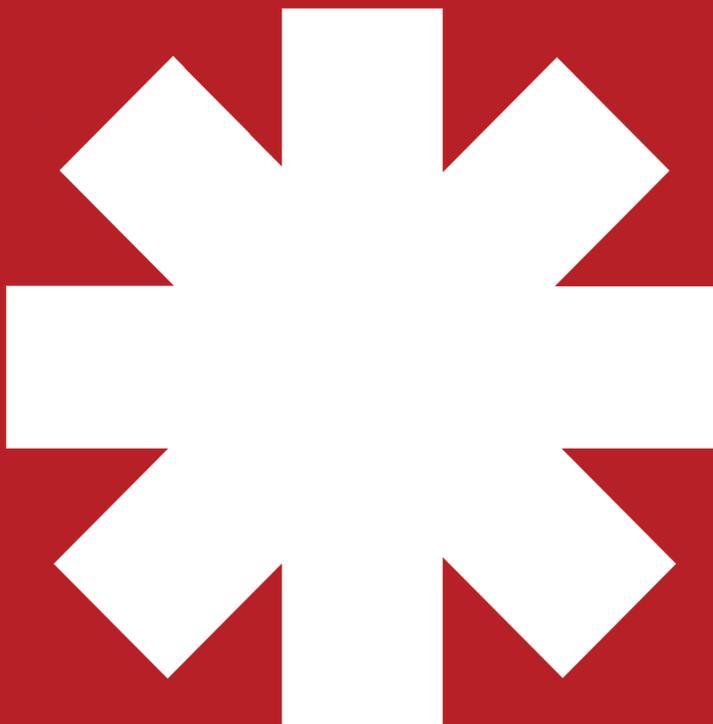




Taylor Vision



State of the Art





About us

Board

Maurits van den Hurk - Chairman
Jeroen Huisman - Secretary
Marc Gritter - Treasurer
Michiel Zult - Internal Affairs
Meindert Ras - External Affairs

Location

Dispuut Taylor
Department Precision and
Microsystems Engineering
Mekelweg 2
2628 CD Delft

Contact

Tel: +31 (0) 15-2786850
Email: taylor-3me@tudelft.nl

Edition

Summer Edition

Editor

Michiel Zult

History

Taylor is the study association related to the department Precision and Microsystems Engineering of Delft University of Technology. The association was founded in 1988 to enhance the study experience of the students. The Taylor Foundation, in its legal form, was subsequently founded in 1992, making it an official organ in the TU Delft. During this time, the department changed its name from “Production Engineering” to the PME you are all familiar with.

In contrast to what many people think, Taylor is not named after the famous mathematician known for the Taylor expansion. It is named after the mechanical engineer Frederick Winslow Taylor, who was active in production engineering and industrial efficiency.

The logo of Taylor was inspired by the tip of an Atomic Force Microscope, an instrument that requires technology from all the divisions of the department.

Taylor aims enhances the study experience of the students by: trying to improve the relation between the students and the department staff, bringing the students in contact with the industry, providing the department with student feedback about courses and, last but not least, organizing recreational events to de-stress from the hard working life as a PME student.



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From the board

Dear reader,

Here we are, at the end of the academic year 2018/2019. The last lunch lecture, company visit, monthly reception and network drinks are all behind us and we were very pleased to see that so many dedicated students maintained presence until the very end. I look back with a lot of pleasure to the past year in which I got to know a lot of new people, among which my fellow board members, and I want to thank all our sponsors for inspiring our students with the awesome world of high-tech engineering, in the Netherlands and even abroad!

Speaking of abroad, our job as Taylor board is not over yet; in a few weeks we will visit South Korea with a group of 20 very enthusiastic Taylor Trippers to see a very different work culture than we're used to and hopefully see some of the beautiful tourist sites that SK has to offer. Preparations have been going very well and I'm sure we'll have lots of interesting stories to tell when we return.

Next to the Taylor Trip we have to assign five new board members to take over our responsibilities for the coming year. We are currently very busy with recruiting a motivated group of people to continue the growth of our association and cater for the many more students that PME will have next year. We thought of many ideas to make the board transfer as efficient as possible to make sure next year will be even better than the past! To end our year in the style we started, we did a 'Taylor Revision' to reflect on each other's work in the way we introduced each other in the first Vision.

On behalf of the board, I would like to thank everyone involved with Taylor in the past year that has given us unconditional support in good and bad times, appreciation for our efforts and new experiences from so many different people, I am very proud of what we have accomplished together. Have fun reading the last Vision of this academic year!

Yours sincerely,

Maurits van den Hurk





Taylor Revision

Jeroen Huisman

You will all have seen the emails sent by our lovely Secretary Jeroen, or as we sometimes call him, JOY. Even though his first names spell JOY, his emails are mostly formal and occasionally lack some enthusiasm. But I've learned that his time to shine is when he gets to talk to people in person. During the Taylor drinks he will just walk right to a group of people, maybe introduce himself, but most importantly tell a story of his own. When Jeroen has lost interest, he just walks away or tells you without excuses that he is going to speak to other people. Honesty and being straight to the point are both characteristics I really like about Jeroen. He will just tell you when he doesn't agree or say "I don't care" if it's not important to him. This makes him an approachable and trustworthy person, and his way of thinking has led to some clever solutions this year.

We, as the Taylor board, have seen Jeroen slowly change over the year. He started as the secretary who mixed up dates and days in the emails, but he took the lead when our chairman Maurits was absent. He even moved from his parents' house to Rotterdam to live in the same house as Maurits where he's getting a crash course in being a student. Cooking, doing laundry, finding and drinking a Smirnoff Ice, attending a Christmas dinner in April, and falling off his bike after a good night out have all been checked from his todo list. We had a great year together which would not have been the same without Jeroen.

Marc

Meindert Ras

In the course of the last year I've had the pleasure of getting to know the many different faces that "Meinditto" has. When he joined the board being the smallest member, he was Kleindert. On one instant he was in for a joke as Geindert, while on the other instant he was the Mastermeindert behind an enormous networking event. Monday night was Taylor Soccer Team, star player: Teun Koopmeindert. He had a wide variety of ways to Remeindert his to-do's and important information, including the old-fashioned pen and paper. During lunch hours, Meinduck never refused a nice dry slice of bread that was 6 weeks overdue, no toppings. When in a bar, Meindarts was frequently Undermeindert by his board members who were way more skilled in playing pool and darts.

All kidding aside, Meindert took his function very seriously when needed and put an incredible amount of effort in his work: not only did he perform his tasks as commissioner of external affairs and board member, he also managed to form a basis for his successors to have access to all important information in a structured way and allow them to work more efficiently and on top of that took the initiative to launch Taylor's largest event up to date (CONNECT) which will hopefully return annually. We tried to give him the credit he deserves every now and then, but a shoutout in the Taylor Vision never harmed anyone: great job Mijndert! You were an invaluable addition to the team.

Maurits





Taylor Revision

Maurits van den Hurk

In the beginning of the year Maurits was a complete mystery to me. He was tall and made jokes which were different than I had ever experienced. During the course of the year I got to know Maurits a lot better. I learned that he taught himself the dutch version of most songs he knows and he is not afraid to sing it. Anybody who knows MauMauMau knows that the numbers 6 and 19 have some sort of weird effect on him. When Maurits leaves, he will most likely say: “Hoe zegt die schwarzenegger dat altijd aan het eind van die film? I’ll be back” as in his favorite youtube video, Willems Kantine 2006 Jos (deel1/2).

Maurits has lead the board with his incredible positive attitude, which gave the rest of us the strength to do what was needed. As a chairman he made sure we kept our head cool and made a card game called Chinese poker a standard opening ritual to our meetings. The crazy thing is that since the first of May, I live in the same house as Maurits.

Jeroen

Marc Gritter

Marc is always smiling and has a positive attitude. Whenever I’m excited about something and want to share it with someone else without receiving a cynical response, I turn to Marc, as he is able to boost my morale at all times. Besides being an excellent engineer, he would also make a great mental coach.

During the year, Marc has developed himself in all aspects of life. The installation of the app ‘Tinder’ had got us all really excited. Therefore, a new recurring item during the weekly Taylor meetings was created: ‘Marc’s private life’. This put a lot of pressure on Marc, so he felt the need to experience as much as possible during the week. Consequently, Marc became quite the player. Thanks to Marc, there was finally something interesting to discuss during the meetings. Moreover, he inspired the likes of Jeroen and Meindert, who also wanted a topic about their life. It seems like Meindert almost has a girlfriend now, her name is commercial. This all thanks to Marc.

Besides being an awesome, sometimes lazy guy, Marc is also the treasurer. That does not mean he hunts for treasures at the beach with a metal detector. It means he makes sure that Taylor does not go bankrupt and is doing a darn good job at it. Without Marc, we would cease to exist, so thank you Marc for your great commitment this year and your exceptional mentality!

Michiel





Taylor Revision

Michiel Zult

Okay, so this would be a lot easier if Michiel wasn't - you know - kinda special. Maybe it's just me, but this guy managed to subvert my expectations every single time the past year. I mean this in a very good way, but first, let me give you an example.

With Taylor we have a meeting every monday. One day we were all sitting around my desk and having a discussion when Michiel suddenly stood up. He does random stuff all the time and there is really no point in asking why, so we just let it happen. Michiel walked to his desk, ripped a long piece of toilet paper from a roll on his desk, grabbed a marker and wrote 'Rambo' on the piece of paper. He walked back and without saying anything and the rest of us still in discussion, wrapped the piece of paper around Jeroen's head and sat down. This was when I realized that he was just on a whole new level.

Michiel isn't ordinary or typical; he does things his own, unique way. Was this often exceedingly funny? Definitely! Was this often practically helpful? Absolutely not. But I am grateful that he was part of the Taylor board because it gave it a completely new dimension you didn't know you needed or even knew existed. He boosted morale, came up with creative ideas and kept you intrigued for what might happen next. I am going to miss the good talks we had and I'm certainly going to miss his unexpected photoshop endeavors. I mean, he once photoshopped me as Taylor Swift and sent this to all of us without context...on a saturday afternoon! You need that in life.

Meindert





Recent graduates

The following students have recently graduated from PME, congratulations to all!



Hylke Kooistra, specialisation: MSD

Scoliosis brace design: utilizing compliant shell mechanisms and primary compliance vector path optimization

Ab Broshuis, specialisation: MSD

Negative stiffness in compliant shell mechanisms for designing a stroke rehabilitation device for the arm

Cees van der Geer, specialisation: MSD

Design of a 2-DOF compliant mechanism for describing closed spatial surfaces, with intended application as leg in omnidirectional walking machines

Gijs van der Velden, specialisation: MNE

Fabrication of a microfluidic device by using two-photon lithography on a positive photoresist





PME News

In the Netherlands, universities are funded by the government, mostly for the education. Technical universities get more than non-technical universities because they need expensive experiment equipment. Medical departments get even more, much to the displeasure of technical universities. About a month ago the “Advisory Committee on Funding Higher Education and Research”, better known as “Committee-Van Rijn” thanks to its chairman, released a report stating that the fundings for technical universities in the Netherlands will be increased, without penalizing other universities. This is great news for Delft, which takes the most advantage: 8.5% budget increase according to NRC. The destination of this money is decided to be maintaining the core competences of TU Delft by hiring new staff for new research areas. So, in order for PME to hire as much new staff as possible, they have to convince the executive board that we indeed strengthen those core competences. What they are exactly is up to PME to figure out, but since ‘design’ is applicable to almost every study, that is not a smart one to promote our department with. Anyway, the increased funding is intended for 60 new staff members nationally, of which Delft will get half. 15 spots are left for 3mE where 1 or 2 will likely go to PME with a small chance for a 3rd. Great job by the PME board! The new research area will be metamaterials - materials with properties that do not appear (to our knowledge) in nature but do appear frequently on Just’s desk - and the new staff can be valuable for giving the ever rising amount of students the attention they need, especially during their thesis. The department also sees this as a nice opportunity to attract women to our man cave, as we have seen at Stanford during the Taylor Trip 2018 they will then make it more open to other female engineers and before you know it, the target of 35/65 is accomplished. We’ll see!

Maurits van den Hurk



Activities

Yes!Delft Tour

On the sunny Friday afternoon of the 26th of April, 15 enthusiastic high tech engineering students met in front of the Yes!Delft building. The Taylor board had once again made use of her network to arrange a very interesting program for us. For a start, we got a nice tour of the Yes!Delft building where we were told all about one of the most successful tech incubators. After a quick cup of coffee we continued with the program namely three pitches by three different startups.

First off Atmos: a company focusing on drones for mapping and surveying purposes. Due to a smart hinge mechanism in the wings, this drone is able to take off and land vertically but fly like an airplane, creating a perfect combination between flexibility and efficiency. Interesting to know about this startup is that the idea was actually developed during the bachelor thesis of the 2 founders, proving that the projects we do at the TU Delft can become much more than the ECTS!



Next up; Flexous, a truly high tech company as they develop flexible mechanisms for the watch industry. Did you know that a traditional mechanical watch consists of roughly 150 parts together fulfilling only about 5 functions? Flexous is working hard to make this a thing of the past. With their expertise in compliant mechanisms, they develop monolithic parts integrating many of the functionalities of the traditional ones. By doing so they do not only make total assembly much easier but they also made the most accurate mechanical watch in the world!

Activities

Yes!Delft Tour



Last but not least: Dot Robot, an electronics company specializing in custom electronic hardware and control systems. If you really like mechatronics this might be the company for you. For example; they developed the complete drive system for an electronic mobility scooter, from the electronic motors inside the wheels, all the way to the joystick of the user.

At the end of the day we joined the lively Friday afternoon drinks in the main hall where all the companies joined for a beer and a snack. All in all, it was a very nice and interesting event. Ooh, and before I forget; all these companies are hiring! So if you are still looking for a master thesis or job don't be shy and give them a call!

Rafael Argiro







Activities

Lunch Lecture: Demcon Opto

On the 29th of April it was time for the first lunch lecture of quarter four. This lecture was about DEMCON and the presentation was given by Ruben Biesheuvel. The presentation started with information about the company in general. The head office is headed in Enschede. But in the 25 years that DEMCON exist, it has grown. With 600 employees it has now also other offices in Best, Groningen, Munster and a new office in Delft. The office in Delft is at this moment located in the building of YES! Delft, but will move to a new and larger location this summer.

DEMCON produces products and systems in different areas. The areas are high-tech, medical, opto-mechatronic, robotic and industrial systems & vision. An example of a medical system is the needle positioning system, which helps the doctor with taking biopsies. An example for a high-tech system is a 3D glass printer.

But the presentation was mainly about their opto-mechatronics projects. Ruben Biesheuvel worked on a project in the opto-mechatronics area. He told us about a laser interferometer he developed. He explained that at DEMCON they work with a V-model, which they go through iteratively. This model has seven steps from defining the requirement specifications to testing and calibration. The seven steps for designing the interferometer were discussed. Finally, he showed us the test setup that has been built to verify the accuracy of the laser interferometer.

Robin Bastiaanse



Activities

Lunch Lecture: ASML

Sometime ago, ASML came to Delft to tell us more about working at their company. The presenter was a woman who studied physics with a focus on astronomy in France. With that study one does not automatically think about a company like ASML. Nonetheless, she ended up working for ASML in the Customer Support. When she started working for ASML, she did not know much about the machines and the technology behind it. For this reason, she first had to learn how the machines worked very well. During her period in customer support, she traveled a lot to customers to make sure the expensive machines of ASML worked optimally. After doing this job with much pleasure, she swithed to the Development and Engineering department. In this department, they investigate the feasibility of ideas that come from the Research department. She still works in this department these days.

During her presentation, she told us a lot about working at ASML. For technology students like us there are four relevant departments. First there is the customer support, which is the department that makes sure that the machines work optimally once they are build and sold to the customer. They communicate directly with the client and have to travel a lot. The second department is the Research department, they come up with new ideas to further improve the machines and make sure that the machines are equipped with the newest technologies to be ahead of the competitors. The third is the Development and Engineering department, they work out the ideas of the Research department and convert it to a design. The last one is the Manufacturing and Planning department, they make sure that the designs can produced in an optimal way.

I found the presentation really interesting. Especially the personal story of the presenter about the road she took to become a development engineer at ASML and her experiences about working at ASML.

Rutger Schreurs



Activities

High-Tech Tea

On May the 7th, the first ever ladies only event was organized at PME square. Every female student or staff member was invited to drink tea, eat cakes and have some nice conversations with each other. Eventually a number of twenty women showed up, which is an attendance to be proud of. After all, women are still a bit under-represented in the PME-department. A wide variety of topics was discussed, ranging from thesis projects to skydiving and from postgraduate doctoral degrees to cake recipes. It was nice to get to know each other so well in such a short time. It was also very useful to discuss certain study- and career-related problems. Especially the students could learn from the staff here, since most PME staff members have many years of experience dealing with this sector of engineering.

The event was an initiative of first year students Lisanne Nijdam and Emma Hoes with the help of the Taylor board. I would like to thank them all for doing the organization. I personally hope this kind of event becomes a tradition within the PME-department!

Sara Pakvis



Activities

Excursion: Sioux

On the 17th of May, Tayler went to Sioux. After a long trip with dutch songs bearing through the radio we finally got to our destination at Nuenen. It was the 50th anniversary of Sioux and we were guided to a huge party tent. It started with a presentation about Sioux and the program of the day. A lot of companies have ideas but don't have the tools to realize those ideas. This is where Sioux makes an entry, Sioux tries to provide these tools in knowledge and facilities to realize the ideas of a customer. As I would call it, Sioux tries to be the bridge between ideas and realization. After the presentation, we got a tour around some projects of Sioux. This was a moment of realization that Sioux really does everything, from the autonomation of docking stations at Schiphol airport to the rapid pick and placement of dies. After the tour, it was time for a case study. The problem was stated as followed. In the former printing industry, all the machines are rigidly connected. This leads to some minor imperfections in the system that cause misprints. One imperfection is the placement of the rollers for the belt, since they are rigidly connected to the frame, they aren't completely parallel. This causes the belt to move from the rollers and this is not desired. Another imperfection is the cut and connection of the belt. Since the cut can't be 100% straight, internal stresses will occur when the belt is welded together around the rollers. These internal stresses can cause displacements in the paper and therefore cause misprints. We were asked to pitch our solution for the problem and afterwards, Sioux presented their own solution. After the case study, there was time for a lunch and talks with the employees of Sioux before we got into the bus back to Delft. To end the day, an exciting game of 30 seconds was played. All together it was a nice excursion.

Vincent Parijs



Activities

Lunch Lecture: Demcon High-Tech

At the end of May 2019, DEMCON Delft gave the second lunch lecture of the year. Earlier that year DEMCON gave an enthusiastic speech about the projects of Ruben (employee at DEMCON Delft) in the field of Opto-Mechatronics. This time Martin and Jelle talked about projects more in the Robotics side of things. This gave an impression of the variety of the field in which DEMCON operates. DEMCON makes Industrial, Medical, Optomechatronic, Robotic and Hightech systems. DEMCON exist for roughly 20 years and is a rapidly growing company that has now more than 700 employees.

Martin is working at DEMCON Delft. This is a relatively small part of the total DEMCON Group. There are currently working around 30 people in Delft but they are also rapidly growing. Their office is in the YES!Delft building but maybe the time when this article gets out this is already changes because they are looking for a new place. Jelle most of the time works on 2 projects at the same time, in this way the work is more spread out evenly across a year. Also, it is nice that in this way there is more variety in the work. Strictly he works for the Robotics department of DEMCON but when he showed his project there where all kinds of technical fields that he touched. For example a medical application.

At the end of the lecture, there was room for some questions. The discussion led to some good tips for applying and working at this company. There are some master thesis spots visible online but Martin's advice is to email him directly. In this way, both of you can figure out a perfect fit. "There is loads of work and always something that fits you".

Thanks, Martin Vermeer and Jelle Snieder for the inspiring lunch lecture!

Tim Wubbe



