



SPECIFIC PROGRAMME  
SMART GRIDS COURSE

*Exploring the business:  
from pilot to deployment*



Founding partners



Associated partners



## SPECIFIC PROGRAMME SMART GRIDS COURSE

“A Smart Grid is an electricity network that can intelligently integrate the actions of all users connected to it – generators, consumers and those that do both – in order to efficiently deliver sustainable, economic and secure electricity supplies.”  
(Definition of Smart Grid according to the European Technology Platform Smart Grids)



“The future of the energy industry is renewable energy.”

### Why the Smart Grid course?

The future of the energy industry is renewable energy. To enable the transition to a low-carbon energy system the roll-out of the smart grid is essential to optimize network efficiency, facilitate intermittent renewable energy sources with storage, back-up systems and enable opportunities for prosumers such as energy trading. There are many misconceptions about smart grids and how this concept will be implemented in the near future. This Smart Grid course explains all aspects, from the super grid to the micro grid and from the conceptual to current practice. The course will address the challenges and opportunities for business development,

networks, regulations and the changing relationships with customers.

The programme deepens your understanding of the smart grid fundamentals:

- Energy transition; how will the energy infrastructure evolve and how smart grids contribute, explore smart energy pilot programs and how the state of the art smart grid implementations are being developed.
- Load balancing; gain knowledge of balancing intermittent energy sources with storage, gas powered generation, batteries and fuel cell technology including the changes needed in the market models.

- Business development; better understand how to explore business opportunities with the introduction of smart grid technology. Review the current utility business models and get insight into future perspectives.

### Your profile

You are a professional working in the energy industry, policy, consultancy, IT or financial sector with a focus on energy. You are looking to deepen your understanding of smart grids which will enable you to approach the subject not just from a conceptual level but also from a technical and business perspective. You have an academic background, several years of experience and a working knowledge of business English.

### The programme structure

The smart grid course is a 3-day commitment and consists of lectures, discussions, dialogues and practical assignments. The focus of the course is on energy infrastructure, smart grid challenges, business development and the changing relationship of utilities with their customers.

### Business case

The lectures will be supported by a case study which covers the main elements of the learning material provided during the course. The business case will integrate the technical challenges with the business opportunities of smart grids.

### Educational partners

The key lecturer in this course is the international smart grid expert Pier Nabuurs, retired CEO of the prestigious Dutch energy consultancy KEMA, Chairman of the Smart Energy Collective in the Netherlands and former President of the European Technology Platform Smart Grids. To guarantee both high quality and a varied programme, he will be supported by lecturers from a carefully selected group of energy experts directly involved with smart grid implementation both from industry and academia.

### Certification

Upon the completion of the course the participant will receive a certificate from the University of Groningen.

## The programme in detail

### DAY 1 - The energy system, regulation, trading and the transition towards smart grids

#### The energy system: from invention to commodity

- Introduction to the energy system
- History of the energy system – the basic concepts
- The story of electricity, gas and heat
- Traditional production, transmission and distribution
- Utilities and their origins
- Utility value chain

#### Networks and grids, the infrastructure we take for granted

- Introduction to energy networks and grids
- Gas network
- Electricity network

- Load and balancing of electricity
- The energy value chain
- Reliability of networks – security of supply
- Constraints in the grid

#### Energy regulation and markets

- Pre-liberalization
- Liberalization of (European) energy markets
- Impact on utilities and future prospects
- Markets for energy and trading

#### Energy transition

- Energy demand and the energy mix
- Sustainability in the energy supply and the environment
- Greenhouse gas emissions
- Distributed generation

### Energy options

- Wind energy projects, planned capacity and future perspectives
- Photo voltaic developments and state of the art
- Gas as the transition fuel and power to gas
- Plenty of energy – smart grids are the key enabler

### Smart grids

- Introduction to smart grids – basic concepts
- Smart meter – the enabler
- Smart grid – what and why
- Storage – the options
- Smart energy system – the future

### Public acceptance

- Privacy
- Early adopters and self-sufficiency
- Security
- Customer engagement

### Business simulation

### DAY 2 - Smart grids and innovation in the energy industry

#### Recap and summary of day 1

#### Cost and benefits of smart grid technology in the energy transition

- The Smart Meter – who bears the cost and reaps the benefits
- Smart grid – how will it evolve and why
- Smart Energy System – our future perspectives in the age of uncertainty

#### Business case – prosumer business model

#### From innovation to business

- An introduction to innovation – learning the basics
- Developing a vision for the business – a culture of innovation

- Roadblocks for innovation in the energy market

#### Innovation speaker

- Innovation and disruptive technologies

#### Business case – smart energy enterprise business model

#### Presentation by industry expert

- The business models in smart grid pilot programs

#### DAY 3 - Business development for smart grids

#### Summary of the vision for smart grids from the previous days

- Lessons learned so far

### Business development

- Groups design future businesses (free thinking)
- Designing an energy business with a strategy for 2020 and 2030
- Integrating business models and cases explored in previous days

### Presentations of the business cases in groups

- Presentations of case work to a panel of lecturers and experts
- Discussing the consequences for your organisation
- Discussing the opportunities for your organisation

### Concluding session

- Smart grids are the enablers
- Make your business profit from its development



## Sharing the Energy of Knowledge.

The key lecturer in this course is the international smart grid expert Pier Nabuurs. Mr. Nabuurs studied electrical engineering and graduated in telecommunications from Eindhoven Technical University. During many years he held jobs in the management of R&D at Philips and Océ. For the latter he became responsible for managing global purchasing and the supply chain.



He later became CEO of Océ-Belgium and Executive Director of the Strategic Business Unit Document Printing, including the responsibility for the product development program. In January 2002 he became CEO of KEMA, an international company specialized in high-grade technical energy consultancy and R&D, inspection, testing and certification. Mr. Nabuurs is involved in many discussions on energy systems of the future. He was member of the Dutch Task Force Energy Transition and Chairman of the European Technology Platform Smart Grids.

Currently he holds memberships in Boards of companies and governmental organizations and is an independent advisor for many companies on technology and innovation related subjects. He is Chairman of the Steering Committee Smart Energy Collective in the Netherlands (Industry initiative to develop a new energy system, e.g. smart grids).

**Pier Nabuurs, key lecturer**  
Former CEO KEMA

### About Energy Delta Institute

Energy Delta Institute (EDI) is an international energy business school, with a primary focus on natural gas. EDI was founded in 2002 by NV. Nederlandse Gasunie, GasTerra BV, OAO Gazprom and the University of Groningen, later joined by Shell, Dong, Eneco, EBN, Taqa and Essent. The energy community has come to appreciate EDI both as a platform of knowledge exchange between partners and participants alike. The changing energy world is forcing energy companies to innovate in order to stay competitive. In addition, the energy sector is confronting the possibility of a growing shortage of qualified personnel in the coming decades. The sector has only one choice: to invest in knowledge.

EDI's main objective is to contribute to the professional development of current and future energy managers. EDI organizes training programmes and network events with a focus on the economic, management, legal and geopolitical aspects of the energy business.



**ENERGY DELTA INSTITUTE**  
**ENERGY BUSINESS SCHOOL**

T +31 (0) 50 524 83 00  
F +31 (0) 50 524 83 01  
E [info@energydelta.nl](mailto:info@energydelta.nl)  
I [www.energydelta.org](http://www.energydelta.org)