

## A Visit to Pierre-Paul Riquet Saint-Orens High School (Haute-Garonne, France)

3AF MP

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The Lycée Pierre-Paul Riquet (LPPR) is a modern high school in a dynamic environment. Opened in 1991, it belongs to the younger generation of high schools in Toulouse and its suburbs. It accommodates 1,640 students. It is located in the commune of Saint-Orens de Gameville (also known as Saint-Orens), where the borders of greater Toulouse and the Lauragais region meet. Conveniently located, it offers to students from a wide geographical area diverse training on many general programs. A center of scientific and technological competence, this French high school develops lessons for different levels of diploma: general and technological baccalauréat (The “bac” is the test required at the end of a high school career.), BTS, and preparatory classes for the “grandes écoles” (France’s most prestigious universities) of the sciences and technologies of the Engineer. Known as the Space High School (Lycée de l’Espace), located near the “Aerospace Valley” schools of engineering, the French National Center for Space Studies (CNES), Rangueil campus in particular, this high school is at the heart of innovations that will shape research and future technologies in the Midi Pyrénées region of France. (That was from the LPPR web site.)

In December of 2012, Mr Jean-

Louis Fréson, former Director of the Superior Institute of Aeronautics and Space (ISAE) Ensica, working for the Institute of Engineers and Scientists of France (IESF) and the Regional Union of Engineers and Scientists Midi-Pyrénées (URISMIP), welcomed us to the lycée. We were a group of three: José Manzano (a retired engineer ENSAM who has experience with two business segments, Civil Engineering and Pharmaceutical Chemistry), Thierry Pardessus (of Ecole Polytechnique, ISAE Supaero, Airbus) and myself. We were visiting to talk to high school freshmen, sophomores and seniors about engineering careers.

I arrived at the school well before 4:00 PM with brochures from the French National Council of Engineers and Scientists (CNISF). On

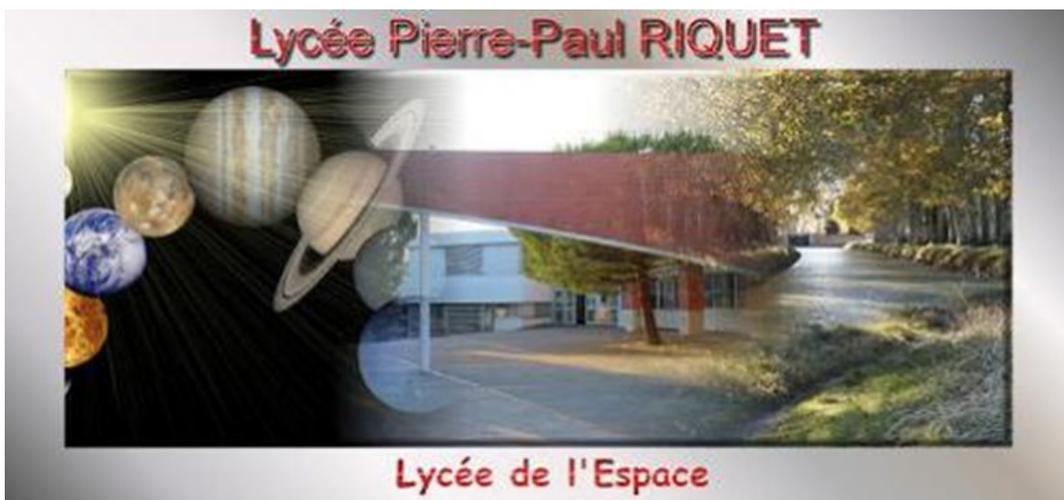
the way, I was asking myself, “What will I say to them?” But I told myself that this is a challenge, and as a working engineer and university graduate, I like a challenge. In spite of a certain shyness related to public speaking I retained from my youth, I told myself, “It is decided!” As planned, “I will tell them about my journey from sixth grade (about age 11) to my first job as an engineer in France.”

We met in a multi-use auditorium with Ms. Catherine Mautray of the high school and Mr. Joël Daste of ISAE. Mr. Daste reminded the students that not just communication, but “good communication,” was important. Questions from students were allowed and recommended. He stated that engineering careers were not well understood by

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*Our French sister section is 3AF MP, l’Association Aéronautique et Astronautique de France, Midi-Pyrénées chapter, [www.3af-mp.fr](http://www.3af-mp.fr). See the Section News pages for the 3AF MP organization [chart](#). More information is soon to be placed on our web site at [www.aiaahouston.org](http://www.aiaahouston.org), but that has not yet been transferred from our former web site, [www.aiaa-houston.org](http://www.aiaa-houston.org).*

*The relevant committee is in the technical branch of AIAA Houston Section, the International Space Activities Committee (ISAC), as shown on our organization [chart](#). The ISAC is chaired by [Ludmila Dmitriev-Odier](#).*



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high school juniors and seniors. Mr. Pardessus mentioned that all three speakers were there to give advice to students.

Mr. Manzano made a presentation about the engineering profession. “What is an engineer?” He explained that an engineer can be a technician, a manager, and even an administrative. I would add that he or she can also be a combination of all three. An engineer may have scientific and technical skills and human qualities. Mr. Manzano gave the example of creating a table. This example illustrated some techniques that can be of use to engineers: value analysis, functional analysis, and development of specifications. He also presented a history of the industrial revolution(s), he told us that fossil fuels are not inexhaustible, he explained that the threshold of 9 billion human beings could be exceeded by 2050, he specified the need for inventing a new industry for the future, and he emphasized the need for engineers in the XXI

century. What are the qualifications for this engineering career? We must “be creative, adapt to constraints and external events, be tough, have an attraction for technology and science, have an ability to maintain abstractions, or at least have some of those qualities. Remember, be creative, too! (After all, why not?)”

Following Mr. Manzano, I took the floor and spoke about my experiences. At their age I sought advice from family members, friends, classmates and acquaintances, but also teachers (including teaching teams and advisers). As for the required military service of my day, I traveled abroad as part of Military Cooperation. Since the Lycée Pierre-Paul Riquet is The Space School in France since 2010, I also talked about my first post: Engineer, specialist, “Cockpit Installations” for the European space shuttle project called “Hermes,” in charge of tasks including air conditioning, oxygen, and thermal cooling of the avionics. I also outlined some technical specialties characterizing this project (thermal pro-

tection using “ceramic tiles,” for example, and some preliminary studies on “Backup Systems” (including ejection seats). I also spoke about the “reorientation” of this project, following the Ministerial Conference of the European Space Agency (ESA) in November 1992. I mentioned a recent project, ESA’s Advanced Re-Entry Vehicle (ARV, which is not spoken about since the ESA Ministerial Conference in November 2012) and the planned American crewed space vehicles: the capsules named Dragon from Space X and CST-100 from Boeing, and the “Baby Space Shuttle,” the Dream Chaser of Sierra Nevada Corporation.

Finally, Mr. Pardessus told us it was important to find a balance between work, family, and friends, both personal and professional. He spoke of “technology,” and even “biotechnology.” Mr. Manzano reminded us of the importance of Mathematics, Physics, Chemistry and Applied Electronics, and of the areas of Materials and Structures in particular, but he also spoke of nano-machines and nano-technologies. He also addressed the question of Intellectual Property and Patents.

We finished with a question and answer session. I hope the students found the event rewarding. To the organizers, I send a big thank you.

