

Report on the activity in the framework of the European Inventor Network



Name of the alumnus who implemented the activity

Jean-Luc Issler

Short description of the activity

Talk on Innovation and Space Electronics:

The interest of Scientific or technical clubs have been introduced, and shown how useful they are to favour capacities and spirit of innovation.

I then presented the EPO, the interest of protecting the inventions with patents, the European Inventor Network, and shown some related EPO video.

Then generalities on satellites mission and architectures has been be introduced.

A simplified presentation has been made about the effects of the space radiations affecting electronics in orbit, and as well about the related mitigation means. The level of radiations in space depends on the solar cycle, having minimum and maximum, correlated to the number and the size of the sunspots. We are currently close to the maximum of the solar activity, as we could see from the sunspots and the aurora borealis. The practical part of the work shop, consisting in using the offered telescope to observe the sunspots thank to a solar filter, couldn't be made due to bad weather. I anticipated a spare day in case of good weather the day after, but this was unfortunately not the case.

A next part has been dedicated to the Doppler and Doppler rate effects on space transmissions, to take into account in the architecture of the radiofrequency satellite devices.

Another specificity of space electronics has been be described, related to its need to be designed and tested to cope with the space thermal environment, as well as with the vibrations and chocs during the launch to reach the orbit in space.

Then I provided some examples of space electronics equipment, and of the related systems, in radio frequency and optical transmissions, and in radionavigation by satellite.

The conference also included a description of simple way to calculate the CO2 equivalent footprint of space systems, and a sensibilisation about the need to take into account such calculations in space system engineering eco conception, having in mind keeping the sustainability of the space sector.

Some fascinating pictures taken by space probes has been finally shown

The international, multicultural and collaboration aspects of space exploration has been also addressed and promoted.

A questions and answers moment concluded the talk.

Date and place of the activity

11th of February 2025 in the “Lycée français de Vienne” (Vienna)

Audience (number and age of the participants):

About 50 students, most being 17, and a few being 16 or 18 years old.

Outcomes and achievement

The following written feedback was received from the school:

Objet : Merci pour votre séminaire

Cher Monsieur Issler,

J'espère au préalable que votre séjour à Vienne s'est bien poursuivi et qu'il a donné satisfaction à vos attentes.

Après avoir pu discuter avec les élèves (de terminale et de première), je voulais vous dire qu'ils ont aimé votre présentation et ont été content d'avoir appris beaucoup de "choses" dans le domaine spatial.

J'en profite, au nom de l'équipe de physique du lycée, pour vous remercier pour votre séminaire devant les élèves et aussi pour le don du télescope. Et ce n'est certainement pas Mme Marchetti qui me contredira lorsque je vous dirais que le passage au bar fut plaisant et instructif.

Nous vous souhaitons une bonne poursuite de votre belle carrière et à une prochaine fois espérons-le,

I confirm that the teenagers were very interested and asked a lot of questions during and after the talk.

I also mentioned during the seminar that when I was 16 years old, I was among the laureates of the “Young Inventor Philips Prize” with a Cold Atom Clock-like device for weightlessness usages. This prize motivated me for innovation, and thanks to this example I therefore expressed the importance of the Young Inventor Prize and the EIN of EPO.

Recommendations

Suggestions:

- Maintain the EIN and YIP
- Organize a meeting gathering the EIN members, maybe in the frame of a conference allowing them to share their personal experience in innovation and in the EIN

Attachments: Any supporting documents (such as photographs, testimonials or other relevant materials) that help illustrate the activity's impacts and effectiveness should be sent to mchopin@epo.org. These supporting documents might be posted on the European Inventor Network webpage.

I have no additional pictures or small films that the ones taken on site by Alexandra