

Electrical Engineers in Germany **ingenieros electricista en Alemania**

Job Profiles & Labour Market
tipo profesional & mercado de trabajo

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Búsqueda de empleo para ingenieros en la UE
Madrid, May 27th, 2013

Dimensions/ Characteristics of Job-Profiles

- technical subject area
- field of activity
- industry branch
- company size
- company type (business, non profit, civil service)

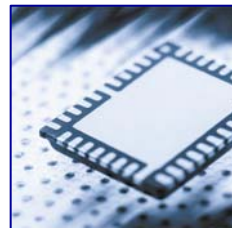
Technical Subject Areas of Electrical Engineering Studies

basic subject areas

- information technology
- power engineering
- automation technology
- microelectronics / microsystems

overlapping subject areas

- medical technology
- mechatronics
- technical informatics
- media technology
- industrial engineering (economy & engineering)



Fields of Activity - Production

■ assembly/start-up

- controlling and supervision of assembly of machines/facilities/factories
- perform test
- location: fabrication site or at facility site at the costumer

■ maintenance/technical support

- machine care, inspection and repair of...
- own facilities/machines or at customer

■ quality management

- development of processes for quality assurance
 - evaluation or development of quality standards
 - test procedures
 - analysis procedures

Fields of Activity

■ research and development

- analysis of new technical methods, acquisition of research projects and funds
- Investigation of patents und publication
 - ▶ goal: application of those methods for developing devices and systems for the market

■ engineering / product development

- products have to work in harsh environments and correspond with standards

■ software engineering

- e.g. for embedded systems

tip: ,engineering' is a good entry field for most of graduates

Fields of Activity

■ (project) planning

- supervision and coordination of bigger projects:
operation studies, cost calculation, project execution, tests

■ marketing and sales

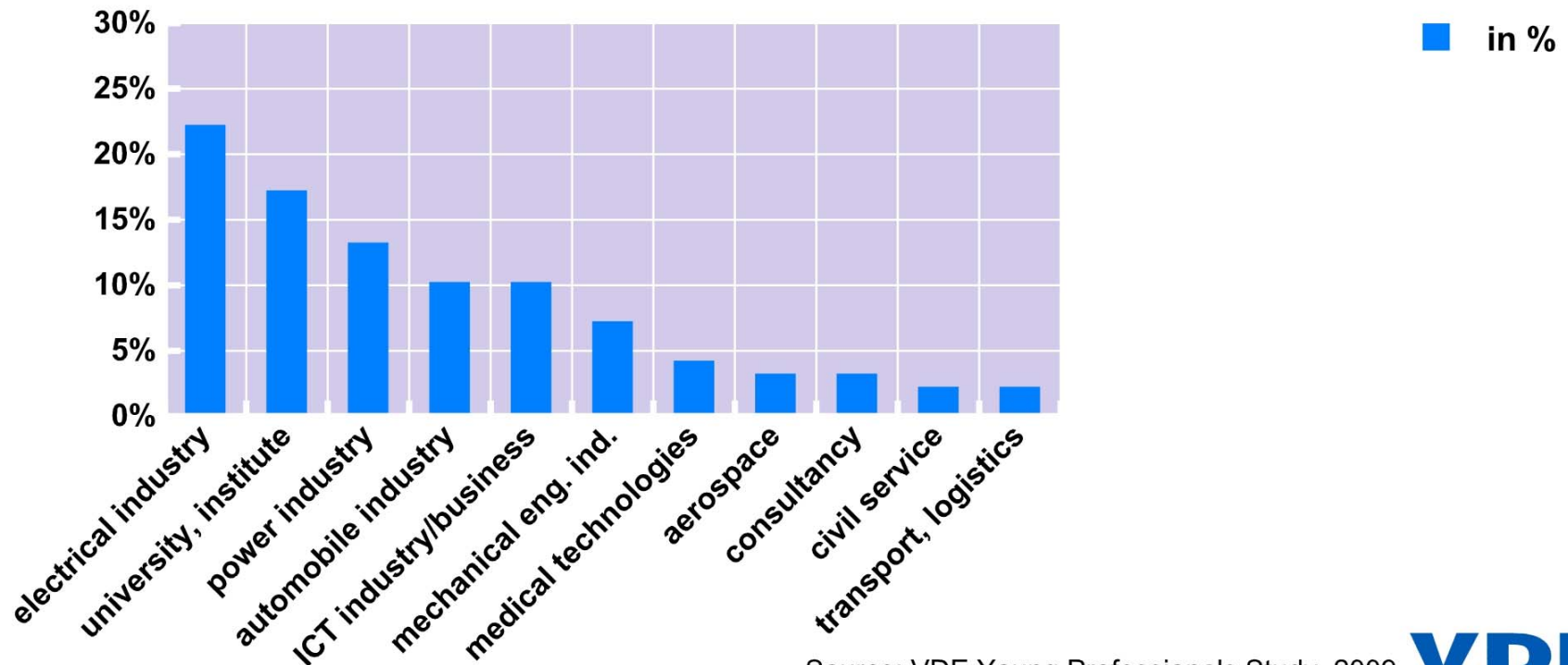
- positioning of products at the market:
consumer products or industrial goods
- interface between customer and company
- communication, customer consultation and care

■ management

- guidance of a department, division or whole company
- product range, financing
- markets, strategies, partnerships, competitors

Occupation of Electrical Engineers (graduates) in a Variety of Branches

Distribution over Industry Branches



Source: VDE Young Professionals Study 2009

Company Size

■ big companies

- more popular amongs students (famous brand)
- better salary
- more specialized jobs
- usually world wide
- change to small and medium company is possible

■ small and medium

- more popular amongst students (atmosphere)
- quicker career advance
- structures more simple but harder to find out who's in charge for something

Job Interview

- **application: error-free**
- **photograph: professional**
 - are there some cool party pictures at facebook?
- **be in time: plan some time buffer in your journey**
- **no acting**
- **clothing must fit to industry branch**
- **prepare for typical questions**
- **plenty of literature and advices in the internet**

- **salary**
 - either standard rates are paid or...
 - salary expectation: 'poker limit' < 20% above mean value

Starting Salaries 2013

■ mean value of different studies:	44.000 €
■ multiply it depending on...	
● (academic) degree	
● applied science university (mainly bachelor's):	1,00
● university (mainly master's):	1,06
● Dr.-Ing / Ph.D.:	1,30
● region	
● Frankfurt:	1,19
● Munich:	1,11
● Ruhrgebiet (Essen, Duisburg, Dortmund):	0,98
● Berlin:	0,95
● industry branch	
● chemical:	1,06
● electro:	1,00
● mechanical engineering:	0,96
● field of activity	
● slight differences, but	
● company's size	
● 50p:	0,90
● 7500p:	1,10

R&D is top

VDE

Present Salaries, Mean Values

■ team size, e.g. department head

- 1-5 persons: 69.000 EUR
- 26-50 persons: 86.000 EUR

■ professional experience, e.g. project manager

- 1-2 years: 44.000 EUR
- 16-20 years: 74.000 EUR

■ hierarchy, e.g. electrical branch

- assistant/person in charge: 56.000 EUR
- project manager: 72.000 EUR
- group manager: 79.000 EUR
- department head: 85.000 EUR

Career Advancement and Perspective

■ circle of career advancement

- 1. task – 2. solution due to engineering skills and efforts – 3. sell the result - 4. gain personal profile – 5. higher expectations – 6. more difficult ...proceed to 1.

■ career paths

- leadership perspective
 - ▶ team forming of specialists and individualists due to communication skills, adequate behaviour and further leadership skills
-> qualifies to technical or general management
- expert perspective
 - ▶ outstanding results and productivity as specialist
-> qualifies to expert career paths (formal in big companies)

Growing Relevance of Electrical Engineers

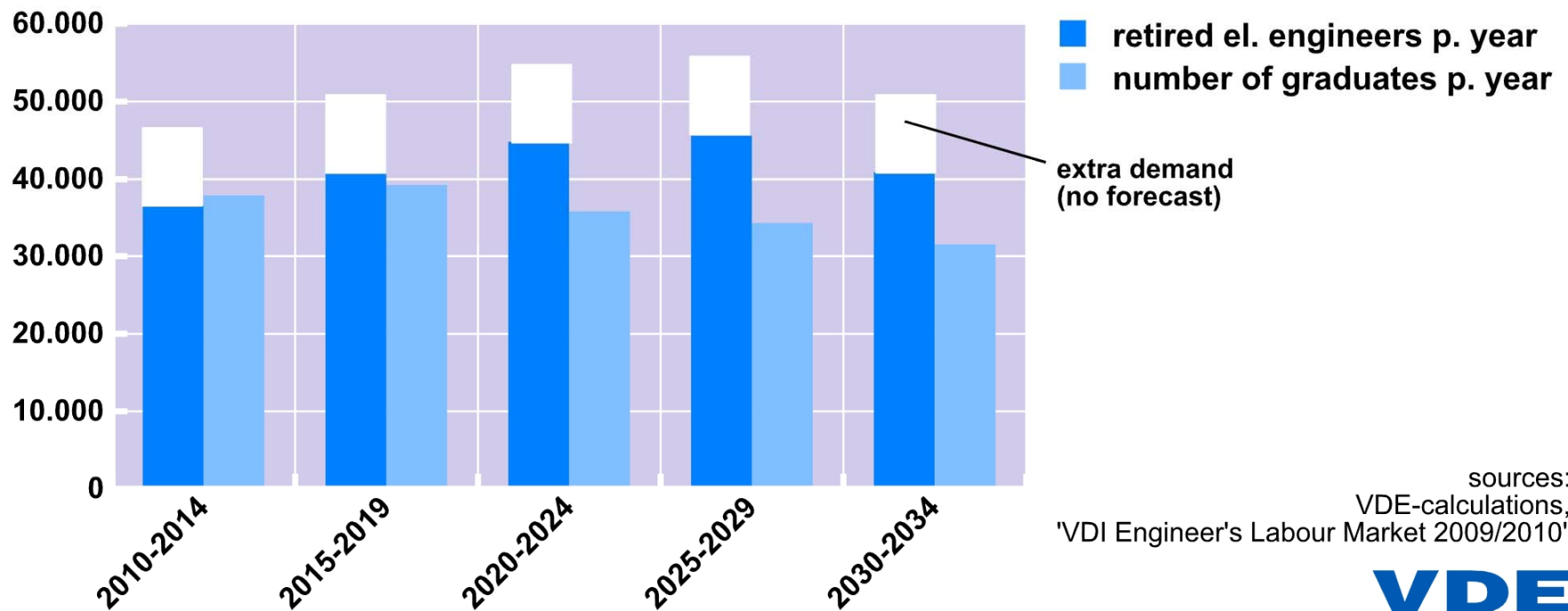
- Electrical engineers cannot solve society's challenges alone... but they play a decisive role for their solution.
- Growing penetration of everyday life by key technologies
 - Information- and Communication Technologies
 - Micro- and Nanotechnologies
- Climate change and shortage of resources as economic driver for 'Green Growth'
 - More regenerative energy facilities
 - Efforts for better energy efficiency
 - Smart Grids
 - E-Mobility
- Everything is getting 'smarter': buildings, cities, traffic, production
- Smart homes as an answer to demographic changes, innovations in medical technologies
- 'Second Electrical Era', 'All Electric Society'
- Since 20 years: growing ratio of engineers in German industrial companies can be observed

Conclusion:

We need rather more than less electrical engineers in the future

Labour Market Expectation

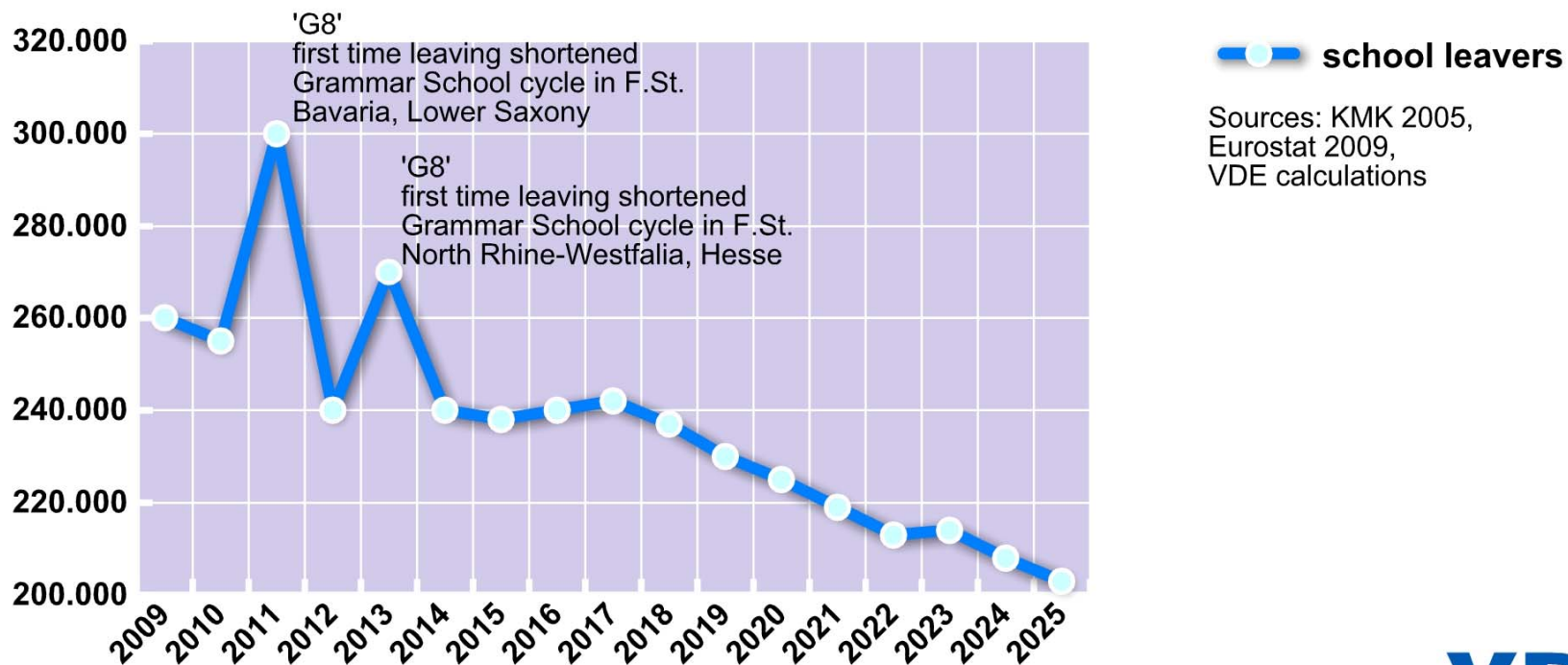
(Optimistic) Long Term Forecast of Demand vs. Graduates Electrical Engineers in Germany



Labour Market Expectation

Forecast of Number of School Leavers

fulfilling the requirements to study



Labour Market

unemployment rate of
electrical engineers is
only $\frac{1}{4}$ of mean value

almost crisis resistant

Rate of Unemployment Electrical Engineers in Germany



Sources: VDE-calculations,
employment agency BA

VDE

Thank you for your kind attention