

# Tobias Jockenhövel

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## WORK EXPERIENCE

**SIEMENS Power Generation**, Erlangen, Germany

*Dipl-Ingenieur*, W711 Computer Codes and Plant Dynamics, since 01 / 2003

- Stationary NLP optimization with the equation-orientated simulator KRAWAL-modular in C++.
- NLP based reformulations of MINLP problems, convergence improvements.
- Project manager of the dynamic block-start up simulator.
- Development of modular dynamic simulator.
- Supervision of student thesis in NLP optimization.

## EDUCATION

**Carnegie Mellon University** Pittsburgh, PA, Department of Chemical Engineering

*Visiting Scholar*, April 2001 – November 2002, Research Collaboration

**Technical University of Berlin**, Germany

Ph.D. in Energy and Chemical Engineering (Process Studies)

08/2003

*Research Associate*, Institute of Energy Engineering.

- Field of Research: “*Dynamic Optimization of Complex Power Plants and Chemical Processes.*”
  - Dynamic online-optimization in real-time using large-scale NLP solvers, start-up and load-shift optimization, online system identification.
  - Optimization of large-scale rigorous dynamic process models (> 300 equations) in less than 5 CPU s.
  - Supervised a research team of up to six students and eight bachelor and diploma theses.
  - Developed the software package OptControlCentre ([www.optcontrolcentre.com](http://www.optcontrolcentre.com)).
- Work is funded by an Ernst von Siemens-Scholarship (only nine scholarship holders worldwide).

**Purdue University** West Lafayette, IN, Applied Intelligent Systems Laboratory

*Visiting Scholar*, January – February 2000, Research collaboration in the project “*Cost Minimization of Fossil-Fuelled Electric Power Plants using Knowledge-Based Approaches.*” (Fuzzy control, neural nets).

**Technical University of Berlin**, Germany

**Master’s Degree in Energy and Chemical Engineering**

1999

Orientation: Power Plant Engineering, Energy Economics Overall: With distinction (A+)

- Winner of the SCHERING Prize of Chemical Engineering 2000
- Winner of the Philotherm-Price winter semester 1995 / 96

**Master’s Degree in Environmental Engineering**

1999

Major: Air Pollution Control

Overall: A

Minors: Radioactivity; Environmental Chemistry

**Lancaster University**, England

*Erasmus - European Exchange Student*, January – August 1997

- Completion of several master’s courses in environmental engineering.
- Conducted an experimental student thesis in Air Pollution Control: “*Oxides of Nitrogen – An Assessment of the Possibilities of Reducing Exposure within Motor Vehicles.*”

## INTERNSHIPS AND ADDITIONAL WORK EXPERIENCE

**SIEMENS Power Generation**, Germany

*Research and Development Student*, May – October 1999

- Conducted Master’s Thesis at employer’s request: “*Stationary Modeling and Simulation of Coal Gas Saturation Concepts for IGCC-Applications.*”

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- Programmed the equation-orientated simulator KRAWAL-modular in Visual C++.
- Developed real thermodynamic property modules, phase equilibrium and heat exchanger modules with part load characteristics. Validated models with real plant data.
- Greatly enhanced modular design capabilities for IGCC power plants and enabled Siemens engineers to simulate and design fuel gas systems together with the entire combined cycle power plant.

Work awarded by SIEMENS Power Generation

Thesis awarded by the SCHERING Prize of Chemical Engineering 2000

*Engineering Intern*, August – October 1998

- Assessed operational data of IGCC power plants Puertollano, Spain and Buggenum, Netherlands.
- Literature research on fuel gas saturation systems.
- Developed automatic electronic report form for IGCC power plant performance data.

**GLAXO WELLCOME Operations**, Ulverston, United Kingdom

*Engineering Intern*, February – March 1998

- Analyzed the energy efficiency of the steam production and steam distribution of the production site.
- Identified the thermodynamic and economic potential of optimization in the scale of \$ 60,000 / year.
- Recommended technical and organizational improvements.

**MAGNOX ELECTRIC** Wylfa Power Station, United Kingdom

*Engineering Intern*, August – October 1997

- Learned basic operation of a 980 MW nuclear power plant.
- Attended the regular D-Shift teams: Mech. Maintenance, Plant Office, Health Physics, Fuel Route and Central Control Room.
- Attended the yearly Reactor-Simulating training.

**Akut Environmental Engineering Consultancy**, Berlin,

*Engineering Intern*, October – December 1996

- Worked on the fields of thermal solar systems and plant sewage systems

## **COMPUTER SKILLS**

Applications: MATLAB/Simulink, Excel, Word, PowerPoint, Visual Studio, Office Applications,  
Web design (Dreamweaver, Net Objects Fusions), Adobe FrameMaker, Firewalls,  
Internet

Languages: C / C++, FORTRAN, Maple, MATLAB, Pascal

Operating Systems: Windows, UNIX, Linux

**LANGUAGES:** German, English, French