Subsidie aanvraag GNEV – De Chemische Binding

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SUMMARY SHEET

IN TE LEVEREN BIJ HET **VERSLAG**

excursies gehouden in de periode 1-9-2015 tot en met 31-8-2016

	datum	bezocht bedrijf	duur van excursie	aantal deelnemers
1.	13-10	SuikerUnie	1 Dagdeel	43 personen
2.	10-11	Shell (NAM)	2 Dagdelen	10 personen
3.	07-12	TataSteel	2 dagdelen	19 personen
4.	16-02 +17-02	Akzonobel	4 dagdelen	6 personen
5.	23-02	Hoogheudt	1 dagdeel	26 personen
6.	26-04	Albemarle	2 dagdelen	18 personen
7.	15-04	Shell (Emmen)	2 dagdelen	8 personen
8.	04-04	Coverstro	2 dagdelen	19 personen

Ingezonden door studievereniging: De Chemische Binding
IBAN: NL58 ABNA0480309469
Ten name van: De Chemische Binding

SUMMARY SHEET

IN TE LEVEREN BIJ DE **NIEUWE AANVRAAG**

excursies te houden in de periode 1-9-2016 tot en met 31-8-2017

	datum	bezocht bedrijf	duur van excursie	aantal deelnemers
1.	17-10	StikerUnie	1 dagdeel	28 personen
2.	10-11 + 29-11	Akzonobel	4 dagdelen	9 personen
3.	11-01	Grolsch	1 dagdeel	28 personen
4.	09-02 + 10-02	Akzonobel	4 dagdelen	~ 6 personen
5.	19-04	Shell (Amsterdam)	2 dagdelen	~ 20 personen
6.	26-06	Covestro	2 dagdelen	~ 20 personen

Ingezonden door studievereniging: De Chemische Binding
IBAN: NL58 ABNA0480309469
Ten name van: De Chemische Binding

Excursies gehouden in de periode 1-9-2015 tot en met 31-8-2016

SuikerUnie

13-10-2015

1. Yaël Kerstholt	2. Dagmar Buist	3. Kwinten Snijders Blok
4. Sanne Smith	5. Bonne Benedictus	6. Jorn de Jong
7. Lars Mulder	8. Daniël Duijnstee	9. Deniz Denizer
10. Leonard Cool	11. Danne Post	12. Olga Yevheyuk
13. Bram van der Sar	14. Parniya Badr	15. Jeny Odj
16. Marit Fiechter	17. Zac Leach	18. Brecht de Jong
19. Keshia Saradima	20. Renske de Vries	21. Paco Visser
22. Annelies Venema	23. Roos Reijnen	24. Timon Garnier
25. Jeroen Wilms	26. Julian Strien	27. Sander Vanca
28. Mathijs Veen	29. Johanan Kootstra	30. Rebecca Rodrigues de Meranda
31. Anais Couto Vasconcelos	32. Jelmer Visser	33. Sammie Mulder
34. Jacopo Martinelli	35. Wouter Saat	36. Alex Hanlon
37. Rosemary Bolt	38. Tamara Milosevic	39. Diana Bollen
40. Stelios Synolakis	41. Tuan Tran	42. Tijn de Leeuw
43. Patrick Bosch		

Summary of the day

Tuesday October 13th we went to the Suikerunie (sugar union) with a group of firstyear students. We started with a nice dinner together at the Luchtbrug. As a tradition we ordered chinese! We gathered at 18:00h. After 25 minutes of cycling, we were finally at the Suikerunie Vierverlaten. We started with a short movie about the whole process in the factory. From the sugar beet to the actual product, granulated sugar. After this interesting movie we had some safety instructions, followed by dressing ourselves like real safety hero's. Including hair nett, helmet, earpluggs and the wellknown orange jackets. In groups of around 13 people we went through the whole factory. We saw the trucks coming with enormous loads of beets, then the beets were washed in big washingmachines. After washing and slicing them up into small pieces they go into huge processors in which the sugar is extracted out of the beets. After extraction the sugary water is cleaned, purified and finally the sugar is crystallized. They thought about everything. Almost every waste stream is recycled which was very interesting to see. They produce natural gas out of their biowaste and they form animal food out of residual molasses. The sustainable view of the Suikerunie is one to remember! After we went through the factory we got a nice storage tray with, of course, sugar inside. I hope everyone enjoyed it as much as I did and will join me in upcoming excursions!

Shell (NAM)

10-11-2015

1. Renske de Vries	2. Marlinde Koops	3. Michael Boom
4. Jesus Rodrigues Comas	5. Katrin Heinzerling	6. Floor van Elsacker
7. Natascha Witto	8. Sander van der Veen	9. Harmen Sikkema
10. Johan Bootsma		

Summary of the day

At the crack of dawn we gathered at the central station. With ten Chemistry and Chemical Engineering students we took the train to Assen, because we went on an In-house day at Shell (NAM).
We started the day with an introduction talk which contained –of course- a safety instruction. At Shell they attach great importance to safety. Then we got a presentation about the earthquakes in Groningen due to the gas extractions, since this is a hot topic in the Northern of the Netherlands. We were free to ask any questions and there was a great atmosphere.
After this, some young talented employees of Shell told us about their experiences. This was very interesting because all of them were from different departments. They gave us a nice overview of all the opportunities within Shell. They usually start in a skill pool related to their study and/or interests. From this you can grow into the company. You will get a lot of responsibilities, even in your first years. But if you manage to deal with all this responsibilities, you are Shell proof!
Then we had a lunch together with them, in which they told something more about their experiences. After the lunch we continued with the last presentation about wells engineering, which was very interesting. After this talk we started with the preparation of our production location visit to Synergy 2. Of course, there were safety rules and regulation first. Then we all got a coverall and very handsome shoes with steel toecaps. With a bus we went to the locations where helmets and safety glasses were given to us. We got an explanation about the different ground layers form a geologist and we saw different drills operating. The guides explained a lot about safety regulations they take into account, for example a huge closing valve. This machine can close the pipe if the pressure under the ground gets too high. Then we went back to the office where we had some drinks with all of the people who presented on this day. Everyone was open to questions and it was nice to meet them in an informal atmosphere. We could not end the day without making a Shellfie. I think everybody will agree if I say that this was a very interesting, fun and inspiring day!

Tata Steel

02-12-2015

1. Renske de Vries	2. Jorn de Jong	3. Paco Visser
4. Marlinde Koops	5. Irene van Droffelaar	6. Sietse Tock
7. Jasper Bos	8. Daan Troost	9. Daniel van Hal
10. Andries Jensma	11. Pepijn Sietsema	12. Hanna Postema
13. Manoj Trip	14. Maurits de Roo	15. Douwe Haringa
16. Martine Schouten Hoogendijk	17. Nick Patsos	18. Rick van der Werff
19. Simon Stegink		

Summary of the day

The day started at 08:30h at the central station of Groningen. With sleepy eyes and breakfast we entered the train. Three hours of fun further we arrived at the station of Beverwijk. There was a bus to take us to the factory of Tata Steel. When we arrived a lunch was waiting for us and we got an introduction with the schedule of the day.
After this, Theo van Roon told us more about the huge plant which is located in three villages. When the process to produce steel starts, the starting material contains only 60% iron, the rest is clay, lime, stone and other unwanted compounds. After twenty hours of processing steps, liquid metal is produced. This has a temperature of 1500 degrees and there is 4.5% carbon inside the iron mixture. This carbon makes the material brittle, therefore the carbon is removed by the use of pure oxygen. The carbon will burn, but 0.04% of carbon will remain. However, if you do this under vacuum only 0.003% of carbon will remain. Besides that, sulfur can be removed from the material by the use of calcium carbide. Unfortunately this smells like rotten eggs, so instead limestone is used as well. This is because otherwise the people who live in Wijk aan Zee have this nasty smell all day.
At this location approximately sixty different types of steel are produced. All these types of steel can be coated with Zn, Sn or polymers. Cans made out of steel can be recycled, in contrast to aluminum cans. Then a movie was played about the steel factory at IJmuiden.
After the movie everyone got a safety jacket, glasses, earphones and a helmet. All dressed up we stepped into the bus where we started with a sightseeing tour. Theo told us about everything we saw. Then we went to the labs where all the samples come in and where they keep up with the latest technology. After a short tour around the lab we continued our visit within the actual steel producing plant. We saw every processing step from the liquid steel to the production of steel bars. Sometimes the heat was even tangible in your face.
Back at the headquarter we started with a case study. There was a problem about the raw materials. Raw materials could be imported from abroad; these were from higher quality but also more expensive. It was our task to find out which decision Tata Steel should make.
After this interesting day, the bus took us to the train station and we started the trip back home. We really enjoyed this visit and I hope you will join us in the upcoming visits!

AkzoNobel

Masterclass
16-02-2016

1. Renske de Vries	2. Chris van Heerewaarden	3. Johan Bootsma
4. Johnny Tran	5. Michael Boom	6. Onno Broekman

Summary of the days

Tuesday 16th of February a group of students gathered in front of Nijenborgh building 18. With a group of 24 students of G.T.D. Bernoulli, TBV Lugus, TeMa and De Chemische Binding we went to AkzoNobel Delfzijl. We were welcomed by our hostess Akkie Jonkman, followed by an interesting and motivating talk of the site manager Johan Visser.
After this, all groups presented a Case Study we made beforehand. This was about the steam consumption within the salt production plant. When all the presentations were finished, we went into the plants. One part of the group went to Salt and the other part went to Delesto. During this visit everything of the process was explained. In the afternoon we had a lunch together with some of the staff members. After the lunch we made a Case Study about five different aspects for the Delamine plant. For example, the chemistry of the reaction and the costs of production were calculated. This was followed by a visit to the Delamine plant. Besides the plant, we visited the control room and the lab where they continuously check the quality of the products.
The next day, Wednesday, we went to AkzoNobel Delfzijl again. We started this day with an interactive lecture about health, safety and environment. A Case Study was made about risk reduction. One part of the group was going to explore the possibilities of failure within the production process. The other part of the group figured out which mistakes could be made due to human activity. Together we made a plan to reduce the risk of an accident. Then we had a lunch together with staff members, which was nice since they could tell you all their experiences.
In the afternoon we had a short presentation about the MEB (Membrane Electrolysis Company) and MCA (Mono Chloro Acetic Acid Factory) plants followed by a tour through both plants. We had to look carefully for points of improvement during the tour. Once we were back, we discussed all our points regarding: safety, efficiency and environment. We got a great insight into the company and the great atmosphere of AkzoNobel Delfzijl.

Hooghoudt

23-02-2016

1. Renske de Vries	2. Paco Visser	3. Jorn de Jong
4. Patrick Bosch	5. Michael Boom	6. Marieke Veenstra
7. Florian Cerpentier	8. Matthijs ter Harmsel	9. Sammie Mulder
10. Andries Jensma	11. Sietse Tock	12. Dina Boer
13. Laura Boetje	14. Rick van der Meer	15. Ernst de Vries
16. Felix van Berkestijn	17. Vincent Zwanenburg	18. Pim Wansink
19. Maurits de Roo	20. Daan Troost	21. Onno Broekman
22. Manoy Trip	23. Ruben Feringa	24. Edwin Schreuder
25. Dagmar Buist	26. Hanna Postema	

On the 23rd of February we went on an excursion to a distillery company. Gathering with 25 people and bikes we started our trip to Hooghoudt. After a cold but sunny trip, we arrived at the factory. We were welcomed by Nicole and Richard who prepared a drink for us. Richard told us everything about the herbs they put into their Jenever. Then we watched a movie about the history of Hooghoudt. Hooghoudt is a family company and was founded in 1888 by Hero Jan Hooghoudt. The distillery was based in the city center of Groningen, but had been moved to a location just outside the city. After this Richard told us more about the recipes, the people and the process. Following upon the presentation we went into the factory. We were told about the whole production of various liquors, from ethanol to the final product in the bottle. Almost everything is produced and packaged on the location in Groningen.

Albemarle

26-04-2016

1. Renske de Vries	2. Paco Visser	3. Jorn de Jong
4. Anouk Goossens	5. Sanne Smith	6. Sander Vanca
7. Ineta Stankute	8. Jesper Zwart	9. Sietse Tock
10. Rebecca Rodrigues	11. Daan Troost	12. Michael Boom
13. Jelmer Visser	14. Wouter Saat	15. Patrick Bosch
16. Jasper Bos	17. Lars Mulder	18. Martijn Deinum

On the 26th of April we went to Albemarle Catalysts Company at Amsterdam. After a long trip we arrived and started with a short introduction. This introduction was about what the company does. Albemarle started around 1900 under the name "Ketjen", since this time Albemarle grew to a big catalysis production location. They mainly focus on the production and research of catalysts for the petro-chemical industry. We saw different catalysts, who had different colours and shapes and of course different properties. During the lunch we worked on a Case Study, where we had to visit the "manager" of an oil refinery. This was a very interesting Case and totally different than we have ever done. We needed to do an offer to the manager and he had a few requirements. He wanted a catalyst who meets the needs of the government, with a long lifetime and as cheap as possible. In three groups we came up with a plan and the manager chose the cheapest option, which fulfilled all the requirements. After the Case we went to into the factory where we saw the production process. We all got an overall and a helmet before we entered the site. We started in the controlling room and from there a Chemical Engineer told us about the machines and the production. At the end of the trip we got more information about the research they to develop new catalysts. We finished the day with a few drinks and our trip back to Groningen!

Shell

15-04-2016

1. Arjen Kamphuis	2. Chris van Heerewaarden	3. Daniël Van Hal
4. Jasper Hacking	5. Jesús Rodríguez Comas	6. Marlinde Koops
7. Renske De Vries	8. Wybren Kalsbeek	

On the 15th of April we went to the gas purification plant of Shell located in Emmen. We went to Shell with a group of 8 students, consisting of 3rd year bachelor and master students. A bus came to pick us up on this rainy Friday morning. When we arrived at Shell, we were welcomed with coffee and tea. After this we saw a safety video, this is what always comes first at Shell (and a lot of other companies). "Safety first!". We all got a orange overall, shoes, gloves and a helmet. Then we visited the whole plant. At Shell Emmen they purify the gas that we use in on a daily basis. They remove for example H2S from the gas. First they pretreat the gas, the water and the condensate are separated. This is done by suddenly dropping the flow rate. After this, the gas is compressed. The gas is purified by the use of sulfinol. Sulfinol is a mixture of water and other chemical compounds. The drops of sulfinol take the H2S out of the gas. Then the gas is dried over molecular sieves. The H2S is converted to water and sulfur. After this very intereseting visit we had a lunch and we continued with a case study. We worked in couples and we all got a process simulation model. This looked like an enhanced version of models Chemical Engineers use during their study (ASPEN hysys models). With the use of this model we had to solve a few problems. After solving the small problems we had to look into a problem which had happened to the plant earlier on. We had to think about causes and how much chemicals were wasted. This was very hard, but we got great help from the engineers at Shell. Finally we understood the problem and were able to solve the problem as a group.

During the whole day the employees of Shell were open for questions and we experienced a great atmosphere at the site. Thanks for having us, we had a great experience this day!

Covestro

04-04-2016

1. Hannah Postema	2. Manoy Trip	3. Edwin Schreuder
4. Henk-Jan Dekker	5. Jelte van der valk	6. Hinno Drenth
7. Herman Bruining	8. Daniel van Hal	9. Paco Visser
10. Rick Scholtens	11. Tom Kramer	12. Katrin Heinzerling
13. Johnny Cranston	14. Martin Karkossa	15. Irene van Droffelaar
16. Marlinde Koops	17. Patrick huiskens	18. Justin Bulten
19. Yichen Yan		

During this day we visited Covestro in Foxhol with two groups of second-year students. Covestro is a relatively new company, previously known as the Material Science brand of Bayer. We were guided by the Research & development manager, the Health & Safety manager and the Production manager.

It was a very interesting excursion due to the fact that it was only for second-year students that followed the course Macromolecular chemistry. Therefore, everybody had the same knowledge about polymers. It was also awesome to see future career options within the brand of polymers, which we were learning about. Due to the enthusiasm of the students and Covestro, our association is looking into future course-specific excursions.

Excursies te houden in de periode 1-9-2016 tot en met 31-8-2017

Excursies gehouden in de periode 1-9-2016 to en met 31-12-2016

SuikerUnie excursion

17-10-2016

1. Arne Hefting	2. Marijn Jonker	3. Jarne de Jong
4. Sietse Tock	5. Joeri ten Kate	6. Andries jensma
7. Jelmer Dijkstra	8. Bram Oosterbeek	9. Mitchell Groen
10. Loek Pieké	11. Shae Beuk	12. Hanne Bosch
13. Tim Bouman	14. Marisha Agarwal	15. Chantal Graafsma
16. Roúel Gnodde	17. Niels Hegeman	18. Eise Nijboer
19. Adaugo Uche	20. Aman Kishore Das	21. Gerben Boerema
22. Peter Rappoldt	23. Luc Terra	24. Jean Paul Nuismer
25. Martin Muller	26. Mieke Nijhof	27. Emiel Magnée
28. Jonne van der Eyden		

On Monday October 17th a group of first-year students and the 50th Board went to SuikerUnie. We started off with a short movie about the whole process in the factory, from sugar beet to granulated sugar. After the safety instructions we were divided in three groups and we could finally see the process in real life.

We saw the trucks coming with enormous loads of beets; those beets were washed in big washingmachines. After washing and slicing them up into small pieces they go into huge processors in which the sugar is extracted out of the beets. After extraction the sugary water is cleaned, purified and finally the sugar is crystallized. They thought about everything. Almost every waste stream is recycled which was very interesting to see. They produce natural gas out of their biowaste and they form animal food out of residual molasses. The sustainable view of the Suikerunie is one to remember! After we went through the factory we got a nice storage tray with, of course, sugar inside.

AkzoNobel Delfzijl Limonadefabriek Bootcamp

10-11-2016

1. Harmen Sikkema	2. Coen Analbers	3. Renske de Vries
4. Jorn de Jong	5. Paco Visser	6. Marlinde Koops

29-11-2016

1. Daniël van Hal	2. Herman Bruining	3. Andries Jensma

It was a cold autumn morning on November 29th when a group of Chemistry and Chemical Engineering students from De Chemische Binding and G.T.D. Bernoulli gathered at Zernike. The group split up and we set off in two vans with AkzoNobel Delfzijl as our destination. As the sun slowly rose over Groningen, thawing our toes in the process, we reached the Delfzijl Chemiepark. We were greeted by Akkie (for many of us a very familiar face) and were guided into the AkzoNobel offices.

Having reached our destination in the building, we were welcomed by additional AkzoNobel personnel, coffee, cake, and an introductory lecture explaining what the Bootcamp would be about. It was our task to safely run and improve a scale-model Lemonade plant. The scale-model Lemonade plant was made up from 3 stations: 1) preparing the ingredients for each specific lemonade recipe, 2) the lemonade reactor (with all the required piping, pumps, and tanks), and 3) the bottle washing and filling station. There were two such lemonade plants, which made for two groups. This, of course, sparked some competition between the two groups. Which group could run the safest, and most productive lemonade plant? The plant was run using 4 people; one at each station and a supervisor. The supervisor made sure the correct and required recipes were prepared, provided a direct line of contact between the plant personnel and the plant operator, and was heavily involved in the cleaning of the lemonade reactor. A first attempt at running the lemonade plants was made. This provided both groups with insight in what parts of the plant could be improved upon. After the first run, the group gathered for some more coffee and discussed the observations. The AkzoNobel personnel showed us some helpful methods with which we could improve the production capacity and safety of the lemonade factory.

After lunch and another informative lecture, each group discussed with the plant operator about a problem in each plant. This proved to be a very handy exercise as it gave all of us insight into how problem solving is handled at an industrial and engineering level. When the source of the problem was identified, and the appropriate solution was put in place, it was time to put the previously derived plant improvements to the test. Each group was given another hour to run the plant. Improvements included: shortening the down-time of the reactor by streamlining the cleaning process (freeing up more time to put in additional lemonade batches), changing the arrangement of the stations within the plant, and concretely dividing the tasks among the available personnel. These improvements dramatically increased production capacity and efficiency. The group assembled together once more to discuss the gravity of the effect of the improvements and to give feedback on the Bootcamp.

Overall, the AkzoNobel Bootcamp gave all of us fantastic insight into the large variety of situations and variables industrial personnel must deal with on a day to day basis. It was an eye-opening and insightful experience.

Excursies te houden in de periode 01-01-2017 tot en met 31-08-2017

AkzoNobel

InhouseDay (datum nog onbekend)

In collaboration with several study associations we will travel to AkzoNobel Delfzijl to have a look at the MCA plant and the production plant of salt. A delegation of the top 5 BSc. students of our association will have a critical eye on the process and eventually have to come up with new ideas for the plants.

Masterclass
9&10-02-2017

This will be the same as last year's Masterclass. See page 7 for the description.

Grolsch

11-01-2017

On this day a group of 30 people will visit the brewery of Grolsch in Enschede. During the brewery tour we will get to know everything about the process of barley, water, hops and yeast to beer. Of course, there will be a special focus in the chemistry of beer.

Shell

19-04-2017

A group of 20 people will travel to Amsterdam to visit the Shell Technology Centre. This is one of the biggest research institutes of Shell over the world. We will start off with a tour around the laboratories and the gas-to-liquid pilot plant. During the rest of the day we will get to know everything about energy transition and eventually have to make a short case about this interesting subject.

Covestro

Exact date will follow, probably in the week of 26th June

This will be the same as last year's excursion. This will be organized for a group of 30 second-year students.