Pan-European Training, Research & Education Network on Electromagnetic Risk Management

Pan-**E**uropean **T**raining, research and education network on **E**lectromagnetic **R**isk management (PETER)

Deliverable 5.11 – PETER Special Session/Workshop I

@EMC Europe 2020, online conference (Sept 23-25, 2020)

PETER Special Session:

Wednesday September 23, 2020

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No. 812.790

Deliverable Number	**D5.11 (D33)**
Deliverable Name	**PETER Special Session/Workshop I**
Due Date of Deliverable	February 29, 2020
Revised Due Date Deliverable	September 30, 2020
Actual Submission Date	October 14, 2020
Deliverable Lead Partner	KU Leuven
Dissemination Level	Public
Work Package	WP5 Training
No of Pages (Annex not included)	11
Keywords	Special Session, Workshop, EMC Europe

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1. Prolegomena

PETER Deliverable 5.11 was initially, as stated in the PETER Grant Agreement Description of the Action Annex I Part B, foreseen to be the report of a Special Session/Workshop organized at the Safety Critical Systems Symposium with initial foreseen due date February 29, 2020. However, this Deliverable 5.11 had already been associated to a Special Session organized at EMC Europe 2020 in Rome from September 5 to 9, 2020 (see also Deliverable 5.11 Deviation document attached which was sent via a Formal Notification to the EC REA on March 6, 2020).

2. Conference selection

EMC Europe is the leading symposium in Europe in the area of ElectroMagnetic Compatibility (EMC). EMC Europe is since 2010 a yearly event. Editions of EMC have been held in different cities spread over Europe, including Rome, Bruges, Sorrento, Eindhoven, Barcelona, Hamburg, Wroclaw, York, Dresden, Angers, and Amsterdam. The EMC Europe symposia are organised by a local committee, but financially supported by the "Stichting EMC Europe" and with the IEEE EMC Society as a Technical Co-Sponsor.

After a long evaluation of the worldwide situation caused by the COVID-19 pandemic, the organizing committee of EMC Europe 2020 (which was originally planned as a physical event in Rome from Sept 5 to Sept 9 2020) had to decide that EMC Europe 2020 would be held virtually as a fully online conference from September 23 to 25 2020. The health and safety of the participants is first priority.

3. Application for the Special Session

***Title of the Special Session**: Risk-Based EMC

***Abstract**: This Special Session allows the researchers in Europe to contribute their work in a special dedicated session on Risk-Based EMC. The most recent version of the European Guide for the EMC Directive emphasis the need for Risk-Based EMC. Manufacturers are obliged to perform a risk analysis, and not just test their equipment and put it on the market. The current electromagnetic environment is too diverse, and the equipment is too complex, that a risk analysis is necessary.

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The European PETER project (https://etn-peter.eu/) is focused on Risk-Based EMC. This special session is connected to an international EU funded projects involving 12 partners and the session is therefore expected to attract a large audience.

***Organizers' information:**

Davy Pissoort, KU Leuven, Belgium

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Frank Leferink, University of Twente / THALES, the Netherlands

Frank.leferink@utwente.nl

Heyno Garbe, Gottfried Wilhelm Leibniz Universitaet Hannover

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***Proposed duration**: half day

4. Special Session Submissions

All papers for the Special Session on Risk-Based EMC had go through a strict peer-review process (according to EMC Europe's and IEEE's rules). In total 15 papers were submitted for the Special Session, of which finally 13 got accepted for presentation at the virtual edition of EMC Europe 2020.

Below is the final program of this **Special Session** (**Wednesday September 23, 2020**).

1. 1:30pm – 1:50pm:
   Effectiveness of Time Diversity Against Multi-Frequency Disturbances Under Planewave Conditions
   Syed Hassan Tirmizi, Jonas Lannoo, Dries Vanoost, Guy Vandenbosch, Davy Pissoort
   KU Leuven, Belgium
   PAPER from the MSCA ETN Safer Autonomous Systems Project

2. 1:50pm – 2:10pm:
   Effectiveness of PAM-4 Line Coding in Triplication-based Error Correction Codes under Harsh Electromagnetic Disturbances
   Jonas Van Waes, Jens Vankeirsbilck, Jonas Lannoo, Dries Vanoost, Davy Pissoort, Jeroen Boydens
   KU Leuven, Belgium

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3. 2:10pm – 2:50 pm:
   Coupling of Energy into PCB Traces in a Reverberant Environment: Absorption Cross- Section and Risk of Susceptibility
   Arunkumar Hunasanahalli Venkateshaiah[1], Haiyan Xie[2], John F. Dawson[1], Andrew C. Marvin[1], Linda Dawson[1], Martin P. Robinson[1]
   [1]University of York, United Kingdom; [2]Northwest Institute of Nuclear Technology, China
   PETER PAPER

4. 2:50pm – 3:10pm:
   Effects of an External Multi-Harmonic EMI Excitation on the Transmission Bit Error Rates of a Redundant Channel under Planewave Illumination
   Syed Hassan Tirmizi, Jonas Lannoo, Dries Vanoost, Guy Vandenbosch, Davy Pissoort KU Leuven, Belgium
   PAPER from the MSCA ETN Safer Autonomous Systems Project

5. 3:10pm – 3:30pm:
   Introduction of Wireless Services and Devices in a Hospital Environment following a Risk-based EMC approach
   Mumpy Das[1], Silvo Jeunink[1], Robert Vogt-Ardatjew[1], Bärbel van den Berg[3], Frank Leferink[1,2]
   [1]University of Twente, The Netherlands; [2]Thales Nederland, Hengelo; [3]Medisch Spectrum Twente Hospital
   PETER PAPER

6. 3:30pm – 3:50pm:
   Obsolescence in EMC Risk Assessment: A Case Study on EFT Immunity of Microcontrollers
   Qazi Mashaal Khan1, Mohsen Koohestani1,2, Mohamed Ramdani1,2, Richard Perdriau1,2
   1Ecole Supérieure d'Électronique de l'Ouest (ESEO), France; 2Institut d'Électronique et de Télécommunications de Rennes (IETR), France
   PETER PAPER

7. 4:00 pm – 4:20 pm:
   System Level Risk Analysis for Immunity in Automotive Functional Safety Analyses
   Lokesh Devaraj[1], Alastair Ruddle[1], Alistair Duffy[2]
   [1]HORIBA MIRA Ltd., Nuneaton, UK; [2]De Montfort University, Leicester, UK
   PETER PAPER

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8. 4:20 pm – 4:40 pm:
   Comparing the Performance of a Matched Filter and Majority Voting to Cope with Harsh Electromagnetic Disturbances
   Jonas Lannoo, Jonas Van Waes, Dries Vanoost, Jeroen Boydens, Davy Pissoort
   KU Leuven, Belgium

9. 4:40 pm – 5:00 pm:
   The Need For and How To Evaluate Continuous Wave Immunity of Wireless Systems Used in V2X Applications
   Tim Claeys[1], Aleksandr Ovechkin[1], Dries Vanoost[1], Guy A. E. Vandenbosch[2], Davy Pissoort[1]
   [1]M-group, KU Leuven Bruges Campus, 8200 Brugge, Belgium; [2]ESAT-TELEMIC, KU Leuven, 3001 Leuven, Belgium
   PAPER from the MSCA ETN Safer Autonomous Systems Project

10. 5:00 pm – 5:20 pm:
    Development of an EMI Detector Based on an Inverted Data Pair with Reduced Number of False Negatives
    Hasan Habib[1], Tim Claeys[1], Dries Vanoost[1], Guy A. E. Vandenbosch[2], Davy Pissoort[1]
    [1]M-Group, KU Leuven Bruges Campus, 8200 Bruges, Belgium; [2]ESAT-Telemic, KU Leuven, 3001 Leuven, Belgium
    PETER PAPER

11. 5:20 pm – 5:40 pm:
    Risk Analysis for Automotive EMC: Scope, Approaches and Challenges
    Alastair Ruddle
    HORIBA MIRA Limited, United Kingdom
    PETER PAPER

12. 5:40 pm – 6:00 pm:
    Design of an Automotive Sensor Readout Class AB CMOS Amplifier for Maximum Robustness Against Transient Electromagnetic Interference
    Burak Baran[1], Hugo Pues[1], Wim Dehaene[2]
    [1]Melexis Technologies NV, Belgium; [2]KU Leuven

13. 6:00 pm – 6:20 pm:
    EMI Aspects of Low Voltage Power Distribution Systems for Ships
    Nancy Omollo[1,2], Jan-Kees van der Ven[1], Robert Vogt-Ardatjew[2], Frank Leferink[2,3]
    [1]RH Marine, Netherlands; [2]University of Twente, Netherlands; [3]Thales, Netherlands
    PETER PAPER

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5. Virtual Conference

Due to effects of the COVID-19 pandemic, the International Steering Committee of EMC Europe decided to conduct a virtual conference instead of the physical event that was planned in Rome from Sept 5 to Sept 9 2020. This virtual edition of EMC Europe 2020 has been held from Sept 23 to Sept 25 2020. All sessions and presentations have been available on-demand during the whole month of October 2020.

In order to replace the physical talks and presentations, the speakers recorded their presentation, which were then made available through the virtual conference webpage. During Sept 23 to Sept 25 2020, "live" sessions were held in which all speakers were present to answer questions after that their pre-recorded presentation had been shown.

The attendance at the Risk-Based EMC Special Session on Sept 23 2020 was quite high, with on average 60 people present in the session.

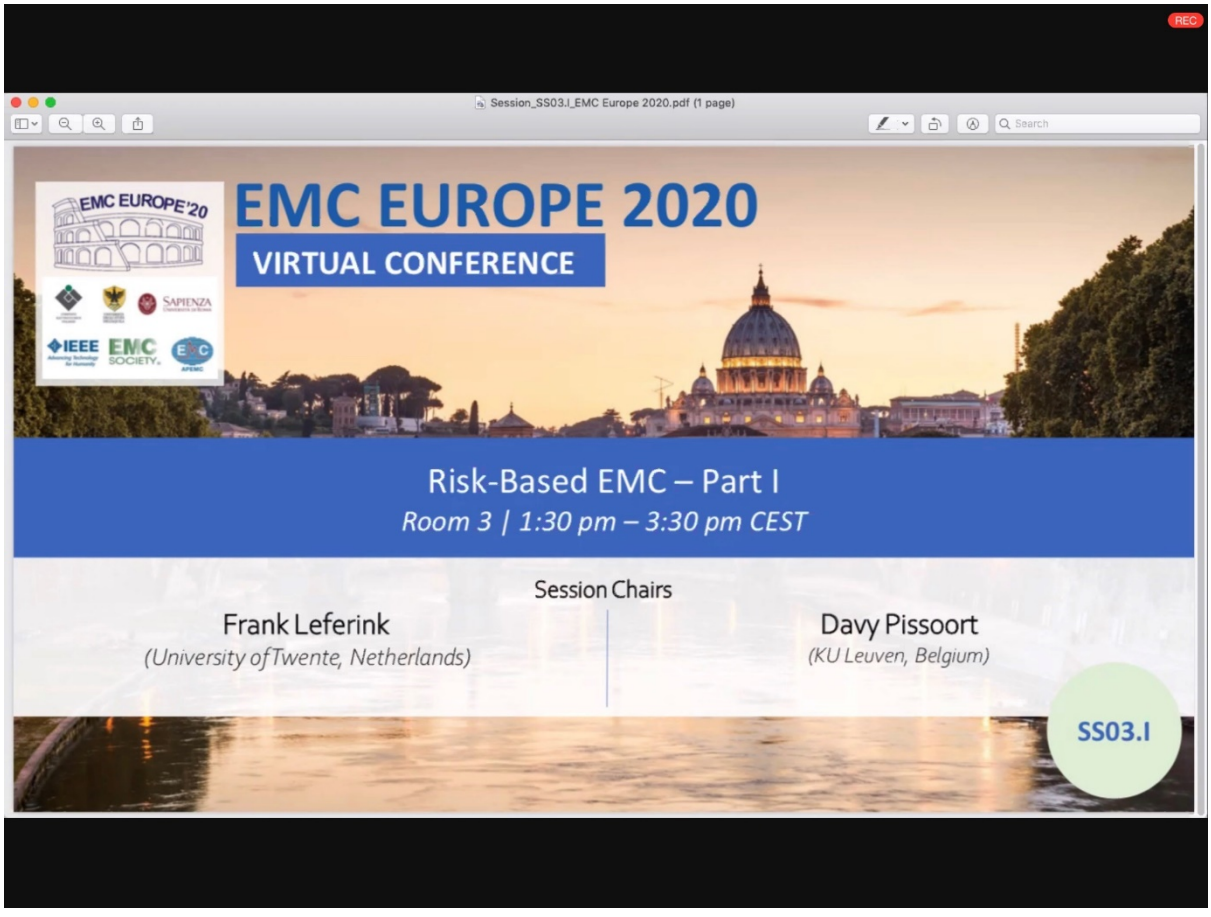

Figure 1. Start of the Special Session on Risk-Based EMC at EMC Europe 2020.

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Figure 2. Special Session Paper 3: PETER ESR9, Arunkumar H. Venkateshaiah, presenting his paper on "Coupling of Energy into PCB Traces in a Reverberant Environment: Absorption Cross-section and Probability of Susceptibility".

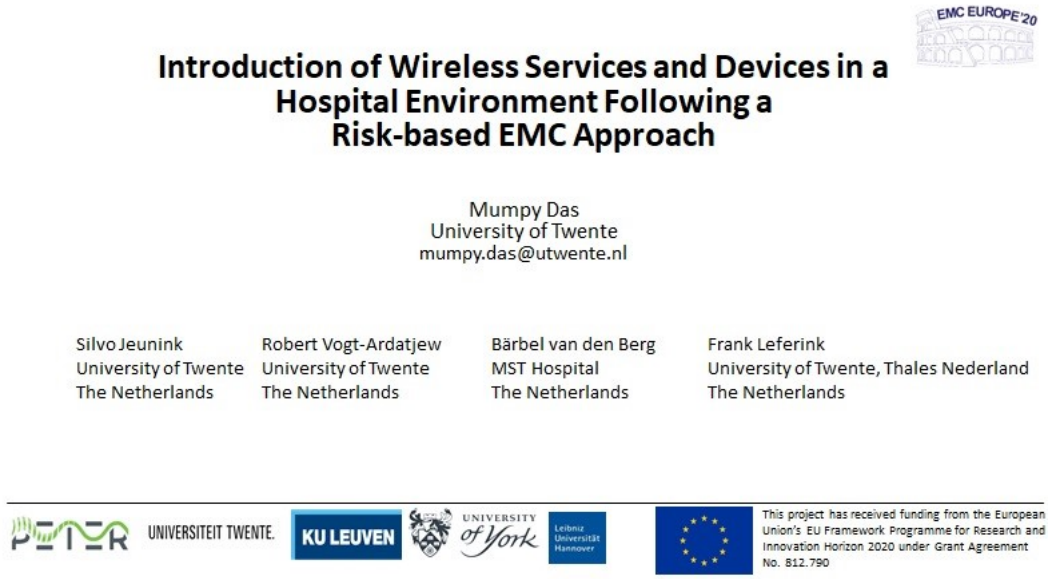

Figure 3. Special Session Paper 5: PETER ESR 4, Mumpy Das, presenting her paper on "Introduction of Wireless Services and Devices in a Hospital Environment Following a Risk-based EMC Approach".

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Figure 4. Special Session Paper 6: PETER ESR7, Qazi M. Khan, presenting his paper on "Obsolesence in EMC Risk Assessment: a Case Study on EFT Immunity of Microcontrollers".

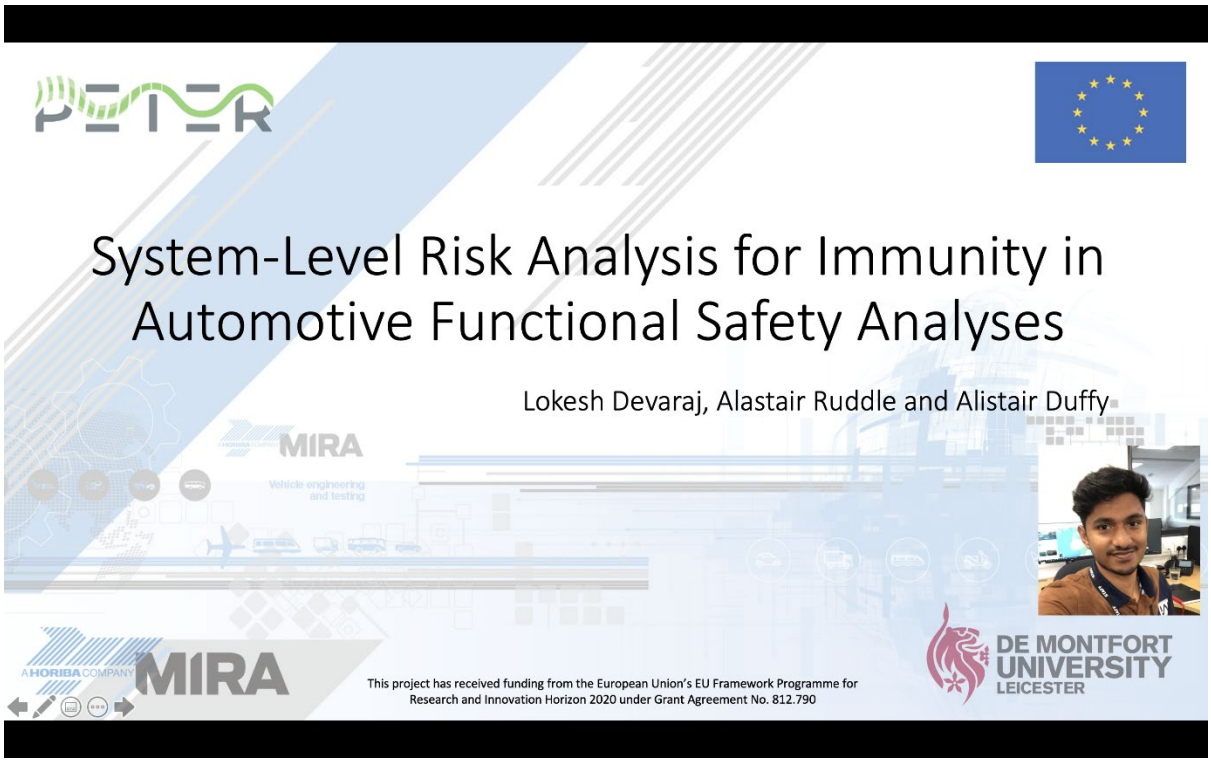

Figure 5. Special Session Paper 7: PETER ESR3, Lokesh Devaraj, presenting his paper on "System-level Risk Analysis for Immunity in Automotive Functional Safety Analyses".

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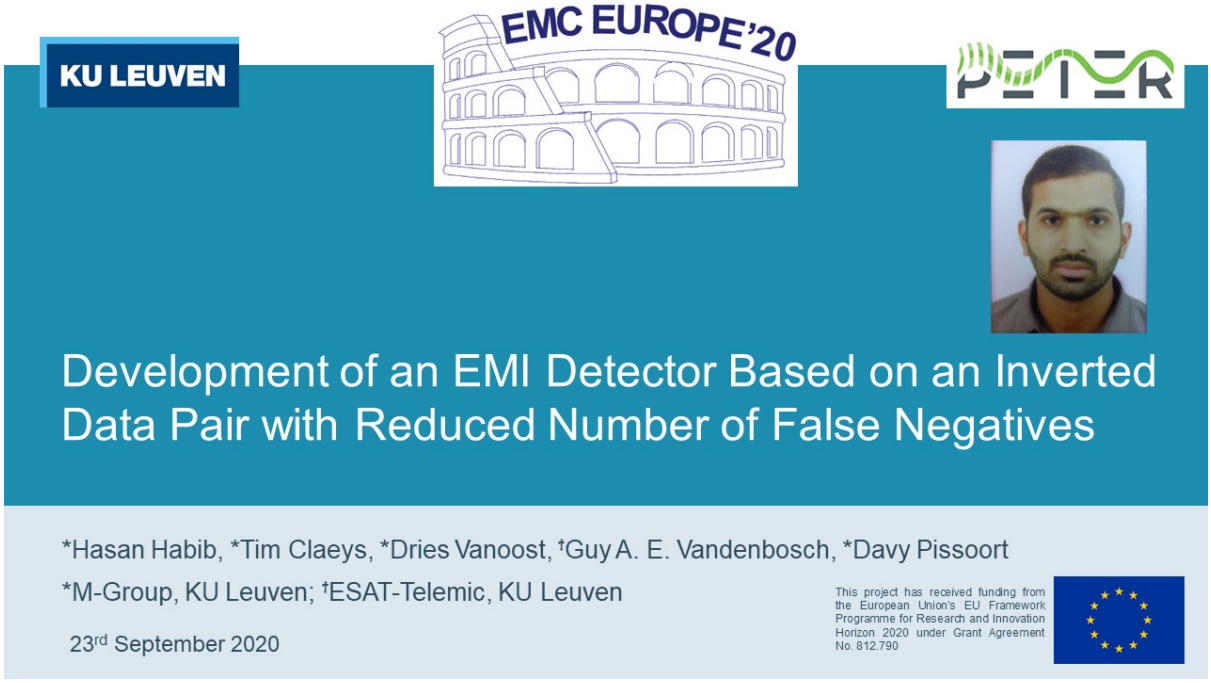

Figure 6. Special Session Paper 10: PETER ESR5, Hasan Habib, presenting his paper on "Development of an EMI Detector based on an Inverted Data Pair with Reduced Number of False Negatives".

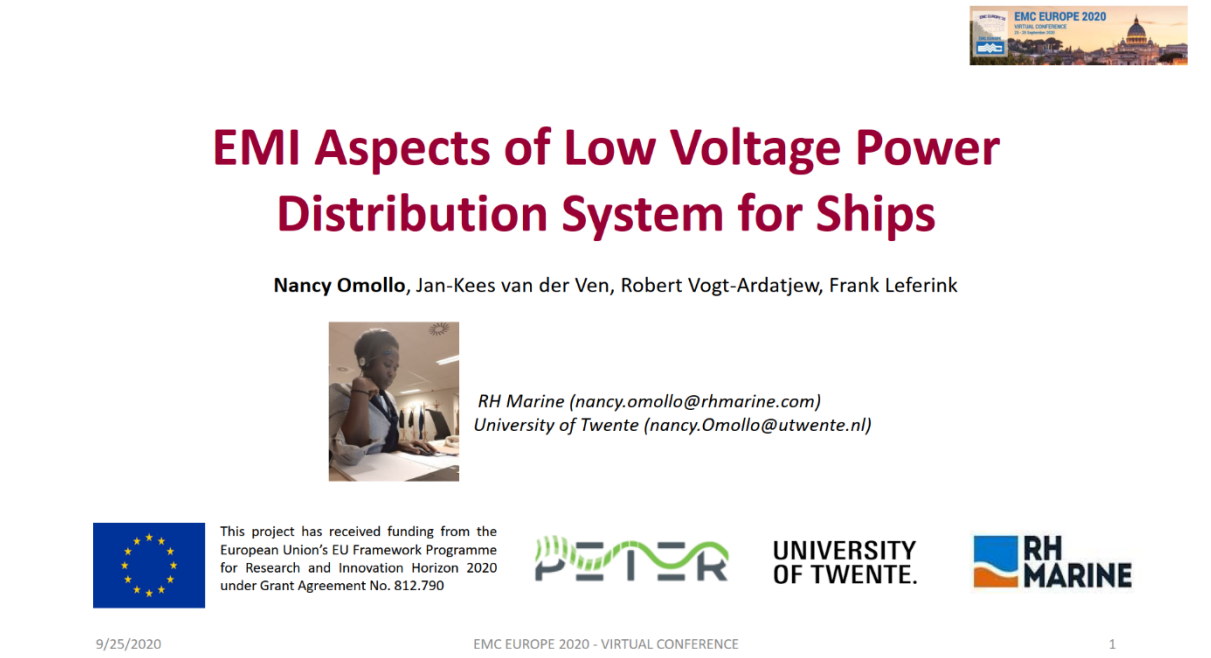

Figure 7. Special Session Paper 13: PETER ESR10, Nancy Omollo, presenting her paper on "EMI Aspects of Low Voltage Power Distribution System for Ships".

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6. Session Outcome

The presented publications will be made available at IEEE Xplore. The PETER and SAS Papers will also be available as Open Access papers through the author's organization's paper archiving systems (specific repositories), through OpenAIR (if applicable) and the respective project websites. Furthermore, once shared via the specific PETER archiving system, those PETER papers will be made available directly on the PETER Website and will also be submitted into the EC REA Portal Sygma System via the Tab Publications.

Annex 1: Deliverable 5.11 PETER Special Session/Workshop I Deviation document

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Deviation from the PETER Grant Agreement

Description of the Action Annex 1 (part A)

DELIVERABLE 5.11 PETER Special sessions/workshops I

EMC Europe Symposium 2020 (Rome): Special Session

Item:	**Deliverable 5.11**
Title:	PETER Special sessions/workshops I
Lead Beneficiary:	**University of York**
Which ERS(s) involved:	**---**
Initial Foreseen Due Date:	**29 Feb 2020**
Postponed Due date:	**30 Sept 2020**

What is the **reasoning/justification** for postponing the due date for this Deliverable/Milestone/Secondment? Please explain briefly.
The MSCA PETER Project started in April 2019 and the ESRs were hired in fall 2019. The key European Symposium is every year in September. So the first opportunity to organise a Special Session is September 2020. The Special Session proposal has been submitted and accepted, and the ESRs are submitting papers.

What is the **mitigation plan** (Action Plan) regarding the new due date for this Deliverable/Milestone/Secondment? Also please explain briefly.
No action required

Does this postponed due date for Deliverable/Milestone/Secondment has **any implications or consequences regarding the PETER Description of the Action as stated in the Grant Agreement Annex 1** and furthermore regarding the Project Implementation of the PETER Project? If not, please mention this specific. If so, please explain in detail which implications or consequences.
No implications

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