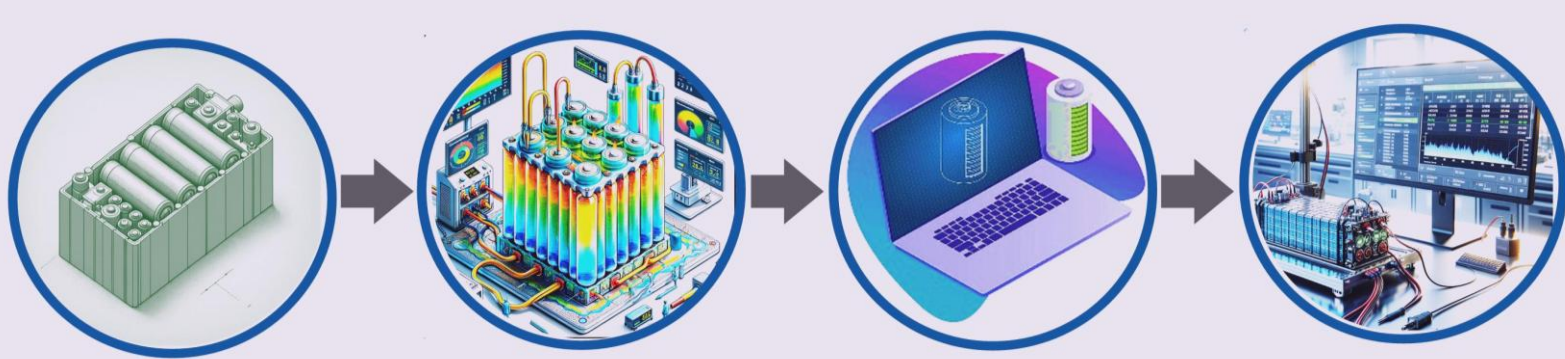




Summer School on Digital Twin Development for Battery Systems: Electrical, Mechanical, and Multiphysical Modeling

University of Twente

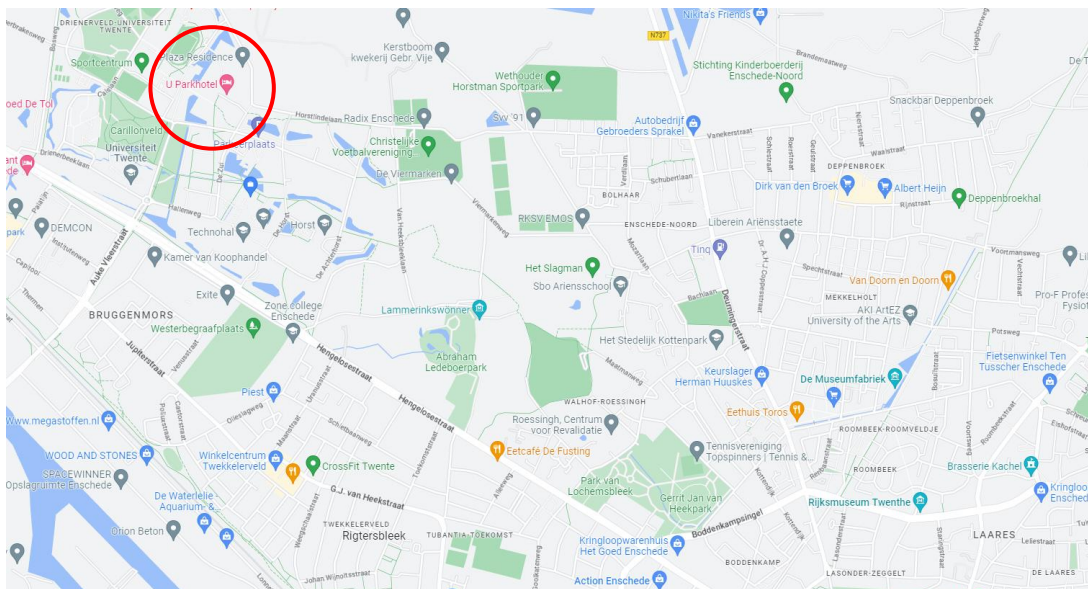
21 – 23 May, 2025

Practical Information

Summer School Venue

U Parkhotel, University of Twente

De Veldmaat 8, 7522 NM Enschede, The Netherlands.



Public Transport

The venue is accessible by public transport. From Enschede central station you can take:

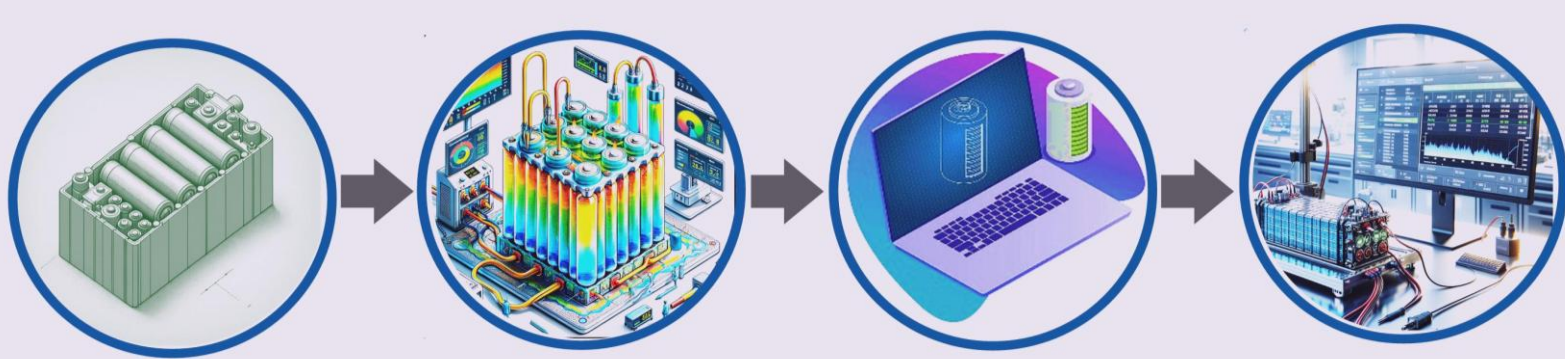
- [1](#), get off at Enschede, Kennispark/UT, and walk around 10 min to the venue.
- [Bus line 1 \(Direction Universiteit\)](#), get off at Enschede, UT/De Zul, and walk around 5 min to the venue.

From Hengelo central station you can take:

- [Bus line 9 \(Direction Enschede CS\)](#), get off at Enschede, Kennispark/UT, and walk around 10 min to the venue.

Alternatively, you can rent a bike and cycle to the venue, 12 min ride ([OV-fiets](#)).

To plan your trip and check travel times you can visit [9292](#)!



Program

Wednesday 21 May

U Parkhotel

09:00 – 09:15

Welcome of Participants – Registrations

Event Opening

Dr. Nataly Bañol Arias (University of Twente)

09:15 – 10:00

“System Engineering in Digital Twin development - I”

Dr. Marcus Pereira Pessoa (University of Twente)

10:00 – 10:45

“System Engineering in Digital Twin development - II”

Dr. Marcus Pereira Pessoa (University of Twente)

10:45 – 11:15

Coffee break

11:15 – 12:00

“Hands-on Workshop: System Engineering in Digital Twin development”

Dr. Marcus Pereira Pessoa (University of Twente)

12:00 – 13:30

Lunch

13:30 – 14:15

“Introduction to battery systems in electric vehicles”.

Dr. Martin Bata (Slovak University of Technology in Bratislava)

14:15 – 15:00

“Efficient Mechatronic System Design & Optimization”

Dr. Bernd Winkler (Linz Center of Mechatronics GmbH)

15:00 – 15:45

“Soft skills training session: Project concept preparation”

Peter Beňo and Miroslav Konečný (ADDSEN)

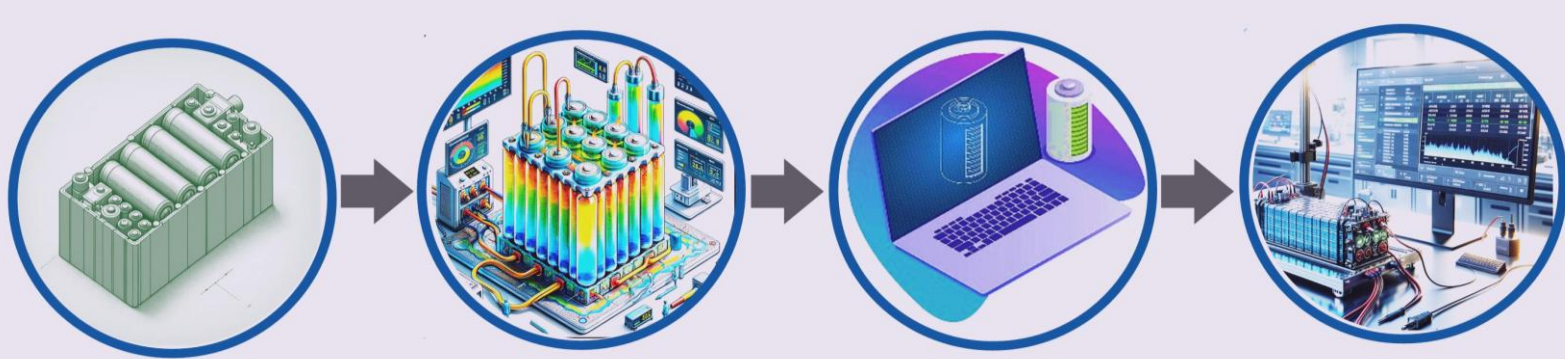
15:45 – 16:15

Coffee break

16:15 – 16:45

“Soft skills training session: Research idea pitching”

Peter Beňo and Miroslav Konečný (ADDSEN)



Thursday 22 May

U Parkhotel

09:00 – 09:15

Welcome of Participants – Registrations
"Day at a glance: Mapping the day's learning"
 Dr. Nataly Bañol Arias (University of Twente)

09:15 – 10:00

"Electrochemical Impedance Spectroscopy and Advanced BMS systems"
 Dr. Prasanth Venugopal (University of Twente)

10:00 – 10:45

"Tutorial: Python based battery electrochemical modelling"
 Sai Krishna Mulpuri (University of Twente)

10:45 – 11:15

Coffee break

11:15 – 12:00

"Tutorial: Python based battery electrochemical modelling"
 Sai Krishna Mulpuri (University of Twente)

12:00 – 13:30

Lunch

13:30 – 14:15

"CAD Modeling of Battery Systems"
 Dr. Martin Bata (Slovak University of Technology in Bratislava)

14:15 – 15:00

"Tutorial: CAD Modeling of Battery Systems"
 Dr. Gabriel Gálik and Dr. Martin Bata (Slovak University of Technology in Bratislava)

15:00 – 15:45

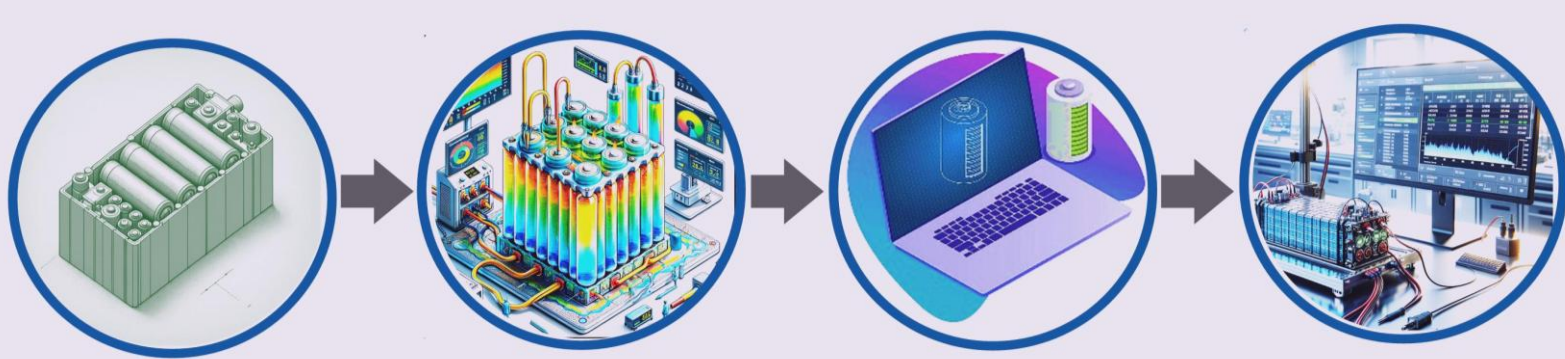
"CAD Models for Simulations"
 Dr. Gabriel Gálik and Dr. Martin Bata (Slovak University of Technology in Bratislava)

15:45 – 16:15

Coffee break

16:15 – 16:45

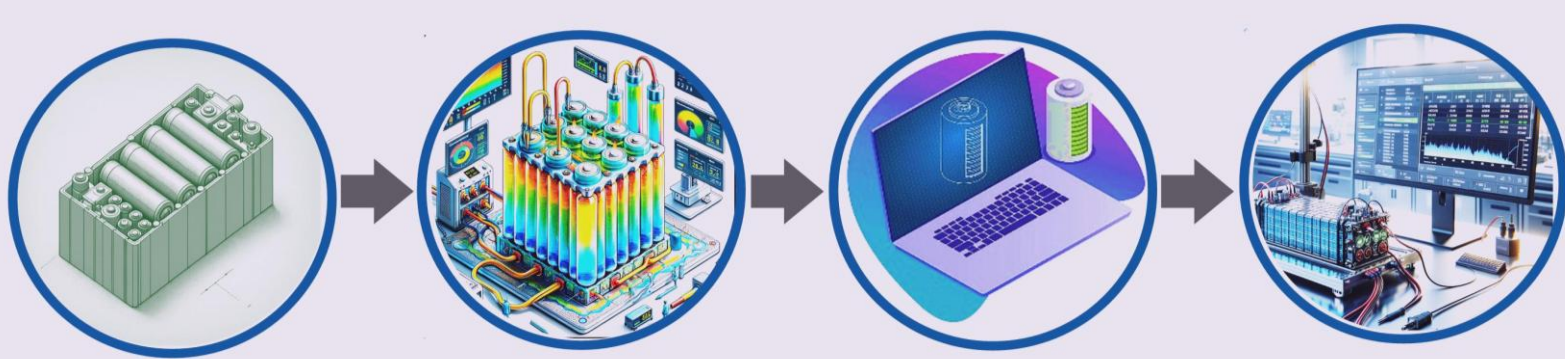
"Wrap-up"



Friday 23 May

U Parkhotel

09:00 – 09:15	Welcome of Participants – Registrations <i>“Day at a glance: Mapping the day’s learning”</i> Dr. Nataly Bañol Arias (University of Twente)
09:15 – 10:00	<i>“Multi-physics modeling, FEM and CFD approaches”</i> Dr. Gabriel Gálík (Slovak University of Technology in Bratislava)
10:00 – 10:45	<i>“Thermo-Electrics domain modeling in FEM”</i> Dr. Gabriel Gálík (Slovak University of Technology in Bratislava)
10:45 – 11:15	Coffee break
11:15 – 12:00	<i>“Tutorial: Thermo-Hydraulics and CHT modeling in CFD”</i> Dr. Gabriel Gálík (Slovak University of Technology in Bratislava)
12:00 – 13:30	Lunch
13:30 – 14:15	<i>“Tutorial: Thermo-Hydraulics and CHT modeling in CFD”</i> Dr. Gabriel Gálík (Slovak University of Technology in Bratislava)
14:15 – 15:00	<i>“Tutorial: Practical Demonstration of Complex Model of Battery System”</i> Dr. Martin Bata (Slovak University of Technology in Bratislava)
15:00 – 15:45	<i>“Digital Twin Integrated Battery Management System Architecture”.</i> Sai Krishna Mulpuri (University of Twente)
15:45 – 16:15	Coffee break
16:15 – 16:45	<i>“Wrap-up”</i>



Program Overview

	Wednesday 21 May	Thursday 22 May	Friday 23 May
Morning	Welcome of Participants – Registrations Event Opening Dr. Nataly Bañol Arias (University of Twente) “System Engineering in Digital Twin development” Dr. Marcus Pereira Pessoa (University of Twente)	Welcome of Participants – Registrations “Day at a glance: Mapping the day’s learning” Dr. Nataly Bañol Arias (University of Twente) “Electrochemical Impedance Spectroscopy and Advanced BMS systems” Dr. Prasanth Venugopal (University of Twente) “Tutorial: Python based battery electrochemical modelling” Sai Krishna Mulpuri (University of Twente)	Welcome of Participants – Registrations “Day at a glance: Mapping the day’s learning” Dr. Nataly Bañol Arias (University of Twente) “Multi-physics modeling, FEM and CFD approaches” Dr. Gabriel Gálik (Slovak University of Technology in Bratislava) “Tutorial: Thermo-Electrics domain modeling in FEM” Dr. Gabriel Gálik (Slovak University of Technology in Bratislava)
	Coffee break	Coffee break	Coffee break
	“Hands-on Workshop: System Engineering in Digital Twin development” Dr. Marcus Pereira Pessoa (University of Twente)	“Tutorial: Python based battery electrochemical modelling” Sai Krishna Mulpuri (University of Twente)	“Tutorial: Thermo-Hydraulics and CHT modeling in CFD” Dr. Gabriel Gálik (Slovak University of Technology in Bratislava)
	Lunch break	Lunch break	Lunch break
Afternoon	“Introduction to battery systems in electric vehicles”. Dr. Martin Bata (Slovak University of Technology in Bratislava) “Efficient Mechatronic System Design & Optimization” Bernd Winkler (LCM) “Soft skills training session: Project concept preparation” Peter Beňo and Miroslav Konečný (ADDSEN)	“CAD Modeling of Battery Systems” Dr. Martin Bata (Slovak University of Technology in Bratislava) “Tutorial: CAD Modeling of Battery Systems” Dr. Gabriel Gálik and Dr. Martin Bata (Slovak University of Technology in Bratislava) “CAD Models for Simulations” Dr. Gabriel Gálik and Dr. Martin Bata (Slovak University of Technology in Bratislava)	“Tutorial: Thermo-Hydraulics and CHT modeling in CFD” Dr. Gabriel Gálik (Slovak University of Technology in Bratislava) “Tutorial: Practical Demonstration of Complex Model of Battery System” Dr. Martin Bata (Slovak University of Technology in Bratislava) “Digital Twin Integrated Battery Management System Architecture”. Sai Krishna Mulpuri (University of Twente)
	Coffee break	Coffee break	Coffee break
	“Soft skills training session: Research idea pitching” Peter Beňo and Miroslav Konečný (ADDSEN)	“Wrap-up”	“Wrap-up”

More info: [Link](#)

Organizers

(University of Twente)

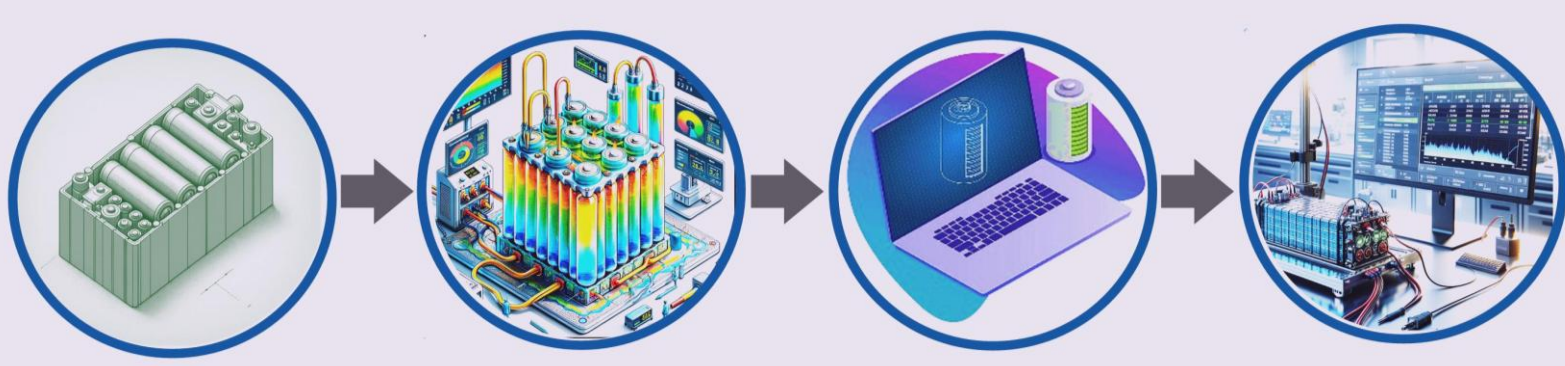
[Sai Krishna Mulpuri](#) (University of Twente)

Prasanth Venugopal (University of Twente)

UNIVERSITY OF TWENTE.

In collaboration with





As part of the [FreeTwinEV](#) Project

"This project has received funding from the European Union's Horizon Europe under grant no. 101159989 (Fostering Research Excellence of STU in Digital Twinning for Sustainable and Safe Electric Vehicles)."



**Funded by
the European Union**