WASTENEWS

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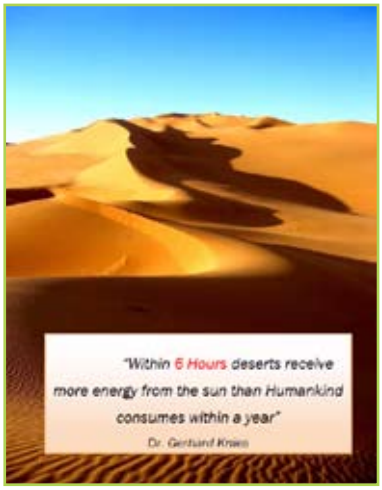
AIR POLLUTION TRANSFER

Cars, buses and trucks constitute undoubtedly a great source of air pollution. When their engines burn the well-known fuels (gasoline or diesel), they produce large amounts of chemicals (like CO, NO_x, NMVOC, PM, CO_2, SO_x) which are emitted in the engine exhaust. Since there is a significant threat to human health and the overall environment, stringent regulations are nowadays developed with respect to optimization of the engine performance and fuel quality in order to diminish the amount of air pollution produced by individual vehicles. There is a great effort worldwide to have a better air quality control in this sector and the automotive industry is struggling to meet the legislative standards and customers preferences as well.

There always existed a strong interrelation between economical growth and market car sales. Being a forerunner of the automotive industry, Germany experienced at the beginning of the 21st century large sales of old autochthon cars, which were mainly sold abroad, towards Eastern Europe. >>> continues

MORE THAN JUST A DESERT

As fossil fuels are being depleted due to its increasing demand and continuous population growth on earth, scientists nowadays have focused their attention on searching for sustainable and environmentally compatible energies. In other words alternative energies that enable human civilization to develop and to function; meanwhile the environment is unaffected. By the middle of the 21st century, not only predictions estimate that conventional fuels (except for coal) will run out, but also climate change threatens with the destruction of our planet as a result of excessive emissions of greenhouse gases. Therefore, the Desertec foundation is now working on the 100 year old idea of trapping North Africa's solar energy.



Desertec is a megaproject that intends to concentrate sunlight of the Sahara desert for heat (usually via steam) and power generation for Europe, Middle East and North Africa (EU-MENA).

However, the project goes far beyond this, it is a mix of available technologies and resources (hydro, wind, geothermal and biomass energy) in order to fulfill not only energy on demand but also all other criteria for sustainability. The energy will be transported via High-Voltage Direct-Current (HVDC) interconnection lines about 700 TWh/y of solar electricity with a capacity of 2.5-5.0 GW each from 20-40 different locations in the Middle East and North Africa to the main centres of demand in Europe. By 2050, it is estimated that the total investment amount to 400 billion Euro and only 15 % of the European electricity will be provided from the desert.

Assuming that political and financial issues do not interfere, it is a very promising proposal that may benefit, on the one hand, developing countries to become political and economic stable. On the other hand, it is an open door for the world to crossover the desire of clean and sustainable energies. For now, what is certainly known is that the way is very long and that intensive work must be done to be able to make this green initiative come true!

▪ Paula A. Carrillo[1]

1 Das Gold der Wüste von Fritz Vorholz. Die Zeit Nr. 29. July 9th 2009
Clean Power from Desserts: The Desertec Concept for Energy, Water and Climate Security. Whitebook. 4th Edition.

International M.Sc. program „Air Quality Control, Solid Waste and Waste Water Process Engineering" (WASTE)
Newsletter published by the Study Program and the WASTE Club Stuttgart e.V.

>>> Air pollution transfer

In 2006, Romania, due to the growth of living standards in the urban areas, has overcome Poland and Bulgaria, becoming the main market sale for the second-hand cars coming from Germany.

It was in **January 2007**, when the first vehicle registration tax which had an **environmental protection** aim was issued in Romania. Although heavily debated by Romanian citizens and criticized by the European Commission as it was infringing the Art. 90 from the European Commission Treaty (1957)[1], the tax was maintained until **April 2007**, when the Romanian Government legitimized the adjustment of the calculation for this first registration tax.

The new regulation stated on short that *the older the car, the lower the tax*. For instance: an owner who had a car with a capacity up to 1600 cc, older than 20 years and which was not technically equipped to fulfill an European emission standard, had to pay half of the tax calculated on January. For a car which was older than 15 years and with a capacity higher than 3000 cc the tax became three times lower, while for the new cars - Euro 4 emission standards, with a capacity range between 1400 and 3000 cc, the tax was as high as it was in January. Afterwards, in **July 2008**, the tax was again adjusted in such a way that it became significantly lower for a old car in comparison with a new car. This represented a powerful incentive for the extension of an ongoing phenomenon: selling of old second-hand cars from Germany on the Romanian auto market.

In **December 2008**, it has been conveyed that the Romanian national market for new cars is getting dangerously close to collapse due to the import of second-hand cars. In order to soften this phenomenon, the Romanian Government has come to the decision to triple the **environmental tax** starting with the **15th of December**[2]. This decision emerged **at the end of November 2008**, that the selling of new cars for the national automotive company, Dacia, has declined with 53% and in general for new cars with 50%, on the national auto market. The governmental position on this matter was to protect the national automotive industry, in which 210 000 people were employed and not the second-hand market sector in which only several thousands were earning their living by operating it. From **February 2009**, a new adjustment to this tax came into force. The first car registration interrelated with environmental protection tax[3] was reduced with one third in comparison with **December 2008**, but it was still double as it was in **July 2008**.

After the scrappage program (Abwrackprämie)[4] was introduced in Germany in **January 2009**, Dacia sales surprisingly registered a gradually increase: in **September 2009** the sales on the German market have increased with 59.3% compared to the same month of the previous year.

The scrappage scheme of Germany has been the largest so far in Europe. Every owner of a car older than 9 years was entitled for a scrappage premium of € 2,500 when buying a new car. According to *Bussiness Standard* publication, Dacia Logan sales in Germany have increased six times by **February 2009**, the model being known in Germany as a *symbol of the financial crisis*.

However, some consequences of the scrappage scheme were not predicted. Its impact on automakers has been varied. The luxury automakers, like BMW, Mercedes-Benz and Porsche have had little benefit from the program. As the customers decided mostly for cheaper, smaller cars, brands like Volkswagen and Dacia, became the most purchased.

While for some years ago there was an influx of second-hand cars from Germany to Romania, nowadays it seems that on the same route, new cars are being delivered, but this time on the opposite direction. Economical interests will always drive the national and also international affairs; however the environment perception plays definitively a major role in balancing these interests in terms of *sustainable development*. This article had the main aim to show how politics, economics and environment could shape the interrelation between countries, when the legislation background supports this. During time, there has always been a defined source of pollution and another one as a sink. As environmental engineers and potential leaders, we have to find a favorable balance for both *source* and *sink*.

▪ Diana-Maria Cerceș

1 Art. 90: No Member State shall impose, directly or indirectly, on the products of other Member States any internal taxation of any kind in excess of that imposed directly or indirectly on similar domestic products. Furthermore, no Memberstate shall impose the products of other Member States any internal taxation of such a nature as to afford indirect protection to other products.

2 Mainly the second-hand cars bought from abroad were subjected to the new triple environmental tax, while for the new cars was yet not clear when the new tax will be put into practise.

3 The tax is related to CO_2 emissions and engine capacity.

4 The Scappage program is a government program meant to promote the replacement of old vehicles with modern vehicles. Scrappage programs generally refer to a dual aim: Stimulating the automotive industry and removing inefficient, high emission vehicles from the road. During the global recession that bean in 2008, many European countries have introduced large-scale scrappage programs as an economic stimulus to increase market demand for new cars in the automotive sector.

News and announcements

Environmental award for urban water supply and sanitation engineer of Stuttgart

Stuttgart's scientist Dr.-Ing. Ulrich Dittmer was awarded the Karl-Imhoff-Preis from the German Association for Water, Wastewater and Waste (DWA). He was awarded this prize because of his outstanding work on biofilters for CSO treatment.

Dittmer has studied these processes occurring in biofilters at a large-scale plant and within additional laboratory experiments. On basis of the experimental data a simple model for the degradation processes can be used to predict the emissions from biofilters for CSO treatment.

David J. Dürrenmatt; Otto Schaaf (DWA); Ulrich Dittmer

Since August 2008 he is head of the Department of Urban Area Drainage at the Chair of Sanitary Engineering and Water Recycling in the Institute of Sanitary Engineering, Water Quality and Solid Waste Management (ISWA). For the WASTE program he helds the lecture „Design of Wastewater Treatment Plants".

We congratulate him on this honored award and wish him good luck for his future research.

▪ Tobias Bunk

Successful accreditation of WASTE!

In context with the globalization of education and the adaptation of the German education system to the "international" system with bachelor and master degrees, the quality assurance in education was standardised as well. All bachelor and master study programs have to fulfil standards and this has to be proved regularly by accreditation of the study program.

WASTE was founded and established in the year 2002. In winter semester 2008 / 2009 the three semester structure was changed to a four semester structure with three semesters of lectures and one semester for the master thesis (see WASTE Newsletter no. 3). This new and modular structure of the WASTE study program suits even better to the demands of the students and their potential employers. In February 2008 the Universität Stuttgart engaged the external accreditation agency ASIIN to accreditate WASTE.

Obviously, WASTE passed the criteria brilliantly, because the goal of the study program and presentation of the learning results were stressed very positively in the final report of ASIIN. Another aspect, pointed out very positively in the final report, was the precise specification of the modules in the module handbook, with its detailed description of the workload and its transfer to ECTS credit points. Another important fact mentioned, was the demand of engineers in the field of the WASTE topics. Air quality control, solid waste and waste water are three topics which are permanently very actual in the field of environmental protection worldwide, with a very high and constantly increasing demand of well qualified engineers, especially in the international context.

WASTE is a very popular international study program. Till the year 2008 approx. 200 students studied WASTE. They originated from 41 different countries. The percentage of 36 of femal students is quite high for an engineering study program. The perspectives for WASTE graduates are quite good. Most of the graduates get jobs in industry, at universities, in research centres in Germany or abroad. Last but not least the numerous additional activities were pointed out very positively. Namely the official welcome meetings and parties, the WASTE summer party, the newsletters, the numerous excursions and the WASTE intercultural meetings (WIM) as platform to exchange intercultural and environmental topics and information. All these single activities form the unique atmosphere within the WASTE study program, the WASTE spirit! Finally the highlights of WASTE, the yearly WASTE graduation ceremony and all activities of the WASTE Club Stuttgart e.V. with its 160 members (in 2008) were mentioned as important and very positive aspects in the final report and resulted in the accreditation of WASTE without any complaints or changes. The chances for the WASTE graduates to find a job will even be higher with the seal of accreditation.

All members of the WASTE administration are very glad after the up-grading of WASTE and the very positive accreditation process. The rector of Universität Stuttgart, Prof. Ressel, mentioned the accreditation of WASTE as a positive model for other study courses.

▪ Michael Waldbauer und Ulrich Vogt

ASIIN e.V.

Akkreditierungsurkunde

Die Akkreditierungsagentur für Studiengänge der Ingenieurwissenschaften, der Informatik, der Naturwissenschaften und der Mathematik e. V. (ASIIN) hat auf Antrag der

Universität Stuttgart
Fakultät Energie-, Verfahrens- und Biotechnik

den

Masterstudiengang
„Air Quality Control, Solid Waste and Waste Water Process Engineering (WASTE)"

akkreditiert.

Die Akkreditierung wird durch Beschluss der Akkreditierungskommission für Studiengänge am 26. September 2008 ausgesprochen und ist zeitlich befristet bis 30. September 2014.

Der nicht-konsekutive Studiengang wird gemäß den ASIIN-Richtlinien als **stärker forschungsorientiert** eingestuft. Die Hochschule hat als Abschlussbezeichnung den Titel „Master of Science" vorgesehen.

20. Oktober 2008

Prof. Dr.-Ing. Heinrich Rake
Vorsitzender der Akkreditierungskommission für Studiengänge

Dr. Iring Wasser
Geschäftsführer

Akkreditierungsrat

Die ASIIN wurde vom Akkreditierungsrat in Bonn am 12. Dezember 2002 akkreditiert und zum 1. Juli 2006 reakkreditiert.

Change of WASTE Course Director

WASTE Course Director, Dr. Michael Waldbauer, resigned and is now assigned with new tasks in the rectorate of the Universität Stuttgart. Mr. Waldbauer was one of the founders of the WASTE study program and he was the Course Director from the year 2002 to the beginning of the year 2009. He built up the study course and he is significantly responsible for the topical high reputation WASTE achieves at the Universität Stuttgart and in the competition with comparable study programs within Germany. Among others his latest achievements were the change of the study program from three to four semesters and the modularisation of the lectures as well as the accreditation of WASTE. He got the chance for a new challenge, the Excellence Initiative of the Universität Stuttgart. The Universität Stuttgart is currently preparing proposals for "Graduate Schools", "Clusters of Excellence" and an "Institutional Strategy" - the three funding lines of the Excellence Initiative which is Germany's most important research funding programme. The Initiative aims to promote top-level research and to improve the quality of German universities and research institutions in general, thus making Germany a more attractive research location, making it more internationally competitive and focussing attention on the outstanding achievements of Germany universities and the German scientific community.

The WASTE Office Team and the WASTE Program Coordinator Prof. Baumbach wishes Dr. Waldbauer all the best with his new challenging task and for his future career!

Now WASTE has a new Course Director: Dipl.-Ing. Ulrich Vogt. Some of the WASTE Alumnis know him from the past. Mr. Vogt was involved in WASTE from the year 2002 till he left the Universität Stuttgart in the year 2006. He was in charge of the WASTE Examination Office for several years, he was member of the WASTE Examination and Admission Committee and he was the Treasurer of the WASTE Club Stuttgart e.V. Since June 2009 Mr. Vogt is back at the Universität Stuttgart and succeeded Mr. Waldbauer as Course Director of WASTE. We wish Mr. Vogt all the best for his new and also challenging task!

▪ Prof. Günter Baumbach, Program Coordinator

Studying WASTE

Expectations...

Dear WASTE,

My name is James Starnes, and I am honored to be a member of WASTE Generation 2009. Each of us will be living in Germany for the next two years, mastering a challenging curriculum and surrounded by students representing five continents. I am looking forward to improving myself academically while simultaneously cultivating my understanding of people and issues in other parts of the world.

While studying at the Universität Stuttgart, I also hope to build life-long relationships. The problems associated with waste management are universal, yet often geographically unique, and I believe by working together we are more likely to apply the right solutions to each problem. Building lasting relationships will only happen if we take time to know one another and understand each other's backgrounds. My hope is that we all study together, but also find time outside of academic life to share our stories and hear those of our colleagues. Even if finding such time is difficult, to succeed will vastly enhance our experiences in Stuttgart. It is my intention to represent the United States the best I can and share with you my love for water and people as well as my passion for engineering.

Ultimately, we are here to learn. I have resolved to expand my knowledge and enhance my technical skills every day. By working hard I will become better qualified in my field. Working hard and studying hard I am willing and ready to do. I hope everyone else is willing to do so as well.

▪ James Starnes

Excursion to BASF Ludwigshafen

During the two semesters of our studies in M.Sc. WASTE, we have learned a lot of issues related with chemistry, mechanical and thermal processes, as well as treatment of waste water in waste water treatment plants and solid waste in incineration plants or landfills. Knowing that the best way to relate all these fields of study is through practice, we had the opportunity to meet a German company that connects each of these processes: The Chemical Company BASF. For us, who have already learned such kind of basic concept to a certain degree, it is extremely helpful to have such an opportunity in order to relate the theoretical knowledge with the realistic units.

On October 29th 2009, Dr. Ulrich Eiden, lecturer of the courses of Thermodynamics of Fluid Mixtures and Thermal Process Engineering, organized an excursion to BASF, for our generation 2008. During this excursion an introduction of the company was presented and we had a visit to the "Besuchenzentrum", where we could interact with different items developed by BASF in connection with other industries, such as automotive, agriculture, paints, plastics, footwear industry.

After an incredibly delicious lunch, we visited areas of the company related with our study in High-temperature processes such as waste combustion and Steamcracker facility. The former related directly to our topic of study and it was one of the best applications we have seen of the engineering development on waste treatment.

The fact to be so close to the industrial use of the combustion as treatment of hazardous and industrial wastes was quite interesting and illustrative. We had the opportunity to look directly in the Rotary kiln reactor with more than 900°C inside. In the same way, the opportunity to have a look on the main process of the plant which is the Steamcraker was really impressive. This technique allows the raw oil to be divided into smaller fractions without damaging further chains and easy breakable compounds. The temperature inside goes from 800°C to 1200°C, breaking the long chains of naphtha into four and five carbon-long chains. After an oil and water cooling and phase separation process, these compounds work as input material to produce mainly all the other products of the plant.

Clearly both examples teach us a lot of how all knowledge is turned into reality in a big scale process, and furthermore, how the chemical industry can be worked out, in order to ensure high quality and quantity of product with high technology as well as with high responsibility for the environmental protection and waste treatment. Definitively a worth experience. We want to thank Dr. Eiden for offering us such an opportunity to spend an interesting day at BASF.

▪ Fabiola Salguero, Jose A. Castillo, Hao Li

Dates to note

- Waste Intercultural Meetings "WIM" in January and February on Tuesdays
- 24 Dec. - 6 Jan. 2010: Christmas Holidays
- 15 February 2010: Application deadline for 9th generation starting in Sept. 2010
- 20 February 2010: End of lecture period
- 19 April 2010: Start of lecture period
- July 2010: Summerparty
- 24 July 2010: End of lecture period
- Sept. 2010: Arrival of 9th generation
- 18 October 2010: Start of lecture period
- October 2010: Welcome Party
- Nov. planned: Grad. Ceremony 2010

The WAREM Excursion 2009: An Enriching Experience

In the summer semester, the WAREM – Water Resources Engineering and Management Master Program offered its students the opportunity to participate in a very interesting excursion around Germany. This one-week trip allowed its participants to get a very complete perspective of a number of important cities, as well as to take a look at processes and technologies in different fields, being water treatment and energy generation some of them. Students of other programs, such as WASTE, could also make part of this important journey.

The main objective of the trip was to visit some companies, allowing us to increase our practical experience. Besides that, travelling around the country allowed us to learn about the German culture and history. This is a great opportunity, taking into account that most of the students come from different countries all around the world.

Our journey started with a cultural tour in Weimar, a beautiful city located in the state of Thuringia. It is full of poetic and musical history. Additionally, it was the place that met some famous geniuses that are gratefully remembered today such as Friedrich Schiller, Johann Sebastian Bach and Johann Wolfgang von Goethe.

Another amazing place that we visited was the so-called "F 60 - the horizontal Eiffel Tower". F60 makes reference to its height of 60 meters. It has a length of 502 meters and it is an overburden conveyor bridge used in brown coal (lignite) opencast mining in the coal region of Lusatian - Germany. This is the largest movable technical industrial machine in the world. It was used only from 1991 until 1992, due to some governmental priorities after the reunification of Germany. Nowadays, it is open for visitors and is considered part of the European heritage.

The visit to the country's capital, Berlin, was another highlight of our journey. There we had the chance to take a look at one of the plants that provides the drinking water to the city. Considering that Berlin has 3,4 million inhabitants, every day approximately 585,000 m^3 have to be supplied. The water purification plant in Friedrichshagen has a maximum capacity of 220,000 m^3 per day and the process of purification uses groundwater. This plant has been in operation since 1893 and is one of the three municipal waterworks that Berlin counts with. During the visit, we could also see from an applied perspective the main process of water treatment, for instance, the removal of undesirable chemicals and biological agents.

The Waβmanndorf waste water treatment plant was also included within our visit to Berlin. The plant, which has a capacity of 590,000 m^3 per day during dry weather, treats part of the industrial and residential waste water of the city. The processing of the waste water is based on mechanical and biological steps. Afterwards, the sludge treatment continues. The plant sections of the mechanical treatment are the inlet structure, screens, grit chamber and the primary sedimentation. The biological part involves the aeration, denitrification, biological phosphate removal, and the secondary sedimentation.

With the sludge treatment, biogas is produced during the digestion. It is then used for heating the sludge and buildings, being also converted into electricity covering the 60 % of the electrical requirement that plant has.

Besides the above mentioned places and facilities, we also had the opportunity to visit other important cities such as Dresden , Berlin ,Wismar, and Hamburg.

We are already waiting for the next year's excursion! It will be, for sure, another enriching experience in our time abroad.

▪ Sandra Palacio Vélez

WASTE in Switzerland

On the day before Valentine's Day 2009, WASTE was on a visit at the Kölliken Hazardous Waste Landfill Site in Switzerland (German Sondermülldeponie Kölliken - SMDK). After a snow-ball fight meant to wake up those who were sleepy and benumbed after the two hours travel, our visit began with a short introduction on the site safety rules.

Situated in Kölliken, part of the Kanton of Aargau, SMDK had been in operation from 1978 to 1985 with the main role of landfilling hazardous waste. At that time, environmental care was not an issue as nowadays; therefore all of the operations were done without a systematic control. Along with its shutdown in 2001, a great hazard has been raised: contamination of groundwater (which was always in contact with the landfill body).

Rehabilitation was therefore essentially to start as soon as possible. All the studies performed drew to the conclusion that the only way to successfully rehabilitate the site was a total restoration. Though, a very costly decision: 350 Mio. $. The rehabilitation is nowadays carried out in order to remove all waste stored in the landfill (a total of 250,000 m^3, mostly coming from chemical industry). The entire site where the excavation of waste takes place is covered by an avant-gardist building that will be moved as the rehabilitation process proceeds over the landfill site. The covering construction kept under low-pressure conditions plays an important role in minimizing the emissions during the excavation process. The material taken from the landfill is analyzed, repacked and environmentally safe disposed via suited disposal facilities.

Except hearing the Swiss German, we have seen how creativity and technology could work in an embedded way to assure environmental and economical success. Besides, we were reminded that present decisions are always influencing the future and being a visionary is a very good skill!

▪ Diana-Maria Cerceș

Recent events

Graduation Ceremony 2008 - We were the Party Gerneration...

Our graduation party was the most especial event that we were looking forward. We had to wait for it more than two years. We had prepared ourselves physically and emotionally and two weeks before there was no other theme of conversation. This ceremony was not only awaited from us, but also from many of our families and friends, who came especially to this event. We had visitors from many countries around the world and the festive spirit was all around. All of us were so excited for this date, and it really overpasses our expectations. The ceremony was held at the Internationales Begegnungszentrum (IBZ), on the 26th of November 2008. The center´s entrance was blazoned by the students from the WASTE generation 2008, who did a great job. The ceremony started with welcoming addresses held by the professors Dr.-Ing. Ulrich Nieken, from the Faculty of Energy Technology, Process engineering and Biological Engineering and Dr.-Ing. Rainer Friedrich, deputy director of the Institute for Energy Economics and the Rational Use of Energy (IER). Their emotive speeches gave the starting point to the night.

The ceremony also included a speech by Mr. Roland Brunner, International Director from the Legacy Program Green Cross Switzerland. The presentation was focused on the world's worst pollution problems and its consequences. This speech dealt with many interesting topics about the environment and its protection and gave an important vision about the relevant mission that we would assume in the future as WASTE master graduates.

Later on, the saxophone-interpretation of the student Hao Li from the WASTE generation 2008, about one of the Disney classicals, filled the environment with a breathtaking feeling.

The following speech was given by the student representatives of the 6th generation Carlos Azucena and Eva Carranza. Their presentation was entitled "Hopes of Yesterday, Challenges of the Present and Dreams of Tomorrow". They made a small description about our live through the WASTE master program. Their brilliant speech touched deeply the hearths from the audience.

Finally, Prof. Dr.-Ing. Ulrich Nieken was in charge of giving the Waste Master program diplomas and congratulating each one of the graduates. After many pictures, the next moment was a very special one; it was the time to share the delicious food prepared by the generation 2008 and to speak about our plans and expectations about the future in Germany or in our home countries.

The last moment and for many one of the most waited: the party time. We had the possibility to dance for many hours to different kinds of music, like we were used to do it during the master, because our slogan always was: "There is always time to study, party and share time with our friends".

▪ Natalia Alejandra Uscátegui Ruiz

Excursion to Schloss Solitude

A couple of weeks ago I had the opportunity to visit Schloß Solitude together with the students from the WASTE Master Program, generation 2009. As a student of another program (COMMAS) I think all these kind of activities something that makes the newcomers feel part of the WASTE family.

As soon as we arrived to the castle the photo session started: group, individual, landscape, every kind of pictures. Afterwards the guided tour began, and thanks to the nice guide we found out many things about the history of the castle.

Because of the tall walls, the colors and the lack of furniture almost all the rooms were colder than outside, so our feet and hands froze but we continued with the tour.

There was a secret door in the castle which took us to a room where literature discussions used to take place.

After the castle tour we walked through the woods to the Bärenschlößle. Because it was autumn, there were leaves of many colors laying on the ground which made the view more pleasant.

A curious fact is that there is no bear in that area but many landmarks are named related to bears.

After the long long walk through the woods we finally made it to the small but cute „Castle of Bears". There we received our prize for the long walk - yes, we ate. The food was really good and we all enjoyed something sweet for the dessert. And the best part of our meal was the warm and fun talk. There I had the opportunity to talk with the people from the WASTE club.

I would like to say that you all are amazing and I had a great time, which made it an unforgettable experience.

▪ Sergio Morales Ortuño

Christmas Party 2009

December 3rd 2009 started off as a normal day of classes, classes and more classes. I was drowning in to the sea of workload, which was building up; the only thing that kept me afloat was that merry thought that I would be Santa Claus in the evening. Yes, today was the Christmas party of the WASTE program, to which I belong, and I was the official Santa Claus. As the clock ticked along, the mood among the WASTE students started getting merrier. The food and drinks started arriving and to top it all there was a sparkling Christmas

tree, which made the atmosphere just like it is on Christmas eve. The party started at seven in the evening, beginning with Santa (me) distributing gifts and a short story about Christmas. The story was read out for everyone present and I am sure all of them have learned a lot more about this merry festival. The real party began after this with everyone grooving to the rocking music provided by, DJ Luis, who is a student of the WASTE generation 2009. There was also a mesmerising performance by Hao Li, of generation 2008, who played the Saxophone and left everyone speechless. This

party was one of a kind; I say this because it was made possible by the combined efforts of students of both the generations (2008 and 2009). Last but not the least, how can one forget the evergreen "WASTE Club", which was the sponsor of this grand party and hopefully will sponsor many more events like this in the future. As all good things come to an end, the party ended and left everyone craving for more. This party assures me of one thing, if anyone ever wants to know what a Christmas party is like, the place to go is "WASTE" at UNIVERSITÄT STUTTGART!!!!!

Merry Christmas

▪ Abhinay Kulkarni Krishna

Running for WASTE

As we were heading full of confidence towards the great event, at some point along the way two young students asked us: "Where is the starting point for the Marathon?" That was the first occasion when we had the chance to size-up our compe-

tition. All over a sudden the situation seemed not so bright anymore: they were very tall and just keeping up the pace with them while walking meant that for one step of theirs we had to do almost two. But this bitter taste disappeared a few moments later when we got to the starting line. Just across the lake to Bärenschloss, people of all ages, nationalities, shapes and sizes, gathered for the famous Bärenminimarathon, a yearly sporting event at which WASTE program sends each time brave representative teams.

The minimarathon supposes crossing the 5 km around the three lakes at Bärensee by running… most recommended. However, jogging or even walking are also allowed since this is, beforehand, a nice and amusing social event.

The competition, which usually takes place in July, is opened for everybody and represents a wonderful opportunity to win a personalized Bärenminimarathon T-shirt or to get your picture on the wall of fame in the IFK kitchen.

▪ Bogdan Rentea

Ludwigsburg at Christmas

To study in Germany is also a very good chance to taste the local culture, and of course with the approaching of Christmas, we get more of these chances. On Saturday, 28 of November, we visited the famous Christmas market in Ludwigsburg, organised as 17th WIM event by the WIM coordinators.

The whole market is decorated by lights, all different lights making each stall unique. Standing in the Christmas market,

it feels not only exotic but also "warm" like home. Each stall sells its own unique stuff; you can not find 2 stalls selling the same things. I still remember one stall selling Fengshui(◎◎)-some small Asian items like talisman which may give you good luck, although the Fengshui they're selling are totally different from ours!

As usual, people were very friendly with each other, but in the Christmas market, they will say "Hallo" to you with their Glühwein, therefore it is always recommended to have some Glühwein in your hand. Here comes a problem: because the weather is cold and Glühwein tastes perfect when it's warm. As a result I have to drink it as quickly as I possibly can in order to buy a new warm one. What a trip!

▪ Jiabing Xia

Welcome Party 2009

We, WASTE Generation 2009, held a welcoming party on 27th October. This party was well organized by the WASTE staff and Generation 2008. We all enjoyed the party so much and I am pleased with the study in WASTE and with good classmates! We would like to organize the next welcoming party for the next generation!!

▪ Nobuhiro Tanigaki

Institute Portrait

Institute for Interfacial Engineering (IGVT)

The IGVT belongs to the Faculty of Energy Technology, Process Engineering and Biological Engineering of the University of Stuttgart (Faculty 4), established at the beginning of 2008. Most of the Institute's activities are currently carried out on the premises of the Fraunhofer IGB, facilitating the close collaboration between the two bodies. Since summer of 2008 the IGVT has also been using offices, laboratories and pilot plant facilities at Stuttgart University's multipurpose branch at Allmandring 5b. At the IGVT, academic fundamental research is combined with application-oriented approaches, incorporating ideas from practice. Today, at the end of 2009, IGVT has a staff of 50 and an annual research budget of about €2 million.

Research and teaching:

The IGVT's mission is the characterization, design and functionalization of surfaces of organic, inorganic and biological origin as well as of nano-, bio- and hybrid materials and their interaction.

The Institute's research activities are grouped in five thematic categories:
Chemical interfacial engineering
Physical interfacial engineering
Biological interfacial engineering
Medical interfacial engineering
Environmental interfacial engineering

Since taking over as head, Prof. Hirth has worked with his staff to extend the scope of the Institute's research activities to include important new themes such as industrial biotechnology, renewable raw

materials and nanobiomaterials. Together with associate professor Günter Tovar he is also designing a new teaching program of lectures, practicals and field trips. Within the WASTE master study program Professor Hirth is currently focused on „Sustainable Production Processes".

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Professor Hirth: The interfaces are the place where innovation occurs

Professor Thomas Hirth took over as head of the Institute for Interfacial Engineering (IGVT) on April 1, 2008. Since December 1, 2007 he has been the Director of the Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB. Born in 1962, he completed his studies of chemistry at the University of Karlsruhe in 1988. After his PhD studies in 1992 he went to the Fraunhofer Institute for Chemical Technology ICT in Pfinztal. Here, he turned the environmental engineering sector into one of the largest and most successful departments of the civil research sector. Since 2005, Hirth has been coordinating the innovation subject "Industrial, white Biotechnology" within the Fraunhofer-Gesellschaft. Because the universitary part has been missing so far he applied for the IGB management with the function as the head of the university institute. Another challenge was that at Fraunhofer IGB chemists and physicists work together with process engineers. He has always enjoyed working in interdisciplinary project teams, as for him "It is at the interfaces between the different disciplines where innovation occurs".

Cesar Aleman

My name is Cesar Aleman. My homeland, Honduras, lies at the centre of the terrestrial area that connects the continents of North and South America. There, I finished studies on Industrial Chemical Engineering and had some working experience in the field of Industrial Water Treatment.

During the year 2004 I participated in a volunteering program in Belgium. This platform gave me the opportunity to contact people from different places and on my trip to Germany I visited a friend who was studying the WASTE program.

After my volunteering year, I went back home with new ideas and wanted to work in areas such as water treatment for human consumption and wastewater treatment. Then, in the year 2007, I started studying the WASTE program.

After almost three semesters, the period for doing the master thesis had arrived and with it the search for an interesting topic. At that time, I got an email from a WASTE alumnus telling about available thesis topics at the former Fraunhofer TEG and after a while I made the proper contacts. Soon, I was immersed into a new world…ultrasound, cooling lubricants and microorganisms. The thesis dealt with sonication of biological contamination in metalworking fluids. Some of its connections to my environmental studies were substance reuse, load reduction going into the industrial wastewater plant, indoor air improvement and others since sonication of these metalworking fluids have a negative impact in their biological populations (microorganisms can diminish the fluid's quality) thus increasing their lifetime and decreasing the associated health risks for workers.

At the beginning of the year 2009, the department where I was doing the thesis became part of the Fraunhofer IGB as the newest department called Physical Process Technology. By March, I have done the final presentation of the thesis and was offered to continue working as a research assistant in the ongoing project related to my thesis. Besides that, I was involved in supporting a student with her thesis' experimental part and exploring in a prospect for a future PhD thesis as well.

Nowadays, I am a scientific staff member at the University Institute IGVT. I am working on a PhD topic that is about microorganisms and sensors at the moment.

In the future, I would like to be involved in projects, either in developed or developing countries, dealing with renewable energies, water treatment and emission reduction.

• Cesar Aleman

Alejandra Campos

My name is Alejandra Campos and I come from El Salvador. I studied chemical engineering in my home country and in 2007 I started to study WASTE. After two semesters of lectures (they were "just" three at that time) I was ready to work on my master thesis. I started asking professors and looking for possible topics in different institutes and I finally found out about Fraunhofer through an email from the WASTE office.

During the meeting with my future supervisors they presented me different topics and I finally decided that I wanted to work on the field of nutrient recovery. The aim of my master thesis was to recover phosphorus and nitrogen from wastewater as valuable fertilizer. The peculiarity of the investigation was that the recovery of the nutrients had to be carried out using a technology beyond the current state of the art.

After many weeks of reading and discussions with my supervisors we finally decided the reactor design and the different experiments to be carried out. As a result of the study, we could conclude that the separation of nutrients using this new technology was a feasible process with many advantages. Personally, the experimental investigation and analysis was the part I liked the most.

It was very satisfying to work in the development of new technologies that help to protect the environment and reduce pollution. Moreover, I have the opportunities to relate with young scientists and students from Germany and many other parts of the world in a very friendly environment.

I finished the master thesis in March 2009 and then I stayed in Fraunhofer IGB for further six months as a research assistant. Basically I continued working in the same topic of nutrient recovery from wastewater. In October 2009, I started in IGVT with my PhD investigation which focuses on the recovery of organic phosphorus from animal manure. I am sure that with dedication and hard work I can reach my goals after three years.

Studying the WASTE program and working at Fraunhofer IGB were a very rewarding experience since I could address my personal and professional goals to accomplish what I want to do in my life.

▪ Alejandra Campos

Jennifer Bilbao

Living, studying and working in Germany has been one of the most difficult, but at the same time, one of the most rewarding experiences I have ever had.

Since I was little I knew I wanted to study a subject in which I could contribute to make our planet a cleaner and healthier place to live. The fact that I was born in Ecuador, helped me realize about the reality of green issues in Developing Countries. After graduating in Ecuador as an environmental engineer, I decided to come to Germany to study in the WASTE Program.

I knew it was going to be a huge challenge, since everything was new for me: the way of thinking and working, the language, the culture. Everything! Being so far away from home was incredibly difficult sometimes, and there were some days I just felt like giving up. However, as time went by not only my ability to speak German improved, but I was also able to apply the knowledge I gained in WASTE.

Since the first months I was in Germany I had the opportunity to work at Fraunhofer IGB as a student assistant. Luck was on my side; my former boss at Fraunhofer Institute had acquired a project in Ecuador, in which the solid residues from the biggest food company in Ecuador had to be treated in biogas plants. I learned to appreciate the working environment at Fraunhofer. That is why I also decided to perform my Master Thesis at the same institute.

Later on I have been given the opportunity to continue with my professional development by starting my PhD at Fraunhofer IGB. My Thesis is about the optimization of anaerobic digestion through nutrients recovery. I am very pleased I can work on such an important project, since it brings together all the concepts of sustainability. First of all, we will not only clean an polluted water, but in addition we will produce renewable energy (biogas) and we will generate valuable fertilizers for the agriculture. All three results will have a great environmental impact, since they contribute to the solution of three of the main issues of today: water, food, and energy!

I am very happy I decided to come to Germany. Of course, it was not always easy. But actually only tough experiences can make us grow and learn. Right now, I am so grateful for all the experiences I have gained here. I have made hundreds of friends from all over the world and I love my work, since I know I can contribute to improve the living standards of many people. I can only advice you to be patient, do not get frustrated so easily, and look at everything with sense of humor.

I would like to thank the WASTE Program and Fraunhofer IGB for having given me the ability to view the world, and its issues, from new perspectives.

▪ Jennifer Bilbao

Life after WASTE

Ricardo Cardoso at Kuttner do Brasil

Firstly I want to thank the great WASTE team for inviting me to write about my current professional activities after graduating.

I have finished my Master Thesis in December 2008, and returned to Brazil just after that. Mid-May 2009 I have found an interesting job in the Company Küttner do Brasil, belonging to the Küttner Group, with headquarters in Germany (Essen) and

office near my city (Belo Horizonte) as well as in other countries. The main activity of this company is to develop turnkey installations for process, melting and material handling in the iron and steel industry. In 2005 the company started to invest in clean energy projects, dealing especially with green waste and municipal solid waste treatment. The Küttner Group has obtained license from the Swiss „Kompogas" to build biowaste fermentation plants and has commissioned its first plant in Rostock in 2007, with capacity to process 60.000 ton/year of municipal biowaste. Besides that, Kompogas has several units in operation in Europe, especially in Switzerland and Germany. The process consists of mechanical biological treatment (MBT), based on anaerobic fermentation of organic waste, at thermophilic conditions.

In Brazil there are still no plants in operation, and this is what we trying to do: install this technology. My tasks at the first month were to help in the contact with potential clients, making business plan and participating in meetings. Just after one month of work I was sent to Switzerland for 2 months to work in the Company CTU, since the Küttner Group has acquired the majority of its shares. CTU has license to install Kompogas plants in Europe, and at the moment they work for a project in Portugal, designing a plant with capacity for 60.000 ton/year. I had the chance to help them by translating important documents in Portuguese while working with P&I diagrams, mass balance, learning the process and visiting plants. Now I am back to Brazil, maintaining contact with suppliers of machines and equipments, expecting to start the first plant within the few months.

If you are interested in the Kompogas process, I suggest referring to www.kompogas.ch or www.kuettner.de

▪ Ricardo Cardoso

Funny stories

Have you ever tried "Vorlesung"?

In addition to the well known lectures given in English, from the 2nd semester, there are various other "Vorlesungen" available as well, which are given in German. It is hard to muster up our courage in order to take it. Among the students from 2008 generation, Francisco Miguel Teran Camarena is the one of the very few students who has ever taken the "Vorlesung" during the last semester. The following short interview with him will enable you to share his experience, and furthermore, you might be inspired, to step in the classroom where the lecture is given in German.

Hao: What did enable you to have a try on taking a "Vorlesung"?

Miguel: I always like to do some different things. In addition, isn't it weird, that when you are studying in Germany without taking a lecture which is given in German? That is why I made the decision to take it.

Hao: What was the impression of the first class?

Miguel: To be honest, it was miserable! It's very ashamed to say, but, actually the only two words which I could understand were "Hallo" and "Tschüss". Nevertheless, I didn't become disappointed. Instead, I insisted on taking that lecture during the whole semester. And as the lecture passing by, the situation was getting better and better. All in all, it's just a matter of will.

Hao: Did you spend a lot of time after the lecturer?

Miguel: Of course! Especially in the beginning of the lecture period, there were hundreds of new words which I heard and didn't know yet. Looking them up afterwards has already taken me a considerable time, not to mention to make a short summary on the intraday lecture.

Hao: At the end, for those kinds of students, who are going to take, or let's say, just have a try on the "Vorlesung", what would you like to suggest?

Miguel: First of all I would say that you'd better bring an electrical dictionary with you, which would be helpful, especially in the beginning. Then try to choose the lecture which is given in a small group, the closer you and the professor are, the easier you could concentrate on the lecture.

▪ Hao Li

Intelligence

Maths, music, sports… I am sure that everyone of us had some problems during our elemental education, in one subject or more. Maybe someone called us "unable" to do that. Humans have seven types of intelligence: logical-mathematical, kinaesthetic, interpersonal, intrapersonal, verbal-linguistic, visual spatial and musical. We are now students of a master program and our minds are dedicated to build, design and other technical purposes, but, is that enough? The history tells us about people like Leonardo Da Vinci who was an architect, engineer and painter.

The mind is an incredible gift; it can be used to different purposes even if it is not entirely dedicated to one kind of "intelligence", let me give you two examples:

Hao Li

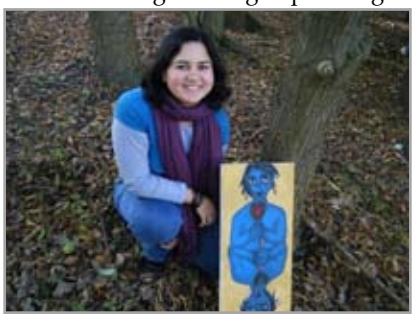
Hao is a student of Environmental Engineering from Beijing, China, but not only that; he is also a Sax player.

He enjoys playing jazz, classical and pop music, and usually plays to his friends and colleges like he did in the last WASTE summer party. Hao thinks and also feels!

The necessity of playing music comes because of a relaxing purpose, but also a way to express his instinct. But he surely has never skipped a lecture because of that! To the question if he would change engineering for music, he took a moment and answered that he would maybe do so in the future after getting some achievements and fulfil some of his plans. He believes that "achievements need 99% of hard work but also 1% of talent". We all in the group think he is a talented person.

Cruz Rodriguez

"A contradiction" is what she replied when it was asked about talking about herself. She considers herself a rational person but also a person who feels; she likes to follow "calls" and one of her calls besides engineering is painting.



Cruz is a Chemical Engineer of Tabasco, Mexico. Painting for her is a way to exteriorize her inner-self, she prefers abstract images to transmit this part of her. This all began with the question "can I do that too?" while she was studying at the university. Engineering is about dimensions, painting is also about that but in a different way, why not give it a try?

These are only two examples, I am sure there are much more. The most important thing is, that we can try another activity to do as well as our career. Maybe we can find something valuable, or another calling…

▪ Miguel Terán

Letter to WASTE

Dear WASTE; November 11, 2009

After being here for some time, I think it is necessary for me to tell you how everything has been from the very beginning. All started as follows:

It was cold, and wet. The rain covered everything the day that I was supposed to check the results for the German course, and as I expected, I was in the lowest level. There was no surprise there, because before coming to Stuttgart I had no knowledge of the German language. Everything was confusing, I just knew I was supposed to take a month preparation of Deutsch and that classes for the M.Sc. WASTE would begin on the middle of October.

I met some people in the course, some names and known faces started appearing in my everyday life. I met "Bin Bin" and Wei. There were three guys from Nepal that I recognized as WASTE students, but we didn't talk much at that time. I met two Rumanians from Waste whom helped me get to Kaufland; I didn't know exactly their names, but I made sure to know them.

There was also Sabbir, Vishal, Arlyn and many others. But as the strangers they were, I only had the possibility to guess what was coming for me this next 2 years.

We started taking classes, and presented each other. Some arrived late, like Armando or Jose but it was easy to start seeing them as fellow students. Then there were more classes, travels, parties, sharing of ideas and a kind of brotherhood that does not recognize countries. We were just people trying to be the best that we can be.

After the first semester, there was this feeling of happiness and freedom. We survived the first examinations.

More than a year has passed now, and we have the opportunity to watch the new generation experience the excitement that we lived. I wonder if they know the marvelous things that they will experience here. The new friends that they will make and knowledge they will gain.

Sometimes I get sad. I look at the window, and think about the future where many of the people that I met here will be far away. The jokes, the laughs, the stress, the surprises. I only hope for them to have a very good future and to use all we learned in the best way. I hope everyone lives a very happy life. I hope to find them someday in a work trip to China, Nepal, Mexico, Colombia, Brazil, India, Bangladesh, Rumania, Guatemala, Honduras, Cameroon or Panama and be able to express them how thankful I am.

Life goes on, but I keep the memories with me. Beautiful memories of extraordinary people that deserves my respect and admiration.

Kind Regards!

The WASTE Club Stuttgart e.V.

WASTE Club - actual state of affairs

Every year, a variety of activities are planned by the WASTE Club Stuttgart e.V. which are designed to introduce new members to the alumni, and also provide opportunities which build social and academic support networks. One of the notable events that the committee organised for the work year 2009 was the "Summer Party" on 23 July 2009, an event that has always been a huge success year after year. Traditionally, this day attracts the majority of the alumni, and this year was not an exception. Numerous activities which were planned by the students of generation 2007 invited the most enthusiastic participants into the stirring dances and fun events.

The welcoming of the new batch of students of generation 2008 was held on 27 October 2009. The night of activities provided the platform of connection between the old and new students. Ideas were shared and new bonds were made.

A visit to the Solitude Palace followed by a hike back home is starting to become a tradition since 2008. On 6 November 2009, a short little tour around the rococo palace was conducted before the participants embarked on their "treacherous" return journey on foot in the moon light. At the midpoint of the hike, the participants were treated to the unique culinary experience at the restaurant of the Bärenschlößle.

On 28 November 2009, the committee members decided to bring the students and alumni to experience the festive spirit of the Ludwigsburg Christmas Market. It was definitely an enjoyable and unforgettable evening as the students and alumni were invited to a taste of Christmas in Germany. As the participants headed towards the venue, the aroma of candied cookies and Glühwein hung in the air as they experienced what goes back to the late middle ages as a way to celebrate Christmas during advent in the German speaking part of Europe.

In the coming months, the club aims to bring more activities to both students and alumni, to provide everyone with an avenue to interact and to network.

Reflecting back the WASTE club's achievements, the club is full of its promises and hopes. As WASTE Club members and alumni, we are bonded by friendships that we have formed from years being together. As graduates, we have started contributing to society in various ways. We grow mature, and have numerous commitments and pursuits. Memories and connection are fading away. Let that not be the case. The club can help by providing the platform for this connection. While we envision growing the club into a more professional body, we still want to retain the family-like spirit, where members are bonded to each other in a very personal way. We hope that the WASTE Club will always be a great avenue for you to find and keep in touch with old friends, to make new ones and stay connected with us.

On behalf of the WASTE Club Stuttgart e. V., we would therefore like to thank all the new, existing and alumni members for your past enthusiastic support and we look forward to your continuous participation in this coming year 2010.

▪ Mona, Ulrich and Keng Been

Where to go in Europe?

Gemeinde Ingenbohl
6440 Brunnen

Brunnen - Switzerland

This beautiful town is located on the Lake Lucerne and it belongs to the Canton of Schwyz. Brunnen has a population of 7.000 inhabitants and the official language in the canton is German. If you have the opportunity to visit this village you will be able to experience the calm of the Alps as well as the extraordinary view of them. For the best time of the year to visit Brunnen it depends on the activities you would like to do. During the winter all the town and its surroundings are covered by snow. On the other hand you will be delighted by the firework on the National Day (1st August) that takes place at the lakeside. The accesses to the village are by train, boat or local bus. There are several options for the accommodation such as: Group accommodation and camping grounds, Apartments and Hotels (bed & breakfast). Finally I would like to invite you to have daring holidays in a calm atmosphere.

For adrenaline lover´s you should try some of the following activities available during the summer and/or winter:

Canyoning in the middle of the Alps

Wreck diving (It is an artificial reef made with a old boat called Bruno which is 15m depth)

Paragliding

Canoe

Biking

Hiking

Boat trips

Windsurfing

Mountain tour

Skiing

Snowboarding

Lakeside concerts (Blues, jazz, folk music, brass, rock, steel drums)

Cultural walk (through the village to discover the peaceful sights)

▪ Cristhel Mora

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