



G.T.D. Bernoulli
Brochure Case Study
2019-2020

Case Study Offer

Is there an interesting project within your company that keeps being postponed? Do you want the potential for the implementation of a new process to be investigated? Do you want an extensive patent or literature study to be performed? Or, are you just curious what the state of the art is in your discipline?

G.T.D. Bernoulli, the study association for chemical engineering in Groningen, and its study trip committee "Bernoulli Goes Abroad 2020" (BGA 2020) are looking for case studies in order to realize a study trip. The case study can involve any type of research and will be executed by a team of two chemical engineering students (Master or PhD). As the case study is performed at the University of Groningen, the students have access to an immense literature database as well as an elaborate amount of programs and tools such as Aspen and Matlab. Due to these resources, the students are able to perform various types of case studies, which include: market research, a techno-economical evaluation, process design and optimization, plant upscaling and almost any kind of literature study. Besides these examples, we are pleased to discuss any other option your company has to offer.

"I would recommend it to everybody if there is a subject you would like to know more about"

- Dr. Klaas Remerie, Chief Scientist Polymer Physics & Polyolefin Functionalization at SABIC (BGA 2016)

In the past editions, Bernoulli Goes Abroad already worked together with various companies. In preparation for BGA 2016 and BGA 2018, case studies were performed for the following companies: Nouryon, Zeolyst, Delamine, Corbion, SABIC, Cosun, Dynaplak, HeatMatrix, PolyVation, Teijin Aramid, University of Groningen and Croda.

"We are certainly interested in offering a new case study for the next edition"

- Prof. dr. ir. André de Haan, Principal Technologist at Cosun (BGA 2018)

"This advice was completely different than what was initially seen as the solution. (...) It has resulted in the prevention of an investment"

- Douwe Tuinstra, Plant Process Engineer at Nouryon (BGA 2016)

Case Study Details

- **2 Students**
- **140 hours per student**
- **Supervision from RUG professors**
- **Students receive credits (5 ECTS)**

The offered case study is an independent assignment that will be executed by a team of two students (Master or PhD) on a specific topic and amounts 140 hours per person (total 280 hours). The case studies will be performed between September 2019 and May 2020; the specific time can be established upon agreement. The students will be selected by an application procedure and deployed on the project they are most suited for.

The quality of the case study is guaranteed by coupling with the university: the students receive credits (5 ECTS) for successfully completing the project. During the execution of the case study regular progress meetings will be held with one or more of the supervising professors. Also, since the case study is performed by students of the University of Groningen, the students have access to an immense literature database as well as tools as Aspen and Matlab. Moreover, Prof Francesco Picchioni from the University of Groningen is appointed as coordinating supervisor. In addition, the quality is guaranteed since the students underwent an application procedure and will be matched to the case study according to their skills and preference.

For each team the case study results will be established in a scientifically written report and there will be a final presentation at the company (and optionally at the university). Our students are very excited to start with the case studies. If you are interested or would like to receive more information, please contact us.

"The results of this research have given us insight into new application areas that we are now going to tackle ourselves. The cooperation with Bernoulli was very good, a professional organization with young talent that has made a tremendous effort"

- Drs. Laura Willemsen, Head of Global Marketing at Croda (BGA 2018)

* The quotes are translated and have been taken from the references on page 4 & 5.

Study Association and BGA

G.T.D. Bernoulli is the study association for chemical engineering in Groningen and consists of approximately 300 (mainly Master) students. Bernoulli organizes both social and career oriented activities, which include annual member weekends, barbecues, excursions to companies and the international study trip. Since 1989 several trips have been organized to Greece, Great-Britain and Czechoslovakia, as well as to locations outside of Europe such as Chile, Thailand and Brazil.

In the summer of 2020, about 20 students of G.T.D. Bernoulli will depart for a fantastic international study trip to South Africa! The aim of this trip is to get students acquainted with the chemical industry and universities, but also let them experience a different culture. The study trip committee "Bernoulli Goes Abroad 2020" (BGA 2020) will work towards the realization of this trip to ensure it will be a big success! BGA 2020 consists of the following chemical engineers:



Douwe Sjirk Zijlstra – Chairman

Ilse Oude Nijeweme – Secretary and Business Relations

Parniya Badr – Treasurer

Diana Bollen – Business Relations

BGA 2016 & BGA 2018

After the absence of a study trip for several years, a new BGA committee was established in 2015. In 2017 the BGA even became a foundation, consisting of a board and an executive committee.

A very successful trip to Thailand was realized in the summer of 2016. A group of 18 students, accompanied by Professor Francesco Picchioni, travelled to this amazing country to get acquainted with the local culture and chemical industry. Besides that, several universities were visited, which gave a good impression of the academic education and research in Thailand. After the success of the study trip in 2016, another study trip was organized in 2018. This time a group of 20 students and 2 Professors, Professor Paolo Pescarmona and Professor Erik Heeres, travelled to Brazil. Also in this country, the local culture, the chemical industry and the universities were explored. Both trips were an excellent combination of education and recreational activities, the participants looked back at both trips with great enthusiasm. Moreover, the students really enjoyed preparing for the trips in the form of a case study. These two trips could not have been made possible without the cooperation with several companies.

References 2016 & 2018

In preparation for BGA 2016, case studies were performed for the following companies: Nouryon, Zeolyst, Delamine, Corbion and SABIC. In addition, in preparation for BGA 2018, case studies were performed for the following companies: Cosun, Dynaplak, HeatMatrix, Polyvation, Corbion, Teijin Aramid, University of Groningen and Croda. The assignments were performed successfully and both the students as the companies were satisfied. Below several reviews (in Dutch) from the case studies performed in 2016 and 2018:

Dr. Klaas Remerie, Chief Scientist Polymer Physics & Polyolefin Functionalization bij SABIC (BGA 2016)

'Ik heb zeer positieve ervaringen met de case study die door jullie studenten is uitgevoerd. Het betrof een lastig onderwerp, niettemin hebben de studenten er hard aan gewerkt om zich de vraagstelling en problematiek eigen te maken, en hebben ze uitstekend werk afgeleverd, waar ik zeer tevreden over was, en waar we in de beeldvorming rond een nieuw thema intern SABIC het nodige voordeel van hebben gehad. Ook de begeleiding was, voor zover ik dat kan beoordelen, zeer adequaat en effectief. Samengevat, ik zou iedereen, als je een onderwerp hebt waar je graag meer over wilt weten, aanbevelen om dit traject te volgen.'



Prof. dr. ir. Kees van der Voort Maarschalk, Corporate Scientist bij Corbion (BGA 2016)

'Binnen Corbion zaten we met een aantal vragen met betrekking tot techno-economische evaluaties van nieuwe procesoperaties. Een groep van 4 studenten heeft gewerkt aan dit onderwerp. Dit was een avontuur voor iedereen: met zeer beperkte informatie een goede evaluatie maken en de resultaten vergelijken met bestaande processen. Door goede onderlinge contacten en feedback van de universitaire begeleider hebben we zeer bruikbare resultaten weten te krijgen. Merk in deze context op dat de case studies studiepunten opleveren. Dit betekent dat inhoudelijke kwaliteit mede door de universiteit wordt geborgd. Het resultaat van de case studies was dat we van 1 van de processen een goede techno-economische evaluatie konden maken. We konden niet op dat punt komen met het andere proces; hier zijn we geëindigd met goede balansvergelijkingen. Al met al zijn we tevreden.'



Douwe Tuinstra, Plant Process Engineer bij Nouryon (BGA 2016)

'Twee mannen van Bernoulli hebben bij Nouryon Delfzijl een case studie gedaan om fondsen te werven voor een studiereis en ervaring op te doen op de plant. Ze zijn aan de slag gegaan met de opdracht en hebben hun oor goed te luister gelegd bij de operators en technologen.

Van de diverse ideeën over oplossingen die hier leefden hebben ze een voorstel gedaan om het probleem bij de wortel aan te pakken. Dit advies was totaal anders dan wat in eerste instantie als oplossingsrichting werd gezien. Gelukkig sneed het hout en is deze oplossing dan ook uiteindelijk geïmplementeerd. Dit heeft geresulteerd in het voorkomen van een investering. In de plaats hiervan is een drukregeling fundamenteel aangepast. Binnen een paar dagen waren er 2 geschikte kandidaten gevonden die met de opdracht konden beginnen. Ze waren gedreven om de opdracht binnen de gestelde tijd op te leveren. Ik heb de samenwerking dan ook als positief en professioneel ervaren.'



Prof. dr. ir. André de Haan, Principal Technologist bij Cosun (BGA 2018)



'Wat met name aansprak is hoe de studenten in korte tijd mooie link tussen problematiek en procesvoering/grondstoffen hebben kunnen leggen. Ook is de goede tussentijdse interactie met hen positief ervaren. Juist daardoor denken we dat er meer uit de case study is gekomen dan anders. We realiseren ons dat deze reis van Groningen naar Dinteloord best veel tijd heeft gekost maar dat heeft het resultaat zeker waard gemaakt. Samenvattend zijn we heel positief en dus zeker geïnteresseerd om bij een volgende studiereis een nieuwe case study aan te dragen.'

Drs. Laura Willemsen, Head of Global Marketing bij Croda (BGA 2018)

'Ik had een technisch pittige onderzoeksopdracht liggen waar we graag externe inzichten verkregen om naast primair onderzoek ook antwoorden uit de markt te ontvangen op de innovatie behoeften.

De twee studenten van G.T.D. Bernoulli waren vanaf het begin zeer gedreven en hebben zich, zonder kennis te hebben van het onderwerp, snel en adequaat eigen gemaakt over de materie. Het is een positieve verrassing hoe snel en gedegen zij te werk zijn gegaan en ook de flexibiliteit toonden tijdens het project om tot het gewenste resultaat te komen. Door discussies met collegae van verschillende afdelingen (marketing, sales en technologen) hebben ze het onderzoek toegespitst op specifieke applicaties en in die segmenten contacten weten te leggen met bedrijven en onderzoeksinstituten.

Door de resultaten van dit onderzoek hebben we inzicht gekregen in nieuwe applicatie gebieden die we nu zelf verder op gaan pakken. De samenwerking met Bernoulli was erg goed, een professionele organisatie met jong talent dat zich enorm heeft ingezet.'

CRODA

Judit Canadell, Sr. Scientist and Group leader Material Science at Corbion (BGA 2018)



'Two students from Bernoulli have done a case study for Corbion to raise funds for their study trip. It was a challenging topic involving a lot of data mining which resulted in a predictive model. The value of the model has already been proven itself by revealing trends that we were not aware off. This would not have been possible without the detailed and hard work from both students. All and all, it has been a very positive and enriching experience.'

Contact

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