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International hydrographic training in the Netherlands

An article by HUIBERT-JAN LEKKERKERK

In addition to the IHO-FIG-ICA International Board of Standards for Competence of Hydrographic Surveyors and Nautical Cartographers (IBSC) recognised S5-A »Ocean Technology« course at the Maritime Institute Willem Barentsz (MIWB) in Terschelling, the Netherlands offers two other, more internationally, focused courses. One is the IBSC S5-B recognised course at Skilltrade, the other is the recent set-up »Hydrographic Surveying and Marine Geodesy« at the MIWB. This article describes the set-up of both courses and how they fit into international hydrographic training and competency development.

Category A | Category B | Maritime Institute Willem Barentsz (MIWB) | Skilltrade | HPAS
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Neben dem vom IBSC (IHO-FIG-ICA International Board of Standards for Competence of Hydrographic Surveyors and Nautical Cartographers) anerkannten S5-A-Kurs »Ocean Technology« am Maritimen Institut Willem Barentsz (MIWB) in Terschelling bieten die Niederlande zwei weitere, stärker international ausgerichtete Kurse an. Der eine ist der vom IBSC anerkannte S5-B-Kurs bei Skilltrade, der andere ist der kürzlich eingerichtete Kurs »Hydrographic Surveying and Marine Geodesy« am MIWB. Dieser Artikel beschreibt den Aufbau beider Kurse und wie sie sich in die internationale hydrographische Ausbildung und Kompetenzentwicklung einfügen.

Author

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Skilltrade Hydrographic Survey »B« course

Skilltrade was established in 2000 as part of Dutch Onshore Offshore Recruitment Group (D.O.O.R.), a provider of hydrographic, ROV and geophysical personnel. Initially Skilltrade gave short (in-company) courses. As part of the short courses, lecture material was developed which was published in 2006 as the first edition of the *Handbooks of Offshore Surveying*, a publication still in existence and now in its third edition.

After a takeover of D.O.O.R. by Atlas Services Group in 2004, Skilltrade separated. At that time, it was decided to expand the curriculum and include an IBSC recognised Category S5-B course. This course was set up together with the Shipping and Transport College (STC) in Rotterdam and was formally recognised in 2008. In 2014 the course was transferred to the Nova Shipping College in IJmuiden (near Amsterdam). Due to changing IBSC recognition requirements Skilltrade included hydrographic E-learning in a substantial part of its curriculum.

In 2021, faced by Covid-19 challenges, Skilltrade took the radical decision to bring the, until then, mainly in-class programme as a blended learning course. Skilltrade recently became a member of the DEEP group of companies but continues to provide the same blended learning course set-up for the coming years.

The »B« programme (see Fig. 1 for the structure

of the course), which attracts mature students from all age groups and from all around the world, starts with a general assessment of the level of knowledge. The programme is open to all students with a good command of English, good computer skills and who have a prior education at least at EQF4 and at least six months of hydrographic experience or alternatively have prior education at least at EQF5. If and where required, modules are available to bring students up to speed in mathematics and physics.

The theoretical part of the programme consists of alternating two weeks of online, instructor-led classes with two weeks of E-learning and self-study. The various modules are concluded with a theoretical exam or assessment. Students who pass all the exams and assessments are granted a certificate of theoretical education demonstrating that they have theoretical knowledge of all required Category-B competencies. They have, however, not demonstrated that they can apply these competencies to a real-world project.

After passing the theoretical part students are eligible to join the four-week Comprehensive Final Field Project (CFFP) held on-site in IJmuiden. The CFFP is preceded by two weeks of practical training and an educational survey project during which the students train specific operations in a real-world setting such as ship reference frame (SRF) measurements, calibrations and so forth.

| RESULT | | | | QINSy certificate + Skilltrade Certificate of Education (Pass) or Skilltrade Certificate of Attendance (Fail) | FIG/IHO/ICA recognized course Certificate of Programme Completion |
|----------------|--|---|--|---|--|
| COURSE CONTENT | E-learning mathematics & physics assessments | Online lecturer taught basic & essential subjects | E-learning lectures & self-guided learning | Practicals & educational Survey Project | Comprehensive Final Field Project |
| LOCATION | remote | online | remote | onsite | onsite |
| WEEKS | 1 - 4 | 5 + 6, 9 + 10, ... 29 | 7 + 8, 11 + 12, ... 28 | 31 - 34 | 35 - 39 |
| PERIOD | 0 | 1 | | 2 | 3 |

Fig. 1: Structure of the Skilltrade Hydrographic Survey »B« course

The CFFP is the ultimate knowledge test and is a combination of team and individual work. Student teams write a Survey Method Statement in response to a client Invitation to Tender. They then collect, test and mobilise the survey set-up on a vessel of opportunity. This includes SRF measurements as well as IMU, gyro and MBES calibrations. They then perform a survey in the harbour of IJmuiden with MBES and SSS. As part of the tasks, they collect bottom samples and of course take sound velocity profiles. They also learn how to sail a small survey vessel along the survey lines and perform basic nautical operations.

After the data has been collected the students go ahead with the individual processing, charting and reporting of the survey results. The project concludes with a debriefing where the project, its results and the individual reflection of the student is discussed. If all goes well the student then receives the Certificate of Programme Completion indicating that they have successfully completed all the S5-B requirements.

HPAS – Hydrographic Professional Assessment Scheme

There were and are more ways to become a hydrographic surveyor. Where some follow a recognised course such as Skilltrade's S5-B or the MIWB's S5-A, others come from a different (educational) background and learn much in the field augmented by additional training. Over the past years, both industry and the IBSC has recognised this and around the world individual, IBSC recognised competency assessment schemes such as the Hydrographic Professional Assessment Scheme (HPAS) from the International Federation of Hydrographic Societies (IFHS) have become available to both alumni from recognised courses as well as those who come from »other« educational backgrounds.

An individual assessment scheme such as HPAS revolves around a combination of theoretical qualifications and experience. Depending on the level of knowledge and (relevant) experience

one can apply for accreditation at Level 2 for operational hydrographic surveyors, Level 1 for party chiefs and surveyors in charge or Level 0 for programme managers, survey managers or national hydrographers. For L2 the applicant will need to demonstrate that they have all the knowledge as outlined in the IBSC S5-B, for a L1 or L0 applicant all the knowledge from the IBSC S5-A.

Unless the applicant has successfully completed an IBSC S5-A (L0, L1) or S5-B (L2) recognised training they will have »gaps« in their knowledge. The width of that gap depends on previous education and experience. The MIWB Hydrographic Surveying and Marine Geodesy (HS&MG) programme aims to provide a way to bridge that gap.

MIWB Hydrographic Surveying and Marine Geodesy programme

During the five-month Hydrographic Surveying and Marine Geodesy (HS&MG) programme (see Fig. 2), students can augment their knowledge to the required HPAS level. The programme is open to both regular students as part of their bachelor studies but also to (international) professionals. The programme takes modules and assignments from the »regular« IBSC S5-A recognised Ocean Technology (OT) programme and allows students to select their own modules and levels (up to seven modules per five-month course). The OT programme was recognised as IBSC S5-A programme in 1978 at the Nautical College Amsterdam and transferred some 20 years ago to the MIWB, a maritime institute which celebrates 175 years of existence this year.

The HS&MG programme starts in September of each year with two weeks on-site at the MIWB. During this period the different modules are introduced, assignments and study guides explained, and a short simulator survey is performed using the advanced bridge simulators that the institute has. At the end of these two weeks, the students select which modules they want to follow and at which level. All students follow the Survey Operations & Applications module and choose between four and six additional, in-depth modules at the level chosen.

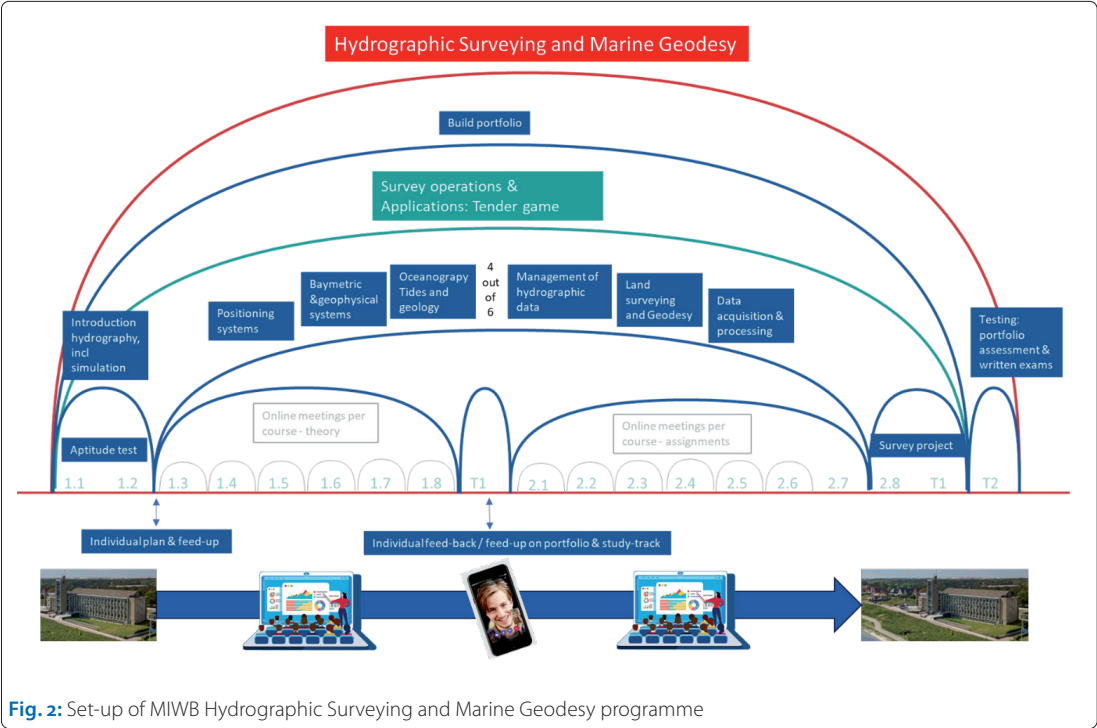


Fig. 2: Set-up of MIWB Hydrographic Surveying and Marine Geodesy programme

The students then return to wherever they have a good internet connection and perform further studies »at a distance« using a variety of methods including some instructor-led online classes, self-guided study and E-learning. Halfway through this period a feed-back, feed-forward and feed-up session is held with each student to discuss study progress and adjust where required.

After this period at a distance learning they return to the MIWB in January for three weeks. During this period, they will have examinations, practical work and debriefings but also perform a short survey project using the institute's survey equipment and 9-m aluminium survey launch.

The programme is open to all candidates with a good command of English, prior knowledge of mathematics and physics and good ICT skills. The programme does not result in an IBSC recognised certificate, as the course is too short and flexible for this. However, for each successfully completed module the student receives so-called »micro-credentials« stating which theoretical S5-A (L1) or S5-B (L2) competencies have been completed. The micro credentials are formally recognised in the European Qualification Framework at EQF5 (L2) and EQF6 (L1) and result in six European Credits (ECTS) per module completed.

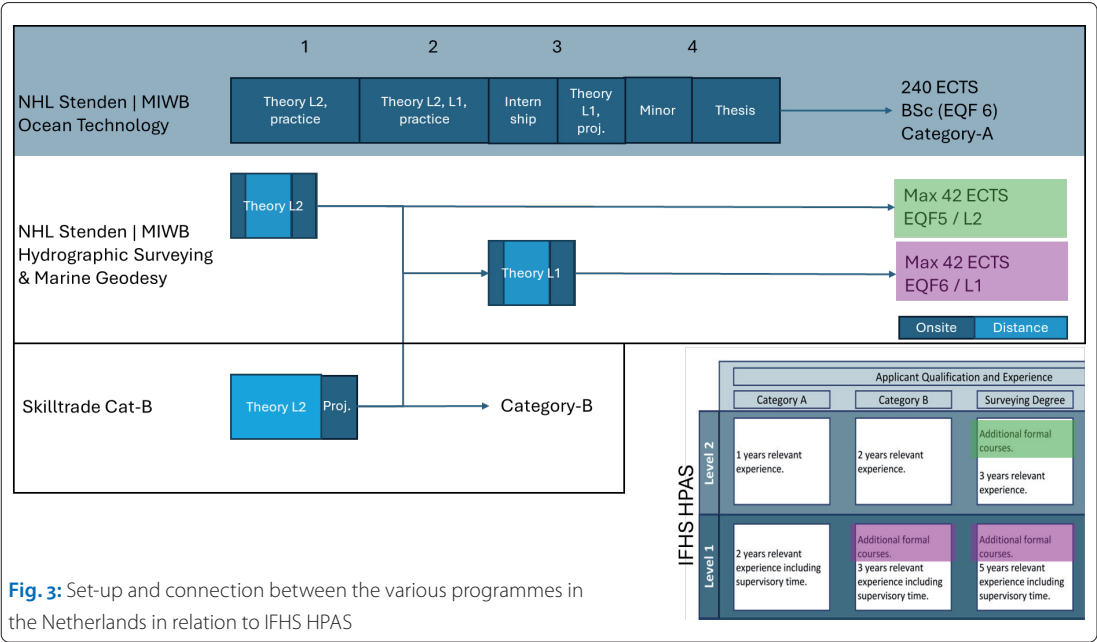


Fig. 3: Set-up and connection between the various programmes in the Netherlands in relation to IFHS HPAS

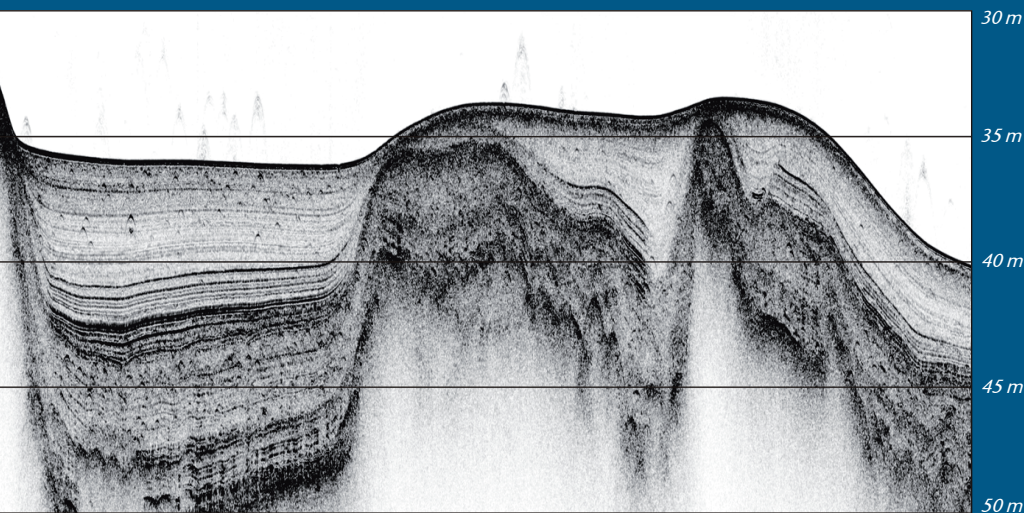
Together with enough relevant experience, the micro credentials programme allows applicants to demonstrate that they have the required theoretical knowledge for the HPAS level they are applying for. Students already holding a certificate from an IBSC S5-B recognised course from, for example Skilltrade can upgrade their knowledge to Level 1 without having to follow a complete a recognised IBSC S5-A course, thus about halving the amount of time required to obtain the required S5-A theoretical qualifications (Fig. 3).

Conclusion

In the Netherlands, a solid infrastructure for hydrographic education exists. While the estab-

lished MIWB IBSC S5-A Ocean Technology recognised programme is in Dutch, Skilltrade's IBSC S5-B recognised course as well as the MIWB's Hydrographic Surveying and Marine Geodesy course is in English, and both are open to professionals from around the world (provided they meet the requirements). Together with professional assessment schemes such as IFHS HPAS this allows international surveyors to obtain IHO (IBSC) recognised certificates regardless of previous educational background. Obtaining this accreditation provides significant advantages, including global recognition of competence and enhanced career opportunities within the hydrographic surveying profession. //

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Data Example from a Norwegian Fjord (Innomar "standard" SBP, 10 kHz)

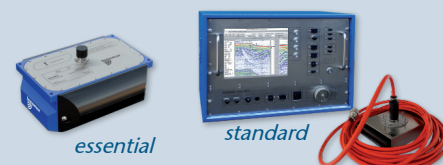
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