



XVI International Scientific
and Technological Conference

Modern Electric Traction 2026

WARSAW, PL
11-13.05.2026 r.

✉ met2026@sitkrp.org.pl



Polish Association of Transport
Engineers & Technicians
80th ANNIVERSARY



Implementation of 2x25kV AC 50Hz power supply in High Speed Rail system in Poland Execution time – process status and current challenges

Detailed Conference Programme
_V96 | _R77 | _EN

EXTERNAL USE



Conference Partnership

Regional Council of the Masovian Voivodeship



Detailed Conference Schedule

11.05.2026 MONDAY

Location:

Warszawski Dom Technika WDT NOT
00-043 Warszawa, ul. Tadeusza Czackiego 3/5
III floor, Conference room A

Web: <https://www.wdtnot.pl/>

CONFERENCE GUEST REGISTRATION 11:00 – 12:00 CEST		[60 min]
PLENARY SESSION 12:00 – 13:00 CEST		[60 min]
12:00 – 12:05	MET 2026 WARSAW Conference Guest Welcome Ph.D. Wawrzyniec Wychowanski Polish Association of Transport Engineers and Technicians National Board (SITK RP) General Secretary	[05 min]
12:05 – 12:10	Official MET 2026 WARSAW Conference Opening Ph.D. Jacek Paś Head of the Conference Scientific Board Polish Association of Transport Engineers and Technicians National Board (SITK RP) President	[05 min]



12:10 – 12:30 Conference opening presentation 01 [20 min]

Prof. D.Sc. Ph.D. inż. Adam Szelaż

Head of the Conference Programme Committee

Warsaw University of Technology. Institute of Electrical Power Engineering,
Traction and Electrical Power Engineering Economy Division

12:30 – 12:45 Conference opening presentation 02 [15 min]

INNOVATIVE APPROACH TO PREVENTIVE DIAGNOSTICS IN THE AREA
OF ORACLE NETWORK DEVICES

Radosław Burak Romanowski

PKP POLSKIE LINIE KOLEJOWE S.A.

Director of the Energy Office of PKP PLK S.A.

12:45 – 13:00 Conference opening presentation 03 [15 min]

POWER SUPPLY SYSTEM FOR HIGH SPEED RAILWAY IN POLAND

Marcin Kokoszka

PORT POLSKA (former Centralny Port Komunikacyjny)

Department Director | Technology and Digitalisation Projects Department

DISCUSSION PANEL 01 [90 min]
13:00 – 14:30 CEST

IMPLEMENTATION OF 2x25kV AC 50Hz POWER SUPPLY IN HIGH SPEED RAIL SYSTEM IN POLAND

Execution time – process status and current challenges

Moderator 01:

Prof. D.Sc. Ph.D. inż. Adam Szelaż

Head of the Conference Programme Committee

Warsaw University of Technology. Institute of Electrical Power Engineering,
Traction and Electrical Power Engineering Economy Division

Moderator 02:

Ph.D. Wawrzyniec Wychowanski

Polish Association of Transport Engineers and Technicians National Board (SITK RP)

General Secretary



13:00 – 13:30 Discussion Panel opening speech 01 (introduction) [30 min]

ENERGY CHALLENGES RELATED TO THE IMPLEMENTATION OF THE PORT POLSKA INVESTMENT PROGRAM

Piotr Rachwalski

PORT POLSKA (former Centralny Port Komunikacyjny)
Member of the Management Board

13:30 – 14:30 Discussion Panel 01 [60 min]

Discussion panel 01 participants (Panelists):

- [1] **Radosław Burak Romanowski**
PKP POLSKIE LINIE KOLEJOWE S.A.
Director of the Energy Office of PKP PLK S.A.
- [2] **Marcin Kokoszka**
PORT POLSKA (Centralny Port Komunikacyjny Sp. z o.o.)
Department Director | Technology and Digitalisation Projects Department
- [3] **Dirk Behrends**
EBC EISENBAHN-CERT, Notified Body Interoperability
former Managing Director in EBC
- [4] **Ralf Klinge**
RAIL POWER SYSTEMS GmbH
Director Sales International & Business Development
- [5] **Łukasz Iwański**
IWN projekt
High Speed Rail traction system designer
- [6] **Cezary Lis**
HITACHI ENERGY
Transportation Segment Manager
- [7] **Daniel Zakrzewski**
MIKRONIKA Sp. z o.o.
Sales Director



LUNCH / Networking
14:30 – 15:30 CEST

[60 min]

SESSION WITH PRESENTATIONS 01
15:30 – 16:30 CEST

[60 min]

MET 2026 WARSAW
CONFERENCE PARTNERS PRESENTATIONS

Moderator 01:

Ph.D. Jacek Paś

Head of the Conference Scientific Board

Polish Association of Transport Engineers and Technicians National Board (SITK RP)

President

Moderator 02:

D.Sc. Ph.D. Tadeusz Maciołek, prof. PW

Warsaw University of Technology Institute of Electrical Power Engineering

Traction and Electrical Power Engineering Economy Division

15:30 – 15:50

Expert introduction speech 01

[20 min]

TSI FOR HIGH SPEED RAIL APPLICATIONS

Dirk Behrends

EBC EISENBAHN-CERT, Notified Body Interoperability

former Managing Director in EBC

15:50 – 16:10

Presentation Rail Power Systems GmbH

[20 min]

SYSTEM SOLUTION FOR HIGH SPEED RAIL

Ralf Klinge

RAIL POWER SYSTEMS GmbH

Director Sales International & Business Development



16:10 – 16:30

Presentation HITACHI ENERGY

[20 min]

1. RAIL SFC FOR AN OPTIMIZED POWER SUPPLY OF 25kV 50 Hz TRACTION

Stan Gnap

HITACHI ENERGY, SWITZERLAND
Business Development Manager

2. DISCOVER THE STORY THAT POWERS THE WORLD. 100 YEARS OF TRANSFORMER PRODUCTION IN LODZ, POLAND**

**HITACHI ENERGY COMMERCIAL VIDEO

3. TRANSFORMER: THE CRUCIAL COMPONENT OF ANY POWER GRID SYSTEM

Cezary Lis

HITACHI ENERGY
Transportation Segment Manager

COFFEE BREAK / Networking

16:30 – 17:00 CEST

[30 min]

DISCUSSION PANEL 02

17:00 – 18:30 CEST

[90 min]

RATIONALIZATION OF ENERGY CONSUMPTION IN RAILWAY ELECTRIFIED TRANSPORT
Energy efficiency, energy savings, rolling-stock and renewable energy sources
in electrified transport

Moderator 01:

D.Sc. Ph.D. Marek Pawlik, prof. IK

RAILWAY RESEARCH INSTITUTE (IK)

Vice-Director of Railway Research Institute, Head of Interoperability Division



Moderator 02:

D.Sc. Ph.D. Piotr Biczal

PGE ENERGETYKA KOLEJOWA OPERATOR Sp. z o.o.

Expert of the Office of Research, Development and Aid Financing

- 17:00 – 17:15 Discussion Panel opening speech 01 (introduction) [15 min]
- ATO AS A SYSTEM LEVEL ECODRIVING SOLUTION – FROM DRIVING OPTIMIZATION TO ENERGY MANAGEMENT OF ALL VEHICLES IN THE FLEET
- Bartosz Antkowiak**
PESA BYDGOSZCZ S.A.
Head of the Architecture, Systems and Control Department
Technical Department
- 17:15 – 17:30 Discussion Panel opening speech 02 (introduction) [15 min]
- ENERGY SAVING TECHNOLOGIES IN POWER ELECTRONICS, EXPERIENCES IN TRACTION 25kV
- Piotr Wroński**
MEDCOM Sp. z o.o.
Vice President
- 17:30 – 18:30 Discussion Panel 02 [60 min]
- Discussion panel 02 participants (Panelists):
- [1] **Ph.D. Marek Sokołowski**
METRO WARSZAWSKIE Sp. z o.o.
Member of the Management Board for Operations
- [2] **Bartosz Antkowiak**
PESA BYDGOSZCZ S.A.
Head of the Architecture, Systems and Control Department
Technical Department



- [3] **Cezary Lis**
HITACHI ENERGY
Transportation Segment Manager

- [4] **Piotr Wroński**
MEDCOM Sp. z o.o.
Vice President

- [5] **PhD. Paweł Korobłowski**
PKP POLSKIE LINIE KOLEJOWE S.A.
Project Director

- [6] **Prof. D.Sc. Ph.D. inż. Andrzej Sikorski**
BIAŁYSTOK UNIVERSITY OF TECHNOLOGY
FACULTY OF ELECTRICAL ENGINEERING
Department of Theoretical Electrotechnics, Power Electronics and Electrical
Power Engineering

- [7] **Adam Gawłowski**
ENERGOMETAL ENERGETYKA SA
Commercial Director of the Energy Market
Commercial Director of the Center Branch



CONCLUSION OF THE FIRST DAY OF THE CONFERENCE
18:30 – 18:45 CEST

[15 min]

Ph.D. Jacek Paś

Head of the Conference Scientific Board

Polish Association of Transport Engineers and Technicians National Board (SITK RP)
President

Prof. D.Sc. Ph.D. inż. Adam Szelaĝ

Head of the Conference Programme Committee

Warsaw University of Technology. Institute of Electrical Power Engineering,
Traction and Electrical Power Engineering Economy Division

Ph.D. Wawrzyniec Wychowanski

Polish Association of Transport Engineers and Technicians National Board (SITK RP)
General Secretary

GALA DINNER / NETWORKING
19:00 – 00:00 CEST

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Location:

InFormal Kitchen

00-066 Warszawa, Pl. Małachowskiego 2
(entrance from Traugutta street)

Web: <https://informalkitchen.pl/>



KITCHEN



12.05.2026 TUESDAY

Location:

Warszawski Dom Technika WDT NOT
00-043 Warszawa, ul. Tadeusza Czackiego 3/5
III floor, Conference room A

Web: <https://www.wdtnot.pl/>

REGISTRATION AND OPENING OF THE CONFERENCE 2ND DAY [30 min]
09:30 – 10:00 CEST

09:30 – 09:45 Registration for MET 2026 WARSAW 2nd day [15 min]

09:45 – 10:00 Opening of the MET 2026 WARSAW 2nd day [15 min]

Prof. D.Sc. Ph.D. inż. Adam Szelaż

Head of the Conference Programme Committee
Warsaw University of Technology. Institute of Electrical Power Engineering
Traction and Electrical Power Engineering Economy Division

Ph.D. Jacek Paś

Head of the Conference Scientific Board
Polish Association of Transport Engineers and Technicians National Board (SITK RP)
President

Ph.D. Wawrzyniec Wychowanski

Polish Association of Transport Engineers and Technicians National Board (SITK RP)
General Secretary

SESSION WITH PRESENTATIONS 02 [60 min]
10:00 – 11:00 CEST

TRACTION SYSTEM ANALYSIS [TSA]

Traction system analysis with definition of interface and impact on related systems

Moderator 01:

Prof. D.Sc. Ph.D. inż. Adam Szelaż

Head of the Conference Programme Committee
Warsaw University of Technology. Institute of Electrical Power Engineering,
Traction and Electrical Power Engineering Economy Division



Moderator 02:

Ph.D. Włodzimierz Jefimowski

Warsaw university of technology, Faculty of Electrical Engineering

Institute of Electrical Power Engineering Traction and Electrical Power Engineering Economy Division

10:00 – 10:15	Presentation PGE ENERGETYKA KOLEJOWA OPERATOR Sp. z o.o. LOCAL BALANCING AREA WITH ENERGY STORAGE AT THE 3 kV TRACTION SUBSTATION D.Sc. Ph.D. Piotr Biczal PGE ENERGETYKA KOLEJOWA OPERATOR Sp. z o.o. Office of Research, Development and Aid Financing Expert	[15 min]
10:15 – 10:10	Presentation HITACHI ENERGY POWER QUALITY IMPROVEMENT IN RAILWAYS Łukasz Gajo HITACHI ENERGY Area Sales Manager (HV and Power Quality Portfolio)	[15 min]
10:30 – 10:45	Presentation PKP POLSKIE LINIE KOLEJOWE S.A. PERFORMANCE OF THE POWER SYSTEM FROM THE POINT OF VIEW OF THE INFRASTRUCTURE MANAGER OF PKP POLSKIE LINIE KOLEJOWE S.A. PhD. Paweł Koroblowski PKP POLSKIE LINIE KOLEJOWE S.A. Project Director	[15 min]
10:45 – 11:00	Presentation MIKRONIKA Sp. z o.o. SECURE DISTRIBUTION CENTERS FOR THE ENERGY SYSTEM BUILT BASED ON SCADA/ADMS AND DISTRIBUTED SYSTEMS CONTROL AND SUPERVISION SYSTEMS (SSIN) Andrzej Danak MIKRONIKA Sp. z o.o. Head of Sales Team	[15 min]



COFFEE BREAK / Networking
11:00 – 11:30 CEST

[30 min]

SESSION WITH PRESENTATIONS 03
11:30 – 12:30 CET

[60 min]

OVERHEAD CONTACT SYSTEM [OCS]

design, construction and operation of overhead contact systems dedicated for high speed railway use

Moderator 01:

D.Sc. Ph.D. Tadeusz Maciołek, prof. PW

Warsaw University of Technology Institute of Electrical Power Engineering
Traction and Electrical Power Engineering Economy Division

Moderator 02:

Ph.D. Wawrzyniec Wychowanski

Polish Association of Transport Engineers and Technicians National Board (SITK RP)
General Secretary

11:30 – 11:45

Presentation RAIL POWER SYSTEMS GmbH

[15 min]

EXPERIENCE BASED APPROACH TO POLISH OCS REQUIREMENTS FOR HIGH SPEED
RAILWAY SYSTEM

Ralf Klinge

RAIL POWER SYSTEMS GmbH

Director Sales International & Business Development

11:45 – 12:00

Presentation HITACHI RAIL POLAND

[15 min]

HMAX – ADVANCED DIAGNOSTICS FOR RAILWAY OVERHEAD SYSTEM

Paweł Strzelecki

HITACHI RAIL POLAND

Deputy Technical Director Hitachi Rail Poland



12:00 – 12:15 Presentation PORT POLSKA (Centralny Port Komunikacyjny Sp. z o.o.) [15 min]

CERTIFICATION CONDITIONS OF THE ENERGY SUBSYSTEM
- POWER SYSTEM AND OPERATION NETWORK 2X25 KV AC

Edyta Gładysz

PORT POLSKA (former: Centralny Port Komunikacyjny Sp. z o.o.)
Certification expert - Energy subsystem

Dariusz Kamoda

PORT POLSKA (dawniej Centralny Port Komunikacyjny Sp. z o.o.)
Head of the interoperability and subsystem certification team

12:15 – 12:30 Presentation RAIL BALTICA RB RAIL AS [15 min]

RAIL BALTICA ELECTRIFICATION PROGRESS

Antanas Šnirpūnas

RAIL BALTICA RB RAIL AS
ENE Technical Lead

LUNCH / Networking [60 min]
12:30 – 13:30 CEST

SESSION WITH PRESENTATIONS 04 [90 min]
13:30 – 15:00 CEST

TRACTION POWER SUPPLY [TPS]
design, construction and operation of AC and DC traction power supply infrastructure

Moderator 01:

D.Sc. Ph.D. Marek Pawlik, prof. IK

RAILWAY RESEARCH INSTITUTE (IK)

Vice-Director of Railway Research Institute, Head of Interoperability Division

Moderator 02:

Ph.D. Anatolii Nikitenko

Warsaw University of Technology Institute of Electrical Power Engineering

Traction and Electrical Power Engineering Economy Division



- 13:30 – 13:45 Presentation PORT POLSKA (Centralny Port Komunikacyjny Sp. z o.o.) [15 min]
- LV/2×25 kV SUBSTATIONS – AS THE CORE OF THE IMPLEMENTATION OF HIGH SPEED RAILWAY INVESTMENTS
- Mateusz Dan**
PORT POLSKA (former: Centralny Port Komunikacyjny Sp. z o.o.)
Energetics Senior Project Manager
- 13:45 – 14:00 Presentation PGE ENERGETYKA KOLEJOWA OPERATOR Sp. z o.o. [15 min]
- CONCEPT OF A NEW GENERATION DIGITAL 3 kV TRACTION SUBSTATION
- D.Sc. Ph.D. Piotr Julian Biczel**
PGE ENERGETYKA KOLEJOWA OPERATOR Sp. z o.o.
Office of Research, Development and Aid Financing
Expert
- 14:00 – 14:15 Presentation PORT POLSKA (Centralny Port Komunikacyjny Sp. z o.o.) [15 min]
- GROUNDING, RETURN CONNECTIONS AND PROTECTION AGAINST INDIRECT CONTACT IN THE 2X25 KV SYSTEM
- Ph.D. Maciej Krocak-Tarchalski**
PORT POLSKA (former: Centralny Port Komunikacyjny Sp. z o.o.)
Expert in 2×25 kV traction power supply
- Marcin Tuzim**
PORT POLSKA (former: Centralny Port Komunikacyjny Sp. z o.o.)
Director of the Office of Control and Energy Subsystems
- 14:15 – 14:30 Presentation KOLEN Sp. z o.o. [15 min]
- LIMITATION OF STRAY CURRENTS BY SEPARATION OF EARTHING ELECTRODES RELATED TO DC ELECTRIC TRACTION AND HIGH-SPEED RAILWAYS FROM PUBLIC POWER ENERGY EARTHING ELECTRODES
- mgr inż. Zygmunt Kulhawik**
KOLEN Sp. z o.o.
President of the management board
- dr inż. Dariusz Pieńkowski**
KOLEN Sp. z o.o.
Vice-President of the management board



14:30 – 14:45

Presentation KUCA Sp. z o.o.

[15 min]

DEVELOPMENT OF TECHNOLOGY AND IMPLEMENTATION OF THE PRODUCTION OF CARRIING-CONDUCTIVE EQUIPMENT OF 25KV AC OPERATING OPERATION NETWORK DEDICATED TO APPLICATION IN HIGH-SPEED RAILWAY COMMUNICATION SYSTEMS

Damian Kuca

KUCA Sp. z o.o.

President of the Management Board

14:30 – 14:45

Presentation KUCA Sp. z o.o.

[15 min]

SELECTED ASPECTS CONCERNING THE OPERATION OF TRACTION POWER SYSTEMS AT THE CONNECTION OF HIGH-SPEED LINE AND EXISTING INFRASTRUCTURE

Petro Hubsyki

RAILWAY INSTITUTE

Lecturer

**TRANSFER TO FACULTY OF ELECTRICAL ENGINEERING WARSAW UNIVERITY OF TECHNOLOGY
COFFEE BREAK / Networking**

[60 min]

15:00 – 16:00 CEST



Location:

Faculty of Electrical Engineering Warsaw University of Technology
00-662 Warsaw, ul. Koszykowa 75
Electrical Engineering Building / Entrance B / Auditorium (AE)

Web: <https://www.ee.pw.edu.pl/>

SESSION WITH PRESENTATIONS 05
16:00 – 17:30 CEST

[90 min]

RATIONALIZATION OF ENERGY CONSUMPTION IN RAILWAY ELECTRIFIED TRANSPORT
Energy efficiency, energy savings, rolling-stock and renewable energy sources
in electrified transport

Moderator 01:

Ph.D. Włodzimierz Jefimowski

Warsaw University of Technology, Faculty of Electrical Engineering
Institute of Electrical Power Engineering Traction and Electrical Power Engineering Economy Division

Moderator 02:

D.Sc. Ph.D. Tadeusz Maciołek, prof. PW

Warsaw University of Technology Institute of Electrical Power Engineering
Traction and Electrical Power Engineering Economy Division

16:15 – 16:35

**WELCOME TO THE CONFERENCE GUESTS AND OPENING PRESENTATION:
SCOPE OF OPERATIONAL ACTIVITIES OF THE WARSAW UNIVERISTY OF TECHNOLOGY
ELECTRICAL POWER ENGINEERING INSTITUTE** [20 min]

D.Sc. Ph.D. Sylwester Robak, prof. PW

Warsaw University of Technology Institute of Electrical Power Engineering
Traction and Electrical Power Engineering Economy Division
Head of the Institute

16:35 – 16:50

**FUNCTIONALITY OF THE 3 kV TRACTION SUBSTATION AS AN ELEMENT
OF A SMART POWER GRID** [15 min]

Ph.D. Włodzimierz Jefimowski

Warsaw University of Technology, Faculty of Electrical Engineering
Institute of Electrical Power Engineering Traction and Electrical Power Engineering
Economy Division



- 16:50 – 17:05 DEVELOPMENT OF A TECHNOLOGY DEMONSTRATOR FOR A HYBRID MEDIUM VOLTAGE ENERGY STORAGE [15 min]
- Ph.D. Rafał Kopacz**
Warsaw University of Technology, Faculty of Electrical Engineering
Institute of Control and Industrial Electronics
- 17:05 – 17:20 MICROGRIDS BASED ON ELECTRICAL INSTALLATIONS OF TRACTION SUBSTATIONS [15 min]
- Ph.D. Grzegorz Kluj**
Warsaw University of Technology, Faculty of Electrical Engineering
Institute of Electrical Power Engineering Traction and Electrical Power Engineering Economy Division
- 17:20 – 17:35 APPLICATION OF THE HIL REAL-TIME SIMULATOR IN ELECTRIC POWER INDUSTRY [15 min]
- D.Sc. Ph.D. Ryszard Kowalik , prof. PW**
Warsaw University of Technology, Faculty of Electrical Engineering
Institute of Electrical Power Engineering Traction and Electrical Power Engineering Economy Division
- mgr inż. Wiktor Wróblewski**
Warsaw University of Technology, Faculty of Electrical Engineering
Institute of Electrical Power Engineering Traction and Electrical Power Engineering Economy Division

INSTITUTE OF ELECTRICAL POWER ENGINEERING WARSAW UNIVERSITY OF TECHNOLOGY

LABORATORIES TECHNICAL VISIT / WORKSHOPS [75 min]
17:45 – 19:00 CEST

[Hint]: *Presentation of research and didactic opportunity and experience in electrical power engineering and electrified transport related solutions*



Polish Association of Transport
Engineers & Technicians
80th ANNIVERSARY



Modern Electric
Traction **2026**

FRIENDS DINNER / NETWORKING
19:30 – 00:00 CEST

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Location:
RISTORANTE SEMOLINO HALA KOSZYKI
63 00-667 Warsaw, Hala Koszyki; Koszykowa 63

Web: <https://semolino.pl/hala-koszyki/>





13.05.2026 WEDNESDAY

Location:

Warszawski Dom Technika WDT NOT
00-043 Warszawa, ul. Tadeusza Czackiego 3/5

Web: <https://www.wdtnot.pl/>

TECHNICAL TOUR

[max 360 min]

ZTM w WARSZAWIE / TRAMWAJE WARSZAWSKIE sp. z o.o. / ANNOPOL TRAMWAY DEPOT
10:00 – 14:00 CEST

[Hint]:

General Technical Tour plan:

- i. Technical Tour meeting point in Warszawski Dom Technika NOT, please refer to “Location” (above)
- ii. Guided 10 minutes’ walk through Swietokrzyska Street to the Tram Stop Marszalkowska street /Swietokrzyska street corner, direction Warsaw North
- iii. Dedicated ZTM Warsaw Tram trip to ANNOPOL TRAMWAY DEPOT
- iv. Technical visit in ANNOPOL TRAMWAY DEPOT
// details of the technical visit will be presented soon //
- v. Dedicated Tram trip back to the starting tramway stop
- vi. Guided 10 minutes’ walk through Swietokrzyska Street to the Warszawski Dom Technika WDT NOT
- vii. The end of the Technical Tour

>>> END OF THE MET 2026 WARSAW CONFERENCE <<<

hope to see You next year 2027
@ MET 2027 WARSAW