

Fewer and fewer students are studying electrical engineering: A series of image studies identifies reasons and possible solutions

- **Misconceptions of the job: Young people picture electrical engineers as workers who install Christmas lights**
- **A series of studies by VDE, IZI, Fachbereichstag and Fakultätentag shows what can be done to get more young people interested in electrical engineering again**
- **Downward trend despite high demand on the labor market: Electrical engineering is currently at a new low with 3.5 percent of all students**

(16.03.2023, Frankfurt a. M.) Back in early 2022, a VDE study on the labor market for electrical engineering showed that the next generation sees little potential in the field. As chairman Prof. Kira Kastell explains, this is a wake-up call for the Fachbereichstag Elektrotechnik und Informationstechnik (a council of electrical engineering and information technology departments): “The study confirmed our fears. That’s why we have now joined forces to investigate where the negative image comes from and how we can counteract it.” Media scientist Dr. Maya Götz from the International Central Institute for Youth and Educational Television (IZI) was recruited to conduct the investigation; another partner is the Fakultätentag für Elektrotechnik und Informationstechnik (a council of electrical engineering and information technology faculties). The survey included 658 students shortly before high school graduation, 50 high potentials with a grade of 1 or 2 (the two top grades in Germany) in mathematics, physics or computer science, and 1,195 students in electrical engineering and information technology.

Poor image, inadequate communication

Many high school students – and high potentials in particular – have an extremely bad impression of what electrical engineers do in their everyday work. Study director Dr. Maya Götz explains: “Working bent over, laying cables, or installing Christmas lights at the marketplace:

this is what comes to mind for young people – and such activities are unfortunately far from appealing.” The series of studies also shows that engineers are regarded as those who simply carry out assignments or check and repair electrical equipment. In contrast, young people want to develop solutions and take responsibility. “Their real career aspirations clearly clash with their wrong impressions of electrical engineering work, thus leading to a decline in enrollment numbers,” explains Dr. Götz.

What’s more, half of prospective students obtain information about possible degree programs online. But electrical engineering and information technology websites are often peppered with foreign words and do not have a design that appeals to young people, which rather puts them off the subject.

Changing the image is not an end in itself: A skilled labor shortage hinders future-oriented technologies

Although Germany is currently able to deal with the lack of electrical engineers largely by recruiting specialists from abroad, this is not a solution for the future. On the one hand, demographic change and fields such as renewable energy, mobility, digitalization and Industry 4.0 are pushing the number of vacancies back up. On the other hand, electrical engineering specialists are increasingly needed abroad too.

Dr. Michael Schanz, director of the VDE Committee for Study, Work and Society, is convinced: “Young people want to shape the future – electrical engineering is an excellent way to satisfy this need. If we are unable to get that across, the major issues of our time will be at risk.” This is compounded by the risk of a decline in electrical engineering research in Germany. Prof. Holger Göbel, Chair of the Fakultätentag, confirms: “We have to stop the downward trend, or else we’ll see erosion and be unable to maintain the high standards in our subject.”

What needs to be done: Improve communication, refine the job profile

If potential students do not understand that a subject is highly varied, interesting and holds the key to meaningful jobs, then communication is failing. According to the survey, it is often matters of chance that drive young people away from electrical engineering, not conscious decisions based on sound advice from job centers or universities. Firstly, therefore, companies need to provide orientation. What does electrical engineering offer young people, what makes it attractive and – in concrete terms – what salary can students expect to earn with the degree? If these messages are communicated in a suitable manner for the target group, the image problem could be turned around. Secondly, a majority of students see “endurance” as an essential characteristic for studying. If the universities succeed in conveying the tasks for which

the degree qualifies students in their later professional lives, they will likely exhibit a higher intrinsic motivation.

Another aspect is specifically addressing girls and young women and getting them to choose electrical engineering or information technology. Even among high potentials in STEM subjects, the majority of the female students surveyed did not have a positive view of the industry. They still believe it to be a male domain and don't want to be disrespected at work or have to listen to dumb jokes because of their choice of profession. "We have to work hard on all these issues," sums up Dr. Schanz. "Who knows, perhaps we also need new names for degree programs in electrical engineering in order to shed the unfavorable image."

About the series of studies

A total of four topic areas were examined. The first two volumes on [image](#) and [career choice](#) are now available to download free of charge (in German). Volumes 3 and 4 deal with the reasons for dropping out of a degree program and the question of how to recruit more women for the subject.

About VDE

VDE, one of the largest technology organizations in Europe, has been regarded as a synonym for innovation and technological progress for more than 130 years. VDE is the only organization in the world that combines science, standardization, testing, certification, and application consulting under one umbrella. The VDE mark has been synonymous with the highest safety standards and consumer protection for more than 100 years.

Our passion is the advancement of technology, the next generation of engineers and technologists, and lifelong learning and career development "on the job". Within the VDE network more than 2,000 employees at over 60 locations worldwide, more than 100,000 honorary experts, and around 1,500 companies are dedicated to ensuring a future worth living: networked, digital, electrical. Shaping the e-dialistic future.

The VDE (VDE Association for Electrical, Electronic & Information Technologies) is headquartered in Frankfurt am Main. For more information, visit www.vde.com

Press contact: Vanessa Rothe, Phone +49 170 7645316, presse@vde.com