

Higher Education for Sustainability: German - Brazilian Co-operation

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For almost ten years now the department "Industrial Water and Wastewater Technology (IWT)" from the Institute of Sanitary Engineering, Water Quality and Solid Waste Management has been active in Brazil. The Institute, which belongs to the University of Stuttgart, Germany, is among one of the biggest Europe-wide. Prof. Dr.-Ing. Uwe Menzel is head of the department and gives lectures in Germany as well as in Brazil and other countries.

At the beginning of their work in Brazil, the University of Stuttgart established an advanced training course in the area of technical environmental protection. From 2002 to 2005, the department IWT offered the so called "Summer School", a three week programme which taught the topics "Industrial Waste Water Treatment" and "Solid Waste Management and Treatment". The courses took place in several Brazilian cities, including São Paulo, Curitiba, Belo Horizonte, Recife and Fortaleza. A great amount of interest was shown for these very successful Summer Schools.

From 2003 to 2005 the department IWT worked on the project "Export-Oriented Research and Development in the Field of Water Supply and Waste Water Treatment", which was supported by the German Federal Ministry of Education and Research (BMBF). The project was initiated in order to create an inventory of the actual environmental situation of different countries world-wide. In particular the University of Stuttgart focused on the topic of "waste water treatment and recycling" in the South American country Brazil. This inquisition had to be done in order to be used as a basis for prospective resolutions which resulted from the "Earth Summit 2002" in Johannesburg.

In July 2007 the post-graduate specialization course "Environmental Engineering" was introduced at the national university "Universidade Federal do Parana – UFPR" in Curitiba, Brazil. Prof. Menzel was part of the teaching staff.

In the year 2008, the company ThyssenKrupp Steel assigned the department IWT to assess the water treatment plants and facilities of the new designed steelwork in the Federal Brazilian State of Rio de Janeiro. As a result two surveys listed crucial propositions in order to improve the operation and the efficiency of the plant.

Furthermore, as result of the great success of the Brazilian Summer Schools and due to the experiences with the project "Export-Oriented Research and Development in the Field of Water Supply and Waste Water Treatment" it was possible to create the new masters programme EDUBRAS-MAUI (Communal and Industrial Environmental Protection) under German management and German standards. The course was established with the cooperation of the Universidade Federal do Parana (UFPR) and the National Service of Industrial Learning (Servico Nacional de Aprendizagem Industrial) (SENAI/ PR) in Curitiba, Brazil. The goal was to create a M.Sc. programme, which would be accepted in Brazil or alternatively in Germany and Brazil, and to achieve an accreditation. The master programme is supported by BMBF through the "German Academic Exchange Service (DAAD)". To assure sustainability of the study programme the course will be financed by tuition fees. The new

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masters programme EDUBRAS-MAUI has been approved by the Brazilian organization CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) and by the University of Stuttgart. In the year 2008 the first course successfully started with more than 15 students from different industry sectors and federal Brazilian states. The course has recently been accredited by the DAAD and is rated as the best programme evaluated by the DAAD. For more information please visit the study course website www.edubras-maui.uni-stuttgart.de.

The “National Environmental Protection Centre of the Industry (SENAI-SC)” in Blumenau/ Santa Catarina offers a post-graduate specializing course “Gerenciamento de Águas e Efluentes”. As part of these course Prof. Menzel gives a series of lectures called “Advanced Water and Waste Water Treatment”.

Furthermore, Prof. Menzel has been nominated as visiting professor at the postgraduate programme “Environmental Engineering” at the Universidade Regional de Blumenau. He is qualified to participate in teaching and research activities as well as being a member of the advisor committee for research proposals.

Recommendations for enhanced sustainability oriented research and innovation cooperation between the two countries:

- Introduction of process and production integrated environmental measures in industries,
- Optimisation of waste water treatment plants of the textile finishing industry in Santa Catarina,
- Elaboration and adaptation of technologies to treat leachate at the landfills in Brazil,
- Implementation of an research center for applied environmental science in Blumenau,
- Standardization of the norms for industrial residual materials,
- Assessment of the influence of urbanisation on the water quality of the river Atuba,
- Development of rules and standards for the treatment of waste water originating from food industries using dairy products,
- Energy recovery of methane in order to treat landfill leachate through electroflotation,
- Implementation of a pilot plant for the utilization of rainwater for public facilities of the city of Curitiba,
- Determination of the amount of dissolved inorganic phosphorus in the water reservoir Alagados, Ponto Grossa,
- Reduction of air pollution and energetic utilization by the usage of pyrolyze on waste materials from the paper industry,
- Management of waste materials from the wood and furniture industry.

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<http://www.iswa.uni-stuttgart.de/iwt/index.html>