

Cover:

A number of articles in the theme Resilience are difficult to illustrate, especially because of the corona measures. We have chosen to visualise those stories and the cover with member dolls. Although you can only work with poses, you sometimes even manage to portray an emotion. (Photographer Sam Rentmeester)

Foreword

Tim van der Hagen

Resilience

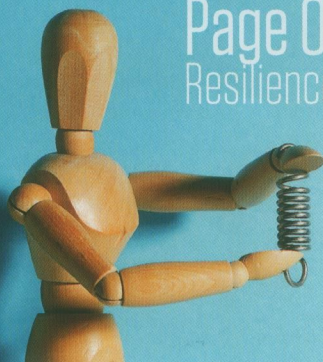
For more than a year now, our lives have been dominated by Covid-19. I am constantly pleasantly surprised by the resilient way so many people at TU Delft have managed to cope, each in their own way. Our researchers often draw strength from their work, even under trying circumstances. People such as Professor Neelke Doorn, who is studying how to make our Delta system flexible, or Alexandru Stefanof, who wants to make our electricity grid resistant to cyberattacks. They are working on resilience, particularly focused on the post-Covid-19 age, which we are slowly daring to hope will come. But for many that is still too far off – it's lasted so long! Who can you look to when your mental resilience has fallen to nil? So let's not just focus on the 'heroes' of this period. As Fares al Hasan puts it: "There must be space for resilience." Studying was difficult when he came to Wageningen from

Syria, with his head full of war. We are living in peace here, but I am still very concerned for our students. We see that they are increasingly suffering from a lack of personal contact. Their limit has been reached.

Alumna Patricia Parlevliet also knows this: as a mentor and business coach, she offers students a listening ear. Meanwhile, with our VSNU colleagues, we are pushing for more face-to-face teaching as soon as possible. And we are testing how to do this safely on campus. Once this is all over, we can look at the suggestion from alumnus Tonie Mudde, who would like to see an extra endorsement on the degree certificates of 'corona students': 'Showed extreme perseverance and resilience, survived the lockdown of 2020-2021.' I can't wait!

*Prof. Tim van der Hagen,
President Executive Board TU Delft*

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At the Faculty of Architecture, René van de Velde and René Hoonhout research the cooling effect of trees in the city. With trees in pots the water supply is important. They are testing the Aquabag, with which the water can seep slowly towards the roots. (Photographer Sam Rentmeester)

Foreword *Tim van der Hagen* Drought

The Netherlands is a beautiful country, but it needs a roof, we used to joke. The joke has worn a little thin since the droughts of recent years. Even though not all the climate models indicate increasing drought in the Netherlands, it is clear that changes need to be made to our water management in order to combat drought-induced subsidence and flooding in the future. Meanwhile, scarcity of water threatens no less than a quarter of the world population, a threat that will only increase under the influence of climate change. The harsh reality is that Wall Street has recently started trading in water in addition to oil and other raw materials, making water 'the new gold'. Drought. The spectre of this century, and also the theme of this edition, because the knowledge and ingenuity of TU Delft engineers can certainly mitigate. For example, as Professor Rudy Negenborn explains, ships' hulls can be fitted with inflatable floats to adjust their draught to the water level.

Satellite readings can in turn help predict the best moments for sowing crops in Africa. Alumnus Mandy Korff working at Deltares is also using satellite images, to study damage to

foundations. And did you know that this year sees the launch of the fifth TU Delft satellite into space?

Oliver de Gruijter graduated cum laude in 2014 with a self-cleaning water filter that fits on a jerrycan. His Jerry has now passed the prototype stage: this summer, over 100 examples will be tested in refugee camps in Iraq and Gaza. And if there is one alumnus who has influenced Dutch water management, it is Alumnus of the Year Karin Sluis. Besides her work at Witteveen+Bos, she was a member of the 'Top Team' of the Water & Maritime Top Sector. All these people are interviewed in this edition. Meanwhile, for our TU Delft top athletes, the road to the Olympic Games is also often a watery one. We wish every success to all our athletes, whether in indoor, outdoor or water sports. It promises to be a great summer for sport. But whether we end up facing a hosepipe ban, or getting wet feet on the campsite, I wish you all a splendid summer!

*Prof. Tim van der Hagen,
President Executive Board TU Delft*

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In Campus South, sheep ensure that the vegetation on wasteland is kept short. Warden Piet Doorn (45 years at the TU) moves the electric fencing every now and then, so that the flock can graze a new area. There they eat the hogweed first, which apparently is the tastiest. (Photographer Sam Rentmeester)

Foreword
Tim van der Hagen

Inspired by nature

Aircraft wings that take inspiration from birds and surgical instruments based on insects or octopuses. Not only does nature provide plenty of inspiration for innovation, it also features increasingly as part of the design itself. We are developing new materials using living organisms and creating coastal protection that spreads itself along the coast under the influence of currents and waves. By the same token, anyone who uses a Living Cocoon for their burial will no longer pollute the earth after death, but actually become a source of new life. All of this is part-and-parcel of an essential and urgent development: instead of plundering it, we need to live much more in symbiosis with nature.

It is essential and urgent, because, for nature, time is rapidly running out. Because of climate change, we face extreme forms of heat, drought and floods causing a shift in human and animal habitats and diminishing biodiversity. It is high time that society took concerted action and, as TU Delft, we are taking the lead with our Climate Action programme. Whether it concerns climate change or the crisis in the building industry, state-of-the-art research and

education remain the cornerstones of any solution. This is why we are so delighted to see Lieven Vandersypen awarded this year's Spinoza Prize, the Netherlands' most prestigious scientific award. It is also the fourth consecutive year that the award has been presented to a TU Delft scientist. Within the university, the Professor of Excellence award is the pinnacle of prizes. I recently had the pleasure of awarding it to professor of Control & Operations, Max Mulder, someone capable of providing unparalleled motivation and inspiration to students and colleagues, even in the time of coronavirus.

As Rector Magnificus, the time for prizes and distinctions may now be behind me, but even if it may win me no prizes, having the honour of leading the university is perhaps the most privileged role within the organisation. Of course, the Executive Board is ably assisted and advised by the Supervisory Board. This year saw two alumni join it: Heleen Wachters and Tijo Collot d'Escury. They introduce themselves in this issue.

*Prof. Tim van der Hagen,
President Executive Board TU Delft*

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Entering the ESP hall is a bit of a surreal experience. The objects look as if they have come out of an electronic tinker box, but the dimensions are enormous. It feels like walking on a circuit board as a gnome. (Photographer Sam Rentmeester)

Foreword

Tim van der Hagen

New energy

TU Delft will celebrate its 180th anniversary on 14 January 2022. One hundred and eighty years of TU Delft means 180 years of research, engineering and innovation; 180 years of innovators and bridge builders; and 180 years of highly educated engineers that have contributed to welfare, development and security in the Netherlands and far beyond. We are extremely proud of our past. It was also a past that was very focused on economic growth and industrial development. While this has undeniably brought much good to society, we are increasingly facing their negative consequences, of which climate change is the most far-reaching. We take our responsibility for this. We are providing new generations of engineers the knowledge and expertise that they need to address these challenges. Through innovation we focus on concrete solutions and through our research we are working on new understanding that could lead to solutions that are not yet there. This will help us all to look towards a safe and thriving future.

The energy transition is a crucial weapon in the battle against climate change. Only if our energy system is CO₂ neutral by 2050 will we limit the impacts of climate change. However, if things do not speed up, we will not achieve this in 30 years. We need to make haste. Hence, 'speeding up the energy transition' is the theme of our anniversary in which we celebrate our active role in the energy transition. This year's edition revolves around this theme. Meet 10 researchers that are working on speeding up the energy transition. Professor of Energy Systems Analysis Kornelis Blok shares his future vision and Professor Peter Palensky discusses a platform to test future scenarios, his digital twin of the energy system. Finally, alumnus Mike ten Wolde finds himself at the heart of the energy transition at TenneT. He is just as optimistic as I am about the outcomes. If we all make an effort, we should achieve it.

*Prof. Tim van der Hagen,
President Executive Board TU Delft*

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PHOTO: SAM RENTMEESTER



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