

HYDRO INTERNATIONAL INTERVIEWS

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Educational Institutes Need to Reach Out in Co-operation



Brest is the biggest supplier of highly qualified hydrographers in Europe with more than 30 graduates per year and growing. Can you explain the success of ENSTA?

The success of ENSTA has several components. Our institute is a Grande Ecole, which means that students must take a National competitive exam in order to get in, or go through a selective file

examination after a BSc or a first year of MSc. This ensures us of high level students. Our curriculum contains difficult scientific components, applied mathematics, physics and information technologies to ensure that students obtain a thorough understanding of the complexity of hydrographic surveying systems, of data processing methods. But I also think that our mix of theoretical and practical education contributes greatly to the success. The originality of our course is also due to a 'triple competence' in hydrographic surveying, physical oceanography which represents a significant part of the curriculum, and marine GIS. On graduation, our students are qualified for a wide range of activities, from coastal modelling to data processing, and of course hydrographic surveying.

Can you elaborate on that mix of theoretical and practical education?

Yes, as I explained, the scientific component is pretty heavy, but students taking a master in Cat. A at ENSTA are heavily involved in practical matters. They carry out surveys, here in the harbour of Brest or further offshore. But our best example of the mix of theory and practice is the survey camp we organised last year. We teamed up with Boskalis as our official sponsor, the Dutch dredging company and EDF, a French energy provider on the commercial side and with the Ghent University in Belgium and the German HafenCity University from Hamburg. We invited 47 students from all these institutes to take part in a camp at the dam lake of Vassivière in the Limousin region in the center of France. The students carried out surveys for a case study, working with Lidar, GPS, sub-bottom profiler, side-scan sonar, multi-beam echo sounders and total stations. The outcomes of the camp were used by EDF, and students were involved in the survey job from A to Z, including ENC production. This year we will continue with the next version of the summer camp, as it was such a big success. In these types of projects, the scientific background of students is highly appreciated as they undertook a number of studies, including Lidar calibration, sediment mapping, 3D geodetic compensation, positioning in multipath environments, etc.

You own a lot of survey equipment in Brest. How do you get access to all these products?

We invested heavily in hard and software. As I explained earlier, we think it is important to mix theory and practice, so we need access to the 'real stuff'. But it is difficult, for instance if we purchased a multi-beam echo sounder and development goes on; we need to replace it ten years later. This is almost impossible, because we cannot keep investing – particularly taking into account the cutbacks in Europe.

Is there anything you would like to ask the industry by way of this magazine?

Yes, from our experience in Brest I can say that software developers are much more inclined to help us than hardware producers. We have a great relationship with, for instance, Caris, who has a great attitude towards education. They help us a lot. I would like to call upon hardware producers to do so too. We do not use the instruments for commercial purposes, new hydrographers are learning to work with them. In my view, different prices should apply to us than for commercial buyers or agreements could be made for loans. The industry could also benefit from this.

Would industry benefit from partnering with you?

Yes, as I already explained there are joint projects, like the summer survey camp, in which partners directly benefit from the results of the survey. I imagine other parties could use feedback for the research & development departments. Also, the industry at large benefits from hydrographers with a high-level education. The demand for Cat. A hydrographers is higher than the number of students graduating every year. The level of our profession – and therefore the level of business - depends on the number of graduates that have a good insight into the scientific sides of it as well.

You are in the middle of a hydrography and oceanography hub in Brittany. Does that help?

There are 700 marine scientists concentrated in Brest. That is the highest concentration in Europe. We have research institute Ifremer and the hydrographic office SHOM nearby. Also, Brest University is only kilometres from our campus. There is much interaction between all these institutes. Forty percent of our classes are given by external teachers; professors from Brest University and professionals and researchers from SHOM and Ifremer. For a hydrography course to be successful it must be in the direct vicinity of the Hydrographic Office rather than operating in isolation.

You are also looking at other institutes and schools?

As a hydrography department within a larger institute you are always a minority. Education in hydrography is very complex. It consists of analysing, describing, acquiring, researching and more. It is very important to learn from each other by exchanging experiences. That is why I am looking at other institutes. We might have a great concentration of sciences here, but still I want to know what is happening in Hamburg, Terschelling and Plymouth, for instance. Again, the summer camp is an example. And under the umbrella of the European Union Erasmus Intensive Programme we already work together on a more structural base with Ghent University in Ghent, Belgium, and HafenCity University in Hamburg. I am not claiming the success of ENSTA Bretagne, but I am trying to reach out.

Would it not be good to work on a European Cat. A. certification?

As much as I would like to have such European unity, it is almost impossible to harmonise the structure. Look at differences between the MSc and BSc titles that graduates currently earn. Also the duration of the course and the tuition fees differ from country to country. We are convinced that for a good Cat A. level a 2-year Master programme at least is needed. Maybe in the future, when other courses consider the same structure, we can continue our attempts at harmonisation.

Are you developing any new courses in addition to Cat. A. Hydrographer?

We are working on setting up a new course module for stakeholders at ports and oil & gas companies. The new course will contain a few modules of the Cat. A. curriculum so that these students will be able to assess datasets that are delivered to them by survey companies in order to control the data quality. We also have a new Master programme, open to foreign students who have graduated at BSc level. This programme is a three-semester programme followed by a Master thesis. This new Master programme is also the basis for a double diploma that we are preparing with HCU University in Hamburg and the University of Québec at Rimouski in Canada. This a great step for a French institute - to offer a programme open to non-French speaking students.

What will be the major challenges for institutes in the future?

The educational institutes have to educate controllers of the hydrographic data. We are developing a course module for this group now. Also we have to follow the developments in technologies - for instance the rapid changes in the field of positioning, but also changes in remote hydrography by means of AUVs - which demands continuous updating. We need to be able in the future to develop links between traditional hydrography and photogrammetry and remote sensing techniques, such as Lidar and satellite bathymetry. But for me the main challenge is preparing our students to work on a wide variety of scales, from satellite bathymetry to marine infrastructure close inspection. They also need to be able to work at a variety of platforms with large datasets.

And what are the challenges for students?

Students need to be aware and prepared to work in very varied fields such as environmental, dredging, oil&gas, habitat mapping or coastal erosion. Also, they need to be prepared to build up extensive scientific knowledge in order to be able to learn continuously, to think independently and not to rely only on what the technology can bring. That requires the hydrography students of the future to be ambitious and flexible!

Is there a message you would like to share with the readership of Hydro international?

All parties in the field of hydrography need to answer the same question: what is a hydrographer? Answering this question means working together, co-operation between commercial and non-profit parties, industry and universities. Together, we should avoid educating and hiring 'press-button people' and therefore remain committed to delivering highly educated people who can take the industry further. At ENSTA Bretagne we want to develop our own capacity, but also reach out to others at the same time.

