

ELECTRICAL POWER ENGINEERING EDUCATION: HOW TO BRIDGE THE GAP BETWEEN INDUSTRY AND UNIVERSITIES

Pierre BORNARD

Deputy CEO / RTE

Chairman of the board / ENTSO-E

Rte

Réseau de transport d'électricité



Question 1 – What level of specialization of engineering curricula should be sought for? Is basic, fundamentals knowledge more formative and potentially more effective for industry than up-to-date information ?

- Fundamental knowledge is required to enable quick integration within industry teams. This knowledge must include **fundamental mathematics** applied to Power Systems (optimization, simulation...), IT, but also **basic Power System economics**.
- ‘Up to date information’ is too often understood as detailed component knowledge. This is quickly obsolete, and anyhow can be learnt at any time. What is more fundamental is the ability to have a SYSTEM understanding and approach (rarer and rarer...). **Better have a helicopter view of Power System complexity...**



Question 2 – What are the differences between Industry needs and expectations and Academia ones ?

- The industry needs graduates with flexibility skills, able to adapt swiftly to new challenges in a quickly changing environment.
- Universities may need focused and original PhD subjects.

The race for more and more publications needed for an academic career may favour too specialized topics.



Question 3 – What are the reasons behind the gap between Academia and Industry, if any ?

- The main challenge is a perceived trend of more and more ‘component oriented’ academic world, while there is more and more needs for system understanding.
- In many countries, a lack of industrial experience of academics.
- Still the classical mismatch between the short term orientation (industry) and longer term research (Universities).



Question 4 – What is the current status of cooperation between Academia and Industry and in particular the interaction between industry and undergraduate/doctoral programs ?

- Several means to cooperate:
 - Specific research contracts
 - Partnerships for large projects (e.g.: European projects like Twenties) with several universities, utilities, manufacturers
 - Industry sponsoring of University chairs with clear specific targets
 - Lectures by industry senior engineers
 - Local partnerships (internships)



Question 5 – Is at present the number of PhDs produced every year for the higher education establishment too much to be absorbed by Industry?

The more competition, the better graduates...



Question 6 – Should industry be involved in the management of Educational Establishments?

- Yes !
- There are many ways to involve the industry:
 - Seats in Supervisory boards
 - Scientific advisory councils (also applies symmetrically to Academia to be involved in industry scientific advice...)



Conclusions

The industry needs graduates able to understand and design complex systems more than component specialists. A better balance should be targeted.

Basic energy and Power Systems economics are too often missing in graduate courses.

The electricity industry attracts again many bright students. An opportunity for more ambition!

