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The Science of Making Torque from Wind 2020 (TORQUE 2020)

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Wind power is starting to make a significant contribution to the decarbonisation of our energy systems throughout the world, though much remains to be done. Although, wind turbine technology is seen as commercially viable and, in many cases, now, subsidy-free, there are still a number of basic grand challenges in wind energy that the scientific and industrial community must address [1]. These include: providing a better understanding of atmospheric flows and how they interact with windfarms; an improved understanding of the aerodynamic, structural and hydrodynamic behaviour of wind turbines; and how to integrate ever greater volumes of wind energy into our electrical grids.

Europe has become very much a centre for the scientific and industrial expertise to address these challenges. To provide a focus for academic research in wind energy, the European Academy of Wind Energy (EAWE) was founded. The Academy has become arguably the world's leading association of academic institutes active in wind energy. Amongst its many activities, EAWE founded a conference where leading researchers from around the world could present their work related to wind turbine technology. The conference was called *The Science of Making Torque from Wind* (or TORQUE, for short) and its inaugural edition was held in Delft in 2004. The conference has gone from strength to strength and is probably the largest scientific conference devoted to wind energy in the world. History came full circle and the eighth edition, TORQUE 2020 was due to be held in Delft again in the spring of 2020. Unfortunately, the COVID-19 pandemic meant that the hosting of a physical conference was no longer possible, so the host, the TU Delft Wind Energy Institute at the Delft University of Technology moved the conference fully online.

Following the call for three-page abstracts, more than 500 submissions were made and, after a two-stage per review process by over 150 reviewers, nearly 320 full papers were accepted for publication in the proceedings. The online conference consists of three plenary session, 28 parallel oral sessions and five poster sessions. Due to the online nature of the conference, oral presentations are to be kept short (eight minutes each) and plenary keynotes are restricted to 15 minutes to allow plenty of time for discussion. All poster presenters are allowed a recorded one-minute pitch which can be accessed during the online poster sessions.

All sessions have opportunity for online question and answer discussions with the presenters. Remote interactive participation will be encouraged as much as possible.

Posters and parallel sessions are grouped under seven broad themes that have been overseen by several experts in the field. These are:

- Turbine Technology - Carlos Simão Ferreira (TU Delft)
- Wind and Wind Farms – Sukanta Basu (TU Delft)

- Control and Monitoring – Jan-Willem van Wingerden (TU Delft)
- Measurement and Testing – Martin Kühn (University of Oldenburg)
- Systems Design and Multiscale Modelling – Katherine Dykes (DTU Wind Energy)
- Future Wind – Dominic von Terzi (TU Delft)
- Small Wind and Developing Countries – David Wood (University of Calgary)

The conference could not have been made possible without an army of people, too numerous to mention personally. However, I would like to give a huge thank you to Linda Gaffel who managed the arrangements for the conference ably assisted by Marie Louise Verhagen and her team at Event Solutions. The effort required to do this should not be underestimated particularly with the significant upheaval involved and having to reschedule the conference at short notice to make it a fully online event.

The good news is, that TU Delft have been offered the opportunity to host TORQUE 2022 in two years' time in their home city. We look forward to a very interactive event with vigorous scientific discussion at TORQUE 2020 and very much hope to see everyone in person at TORQUE 2022 (world-wide pandemics notwithstanding!).

Simon Watson
Chairman of TORQUE 2020
Delft, July 2020

References

[1] Veers P et al. 2019 Grand challenges in the science of wind energy Science **366** (6464) eaau2027, doi: 10.1126/science.aau2027.