JADEHOCHSCHULE
Wilhelmshaven Oldenburg Elsfleth

USA-Excursion 2014

Department of Engineering

September 07, 2014 – September 19, 2014

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Introduction

The cooperation between the Jade Hochschule Wilhelmshaven and the Texas Tech University exist for more than 25 years. The main aim of the excursion was to strengthen the cooperation. Because of the cooperation it is possible for students of the Jade University to acquire a Master's degree at TTU, without paying study fees. Another benefit of the cooperation is the annual summer school in Wilhelmshaven, with students from booth universities.

The excursion was the conclusion of a project work with students from the Jade HS (Department of engineering) and the TTU (Institute of wind energy). The main topic was wind energy. There were four groups, each of the groups exist of three American and three German students. The subjects of the groups were:

- Comparison of different technologies (generator, gear box, grid connection, etc.)
- Propeller
- Controls
- Repowering

The group work started in June 2014. The aim was to prepare a presentation about the given subject. The American and German students worked together over a long distance. They used different communication platforms, like skype, facebook and whatsapp. The last step of the group work was the presentation during the excursion.

Daily Reports

Flight from Germany to Dallas

September 07, 2014
Björn Willers

The flight

The excursion started at 4:30am at the airport in Bremen. Everyone was on time, no one forgot anything and no luggage was too heavy. Therefore, we were able to leave on time at 6:05am to Frankfurt, where we landed at 7:10am. Our plane was a Boing 737-500. In Frankfurt we had some time to eat breakfast, watch at the shops and to prepare our presentations. At 10:15am our flight to Dallas started. The Airbus A340-300 was very comfortable, especially the entertainment program. I watched 3 movies and slept a lot, like the most of us. After 10:55 hours we landed in Dallas/Fort Worth, at 2:10pm local time.

Drive to the hotel

After passing all controls on the airport we went out of the airport and in this moment everybody recognize the hot climate in Texas. We took the bus to the car rental station and picked up our rental cars. We got 2 Volkswagen, 1 Dodge and 1 Chrysler. All of them were medium-range cars. With these cars we started our first car trip. I was one of the drivers. At first it was a little bit difficult to get used to the other traffic conditions, but the differences were smaller than expected and therefore the settling succeeded quickly. After half an hour we arrived at the hotel. Our hotel for the first night was the “Super 8 Richardson Tx”. It was a nice and simple hotel, with everything we needed. There was even a pool, which some of us used directly.

Figure 1: Our first motel "Super 8 Richardson Tx"

Dinner at Bone Daddy’s

We had our first American (or Texan) dinner at “Bone Daddy’s House of Smoke”. This restaurant was next to our hotel and therefore it was possible to walk. With the first view into the menu we saw what we expected, a lot of meat. They offered many varieties of meat, burgers and a lot of delicious sides. It was our first group evening and we talked about the schedule for the next days.


Figure 2: Dinner at Bone Daddy's

The end of the day

The different climate in Texas (35°C and high humidity), the jetlag (-7 hours) and the travel day in general were exhausting for the most of us. Therefore there was no activity after dinner. Some people used the pool facility of the hotel. Although the day was very exhausting, everybody was happy to be in Texas and that the final phase of the project had started.

Fieldtrip to Variosystems and drive to Lubbock

Rena Oltmanns
September 08, 2014

After waking up so early at 7 o´clock, our hotel served a small typical American breakfast. We ate frozen waffles, cereal and drank orange juice without any fruity taste.

After check-out at 8:30 a.m. we drove to Variosystems. Due to the high volume of traffic on our way it took about 50 minutes to cover almost 40 km.

Figure 3: Explanation about the producing process by Alfred Langguth

We were warmly welcomed by Peter Ermish, one of the directors of Variosystems Inc. Peter Ermish, Peter Germann and Norbert Bachmann are the founding members of Variosystems. He led us to his large, bright conference room. He talked to us in the German language, so it was very easy to understand everything.

Variosystems is a services industry, headquartered in Switzerland. The company is active worldwide, for instance, production sites in Sri Lanka, China and the USA (Texas). With 1110 employees this company manufactured various printed circuit boards and other electrical components for certain firms.

Mr. Ermish told us about the history of his company and his personal career. We had a big discussion, if foreign workers, especially from Asia and Mexico, should take executive positions in the company.

Our conclusion was that this would take a long time and the workers would have to show a lot of effort to make the company`s mentality their own.

Also Mr. Ermish was very interested in our studies and our Jade Hochschule, he even offered some places for practical training for the future.

After two hours of conversation we saw the production area. We were allowed to look into every device, for example we learned that for the coating of soldered joint it`s very important to control the speed of sweep.

At last we visited the office wing. This room is very comfortably furnished and the employees can see and talk to their coworkers. Also the office of Peter Ermish is a small modest room next to the other office rooms with a glass wall, so he is always close to his employees.

Figure 4: Mechanical soldering

Figure 5: Manuel assembly, soldering and mounting of assemblies

Variosystems is a company with a friendly working environment which cares for its customers and personnel. Every office worker had assembled his office furniture, on his own. So they could set up everything as they wanted.

At 1:45 P.M. we had to get on our way to Lubbock, a 5 hour drive. We took the scenic route, leading us to a restaurant, where we had lunch and then continued our journey.

The Texas country really looked like it is stereotyped in movies with oil and gas pumps in the fields next to the endlessly long highway and little villages scattered apart in the desert-like landscape.

We reached Lubbock around 8 o´clock p.m. The first stop was at a restaurant named Crickets. Upon arrival we also got to admire our partners from the Texas Tech University for the first time.

Two hours later we checked into our hotel. Then we returned to Crickets, where in the meantime a lot of people had arrived to spend some amazing time with friends.

Figure 6: Road to Lubbock

Campus tour and Group work

Johanna Timmermann
September 09, 2014

Our first night in Lubbock ended quite early as Michael Johnson from the international office awaited us at 7:30am at our motel. He directed us the way to the buildings of the national wind institute on campus and we were able to get first impressions of the TTU. We were very impressed by the size of the campus and glad to be guided in order to arrive in time for the breakfast we were invited to by the College of Wind institute.

Kacey Young and Matt Salanda kindly welcomed us at the office of the National Wind Institute and we had the chance to catch up with some of the American students as well with some double degree students from Jade HS we met the evening before. A typical Texan breakfast was prepared for us and we were quite surprised being served tasty breakfast burritos and fresh fruits as we had expected a more common American breakfast with rather sweet dishes. So that was a good and at the same time delicious beginning for our first day at Texas Tech.

Figure 7: Welcome Breakfast

After a very warm welcome from as well, Andy Swift, Audra N. Morse and Stephen Ekwaro and some words form Mr. Köster in behalf of our group we headed to the international office in order to meet our guide Frank for the campus tour. Starting from there we got an excellent tour around the campus, at first walking along the engineering key and having a sneak peek to some lecture halls of the college of engineering.

Figure 8: Racing cars, mechanical workshop

Since we asked our tour guide to focus on the facilities of mechanical and electrical engineering, we were able to visit some of those laboratories and workshops. In the laboratory for microelectronics one of the Professors introduced us to a project on motion sensors on which students were currently working at. In the buildings of mechanical engineering we got an overview of research projects from the past and got an idea of the good opportunities students have for realizing their own ideas on research projects. Amongst other things we saw racing cars in the workshop, which made us curious. We learned that building and developing those cars can be chosen as course for two semesters, which implies as well taking care of finding willing sponsors as continuous development and improvement and that we thought is a quite interesting project.

Walking back to the Wind institute some already had gained a little orientation of the huge campus but the majority was still overextended by its numerous buildings and streets looking all very similar. At the wind institute we met Kacey Young and Larry Tanner, who both gave as a very interesting overview about the ongoing projects and work at the institute.

The next stop on the tour was the Student Union center. The Student Union provides an environment for relaxation and social interaction. Moreover you can find a variety of snack bars, the university own bookstore, a Texas Tech Fan Shop and a lot of other facilities. The area in front of the Union center is a place where all people can promote their concerns or clubs, so there are always people try to catch your attention and lure you with free things.

After we enjoyed a short break and a ginger iced tea while watching the active going-on around the Union center our tour carried on to the library. Again we were impressed! The library is like the rest of the TTU huge and well equipped. For example there are several working stations with large-format screens, which students can book for group work or as our guide told us some meet there for watching sports. Later on we would come back for our group meeting to work on those computers as well.

Figure 9: Back side of the library

A highlight of our tour definitely was the Rec Center, short for the Robert H. Ewalt Student Recreation Center. Everyone was really impressed by such an enormous sport building as well as the professional high tech equipment. The sport center has an outdoor and indoor pool and utilities for all kinds of sport activities like squash, ping pong, soccer, volleyball, basketball, climbing and much more. This place offers a spot for everyone and there are lots of sport clubs and course you can join as well. For all of us it was unbelievable to see such a big offer of sport activities on one campus. In order to that we were quite excited about getting a visitor access pass and being able to take advantage of those offers.

Figure 10: Outdoor Pool Rec. Center

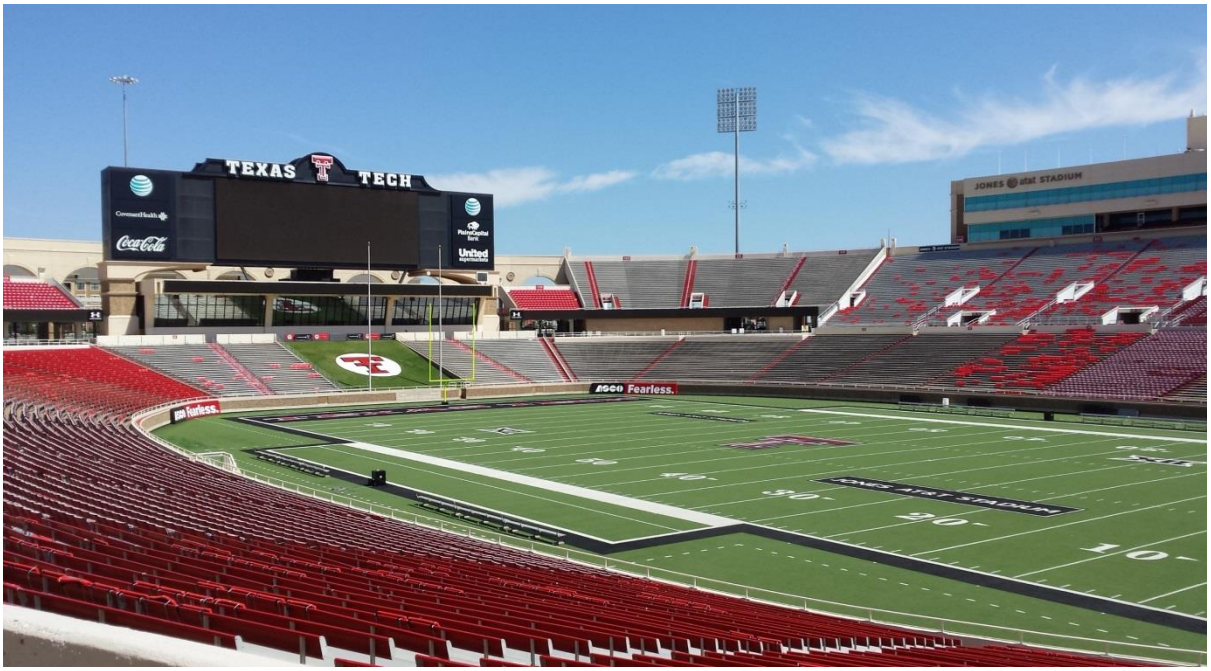


Figure 11: Jones AT&T Stadium

Last but not least on our tour we got the marvelous opportunity to visit the Red Raider Jones AT&T Stadium and even were able to go down to the field. Right away some of our group took advantage and ran a race on the grass which was quite entertaining for the rest of the group. We all were stunned by the view up to the enormous tribunes and were overwhelmed by the thought of these tribunes been filled with thousands of fans, as the stadium holds seats for over 60 000 people.

Walking back to the Students Union Center our Campus tour ended and we agreed on a lunch break till 2pm before having the first official meeting within our project groups.

After enjoying the various options for lunch at the Union Center, all participants of the wind energy project met in the library. Some groups met for the first time other already knew each other form the night before at Crickets. As each group gather together on one of the working stations provided in the library we were able get to know each other better and work on our last remaining tasks and practice the presentation.

By 5pm all groups were done with their work for the day and we went back to the motel to freshen up. Later at 6pm we headed to the rec center, where we agreed on meeting with some TTU students. At the rec center we spilt in several groups as some wanting to work out and other just taking a swim in the lazy river. At 8 o'clock the outdoor pool closed so some decided to go downtown and have some dinner others stayed and took advantage of the multiple other sport activities such as playing basketball or squash. But soon we all went back to the hotel as we were exhausted by the eventful and very informative day and needed some sleep for the upcoming exciting days at Texas Tech.

Group Work and Fieldtrip to X-FAB Lubbock, Texas

Jonathan Ahrens
September 10, 2014

The fifth day of our trip we started with working in groups on the presentations. The work had to be done until 2:00pm. It was the final preparation before the display. Additional some of the students provide an info desk at the international fair of the TTU. It is a fair for the American students to find a partner university for international exchanges.

Figure 12: Group work of the repowering group

Figure 13: Booth from the Jade HS at the fair for international study programs

For the afternoon we were invited to X-FAB, a special foundry for semiconductors in the sector of analog and mixed signals. Actually X-FAB is a German company with four locations: the production location in Dresden, Germany and Kuching, Malaysia as well as in Lubbock, Texas. The headquarter is located in Erfurt, Germany. Altogether there are about 2,500 employees working for X-FAB worldwide.

At 2:30 p.m. we arrived at the plant area of X-FAB. Our guide was Marcus Borhani, the Product Engineering Manager of this company. He led us through the company and explained the different steps of the wafer processing to us.

Figure 14: Explanation about the production by Marcus Borhani

The company is a pure-play foundry what means that the clients have to develop the chip design on their own. X-FAB only implements the given circuit diagrams. That is why

the company´s name is never on the products. The production starts with wafers manufactured by other companies. Wafers are circular slices with a diameter up to 150mm made of pure silicon. This is the base for every integrated circuit. There can be thousands of chips made out of one wafer. Per lithography circuits get applied on these wafers. For this process you need a very clean room. Every particle of dust can disturb the production process because the line-with is so small. X-FAB can produce geometries ranging from 1.0 µm to 0.18 µm. Therefore a constant temperature is ensured by the air conditioning that also filters the air continuously. In addition it is important that the employees wear whole-body suits including a face mask and gloves.

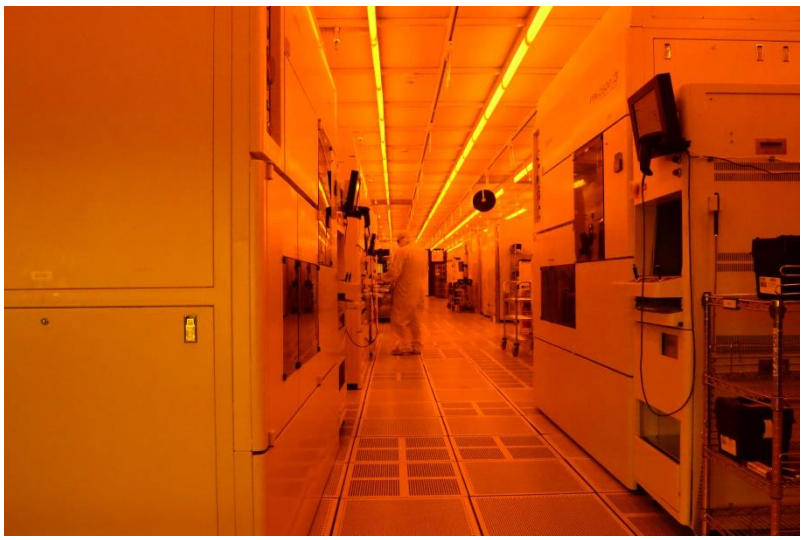


Figure 15: Production of light-sensible semiconductor components

The production process consists of 200 different steps. To make sure that no employee forgets any of them, everybody has to document all of his actions. At the end a function control guarantees that the product is errorless. Every day between 800 and 1000 wafers get accomplished, that matches 25,000 till 35,000 chips.

The products from X-FAB are used in completely different sections. You can find them in cars as an engine control, cameras or in iPhones for example. The most chips are delivered to the Silicon Valley, but the costumers can be found all over the world especially in Germany, Asia, UK and North America.

The visit was a very interesting experience which gave us a broad idea of semiconductor production. Marcus Borhani made it possible for us to see behind the curtain and get a deep insight into the business.

Presentation and Fieldtrip to NWI Research Center

Katrin Pieper
September 11, 2014

Finally, the day we had all been working for the last couple of month. The day we had to hold our presentations. We were all very excited and a little nervous. We left the hotel at 8.15 am and drove to the university. After arriving there we had a few minutes to check out the room, the stage and got a few instructions regarding the technical equipment. At about 9 am we were ready to start.

The first group to present was the group “Compare Technologies”. They gave us an overview about the construction of a wind turbine. The technologies that are currently used were introduced and compared regarding efficiency and costs. Very interesting was the preview to the future, where new technologies were presented.

Figure 16: Presentation by the “Propeller” group

The group “Propeller” was the second to present their results. They had done some research on rotor blades and the different materials they consist of. Another interesting part of their presentation was the comparison between horizontal axis wind turbines and vertical axis wind turbines. The main principle of their functioning regarding fluid dynamics was explained.

After a short break the group “Controls” continued with their presentation. Different control systems, as the wind measurement and the adjustment of the turbine to the wind direction, the feed into the grid regulations, the SCADA system and environment and safety regulations, were introduced and explained to the audience.

Last, but not least, the group “Repowering” presented their work. They explained the general requirements, the legal situation in both countries and problems that occur planning a repowering project. The proceedings of a repowering process and the regulations were presented. At last, the group gave an overview about the operational costs and their development over the years of operation. They came to the conclusion that Repowering in Germany and in the USA differ in many ways, but that there is a huge capacity for repowering in both countries and that more and more repowering projects are and will be realized.

When the presentations were done we were all happy that it was over and relieved that it went so well!

Figure 17: All participating students

After a short lunch break we met at the National Wind Institute Research Center (NWI). Elizabeth Paulk and Bryce Looney showed us around and explained the work of the NWI.

The organization was originally founded in 1970 after a massive tornado to research the impact of wind (e.g. on buildings). Today they do research on "all things wind".

Professor Larry Tanner talked to us about his work on storm shelters. He does research on the impact of flying materials on for example walls, doors, etc. Therefor he has a pneumatic canon that is able to simulate wind speeds over 250 miles per hour. He showed us such a test and shot a wooden stick at a concrete wall. It was very impressing to see how the wood splattered into many parts! With the results of these tests the NWI is able to design "safe rooms" to protect people against tornadoes and hurricanes.

Figure 18: Storm shelter

Figure 19: Ka-band Mobile Doppler Radar Truck

We were also shown the "Ka-band Mobile Doppler Radar Trucks". They work closely together with the so called "Stick Nets" which are a development of TTU Students. With these mobile measurement devices it is not only possible to study wake effects of wind turbines, more importantly, they collect meteorological data and radar information directly from the place where the tornado or hurricane hits.

All these data are collected in the NWI wind library, which is home to one of the largest collections of wind- related material in the world. It includes documentation of more than 100 wind storm events from throughout the United States.

Furthermore, the NWI has a wind tunnel generating wind speeds up to 110 mph. In this tunnel research on how the wind goes over structures is observed. Also, wind induced vibration of for example bridges is tested in this wind tunnel.

Figure 20: VorTech Tornado Simulator

Another very interesting thing we were shown was the VorTech Tornado Simulator. We were told that the NWI was the first one to get such a simulator. It is able to simulate an EF3 tornado with a maximum speed of about 150 miles per hour, which is the average tornado in the US. With this simulator it is possible to research how tornadoes interact and damage a structure. Again, this knowledge can help to improve the safety of buildings.

It was very interesting for us to see some of the many projects the NWI is working on.

The day ended in the hotel. We were all sitting together, discussing the presentations and the work with our American partners during the last months. We agreed that we had to get over some hurdles, but that it was a successful project. We all learned a lot about intercultural communication, how to work together internationally and of course about wind energy.

Fieldtrip to EDF Renewable Service and Sightseeing

Sven Sextro
September 12, 2014

The day began with breakfast at 7 a.m. in the morning. One hour later we started to drive to Vega, where EDF renewable services is located. This company is a third-party operations & maintenance service in North America with over 1000 employees and over 8,000 megawatts of power under contract.

After a 2hr ride through very flat land, we arrived in Vega und met Cory Severson, Site Supervisor of EDF renewable services. He told us some details about EDF renewable services and their projects. His assignment in Vega and surrounding is to maintain wind farms.

Figure 21: Explanation about the work of EDF renewable services by Cory Severson

Spinning Spur 1 is a wind farm near Vega, which is supported by Google. It consists of 70 wind turbines, developed by Siemens, with a power output of 2.3MW per wind turbine. The total power output of the wind farm is 161MW.

Spinning Spur 2 is another wind farm with the same capacity, supported by a banking institution from Boston.

We also talked about problems of grid connection and main failures. After this discussion, we decided to drive to Spinning Spur 1, to have a look about the controls of a wind farm and some maintenance parts.

At 12 p.m. we left and drove into the direction „Cadillac Ranch“. The weather this day in Texas was unusual. It rained the whole forenoon and it was really windy. When we arrived at the „Cadillac Ranch“, it stopped raining and we resolved to get out of our cars. It was a crazy view to see ten Cadillacs, half-buried nose-first in the ground, directly at an interstate. We immortalized our group with graffiti on one of these cars and disappeared into our cars, because of the cold weather.

Figure 22: Cadillac Ranch

It was lunch time and everybody was hungry, so our next destination was „The Big Texan“ steakhouse in Amarillo. A lot of advertisement at the interstate aroused our interest, because this restaurant is best known for its 72oz. steak, called “The Texas King”. The steak is free to anyone who, in one hour or less, can eat the entire meal, consisting of the steak itself and many sides, otherwise, the meal costs $72. At the entrance of the restaurant, it was possible to have a look at the huge menu. But everyone decided to eat a smaller steak, for good reason. When we left the restaurant, there was a picture with actual record holder for the 72oz meal, Molly Schuyler. She set the record for eating the 72oz meal in just 4 minutes 58 seconds. More impressive was that she ate a second 72oz meal in the same sitting in a total time of 14 minutes and 57 seconds. That steak must be fabulous…

Figure 23: Record by Molly Schuyler


Figure 24: 72oz steak

The last official activity for this day was the tour to the Palo Duro Canyon near Amarillo. It is the second largest canyon in the United States and called „The Grand Canyon of Texas“. The view over the landscape was just impressive. Directly in front of us, there were deep valleys, mountains and spires of rocks. We made a tour with our cars through the valleys to get some better impressions. It was a fantastic view and a great experience to see something like this.


Figure 25: Group picture at the Palo Duro Canyon

At 7 p.m. we arrived back home in Lubbock. Many of us wanted to go out and check the club/bar scene in Lubbock with some of the TTU students. The rest of us went to the student recreation center, to run off one´s pounds.

Tailgaiting and Red Raiders Football Game

Wiko Braun
September 13, 2014

It was our last day at Texas Tech University and our last day in Lubbock. This morning we had some time, to get up a little bit later. The only thing we knew was to come early to tailgating. So we arrived at 8:30 a.m. on campus. Our biggest problem that day was to find a parking spot. The whole Campus was reserved for those how had permission. Other parking lots were totally closed for tailgating. So it took us half an hour to find a good place to park.

Figure 26: Tailgating

Tailgating

So what is the big deal with tailgating? Wikipedia says: "A tailgate party is a social event held on and around the open tailgate of a vehicle. Tailgating, which originated in the United States, often involves consuming alcoholic beverages and grilling food." But it's so much more. It´s more like come together and get ready to have a good day, listening to music, play some little games, hang out with your friends and be prepared for a Texas Tech Red Raiders football game. Some of them even started at 6 a.m. just to put a whole pig in a smoker.

Football game

The main event that day started at 2:30 p.m. in Jones AT & T stadium. The Texas Tech Red Raiders Football team played against the Arkansas Razorbacks.

College football is a real big deal in America. Half an hour before the game started almost every citizen of Lubbock was on their way into the stadium. In the bulk of people also the 14 over-whelmed guest from Germany.

Figure 27: The football game

We were so happy that we also got tickets for the game and could join the crowd of 63 000 people in the stadium. It was not the same felling joining a German soccer game. It was really different and a new life experience for all of us.

The game starts with a touchdown for Texas Tech in the first 3 minutes of game time. But Arkansas was a great opponent this day. The first and the second quarter was a tight and hard fight game. But in the second half of the game the red raiders made some mistakes and J. Williams the running back from the Razorbacks had a really good day that day. So all in all Arkansas won against Texas Tech with 49 to 28. But even in case that "we" lost the match we saw a nice event. Game day in stadium is even more than just the game.

Figure 28: The red raiders fans

Figure 29: The result of the match

There are some mini games in every break, then they have different camera units where they try to involve the audience, like "Dance cam", "Kiss cam" and so on and they show people who fight against some living condition. Before the game and in the half time there is also place for cheerleader, the big collage band and some other groups.

They all show up on game day and present what they have prepared. That's why we almost spend four hours in the AT &T stadium and some of us got a nice sunburn.

Drive from Lubbock to Dallas

Marvin Raczek
September 14, 2014

We left the hotel at 6:00 a.m. in the morning in direction southeast. The route was not the same we drove to Lubbock on Monday. We drove on the Highway 84 to Sweetwater and continued on the interstate 20 to Dallas.

In Sweetwater we passed by a huge wind farm with around 350 wind turbines and a capacity of 585 MW.

Approaching Dallas it was possible to sense the higher traffic density compared to Lubbock.

We arrived at the hotel at 11:30 a.m. after our 550km (341 mi) trip. Due to the early hour we weren't able to check in all the rooms but could leave our luggage in one room. That gave us the extra space and lightness for our next appointment. This was the visit of the sixth floor museum, in the center of Dallas at the Dealey Plaza.

Figure 30: Downtown Dallas

Figure 31: Texas School Book Depository

The museums topic is the assassination of John F. Kennedy. The exhibition space is located on the sixth floor of the Texas schoolbook depository. The very spot from where the deadly shots have been fired.

After taking the elevator up to the sixth floor we put on the audio guide that was included in the admission. The exhibition itself is a tour with text panels and pictures, supported by the audio guide and videos.

The political beginnings of the Kennedys are the beginning of the tour, going to the election and the assassination. A very interesting point is the faithfully reconstructed and with original details equipped sniper spot.

After the tour we went outside in direction Elm Street. The positions of the car when the bullets hit are marked on the ground.

The rental cars needed to be returned at 4:00 p.m, so we went off this historical place, without missing to take the same lane in Elm Street.

Figure 32: Elm Street

Our rooms were prepared and ready to check in after we returned the cars and took the shuttle back.

The transfer to the airport was scheduled at 4:30 a.m. the following day, so after dinner nothing much happened.

Flight from Dallas to New York and Sightseeing (MoMa, Rockefeller Center)

Sven Lautenbach
September 15, 2014

At the early morning on the 15th September we take the plain to New York. After landing in New York we checked in in our Hotel. The first think we were visiting in New York was the Museum of Modern Arts. The MoMA is one of the most important place to get in contact with modern art. Especially the exhibition of Architecture and Design was very interesting. Furthermore there was a special exhibition about videogames in the past and now. Here some insights:

Figure 33: Impressions of the MoMa 1

Figure 34: Impressions of the MoMa 2

The Next point we visited was the Top of the Rocks at the Rockefeller Center. If you are at the rooftop you get an amazing view of New York's buildings und structures. We take a lot of photos on it.

Figure 35: View from the Rockefeller Center

After this visit we split into smaller groups. My group decides to visit the Saint Patrick's Cathedral because it is next to the Rockefeller Center. Unfortunately the Cathedral was under construction. After 130 Years the Cathedral will be completely restored. Today, the Cathedral is an anchor of tourism in New York, a destination for more than five and a half million visitors each year. The total cost for this full restoration is approximately $175 million.

Figure 36: Saint Patrick's Cathedral under construction

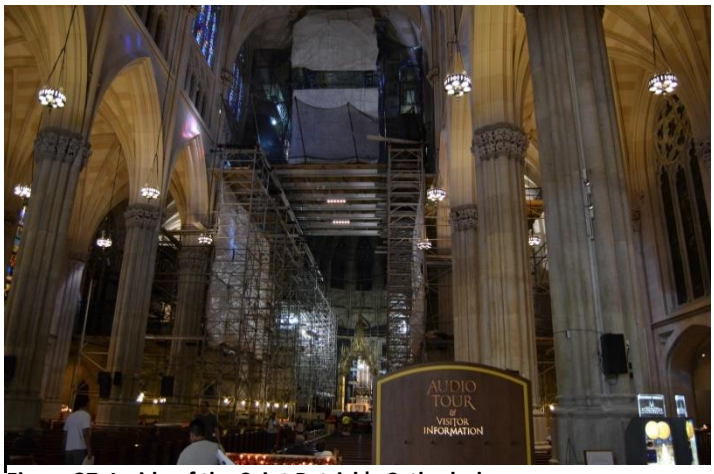


Figure 37: Inside of the Saint Patrick's Cathedral

In the evening we went to the Time Square to see the lights by night. It is the hub of the Broadway Theater District.

Round about 330,000 people pass the Time Square every day. As you can see on the picture this number is true.

The Highlight of the Times Square is the ball drop on New Year's Eve (in the middle of the picture). It is a tradition which began on Sylvester 1907.

Figure 38: Time Square

Finally we visited the Empire State Building at 1am. The construction of the Empire State Building starts on March 17, 1930. One year later it was finished and opened by President Hoover. It is 443m high. 2010 the cost of the renovation were $550 million. $120 million were spent to make the building more energy efficient.

Figure 39: Explanation about the Empire State Building

Figure 40: The view from the Empire State Building by night

Fieldtrip to MTA and United Nations

Sascha Börgmann
September 16, 2014

In the morning of the 16th of September we visited the Grand Central Terminal and the MTA (Metropolitan Transportation Authority).

The MTA is the largest Transportation network in North America on an area of 5,000 square miles from New York City, through Long Island, southeastern New York State, and Connecticut. There are 7 million rides a day and the Grand Central Terminal in New York City has 36.000m^2 and 10,000 people have lunch every day at the terminal. Up to 97% of all trains are on time and every 42 seconds arrives a train.

Figure 41: The clock of the information center


Figure 42: Grand Central Station

Dan Brucker told us about the history of the MTA and Grand Central Terminal. There are some secrets in this terminal. First there is a secret train station that was built for President Roosevelt and his train is still on one of the old tracks. This train carried Roosevelt directly to his hotel in Manhattan. Downstairs are still some of the old converters and in the big hall was standing a rocket. Also there is a mistake with the departure times; the trains are leaving one minute after the departure time. The clock of the information center is special its value is about 10 to 20 million dollars. Every face of this four face clock is made out of one solid piece of pure opal.

We also visited the control center of the rail roads of all incoming and outgoing trains at Grand Central Terminal. On our tour we went through a narrow passage with nice windows on


Figure 43: Control center

each side and a glass floor. From there we could see the United Nations and on the other side we had an awesome view into the main hall.

This tour was great, our guide told us everything so realistically and detailed, that it was easy to follow and to imagine everything.

A few hours later we visited the United Nations Headquarter.


Figure 44: UN Secruity Council

The United Nations is an intergovernmental organization with 193 member states and 2 observer states. It is totally financed from assessed and voluntary contributions from member states. Germany is with around 7% on 3rd of all contributors to the UN budget.

The UN has three primary purposes:

- peacekeeping and security
- human rights
- economic development and humanitarian assistance


Figure 45: UN Economic and Social Council

There were some construction works in the building so we just visited the UN Security Council, the UN Economic and Social Council and the UN Trusteeship Council. The United Nations also has three other organs: the UN General Assembly, the UN Secretariat and also the International Court of Justice in Den Hague.

Every joining country is giving gifts to the United Nations that are placed all over in the building and over the territory. For example a guitar made of an automatic rifle or a statue that was found 300 meters away from its normal location after the nuclear bomb attack on Hiroshima.


Figure 46: UN Trusteeship Council

All in all we had a great day in New York in two of its sights. We got lots of information and enjoyed the guided tours.


Figure 47: Statue from Hiroshima


Figure 48: A Guitar made of an automatic rifle

Last day in New York City

Hans-Heinrich Früchtnicht
September 17, 2014

Following the original agenda, it was planned to go to the Museum of modern Art and to have the final evening discussion. But since we visited MoMa on Monday there was the only fixed date was the final discussion. In smaller groups we continued our tour through NYC.

Breakfast

Because we had no breakfast in the hotel we looked for a nice restaurant for a good breakfast. In a guide of New York we found the "MUD" in the EAST VILLAGE on the E 9th street No 307. The restaurant is rather untypical for Manhattan: it is cash only and the room had an alternative appearance. The food was really nice with fruits, fresh made and tasty.

Figure 49: View on the skyline of Manhattan

Figure 50: Route Circle Line

Circle line Landmark Cruise

The Circle Line Sightseeing Pier is on the Pier 83 at the end of W 42nd St. There were different kinds of cruises ("Semi Circle", speedboat ride, a cruise to Liberty and Ellis Island) included in the "New York City Pass". We choose the Landmark Cruise which lasts about 1.5 Hours and covered half of Manhattan from the pier 83 to the United Nations Headquarter. The starting point pier 83 is next to the Intrepid Sea, Air and Space Museum with the distinctive air craft carrier. During the trip we got a close look on Ellis Island and Liberty Island, Manhattan and some more districts: according to the guide on board is New Jersey growing, Governors Island is a popular cultural meeting points, Brooklyn is one of the fastest growing parts of New York and in the last years some residential buildings replaced industrial wasteland.

Picnic in Central Park

When our cruise was over we went to the Central Park (Corner Columbus Circle) and grabbed a sandwich to picnic in the Central Park.

American Museum of Natural History

Also included in our New York City Pass was the entrance to the American Museum of Natural History. Those of us, who hadn't been there yet used the last day in the city to visit it. The museum is one of the largest and most celebrated museums of the world. It really is an amazing museum with a lot of very interesting exhibitions e.g. the Dinosaurs.

Figure 51: Hall of Ornithischian Dinosaurs

Final evening discussion

Some of us reserved the evening earlier a table in an Italian restaurant called "Ignazio´s". We went to the restaurant which is very close to the Brooklyn Bridge. The food was pretty good but the location closed early (9:00 pm) and we had to leave.

During our final discussion all of us stated that we had a great time during the excursion and that we learned a lot and gained many impressive experiences. During our time in the US we had the chance to visit several companies and institutes and learned a lot about the American way of living. During the group work with the TTU students we gained a lot of experience in international communication and the procedure of such an international project. On top of that we made friends with some of the TTU students who were mostly very hospitable and friendly.

We thanked Dipl.-Ing. Volker Lübben, Dipl.-Ing. Paul Beckmann and Prof. Dr.-Ing Heiner Köster (who already departed earlier) for a great and brilliant organized excursion which has broadened our horizon and which gave us the opportunity to make exciting experiences. It was a great trip!

Figure 52: View from the Rooftopbar 230 FIFTH

230 FIFTH outdoor Rooftop Bar/ Club / Restaurant

After we finished at Ignazio´s we walked back over the Brooklyn Bridge to Manhattan and from there to the subway. To complete the evening we went to the **230 FIFTH**, which is an outdoor Rooftop Bar located near our hotel at the corner 27th street on 5th Ave. From the one of a kind location we had a fabulous view over the skyline of Manhattan.

Last day of our trip

Carina Knelangen
September 18 and 19, 2014

The last day in New York City begun with a simple American breakfast; followed by packing our stuff.

Figure 53: New York City

We did different activities in the morning, some of us were doing more sightseeing and some did last shopping tours and so on.

At 2pm we met at the hotel lobby to get our luggage and to take our ride to the Newark airport. The ride and the two flights to Frankfurt and Bremen went well. There were no complications or problems.

The trip was a great experience. With the project we learnt how to work with people from another country and with another culture. The organization with long distance and with time difference was one challenge of this project and it worked out very well. We got in contact with our group mates in different ways like email, skype and so on.

Figure 54: Back in Bremen

The direct contact with the American students was a rewarding experience for the interaction with other cultures and another language and another challenge for us. The group work went well for all of us; we finished our presentations and presented our work. The presentations had the same Master layout which was designed by one of our groups. The kind of how to present the work was different between the American students and the German students but both ways worked out well.

Also we got a view of the students' life in the United States. The Texas Tech has the second largest campus in the States with around 35,000 students which is ten times more than Jade Hochschule has. How the students life and how the study is organized is different than in Germany. In some ways it is similar to Germany but in many ways it is different. The students have to/ can live on campus and they have to pay a lot more but also they get a lot more like the recreation center. Now we have a good impression of Texas Tech and we can think about to study abroad in the master program.

As well we got a valuable insight of the different companies in Texas. The first one was Variosystems, the second one was Xfab and the last one was the wind farm spinning spur in Amarillo. The companies showed us what their work is and how they do it.

The last days we spent in New York City. There we visited the United Nations, museum of modern art, MTA, Empire State building and had a great over view over NYC from the Rockefeller Center. At the United Nations and the MTA we had great tours with really good guides. They told us a lot about UN and what they are doing and also they told us the secrets of the Grand Central Station.

Thanks to everyone for the great and unique trip ☺

List of Participants

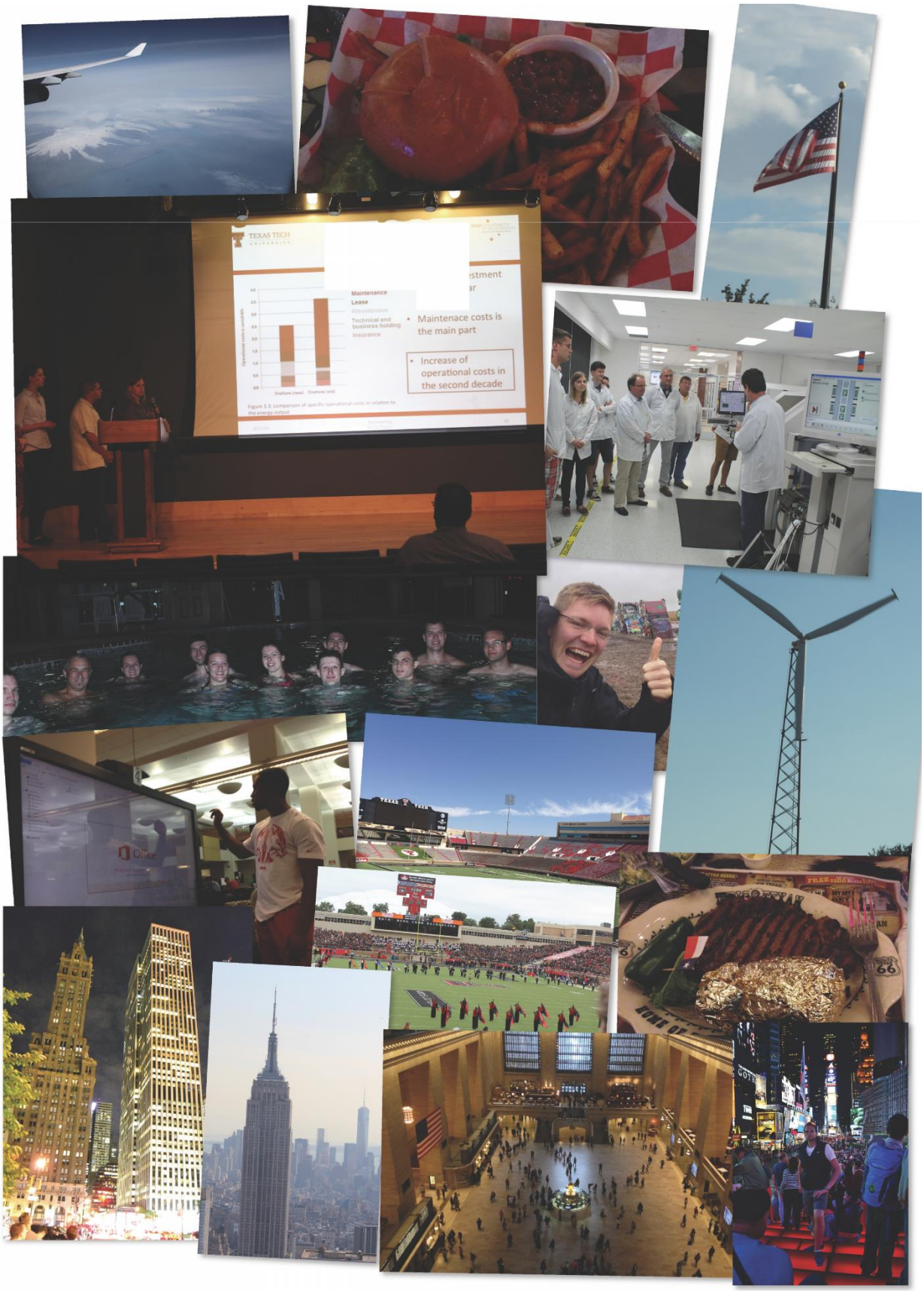
University Staff

- Prof. Dr. Heiner Köster
- Volker Lübben
- Paul Beckmann

Students

- Jonathan Ahrens
- Sascha Börgmann
- Wilko Braun
- Hans-Heinrich Früchtnicht
- Carina Knelangen
- Sven Lautenbach
- Rena Oltmanns
- Katrin Pieper
- Marvin Raczek
- Sven Sextro
- Johanna Timmermann
- Björn Willers

Collage


TEXAS TECH
Maintenance
Lease
Technical and business holding insurance
• Maintenace costs is the main part
• Increase of operational costs in the second decade