



Engineering Education in France

Jacques LEVY

National Academy of Technology of
France

(N.A.T.F)



A Rapid Historical Survey

- First Engineering Education Institution in history: Czech Technical University in Prague(1707)
- Creation of Mining Schools in Europe (Freiberg, Madrid, London, Paris) :18th cent.
- The German model : T.H.,F.H. (The von Humboldt Research University)
- The English model : university-type diploma, professional recognition (Chart.Eng.)
- The French model : « Grandes Ecoles »
- The U.S. model :university-type diploma (Bach., Mast.,PhD)



The French situation : main features

- Selective admission
- A 5-year curriculum (either integrated or 2+3)
- Permanent faculty of University type, part time industry speakers
- Research activities in engineering sciences, but also in basic sciences and economics and social sciences



The French situation : main features

- Complicated institutionnal situation : public schools depending on the Ministry of Education and Technical Ministries, private schools
- National habilitation by a special advisory commission (CTI) renewable every 6 years
- Negligible tuition fees in the public system
- Very high teacher-student ratio (small number of students, almost no failure rate)



The French situation : main features

- 29 000 diploma granted per year
- No employment problem
- Decreasing interest for engineering careers :
 - 30% never practice
 - 20% turn to research and higher education
 - 50% spend in average 10 years, before becoming managers

Incentive for attracting foreign students from developed and emergent countries



Main orientations in Programs

- High level of general education
- Strong emphasis on basic sciences, especially in mathematics
- Relative weakness in technology, due to a lack of specialisation
- Proportions of time (over the 5 years) devoted to:
 - Basic sciences : 30%
 - Engineering sciences: 35%
 - Economics and social sciences : 10%
 - Humanities, Arts, Foreign languages : 5%
 - Specialisation and personal initiatives : 20%



What about « F.H. » engineers in France ?

- No existing formal system
- D.U.T (diplôme universitaire de technologie) : a 2-years program ;70% of the students continue in higher degrees programs
- B.T.S. (Brevet de Technicien Supérieur) : a large proportion is promoted inside companies after some professional experience and/or continuing education



New challenges and recent trends : The international competition

- Implement the Bologna process for a standardisation of the diploma system
- Simplify the institutionnal landscape by building « clusters »
- Design a policy for attracting foreign students : recruitment, new pedagogy, tackle the language issues



Conclusion

- The French system is rather efficient for training an elite population in science and engineering
- It is less efficient for training entrepreneurs
- It should be much better for training qualified professional manpower