

Solar Energy Engineering Master of Science

Webinar ISES

08.02.2017

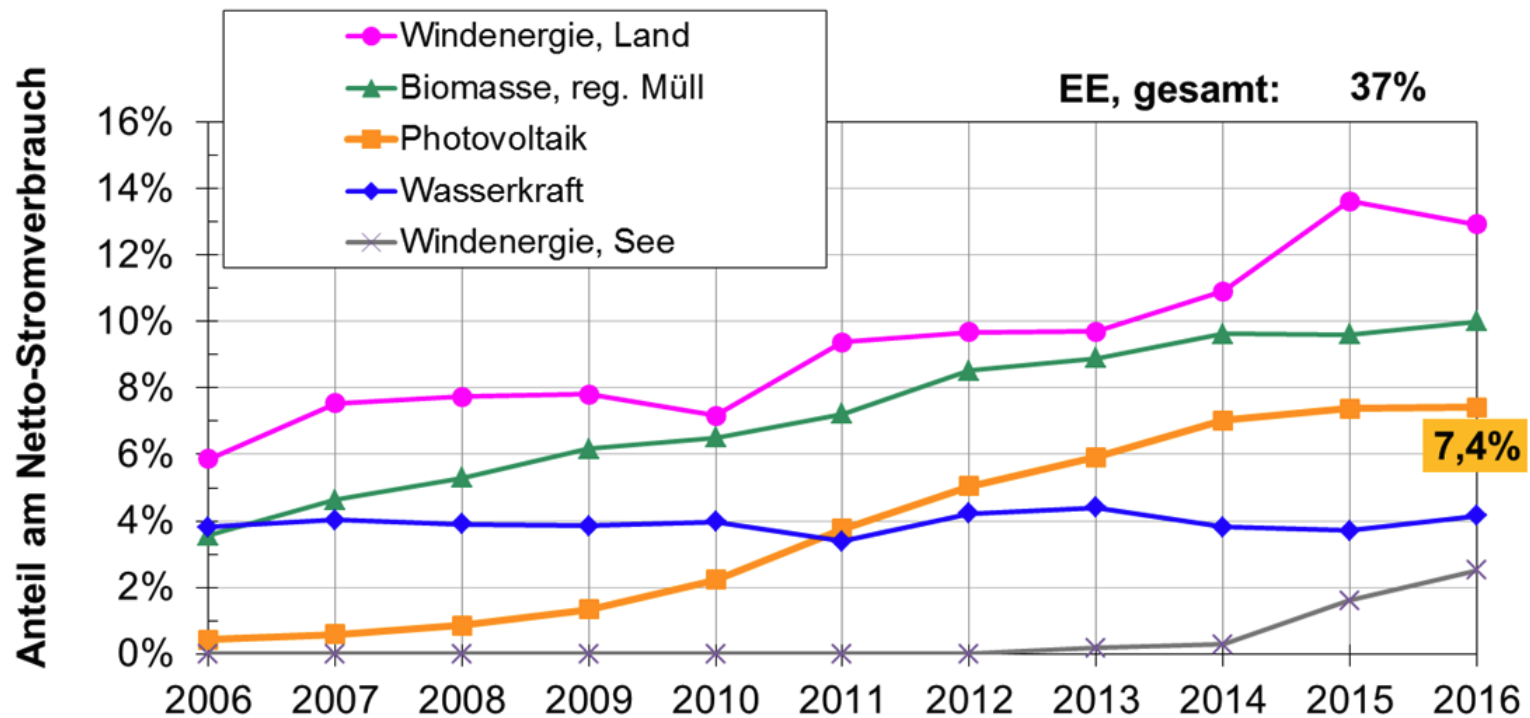
Martin Heinrich

Solar Energy Engineering – Continuing Education

In scientific cooperation with:

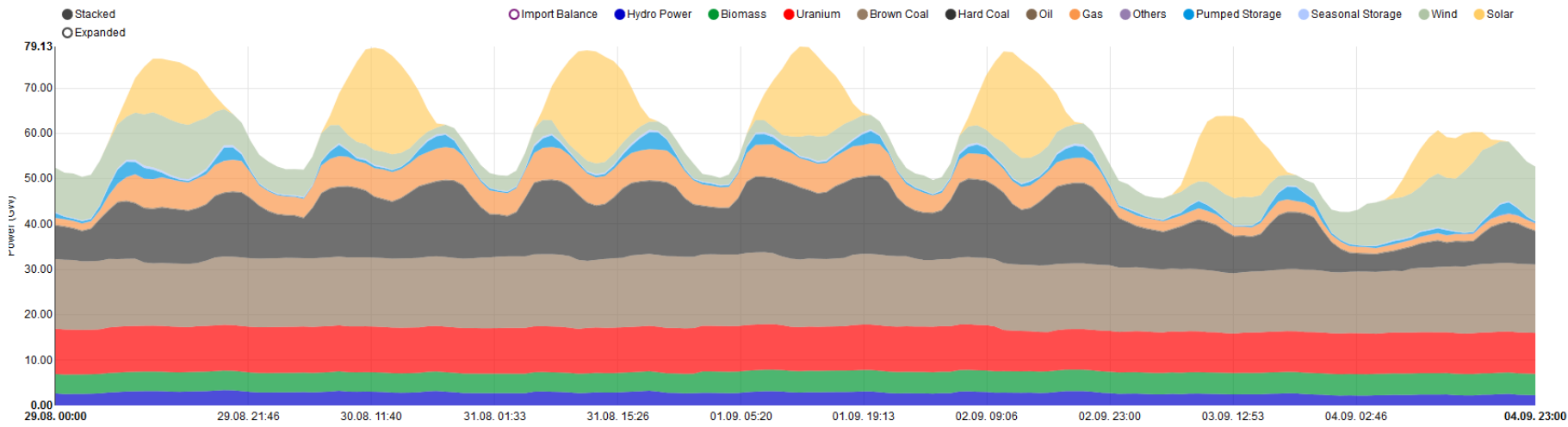


- Share of renewable energies to power mix in Germany



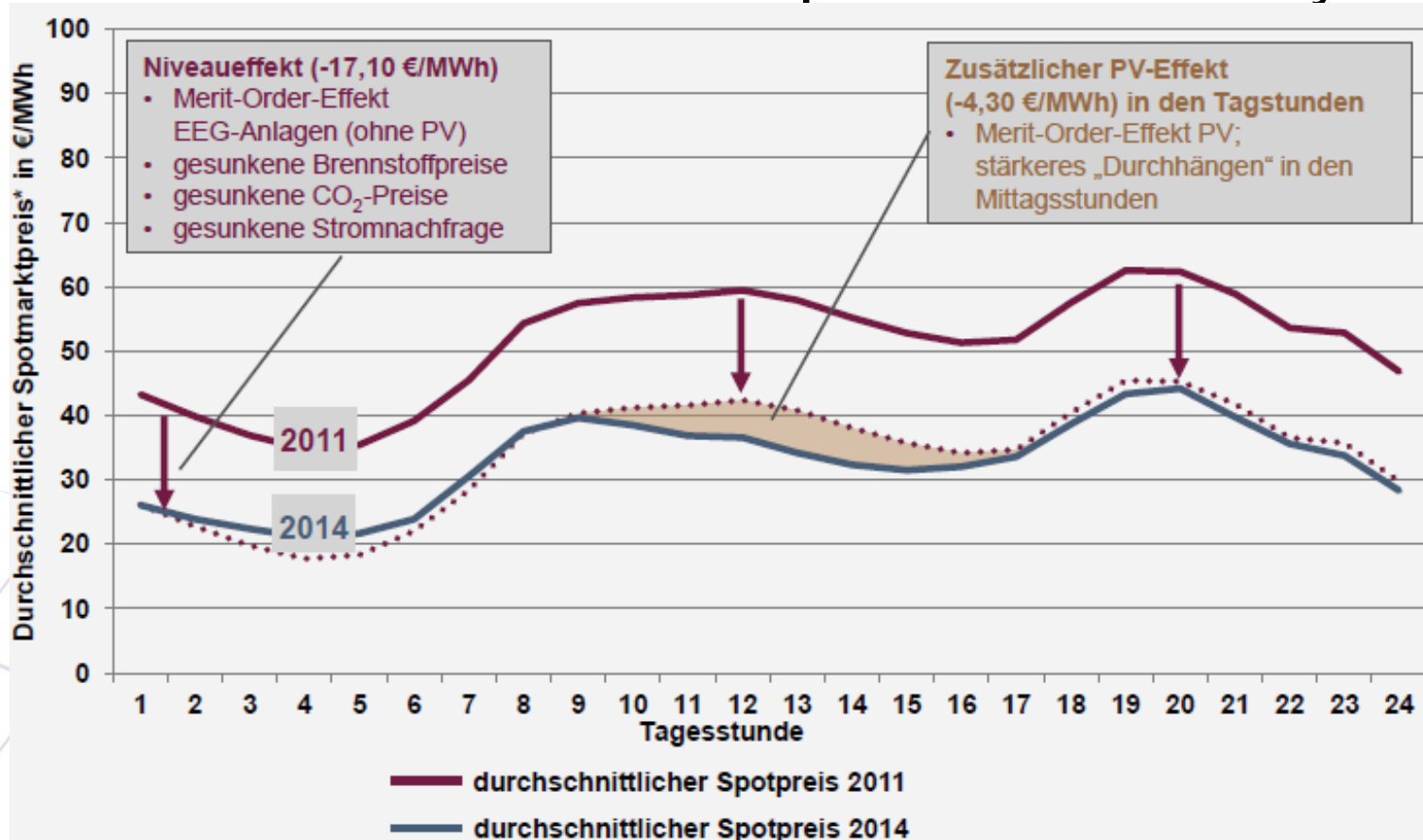
Source: BMWi 2016

■ Influence of PV on the generation of electricity



Source: www.energy-charts.de, KW36, 2016

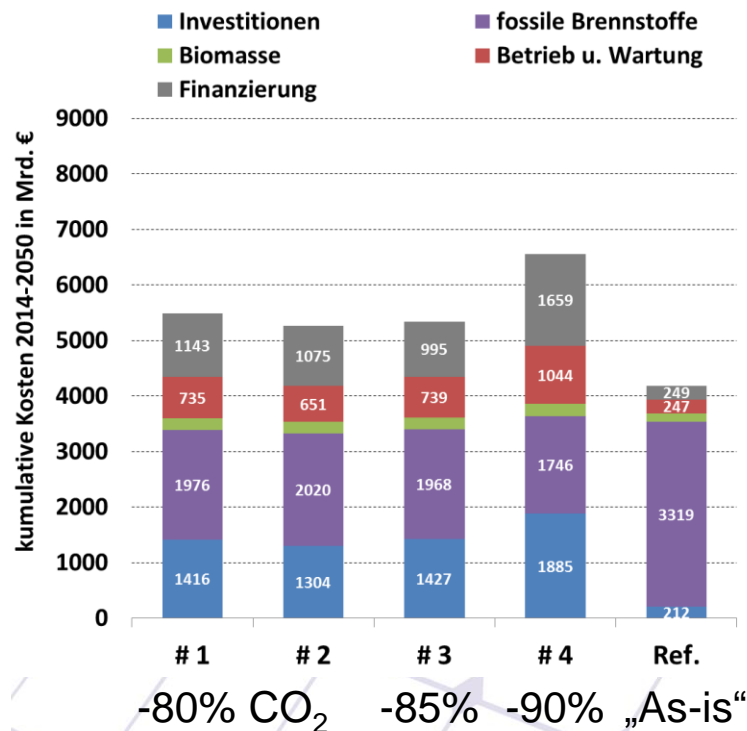
■ Influence of PV on the price of electricity



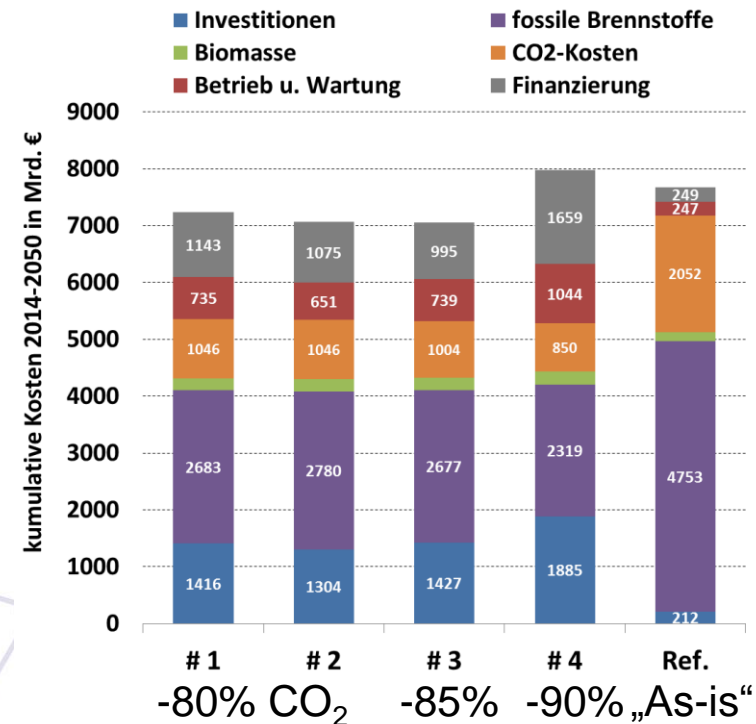
Source: Bundesverband Energie und Wasserwirtschaft 2015

■ Outlook: cost of energy revolution

No cost of CO₂ emission
Constant fossil fuel prices



Increasing CO₂ emission cost until 2030
fossil fuel prices increase with 2% p.a.

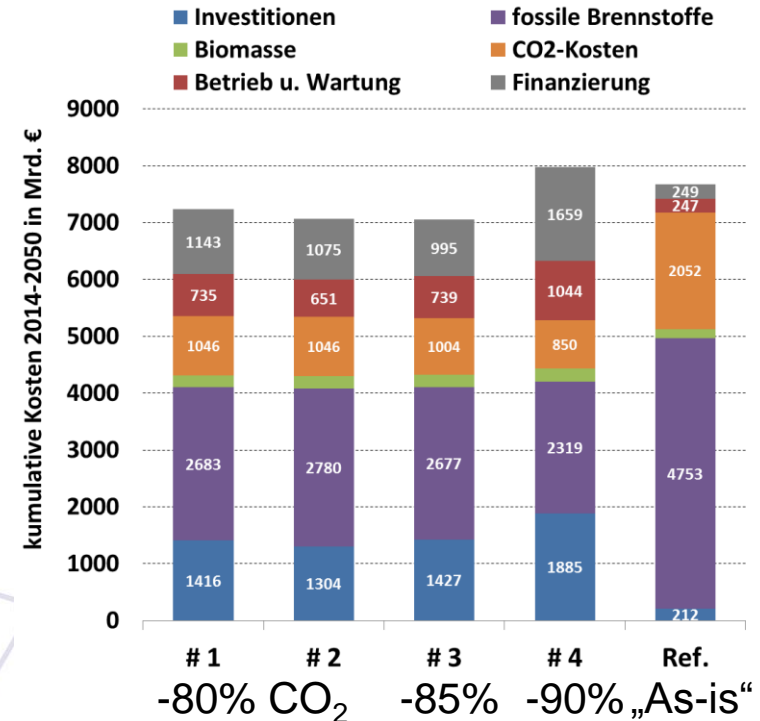
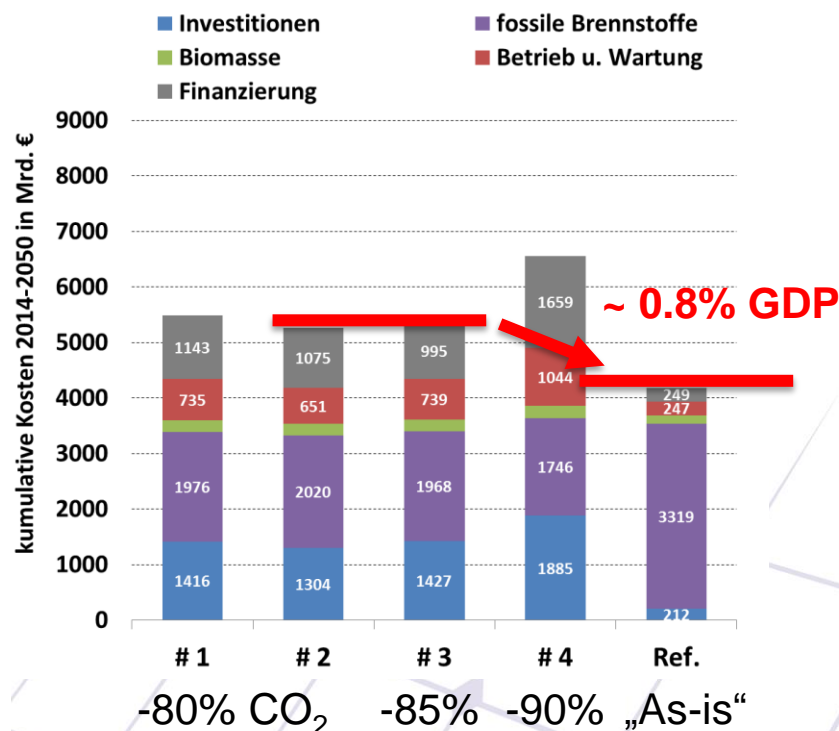


Source: Fraunhofer ISE 2016

■ Outlook: cost of energy revolution

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Source: Fraunhofer ISE 2016

MSc Solar Energy Engineering



- Focus on: Science and Technology
- Blended-learning and part time
- Global program: English/ study everywhere

The program in detail

- Master of Science degree or University Certificate
- Existing since 2010 („Master Online Photovoltaics“)
- Around 35 students from all over the world
- Mixed student body (entering PV sector or advancing career)



■ Fraunhofer Institute for Solar Energy Systems ISE

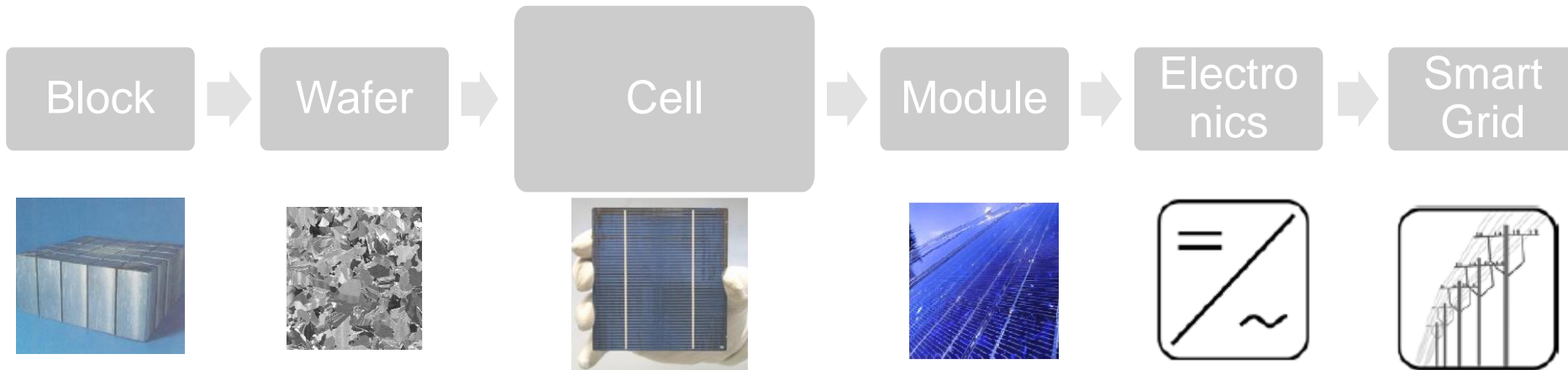


- Largest solar energy research institute in Europe
- Many records for solar cells including for conversion of sunlight into electricity: 46%

■ Albert-Ludwigs-University Freiburg



- One of the best universities in Germany
- Leading research and teaching in renewable energy and sustainability



- In-depth Physics and Engineering
- Solar Thermal Systems
- Silicon based and future photovoltaic materials

The graduate is able to make
decisions on the process line of PV and Solar Thermal Systems
to increase efficiency, lower costs or extend lifetime.

Preparation

Politics, Markets

Physics and Engineering

Projects

Research with Advisor

Mandatory

Solar Cells, PV, Solar Thermal
Crystl. Silicon PV

Electives

Characterization & Modeling

PV Systems & Grids

Solar Cell Technologies

Thesis

Modules	Lecturer	CP
Module A: A.1 The Global Energy Needs in a Nutshell		
	<u>W. Hoffmann</u>	5
Module B: Fundamentals of Math and Physics	<u>M. Datcheva</u>	10
Module C: Fundamentals of Semiconductors	<u>M. Zacharias</u>	12
Module D: E.-Engineering and Power Electronics	<u>O. Stalter</u>	3
Module R: Research Projects		
Module R: Research Projects	<u>Th. Hanemann</u>	30
Mandatory Modules		
Module 1: Solar Cells & Photovoltaic Systems	S. Glunz	10
Module 2: Solar Thermal Systems	W. Platzer	10
Module 3: Crystalline Silicon Photovoltaics	R. Preu	10
Elective Modules		
Topic: Characterization & Modelling		
Module CM1: Material and Solar Cell Char.	M. Kasemann	5
Module CM2: Device Modeling & Adv. Char.	J. Schumacher	5
Topic: Photovoltaic Systems & Grids		
Module PG1: Electronics for PV Systems	E. Weber	6
Module PG2: RE Systems & Smart Grids	Ch. Wittwer	4
Topic: Solar Cell Technologies		
Module ST1: Thin-Film and Concentrator PV	M. Powalla	7
Module ST2: Adv. Process. & New Cell Concepts	U. Würfel	3
Module M: Master Module		
M – Master Module		15

- E-Lectures for online studying
- Regular Online meetings to discuss content & exercises
- Voluntary campus phase in Freiburg

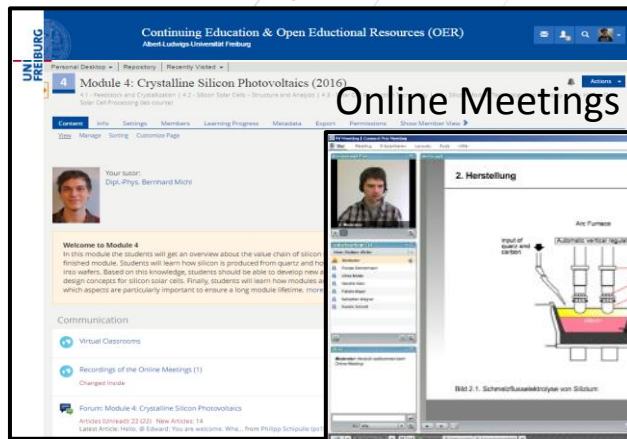
Semester

Study Online

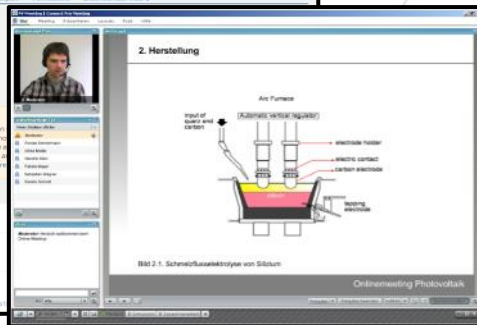
On Campus
(3 – 5 days)

Freiburg

Courses



Online Meetings



Networking

Hands- on Courses
Exams

Thank you for your attention

www.study-solar.com

info@study-solar.com



Milan, now at SolarCity

“What I liked best about my particular course (Fundamentals of PV-systems) was the quality of the e-lectures. I found it extremely well structured! It is the first time that I’ve worked with e-lectures, so it’s a new experience.”



Ronald, Entrepreneur

“The solution lies in renewable energies and photovoltaics in the modern world, even for developing countries.[...]. The seminar has opened my eyes to new things. Some of the concepts we are studying are completely new to me and they are amazing.”