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## **INFORME FINAL DEL BECARIO - PROGRAMA ALEARG - PASANTÍAS** **DIRECCIÓN NACIONAL DE COOPERACIÓN INTERNACIONAL.**

**Nombre:** Carlos Gabriel Cantero Dupont

**Universidad:** Technische Universität Carolo-Wilhelmina zu Braunschweig

**Facultad:** Fakultät für Maschinenbau

**Instituto:** Institut für Chemische und Thermische Verfahrenstechnik.

**Nombre del programa:** ALEARG

**Director de tesis:** Prof. Dr.-Ing. Stephan Scholl

**Duración del programa de estudios:** 01.09.2008 – 28.02.2009



### **1. Breve descripción de los cursos tomados y actividades desarrolladas durante el período de la beca.**

- During the time of the scholarship in Braunschweig, Germany, I have developed the Thesis of the career of chemical engineering; the subject was "Design of a biogas purification plant".
  
- Also In this time I have studied the following subjects:
  - Umweltschutztechnik 1  
(Techniques for protection of the environment 1)
  - Umweltschutz für ingenieure  
(Protection of the environment for engineers)
  - Numerische simulation (CFD)  
(Numerical simulation with CFD software)
  - Deutsch als fremd sprache A2.1
  - Deutsch als fremd sprache A2.2
  - English for the process industries

### **2. Evaluación del programa**

The International Office of the TU Braunschweig helped us a lot with the papers and all the things to do in the first time here, e.g. Matriculation, student visa, selection of classes, etc.

The whole classes that I took in Germany were very organized; in the first class they provide all the information about program of classes and copies of the contents. The teachers teach the classes very clearly and with a high level of pedagogy. There were full availability of equipment



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for the development of every class and possibilities to make questions to the teachers out of class time.

About the project, the first week that I was here in Braunschweig, I had a meeting with Prof. Scholl, the director of my thesis. I received a Doctorate Student Dipl.-Biotechnol. Manuel Holtkamp as a direct responsible of my thesis, he showed me the laboratories, gave me the keys of the laboratory and one computer with printer to use for the development of my project. There I worked in my project, 8 hours per day, Monday to Fridays.

After that week I had every week a meeting with the thesis responsible about the progress of my project. Using papers and scientific information I started with my thesis "Design of a biogas purification plant", subsequently to get more details and real data, I meet Dipl. Ing-. Verena Stroot responsible of the renewable energy office of BS-Energy GmbH. The company gave me a lot of information about the biogas plant in Braunschweig and the uses of this to produce heat and electricity in the co-generation plant in Ölper. With that real information I started to develop the project. After to finish the project, I have presented it in the "Institut für Chemische und Thermische Verfahrenstechnik".

My project consists in the development of a purification process to upgrade biogas to be injected after into the natural gas grid. Actually the EU countries are importing Natural gas from countries politically and economically unstable, and knowing his changing prices and their impossible regeneration is necessary to find new resources to replace it, or at least to minimize their consumption. Biogas is one of the most interesting renewable energies because is possible to obtain from organic waste and the EU governments are encouraging the development of this kind projects with very interesting economical benefits.

During this time of the scholarship I did my best to fulfill every goal that I set before to start it, and I can say that I had success using the time wisely. I did not have any problem in the classes of the University or in the laboratory.

### **3. Comentarios**

This experience in the TU Braunschweig was really amazing, I have learned a lot about how to prepare a thesis, how to study in another language and living in another country. I found that the studies programs in Germany are more focused in one specific subject, that gives a lot of information and helps the students to be ready to develop their selves in that specific branch; but comparing with the programs in Argentina, I thing that there the careers are more global (not very specific) making a open door to know the whole possibilities of the career and then in the end with knowledge, be able to choose which branch to get in focus.



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I received a lot of help from the directors of my thesis, from the teachers of every subject that I made and from those responsible of the scholarship, both the “DAAD” and the “Ministerio de Educación”.

**4. Proyectos laborales actuales.**

My labor projects are, firstly start working in an Industrial chemical plant, specifically I would like to work in the quality management section, obtaining more experience about the field of action of my career and applying that I have learned in the last years in the University. I would like to make a post grade in protection of the environment and in quality managements, e.g. application of ISO 14001 certification in chemical processes. In the last 6 months, I have taken the goal to work for the environment protection, the utilization of renewable energies, rational use of energy and application of quality management in the processes.

In the end of my scholarship time, I can say that this experience has a great value for me like a person and as a future engineer, exceeding all my expectations. The preparation for this scholarship was not easy, but it served much to value and take advantage to this great opportunity.

Carlos Cantero Dupont