouth Science Park provided an appropriate space including excellent presentation A/V – the room held attendees comfortably, all with a good view and clear hearing of proceedings.

## Programme

The programme was designed with suitable speaker slots; enough time for detail but not too much to stray off topic/fatigue audience.

The morning session was chaired by Dr Tim Smyth from Plymouth Marine Laboratory and was structured to deliver the majority of presentations, which would provide diverse subject material to facilitate a productive discussion after lunch. The morning presentations were as follows:

1. Trevor Howard from Triskel Marine spoke about the hybridisation of marine vessels; Trevor presented work on the replacement of diesel generators with battery banks that charged using the excess load from the main engines.
2. David King (Viva Rail) presented a project to provide flexible power systems to rail vehicles. David discussed various power options including large battery banks and the possibilities for charging.
3. Kieron Arnold (Satellite Application Catapult) gave a presentation on mobile and remote workforce enabling emergency services.
4. Trevor Jackson discussed the work he has been doing through MAL (R & D) Ltd to develop a high energy battery using aluminium.
5. Mike Poole (AutoNaut Ltd) gave a presentation on the autonomous vessel AutoNaut, Mike discussed how the vessel was powered through wave motion. The AutoNaut is scalable and this can facilitate, amongst other things, greater power availability for on-board systems through larger solar panels etc.
6. Ian Stock (KTN – Transport Knowledge Transfer) gave a presentation on the potential funding available through Innovate UK.

After lunch a seventh presentation was made by the University of Exeter on versatile energy harvesting sensor systems, which led well into the panel discussion. Paddy Dowset chaired the panel, which comprised of the various speakers. The panel discussion was diverse with good audience participation exploring many aspects of the morning's presentations.

Paddy drew the day to a close on schedule at 15:15; however many attendees remained in the room afterwards to engage in more direct discussions.

## Attendance

>32 (including late comers and un-registered).

Good mix of industry, academia, students and professionals.

Large, medium, and small enterprises represented.

The Year of Autonomy events aim to attract around 30 delegates with specialist interest in the event. The Energy Management event had an ideal number of delegates with strong interest in the subject material, which facilitated good discussion and hopefully several future collaborations.



**South West**  
Centre of Excellence in Satellite Applications



**PML**

Plymouth Marine  
Laboratory



## Summary

Well run and received, with quality discussion and a diverse selection of speakers.

Clear positive engagement between organisations and individuals that have not met before.

Important challenges and opportunities in autonomy identified, e.g the UK government needs to compensate for the shift in private equity to a risk-averse position, in order to adequately fund innovation and the progress of disruptive technologies up the TRLs.

All attendees were pleased and satisfied with speaker sessions, networking, catering and venue.

A number of useful introductions were made by the event that produced further discussion and potential collaboration, these included:

- a) AutoNaut Ltd <-> MAL (R&D) Ltd – re battery alternatives to power AutoNaut USV
- b) Sonardyne <-> Triskel Marine – re replacing Sonardyne fleet vessel diesel generator engines
- c) Plymouth Marine Laboratory <-> University of Exeter – re techniques to aid generating power underwater in support of surface/subsurface assets.