Editorial

An unusually kind Autumn has almost passed and, as the merciless winter approaches, it is time to reach in the wardrobe for the thick woollen coats and brace for a cold and dull season. But to help you out in those grey and lonely days, we bring you the PDEng’s Autumn Newsletter! This edition is of special significance to us, since it showcases the 25th Anniversary Event in which current trainees, former alumni and many professionals from different companies gathered to celebrate the occasion.

On November 5th, the 25th anniversary of PDEng programmes at TU Delft was celebrated with a full-day event at the Science Center in Delft. It was organized by Pieter Swinkels, Managing Director of the Delft Product and Process Design Institute, and the Delft Ingenious Design Employee Association (DIDEA). Around 100 PDEng alumni, 40 current trainees, and 10 (ex-) staff/lecturers from all over the Netherlands gathered to honor this occasion and reminisce about the good times.
Starting from 11.00h, several speakers shared their experiences in the Programme and the value they found in it for their career development. In the afternoon, a design challenge called for the participants’ creativity and teamwork spirit. The celebration ended in the evening with informal drinks at the botanical garden.

The opening speeches, presided by Pieter Swinkels and Johan Grievenink—both key leaders in the development of the Programme at Delft—provided an overview of the evolution of the PDEng, highlighting the challenges faced during the last 25 years. Several alumni also recounted their learnings and inspired us with their career paths. Ernst de Leeuw (CB&I) and Vincent van Eekhout (Akzo-Nobel) represented the early-Dutch generation of the Process and Equipment Design (PED) Programme. Later on, Beatrix van der Star (Organisation for the Prohibition of Chemical Weapons) showed that more adventurous career tracks are within reach of the PDEng graduates.

After the networking lunch, David Sánchez García (Corbion) and Fabiola Pineda (Dow Benelux) motivated us with a couple of very energizing presentations. Being from more recent generations, they shared with us the most useful courses for them and the most important skills they acquired during their stay at TU Delft. Although all speakers were from different Programmes, backgrounds, countries, and built different career paths, they all concluded that—besides the opportunity to practice their technical skills—the PDEng Programme allowed them to develop the most useful personal abilities: multicultural teamwork, listening, organization, planning and flexibility. This segment of the event ended with presentations by the current trainees Ishan Bhagali (Chemical Product Design, CPD), Miguel Sánchez (PED) and Roman Agustin (Bio-Process Engineering, BPE). Through a very creative set-up, they emphasized the importance of sharing knowledge, expertise and experiences within this big family.

A design challenge took place to strengthen the bonds and—even more importantly—to have fun with innovative and, sometimes, not very successful ideas. It was the interest and enthusiasm shown during the challenge that made this section one of the most satisfying parts of the day! Once the winners of the challenge were officially announced and rewarded, the scene shifted to the bar at the botanical garden for a drink. With this, the successful and well-received celebration was concluded with expectations of staying connected and the promise of future events such as these on a more regular basis.
Modelling and design of a novel hydrothermal treatment process of aqueous waste streams - Francesco Sebastiani (HyVent Technology B.V.)

Over the last year I have been working on my IDP project. This was executed at HyVent Technology B.V., a venture of four enthusiastic entrepreneurs. HyVent aims at supplying innovative and more environmentally friendly technologies for the treatment of special wastes to the process industry. Specifically, HyVent is developing a novel hydrothermal oxidation process for the treatment of aqueous wastes, such as spent caustics. This process enables a reduction of the treatment cost, the emission of pollutants and the energy consumption, compared to the currently available process alternatives. Nevertheless, the achievement of a safe and economic viable design was hindered by the reaction’s exothermicity and the large pre-heating requirement. In order to avoid the economic and safety risks that are associated with a trial and error approach, mathematical modelling was selected to optimize the reaction development, define a thermal control approach, and implement heat integration. Consequently, my project focused on the design of a mathematical model of the treatment process. This was implemented on Microsoft Excel, according to specific user and functional requirements. Furthermore, process simulations were executed to optimize the reaction development and define a thermal control strategy. This knowledge was finally used to perform the design of the process and subsequently to estimate operational and capital expenses. Overall, it was an exceptional learning experience, where I had the opportunity to combine my academic knowledge and the practical expertise of senior professionals to achieve tangible results.

Fouling in the dairy industry - Raquel Penagos (FrieslandCampina Innovation Centre)

Fouling in heat-based processes of dairy products is a widely studied topic due to its importance in determining process runtimes and operational efficiency within any dairy-related company. Fouling is an inevitable concern that occurs due to the accumulation of product components on the equipment surface, coupled with the growth of thermophilic bacteria. This is a big issue because the count of thermophilic bacteria increases to such a point that the product shelf life is affected. Thus, leading to an increase in the production costs and a decrease of the runtime because of the need for cleaning.

FrieslandCampina has a significant interest in increasing the runtime of heat exchangers and evaporators by reducing the fouling formation rate. My project aims to provide a deep understanding of the fouling mechanism according to the type of product and processing conditions and, to translate that knowledge into a mathematical model that can be used to predict and minimize the fouling process by designing optimized operating conditions or process redesign.
This Autumn has seen the arrival of 13 new PDEng trainees from 8 different countries, adding to the healthy diaspora of the PDEng Programme at TU Delft. Once again, the Spanish-speaking countries have dominated the intake with Spain and Mexico offering 3 and 2 trainees respectively. Portugal and India also join Mexico in supplying two trainees each. Germany, China, Iran and Indonesia complete the group with a trainee hailing from each country. With most trainees coming from warmer countries, Delft has been generous enough to offer a slightly extended Summer in the form of a rather benign Autumn. While the new arrivals have been lulled into a sense of ‘Gezelligheid’, Noelia and Easwaran, the seasoned graduates of TU Delft, have warned them of impending frozen fingers and rain-soaked trousers.

The BPE Programme has the largest addition, with 6 new trainees including – Sara (Spain), Nancy (Germany), Miguel (Spain), Diogo (Portugal), Ana (Portugal) and Noelia (Mexico). The CPD Programme has Albert (Spain), Yuan (China), Padma (India) and Jessica (Indonesia). The PED Programme makes up in quality what it lacks in quantity with Rod (Mexico), Easwaran (India) and Amin (arriving fashionably late from Iran). The new set of graduates have made a spirited start to their PDEng journeys with some lively social events coupled with gritty hard work at the office. The coming period with these new trainees promises to be an exciting one!

From July 17th to July 24th, 23 PDEng trainees partook in the annual International PDEng Study Tour. This year’s trip took place across four industrial sites, belonging to three different companies in two countries: Germany and Switzerland. The first stop was with Sulzer Chemtech in Winterthur, Switzerland. Sulzer focuses on pumping and rotating equipment along with chemical engineering technologies, specializing in separation columns and static mixers. The second visit was to Lonza AG in Visp, Switzerland. Lonza, a pharmaceutical, biotechnology, and specialty ingredients company, relies on modular multi-purpose plants to manufacture a variety of products. The last company visit was to DSM in both the Grenzach, Germany and Sisseln, Switzerland sites. In Grenzach, the main products are Vitamin D and B2, while the Sisseln site focuses on Vitamin A and E. However, other products are also manufactured at both sites that fit into DSM’s nutritional product portfolio. Aside from the company visits, the study tour was also an excellent bonding opportunity for the trainees. The group visited the city of Strasbourg, swam in Lake Konstanz, hiked in Zermatt, and explored the Black Forest. Ultimately, the study trip was a successful way for companies to learn about the PDEng Programme at TU Delft, while providing the current trainees an opportunity to explore new places, strengthen friendships, and learn about different businesses.
Welcome event PDEng
As is the case every September, a fresh and nervous batch of PDEngs arrived, eager to start and hear tales about what life in Delft is like. To give them a nice insight of what a PDEng’s life is about, the older trainees prepared a presentation and a quiz that showed the best of their experiences as part of this group. Needless to say, the slides showed the colourful side of our colleagues and gave all the attendees a good laugh. Since that moment, the new PDEngs knew they had landed in the best working environment possible! The day ended with beers at a pub in the city centre and a blurry (like the frequent fogs in Delft during this season) memory of the night.

International dinner
The international dinner is a yearly tradition that consists of a potluck meal with typical dishes from different countries, allowing us to experience tastes from every corner of the world. The dinner was held in the green boxes and more than 20 different dishes were prepared by the different PDEngs: we tried käsespätzle (Germany), butter chicken (India), rajas poblanas (Mexico), papas alioli (Spain), bacalhau com natas (Portugal) and many others. In order to fully create an international atmosphere, we played music from different countries to which the least shy danced, proving that Indians can dance Reggaeton just as well as the Iranians can dance Punjabi.

Halloween
One of the most anticipated events in the yearly cycle; the Halloween party. The evening calmly started with Gandhi spreading the peace amongst the attendees until four police officers turned up carrying a prisoner and warmed up the party by dancing to some Latin tunes. Many other unexpected guests (skeletons, a zombie pilot, Dracula, Jigsaw, among others) contributed to marking an utterly terrifying, yet enjoyable, evening. The costume contest was won by Pedro Martín, Luz Narango and Cookie (their dog), who dressed up as mummies, earning them the coveted prize of the night: a chunk of Old Amsterdam cheese.

New DIDEA Board
On September 14th, 2016, the outgoing DIDEA Board held elections to choose the new board for the next 6 months. Candidates first presented their programs and the competences that qualified them to assume this responsibility, and after counting the ballots, the new representatives of the PDEng Programme were announced:

Chairman
Frank Sauerhöfer

Secretary
Ishan Bhagali

Treasurer
Miguel Sánchez

Representatives for each of the programs were also elected with Pedro Martín Salvador, Padma Sridharan, and Nancy Schäper now taking the baton for PED, CPD and BPE respectively.

UPCOMING EVENTS

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