Dear Members,

The pepernoten are flying all around, Sinterklaas just arrived and even Santa Claus has made his appearance in some stores. These are all signs that the first Swell of the year is coming for your doormat. Because what else would you do when sitting in your comfortable chair next to the firepit?

In this Swell we will introduce the new board of ‘Het Waterbouwdispuut’ and of course present an overview of our activities for the coming period. Besides upcoming events several former events are reviewed. There might even be a picture of you!

Enjoy!

Editors of the ‘Swell’

Marijn Meyer Ranneft, Jim Tukker & Gabrielle van Zwiereren
From the chairman | Marijn Meyer Ranneft

Dear members of ‘Het Waterbouwdispuit’,

With a full period already completed, we have left the academic year of 2017/2018 well behind us. This means that the old board of the Hydraulic Engineering Student Association has retired and is now taking a well-deserved time off, to concentrate on the remaining courses and master theses they have left.

They left us with a healthy curiosity to new experiences and a broad spectrum of base knowledge. Therefore, I would like to thank the board of 2017/2018: Focco, Servaas, Iris, Florian, Inelotte, Marlein and Sebastiaan, thank you guys a lot for what you have accomplished for the student association last year.

The trip to China with its activities has been very successful. But as a new hydraulic year came closer and closer, seven new students, with water running through their veins, were waiting to kick off their year. As the new chairman of the Hydraulic Engineering Student Association ‘Het Waterbouwdispuit’ I am proud to present to you the new board of 2018/2019!
Meet the board of 2018-2019

Marijn Meyer Ranneft - Chairman

My name is Marijn (spoken as: Mah-Rhine) Meyer Ranneft. During this year I'll be the Chairman of the Hydraulic Engineering Student Association, ‘Het Waterbouwdispuut’. As Chairman you will see me dartling around some lectures to inform you with the latest news. Whenever you have a question don’t hesitate to ask them right away. Besides being the face of ‘Het Waterbouwdispuut’ I’ll have seating in different boards to represent us as students. On top of that most of my work is making sure the rest of ‘Het Waterbouwdispuut’ does their job. Whenever you have a suggestion or a question walk in at 3.72.

And remember: Save water, Shower together!

Jakob Christiaanse - Vice-President & External Affairs

When I was just a little boy, I accidently fell into a pot of water from the Oosterscheldekering. Since that moment, I have always known that I wanted to study hydraulic engineering. And what do you know, 23 years later, my dream has become true! As this year’s Vice-President, I will be responsible for the external affairs of Het Waterbouwdispuut. That means, I am the contact person for our partners and together with them, I will be organizing events like lunch lectures, excursions, company cases and hydraulic dinners. I will also inform all of our students about vacancies / internships / traineeships etc. If you have any questions regarding our partners, events or vacancies you can always knock on the door of room 3.72!

No man ever steps in the same river twice, for it shall not be the same river and he shall not be the same man.

Gabriëlle van Zwieteren - Secretary

Hi Hydraulic Friends, my name is Gabriëlle and this year I will fulfill the part of Secretary of Het Waterbouwdispuut. As you all know, we organise various events, weekly hydraulic coffees and quarterly hydraulic drinks. As a member of Het Waterbouwdispuut you are free to sign up for all these events and thus enjoy all the benefits from getting to know the department, the professors and your fellow students. Furthermore, you will be able to get in touch with companies from the Hydraulic Sector in a professional, as well as casual, way. As Secretary, I am responsible for maintaining the contact with all members and informing you about all the events being hosted, not only by us, but also by companies. The website will be updated frequently and all social media channels can be followed for the latest information!

What did one ocean say to the other? Nothing, they just waved.

Roline Montijn - Internal Affairs

Hello hydraulic friends! I hope you are enjoying your masters and will be inspired by the courses we are taking. I am very happy this knowledge is so specified in the things I like to learn! Next to studying I play the saxophone in a band and like to sail or go for a run in my free time. But after all, why I am writing this is because I will do my fully best to organise an amazing Multiple day Excursion to Dublin and the symposium which will be in collaboration with NETHCOLD, the Dutch commission about Large Dams which is celebrating their 50th anniversary. Looking forward to this year!!

A river cuts through rock, not because of its power, but because of its persistence.
Meet the board of 2018-2019

Jim Tukker - Foreign Affairs

Hello everyone, my name is Jim and this year I will be responsible for the Foreign Affairs of ‘Het Waterbouwdisput’. Many events will be hosted this year for all the Hydraulic Engineering students with the study trip being the highlight of the year. Therefore it is an honour to be in charge of this years study trip. Last year the study trip took place in China which was a great success. Already excited about how we are going to top it this year? Stay tuned on our social media pages for updates regarding the study trip 2019 or just take me out for a drink and i will tell you all about it (0636118779)! Next to the study trip i’m also responsible for the first Hydraulic dinner of the year. This is a great opportunity to meet four of the most well known Hydraulic companies. I’m looking forward to see everyone at our events this year!

Drink water, surprise your liver.

Pauline Janssen - Treasurer

Hello! My name is Pauline and I am 22 years old, which makes me the youngest of the group. Back in 2014 I started my bachelors Civil Engineering, here at the TU Delft. I made this choice because I thought I wanted to be a structural engineer, but then I fell in love with water! Now I’m on the board of the Hydraulic Engineering student association, and as the treasurer I will make sure that the money will flow. Besides that I hope to make the Waterbouwdisput a little bit more sustainable. I’m very looking forward to this year and I hope to see you at our hydraulic coffees, drinks and other activities!

In wine there is wisdom, in beer there is freedom, in water there is future.

Meet the board of 2018-2019

Bart Scheurwater - Educational Affairs

My name is Bart Scheurwater and this year I am the person you need to talk to when it comes to educational affairs. I am 23 years old and started my bachelor Civil Engineering in 2014. My last name would suggest otherwise, but I am the first in my family that is studying/working in the Hydraulic Engineering sector. This year I will be responsible for the Educational affairs. Although we’ve only started for a couple of weeks now, I am already enjoying the lectures, so going to the faculty everyday is not even punishment. I am really looking forward to the combination in being in such good contact with as well the professors as all the other students.

“What did the fish say when it ran into the wall?” Dam.
Study Tour 2018: China

Written by Sebastiaan Woerlee

As one of the world’s most prominent players in the field of hydraulic engineering, the People’s Republic of China keeps surprising us with astonishing projects like dams, ports, and coastal infrastructure on scale that some might consider to be inhumane. The present situation in China moreover seems to attract plenty of attention not only from an engineering point of view, but also regarding political and economic questions. We could say that visiting this country and experience their working culture is more attractive than ever before.

These summer holidays ended with a bang for eighteen hydraulic engineering students, accompanied by dr. Mark Voorendt and prof. dr. ir. Zheng Bing Wang. The tour started with an exhausting flight from Amsterdam via Moscow towards the first destination of the study tour, the city of Shanghai. Although you will not experience the ‘real China’ here (not a single more western place to find in China), it is a metropolis to never forget. With almost 25 million people living here, it is one of the most populous cities at present. In the city life, this is reflected by highrises stretching out as far as you can see. To witness this, a ‘Shanghai-light’ tour was organized on the first day, watching the impressive skyline of The Bund and climbing one of the highest skyscrapers in the Pudong financial district to have an overview of how big Shanghai actually is.
To escape the immense tourist crowds in the city center, we had planned an excursion to the Yangtze estuary on the next day. After an early morning bus ride, we crossed the estuary by ferry, meanwhile witnessing the majesty of this river mouth and all gigantic vessels and cranes that came along with it. We were dropped off at Chongming island, an ecological island with a vast amount of salt marshes and nature reserves. Unfortunately, due to high typhoon activity in the days before we arrived, the park entrances were blocked, leading to an early end of this day. Luckily we still received some explanation about the Yangtze estuary the next day at the research facilities of SKLEC. Also, we paid a visit to the Dutch consulate on the same day, to be informed about the differences in working culture between the Netherlands and China.

Next on the list was the city of Wuhan. A thousand kilometers more inland we expected a little more quietness, however the opposite turned out to be true. With ten million inhabitants and situated on the crossing of the Yangtze and the Han river, Wuhan is the most populated city in central China. The reason of our visit was to pay a visit to the world’s largest dam and largest power station in terms of installed capacity (22,500 MW), the Three Gorges Dam. The university of Wuhan had arranged a special tour for us, in which we had the opportunity to actually go on top of this enormous concrete structure. An unforgettable experience. It took hours for us to see the most interesting spots, such as the shipping locks and the spillways. A long day, but definitely one of the highlights of the study tour.

At the end of the first week, we visited Nanjing, again located along the Yangtze river. We paid a visit to Hohai University, having strong connections with the TU Delft. This made it possible for us to really get to know the campus and the students. We even got invited for dinner, so that we could learn some Chinese traditions. We all expressed our gratitude to the host by approaching him personally with a glass of rice wine, lowering our glass a little lower than his to show our respect. The Chinese students gladly joined, resulting in a lot of fun and good conversations.

On Sunday, we took a look at the extensive research facilities of the Nanjing Hydraulic Research Institute (NHRI), which were so large that we had to be transported with big golf carts to see all the experiment labs. The next day, another hydraulic highlight was planned. Today we were going to see one of the largest tidal bores in the world! We were being warmed up with some model simulations, after which we headed to the bore location. For an hour or so, we chased the tidal bore by watching it and then hurrying into the car with a loud “kuài kuài!” (fast, fast!) to arrive at a new spot, yelling even louder since it grew bigger and bigger. At the end of the bore hunt, we even saw a reflected tidal bore, which grew so big that it rose above the quay wall, resulting in many wet shoes.
After this, we planned some days to see some of China’s nature and culture. We climbed Mt. Huangshan, better known as the Yellow Mountain, argued to be the most beautiful mountain in China. In addition, we got an impression of the city of Hangzhou, famous due to the city’s natural beauty and location along the fabled West Lake.

Our very last day was dedicated to the Yangshan deep water port, the busiest container port in the world, which is connected to the mainland via the 32.5 km long Donghai bridge. This excursion was organized by the Shanghai Dredging Company. After our visit, we were invited into the office of SDC, where we had a big meeting with some of their directors, including the president. At the end of the day we even got the opportunity to enter the terrace on the top of their office, located at the middle of The Bund!

With this, our study tour came to an end. A lovely two weeks full of activities which were really enjoyable. We got to know a little bit more of China, although there is still so much more to discover. A big thanks to the ‘Three Gorgeous’, clearly visible as the flag-bearers in all group pictures, for the photographic control during the trip. If you are looking forward to have an experience such as this one, please do not hesitate to sign up for next year’s version!

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It's always exciting to start something new, just as starting as a freshman at the university with a new study: the master hydraulic engineering. To meet your fellow students the master kick off was organised by Het Waterbouwdispuut. The day started with some useful information about your study, followed by four different excursions. The day ended with a nice barbeque behind the civil engineering building. Now everybody was ready to start with the masters!

**Excursion Witteveen+Bos, Levell & Deltares**
Here we took a close look at the Delta Flume, equipped with the largest wave generator in the world. The 300-metre-long concrete flume hosts waves of up to 4.5 metres high. Currently, the new levvel-blocks are tested there.

**Excursion Rotterdamsebaan**
With a part of the group we visited the Rotterdamsebaan at the Laan van Hoornwijck. After an interesting and quite technical presentation we got a guided tour around the site. We got to explore the inside of the first tunnel, which had just finished building, and we saw how the drilling machine was being installed for the start of the second tunnel.

**Excursion Maeslantkering**
With most of the international students of Hydraulic Engineering, we went to visit the Maeslantkering; one of the showpieces of the Deltaplan. The excursion was introduced by a lecture of Mark Voorendt, after which we went to the Maeslantkering. After the walk-around, we built our own flood defences as real hydraulic engineers.

**Excursion HKV**
At HKV we got a presentation about the BRIGAID project which supports innovations that reduce the impact of floods, drought and extreme weather. To actually witness one of these innovations we went to Flood Proof Holland where a prototype of a titling road flood defence was demonstrated.
Wil jij ervaren hoe het is om bij ons ingenieursbureau te werken?
- Doe dan mee aan onze business course! Wat ga je doen?
  - een visie uitwerken met maatregelen voor het versterken van de Afsluitdijk zodat de waterveiligheid voor een groot deel van Nederland gewaarborgd wordt
  - oplossingen bedenken voor uitdagingen op het gebied vanconstructie, geotechniek, waterbouw, waterveiligheid, landschappelijke inpassing en ecologie in een dynamische omgeving met verschillende stakeholders. Daarbij moeten de vervoersstromen gedurende het uitvoeren van de werkzaamheden doorgang vinden
  - nadenken hoe je met je team innovatieve technologieën en duurzaamheid (duurzaam bouwen en energieneutraliteit) op zijn best kunt toepassen in dit miljoenenproject
  - de oplossing presenteren voor een deskundige jury die aan het eind van de dag het winnende team zal benoemen
  - sfeer proeven bij ons op kantoor en dineren met ervaren Witteveen+Bos collega’s.

Bedenk jij de winnende oplossing?
Schrijf je nu in! www.witteveenbos.nl > werken bij > studenten > business courses

Business course
Afsluitdijk
29 november 2018

On the 22nd of October the first Master Community of the year was organised in the PSOR Cafe. The afternoon was hosted by Tjerk Zitman and was regarding the specialisation choice students have to make in their first year. Since hydraulic engineering covers a wide spectrum of subjects, it is important to inform students as early as possible on their options. There were several presentations from PhD candidates from our department by Frederik Vinke, Wouter Jan Klerk, Stuart Pearson, Victor Chavarrias and Frans van Grunsven. After these fun and insightful presentations we had some drinks together and the remaining questions were asked.

All in all, the afternoon was a success and we hope that it will help the new Master students in making a thoughtful choice of their specialisation.

Written by Gabrielle van Zwieteren

On the next two pages you can find some pictures and a very useful and fun flowchart made by Pauline and Bart. Keep in mind that you still have to make the choice yourself! For questions about your specialisation choice you can contact us or someone at the department.
HYDRAULIC FLOW CHART

Answer honestly and find the track for YOU!
Van Oord

Title

Van Oord
Marine ingenuity

Project risk engineering is not set in stone
After obtaining her Master’s degree in Behavioural Economics and Game Theory, Brigitte decided that she wanted to work for a large, international contractor. ‘I don’t have a technical background but I think the construction industry is really cool. It’s fascinating to see new objects being built.’ Brigitte decided to apply for a job with Van Oord. The fact that Van Oord is active in the Middle East was an added bonus for her: ‘Over the years I have gathered a genuine interest in the Arabic world through my studies and (family) visits to the region. It is exciting to be building with Van Oord in this part of the world’.

Delevering added value
In her job as a risk engineer for Van Oord, Brigitte is actively involved in the tendering process. ‘This is a relatively new position at Van Oord,’ she says. ‘I work with four other colleagues in the Engineering & Estimating department and we are responsible for assessing the risks during the tendering process.

These can be geological or environmental risks or risks associated with currency fluctuations or shipbuilding. A customer comes to us with a design and we, as tender team, review the entire project and make a risk assessment.

Since I am not an expert in all disciplines, I consult my colleagues in other departments, such as planning, engineering, and legal or procurement.’ Brigitte works at the head office in the Netherlands but regularly travels abroad for her job. ‘I was in Egypt recently where we are working on preparations for a underwater pipeline construction at a depth of 650 metres. I flew to Cairo, followed by a four-hour car journey to Damietta to discuss the risks with the team concerned. During the same visit we visited a quarry in Suez which supplies the building materials for the project. My personal presence on site means that I can deliver added value.

Part of the tendering process consists of theoretical evaluations or assumptions. By visiting the project site, we can see for ourselves what is happening, what needs to be done to mitigate risks and which issues could affect the smooth implementation of a project. We incorporate the lessons learned into our tenders and this is how we contribute to a successful project.’ Brigitte stresses: ‘We can avoid unexpected surprises by being aware of the risks and taking the necessary actions to eliminate or reduce those risks’.

Not set in stone
Brigitte enjoys her job at Van Oord; Van Oord is a professional and well-organised family business. You get a lot of opportunities if you are actively involved and know what you would like to achieve. The lines of communication are short and the company is willing to listen.
Currently I am doing a (industrywide) course on hydraulic engineering, as this is both something I am interested in and something that will improve the quality of my work. Project risk engineering is not set in stone. We are continuously thinking of ways to address the various risks. I am increasingly becoming involved with the tendering process and I see the added value of close cooperation with colleagues in the planning department. The fact that our work is also in the Middle East, makes it even more interesting for me.

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The answers to the hydraulic puzzle will be released in the next edition of the Swell.
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On the 4th of October, the annual Waterbouwdag took place, this year at the Jaarbeurs in Utrecht. It was an entire day dedicated to hydraulic engineering, specifically on the newest high-tech developments in the sector. The day was hosted by our very own professors Bas Jonkman and Stefan Aarninkhof. It consisted of several different sessions, presentations and interviews on recent hydraulic projects and/or developments. Notable examples are the renewal of the bank protection of the Afsluitdijk and an interactive discussion session on the possibilities of building new islands in the North Sea. Another highlight of the day was an interview with Boyan Slat, the founder of The Ocean Cleanup, conducted by Stefan Aarninkhof (see photo). Next to that, it was a big and very ‘gezellig’ coming together of the hydraulic engineering community with a company market in one of the halls. The boardmembers of Het Waterbouwdispuut helped the organization during the day and we also had a stand on the company market. All in all, it was a great day to celebrate our sector together with fellow hydraulic people!
Bridges are highly convenient for crossing a channel, no matter whether it is a natural or a man made one, without getting your feet wet. Or without getting stuck with your vehicle in a sloppy, rocky, rippled or otherwise heavy going bottom. In its basic form, a bridge connects one bank of a channel with the opposing one. Although this may seem obvious, ample examples of bridges can be found that lack one or both connections. Is that the result of thoughtless design? Well, that depends on one’s perspective. It is hard to imagine that a trustworthy engineer would come up with a design that doesn’t match the width of the channel to be spanned. Nevertheless, it happens. Question is, however, whether that has anything to do with the design of the structure itself or something else.

For the construction of the Eastern Scheldt storm surge barrier, a temporary bridge was built between the islands of Noord-Beveland and Schouwen-Duiveland. It provided access from two sides to the construction site at the artificial island Neeltje-Jans. After completion of the barrier, this bridge was for sale. Rumor has it that it was bought by the government of a far away country. It was disassembled into big chunks and shipped to this country where it would serve as an inland cross-river connection. Thus far, a beautiful example of giving redundant infrastructure a second life, but the funny part of the rumor is that nobody ever cared about comparing the width of the river to the length of the bridge.

Such stupidity is unlikely to occur in sound bridge design. But even if the width of a river is known exactly at the time of designing a bridge meant to cross it, there is no guarantee that nature is willing to maintain that width indefinitely, or at least for the projected lifespan of the bridge.

One example of a bridge where that lack of guarantee has been recognized, is the one at the Altantsugts-Bugat Road, somewhere outside the city of Ölgii in the North-Western part of really beautiful Mongolia. I haven’t got a clue about the name of the river underneath the bridge, but I do know that the bridge is not far from where the river rises. The river braids in a bed of pebbles and small rocks and the water is either cold or frozen. Even during summer, ground frost is not uncommon and neither is snow. When the river is not frozen, it is highly dynamic. Branches continuously migrate and so do places where they split and merge. Bridging this rivier is risky in the sense that the river might just walk around the rigid structure and a bridge with its abutment surrounded by water usually lacks any practical purpose.
That is one of the reasons revetments have been invented. These structures are amazing. They can force a river to stick to its course underneath the bridge. The designer of the bridge at the Altantsugts-Bugat Road must have had at least some knowledge of revetments as left-overs can be observed around both abutments. It seems that they have been constructed by piling up rocks from the river bed to form some sort of parallel dams, stabilised with a thrifty outer layer of concrete. The head of one of the revetments is shown in figure 1. The vegetation on top is natural (or accidental if you prefer), not planted. At the other side of the bridge, the lower part of this revetment is severely damaged, probably due to the absence of a proper toe in combination with frost and the erosive effect of a branch that nestled up against the structure (figure 2). Whether this is reason to disapprove of the revetment design remains to be seen. After all, these revetments are meant to maintain the course of the river for at least the lifespan of the bridge and what is left of the latter seems somewhat limited (figure 3). Thoughtless design or actually nicely tuned?
De Nederlandse waterbouwers zijn wereldmarktleider op het gebied van baggeren, havenontwikkeling en landuitbreiding en worden wereldwijd geroemd om de waterbouwkundige werken die zij realiseren.


Bedrijven

Bedrijven in de waterbouw houden zich bezig met de aanleg en het onderhoud van havens en waterwegen, landaanwinning, aanleg van kunstmatige eilanden, bouwen met de natuur en infrastructuurprojecten.

Interesse?
Kom dan werken in de waterbouw, een branche met een breed carrièreperspectief zowel in binnen- als buitenland met aandacht voor je persoonlijke ontwikkeling en begeleiding gedurende je hele carrière.

Facts & Figures
- Totale werkgelegenheid: 10.000, verspreid over de hele wereld
- Totale omzet per jaar voor deze branche: Meer dan 11 miljard euro wereldwijd
- Aantal bedrijven: Ongeveer 250
- Aantal werknemers: Ongeveer 6.000 in Nederland
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Waterschappen Rivierenland
‘Swell!’ is a magazine which is published four times a year for all the members of ‘Het Waterbouwdispuit’ and her relations.

‘Het Waterbouwdispuit’ is the student association of the department of Hydraulic Engineering and Environmental Fluid Mechanics of the Delft University of Technology.

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Printed by:
Drukland.nl

Number of copies: 500

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