NEW MODERN NATIONAL VOCATIONAL SCHOOL

Last year, Stef Vink was appointed director-administrator of the Leidse instrument-makers School (LiS). Since then, he has been working on a new strategy for the LiS, under the denominator of 'New Modern National Vocational School'. The objective is to modernise the curriculum by offering more challenging projects and paying more attention to digital design and manufacturing. This strategy should help the LiS to strengthen its position as an independent, unique and relatively small vocational school in the Dutch scale-driven educational system. For this, support from the professional field is indispensable.

The Leidse instrumentmakers School (LiS) is one of the oldest Dutch vocational educational institutions. The school was founded in 1901 by the Leiden professor and later Nobel Prize-winner Heike Kamerlingh Onnes because he needed professionals who could develop and make tools for his research into the liquefaction of helium and the phenomenon of superconductivity at ultra-low temperatures. Over the years, the LiS has retained its status as an independent vocational school, dedicated to the training of (research) instrument makers, despite the trend in the Dutch educational system towards scaling-up that has led to the establishment of large, multi-disciplinary regional training centres (RTCs, or ROCs in Dutch).

EDITORIAL NOTE

This article was based on an interview with Stef Vink, director-administrator of the Leidse instrumentmakers School (LiS).

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Vocational school

Stef Vink worked in both education and industry; before joining LiS he was domain leader Metal and Process Technology at ROC Da Vinci College in Dordrecht (NL). He enjoyed training both adolescents and senior professionals and appreciated the traditional concept of a vocational school. At the LiS, he can combine his passions in the further development and modernisation of the education at the 'vocational school' of the Dutch research community and high-tech industry. "I was attracted by the LiS history, its focus on craftsmanship, the highly motivated and passionate students and staff, and the extensive facilities, partly sponsored by 'friends' of the LiS", explains Vink.

The latest extension of the housing of the Leidse instrumentmakers School at the Leiden Bio Science Park. (Photo: BryanR1, Wikipedia)

The LiS is by far the smallest vocational school in the Netherlands, counting 360 students at the moment. The latest extension of the facility (Figure 1) in 2016 doubled its capacity from 200 to 400 students. Against the demographic trend, year-on-year growth is achieved. Vink: "In my opinion, secondary vocational schools have distanced themselves too much from industry. At Da Vinci, I managed to restore and intensify contacts with companies and their vocational schools. That's also what I like about the LiS; the close contacts with research institutions and companies. It is a regular school but it looks a lot like a 'company vocational school' (*bedrijfsvakschool*, in Dutch)." It was, however, the right time for reviewing LiS's strategy and curriculum. "We have established an excellent track record of over 100 years and we will continue this performance in the coming years."

USPs and action points

Vink was put on the trail of the New Modern National Vocational School by the feedback in a report from the Dutch Ministry of Education, Culture and Science. He instigated workshops and interviews with staff, students, the professional field and network partners, which resulted in a summary of the LiS branding, in terms of unique selling points, as perceived by internal and external stakeholders:

- cultural foundation: involvement in the school, passion for the profession, master-apprentice principle;
- broad and professional practical training – (quality) standardisation;

LiS director Stef Vink: "We want to modernise our education, both didactically speaking, by offering more projects and integrated assignments, and in terms of content, by paying more attention to digitalisation of design and manufacturing."

- students who are disciplined and immediately employable;
- students who are able to work together in broad teams – problem-solving by nature;
- connection with the business community (coordination of programmes, facilities and competences);
- enterprising, flexible and independent students.

This served as input for a redefinition of the LiS strategy, culminating in five points of action for the coming three to five years:

- Authentic and specialist craftsmanship.
- Being together and being yourself.
- Practically skilled with the most modern techniques.
- Preparing yourself for your future while working on the most beautiful projects.
- Network of partners at home and abroad.

Vink (Figure 2), in conclusion: "We want to modernise our education, both didactically speaking, by offering more projects and integrated assignments, and in terms of content, by paying more attention to digitalisation of design and manufacturing."

Digitalisation

Currently, the vast majority of practical training at the LiS is still focused on conventional technology (Figure 3), Vink acknowledges. "In consultation with the professional field, we want to devote at least 25% of the practical training to digital technology, with for example 3D design, CNC machining and 3D printing. We are reaching out to the professional field for support. In their opinion, what should remain conventional technology in our training and where is room for digitalisation? And can they make hybrid teachers available, for example for training digital manufacturing techniques?"

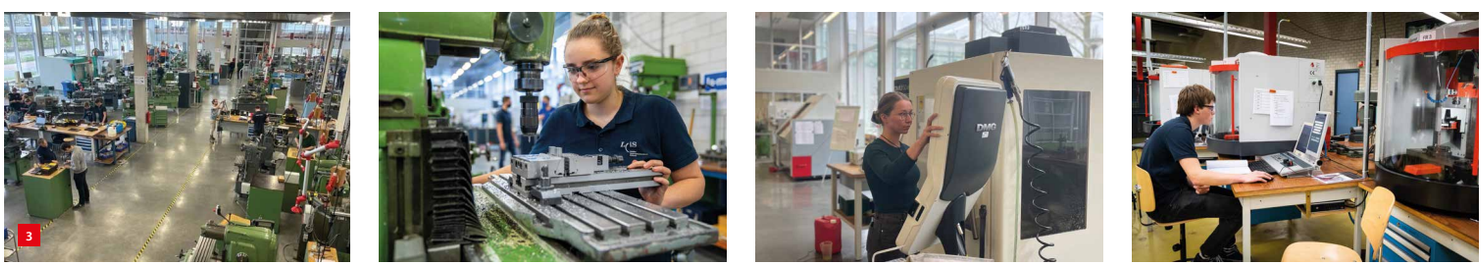
Appropriate learning

The LiS must therefore to some extent let go of its focus on conventional technologies. Flexibility is also required for a modern vocational school in other respects, explains Vink. "We traditionally believe in a fixed four-year curriculum with students attending school 32 hours a week – much more than the average of 25 hours at other RTCs – with a tremendous discipline and drive to be trained in the LiS culture, solution-oriented and always looking for improvements in design or production. But students who are ill or are doing an internship abroad should be able to follow lessons online, for example."

At the same time, Vink continues, "our master-apprentice principle is already fully focused on flexibility in student supervision and progress testing, not on the basis of formal tests but of what can be observed in the student's learning development. Our teachers and technical teaching assistants have been praised for this by the Education Inspectorate. Our practical education is therefore already very modern."

Improving student intake

Vink has no further plans for expansion of the LiS at the moment. "We do, however, want to improve our student support. Currently, we have a relatively high drop-out rate. On the one hand, this is because we set the bar very high for our students, because 'our' companies and research institutes demand highly qualified students and employees. For example, in Covid-19 times, we have not made any concessions to the qualification requirements for students. We only recently had to decide in consultation with our



Currently, the vast majority of practical training at the LiS is focused on conventional technology, but a shift to digital technology, such as CNC machining and 3D-printing, is ongoing. (Photo second left: Monique Shaw)

professional field committee that some students who have not yet passed their practical exam completely may already do an internship, albeit with an assignment based on an analysis of their points for improvement."

On the other hand, Vink continues, "too many freshman students still enter with misconceptions about our education and the profession of research instrument maker. We must therefore provide even better information and advice to interested students and their parents. That is more important than unlimited growth. In addition, we pass up opportunities with students who have a different motivation than our standard target group. For example, consider diversity; we are overlooking the potential of girls and young people with a migration background who are not familiar with the profession of research instrument maker and our school."

Future-proof?

With the new strategy and curriculum modernisation, the LiS is once again future-proof. However, there is still a major threat, as posed by national education policy, i.e. the revision of the qualification structure in the secondary vocational education system. "The qualification dossiers for the metalworking-related courses in particular are under scrutiny. The government wants to go back from 14 dossiers to three; then the question is whether Research Instrument Maker will survive as an independent outflow profile in the Precision Technology qualification dossier. If we are placed under a broad metalworking dossier, what does the LiS still stand for and what will still make us distinctive? Will we lose our focus on craftsmanship, with more than 50% practical education, to which we and our 'customers' attach great value?"

Every reason for Vink to appeal to the professional field – DSPE members and Mikroniek readers included – to make themselves heard and argue for a stable, independent and recognisable position for the LiS in the future educational landscape.

LiS in space

One of the elective modules in the LiS curriculum is 'Instrumentation for Space'. The aim is to train students to specialise in the design and construction of instrumentation for satellites, rockets and astronomical observatories. The special programme was set up with support from the Regional Investment Fund, local government, (research) institutes (such as NLR, NOVA, SRON and TNO) and companies (including Airbus, AJB/Madern, ISIS, Lens R&D, Microtechniek, SSI and WestEnd).

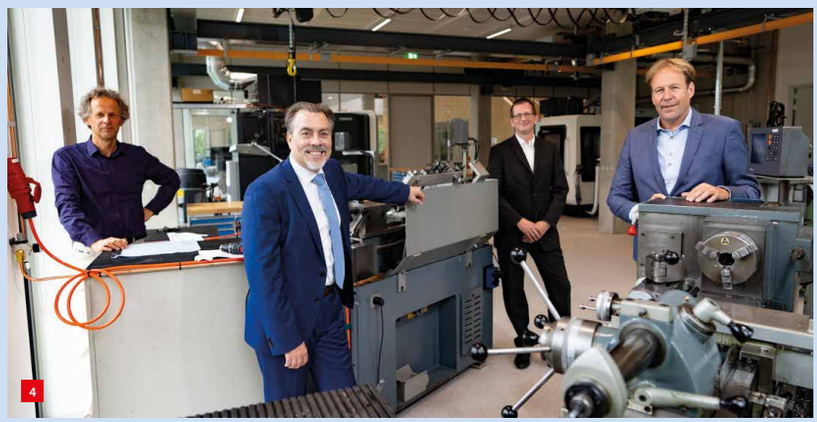
In addition, Peter Paul Kooiman, engineer at SRON Netherlands Institute for Space Research, was appointed practor ('practical professor') of Instrumentation for Space. He will contribute to the LiS curriculum and act as a liaison between the worlds of space research and vocational training.

The practorate was established as part of the recently formalised collaboration between LiS and SRON (Figure 4), which covers:

- training students in space research instrumentation;
- obtaining new practical knowledge about manufacturing and integration methods in space research;
- raising external funding for the development of instrumentation skills and knowledge;
- identifying and promoting applications outside space research.

"Development and realisation of ground-breaking instruments requires the LiS type of craftsmen," Kooijman comments. "Here at SRON, most of our instrument makers are LiS alumni. Now that SRON and the LiS have become direct neighbours at the Leiden Bio Science Park (following the recent move from Utrecht to Leiden by part of SRON, ed.), we can further intensify the knowledge exchange between SRON and the LiS."

A next candidate for a practorate at the LiS is in the field of quantum technology. The LiS was invited to participate in the Leiden-Delft hub of Quantum Delta Nederland because of its expertise in cryogenics, photonics and optics. LiS students have already carried out projects at QuTech, the internationally renowned, Delft-based research institute for quantum computing and quantum internet.



From left to right, SRON engineer and LiS practor Peter Paul Kooijman, SRON scientific director and general director Michael Wise, manager of the LiS TOP centre for innovative craftsmanship Frank Molster, and LiS director Stef Vink. (Photo: SRON)

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