

博士課程教育リーディングプログラム「環境エネルギー協創教育院」第2回特別講演会  
Academy for Co-creative Education of Environment and Energy Science  
-Second Special Lecture-

**Ecoefficient energy technologies: a European perspective**

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(Swiss Federal Institute of Technology, Lausanne)

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Tokyo Institute of Technology

Abstract

In the wake of the Fukushima disaster the European energy scene is far from being unified. Major concerns about some technologies (nuclear, shale gas exploration,...) and the financial difficulties of some countries are slowing down the expected efforts towards a less energy dependent continent. Whatever the scenarios and the different country reactions, renewable energy and ecoefficient technologies are still being broadly promoted in most countries. Better building insulation, lower average vehicle consumption, cleaner industrial processes, photovoltaics, energy storage schemes and smart grids are among the preferred domains for action. Biomass technologies and the so called smart city concepts with systemic approaches are also gaining in attention. Among the ecoefficient technologies our own research focuses among others on both theoretical and experimental approaches regarding Solid Oxide Fuel Cell (SOFC), SOFC-hybrid systems, advanced heat pumps and ORCs as well as new concepts of district heating and cooling. Recent achievements in these technology development areas will be described with an evaluation of their perspectives.

## Brief CV

Daniel FAVRAT graduated from EPFL in Mechanical Engineering in 1972, followed by a PhD in 1976. After 12 years in industrial energy research centers in Canada and Switzerland he became professor and director of an energy systems laboratory at the EPFL in 1988. His primary fields of research include the thermodynamics and optimization of energy systems and the design of advanced energy technologies, including heat pumps and fuel cells. Prof Favrat is a member of the Swiss Academy of Engineering Sciences and of the French Academy of Technologies as well as vice-chair of the energy committee of WFEO ( World Federation of Engineering Organisations). He is associate editor of several well-established scientific journals like "Energy". He is also coauthor of two books on "thermodynamics and energy systems analysis"