

SENDAI COLLOQUIUM



© City of Sendai

October 3-7 2023
Sendai International Center

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If we change
the start,
we can start
the change.

SILENT INNOVATION.

Every day, transmission lines supply the world's energy. From our daily lives to global manufacturing, it all starts here.

That's why our Power Grids, Energy Solutions, and Nuclear Energy business units are committed to Innovation.

And now, it's why we strive to make our energy systems carbon neutral.

*It may be a quiet change.
But it's a big change, because it brings us closer to our goal: A sustainable future for all.*





Hitachi Social Innovation is **POWERING GOOD**



What can we do to
reduce CO₂ emissions?

Through the use of drones and AI we can maintain wind turbines to prevent sudden shutdowns in operation, ensuring a reliable supply of renewable energy.

In Europe, large scale and efficiently operated ultra-fast e-bus charging will support

ZERO emission transport.

At Hitachi, we strive to achieve decarbonization in all areas of energy by implementing digital technology.



TOSHIBA



We turn on the promise of a new day
by designing the future of energy.

Toshiba Energy Systems & Solutions Corporation

<https://www.global.toshiba/ww/company/energy.html>



TOSHIBA

For a new day



ENERGY EFFICIENCY

ENERGY MANAGEMENT SYSTEMS

Now, more than ever, we need solutions for complex social and environmental issues, from CO₂ emissions that cause global warming to water pollution.

Toshiba mobilizes over a century of creativity and technological expertise to make and do things that lead to a sustainable world, developing eco-friendly businesses and solutions.

As an infrastructure company, Toshiba has an unwavering drive to contribute to a safer, cleaner planet and a society that's both sustainable and dynamic.

As one Toshiba, we create value through manufacturing, operations, maintenance, and data services.

Welcome Message

Yuko Kuranari

CIGRE SC B2 chair of Japanese National Committee
Executive Officer & General Manager, Tohoku Electric Power
Network Co., Inc.
Chair, CIGRE 2023 Sendai Colloquium Organizing Committee



倉成 祐幸

We are pleased to inform you that the CIGRE 2023 Sendai Colloquium will be held at the Sendai International Center (Sendai, Japan) from October 3 to October 7, 2023.

This colloquium is organized by the Study Committee (SC) of CIGRE, an international organization, and is held every two years. The colloquium is a meeting for the presentation of CIGRE papers.

The colloquium is organized under the general theme of “Recent Overhead Transmission Line Technologies and Environmental Measures” and is based on the preferential subjects of “Sustainable OHL, Environment and Planning”, “Reliability of OHL, Advanced Construction and Maintenance”, “Resilience of OHL, Recent Technologies for Disaster Recovery”, from SCB2 (Overhead Lines), SCC3 (Power System Environmental Performance), SCC4 (Power System Technical Performance). Over the three days, many papers will be presented in two tutorials and seven sessions. Social programs including receptions, a technical tour, and companion tours are also

planned to contribute to international exchange.

Through the face-to-face CIGRE 2023 Sendai Colloquium, we hope to develop opportunities to deepen information exchange and academic exchange with everyone concerned and to contribute to the development of power technology around the world.

We hope that you will take note of the purpose and significance of this meeting, and we would be grateful for your support.

We sincerely wish your company's continued growth and success in the future.

We look forward to seeing you in Sendai !

Committee Members

Colloquium Organizing Committee



Mr. Yuko Kuranari

Chair

Colloquium Organizing Committee,

CIGRE SC B2 of Japanese National Committee

Executive Officer & General Manager

Tohoku Electric Power Network Co., Inc.



Dr. Satoshi Nakasono

Chair

CIGRE SC C3 of Japanese National Committee

Senior Research Scientist

Central Research Institute of Electric Power Industry (CRIEPI)



Prof. Masahide Hojo

Chair

CIGRE SC C4 of Japanese National Committee

Professor

Tokushima University

Committee Members

Technical Organizing Committee (TOC)



Dr. Pierre Van Dyke

Chair

CIGRE SC B2

Senior Research Scientist

Hydro-Quebec Research Institute (IREQ)



Ms. Mercedes Vázquez Miranda

Chair

CIGRE SC C3

Responsible for Climate Change

Red Eléctrica de España



Ms. Marta Val Escudero

Chair

CIGRE SC C4

Technical Lead

EirGrid

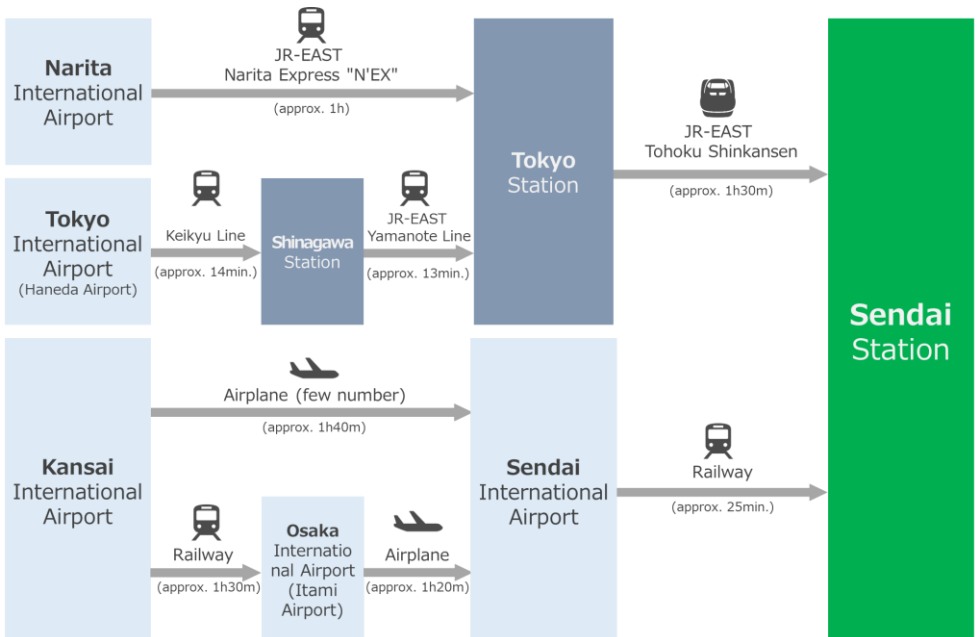
Conference Venue

Access to Sendai International Center

From overseas to Sendai, Tokyo International Airport (Haneda Airport) (HND) and Narita International Airport (NRT) are convenient to visit.

From International Airport to Sendai Station

- Take the Narita Express from Narita International Airport to Tokyo Station in 1 hour.
- Take the Keikyu Line from Tokyo International Airport (Haneda Airport) to Shinagawa Station (14 min.) and transfer to the Yamanote Line to Tokyo Station (13 min.).
- Take the Tohoku Shinkansen (bullet train) from Tokyo Station to Sendai Station in 1h30m.
- From Kansai International Airport to Sendai International Airport is 1h40m by airplane. Or from Kansai International Airport to Osaka International Airport (Itami Airport) is 1h30m by conventional line, and from Osaka International Airport (Itami Airport) to Sendai International Airport is 1h20m by airplane. Take the Sendai Airport Access Line from Sendai International Airport to Sendai Station in 25min.



From Sendai Station to Sendai International Center

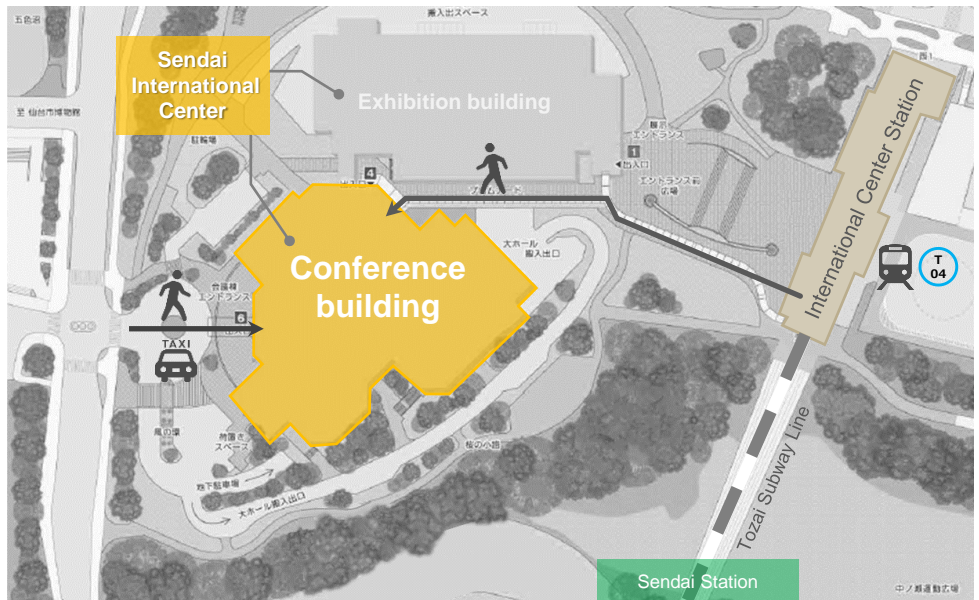
- 30 min. walk from Sendai Station to Sendai International Center.
- 7 min. by Taxi from Sendai Station to Sendai International Center.
- Take the Tozai Subway Line from Sendai Station to International Center Station in 5 min.
- 1 min. walk from International Center Station on the Tozai Subway Line.



! Tozai Subway Line

The Tozai Line and the Nanboku Line run through Sendai Subway Station, so please be sure not to make a mistake. The Tozai Line is marked by the symbol "T" in a light blue circle. Take the train bound for Yagiyama Zoological Park Station and get off at the third stop, International Center Station. It takes 5 min.

The Sendai International Center has a conference building and an exhibition building. Please note that the CIGRE 2023 Sendai Colloquium will be held in **the conference building**.

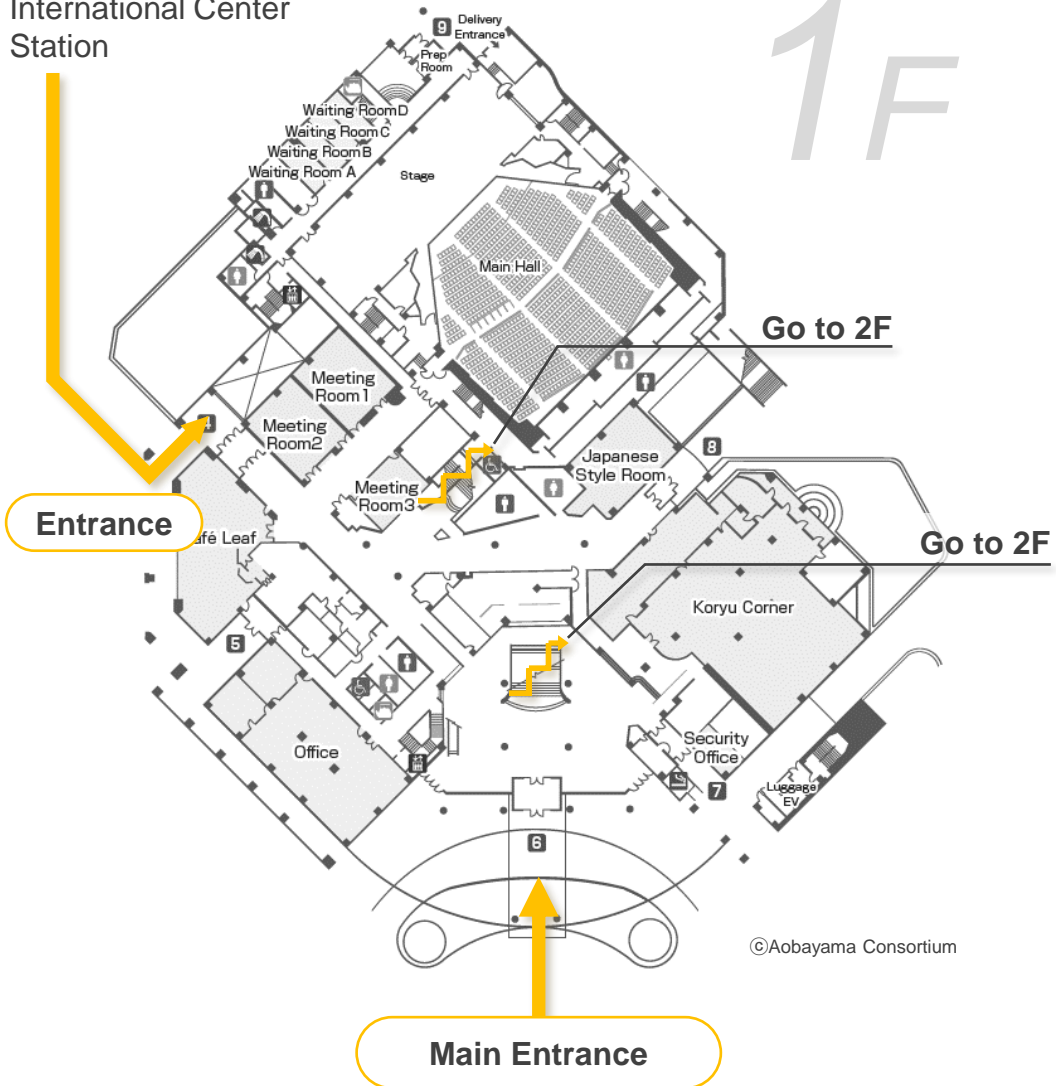


Conference Venue

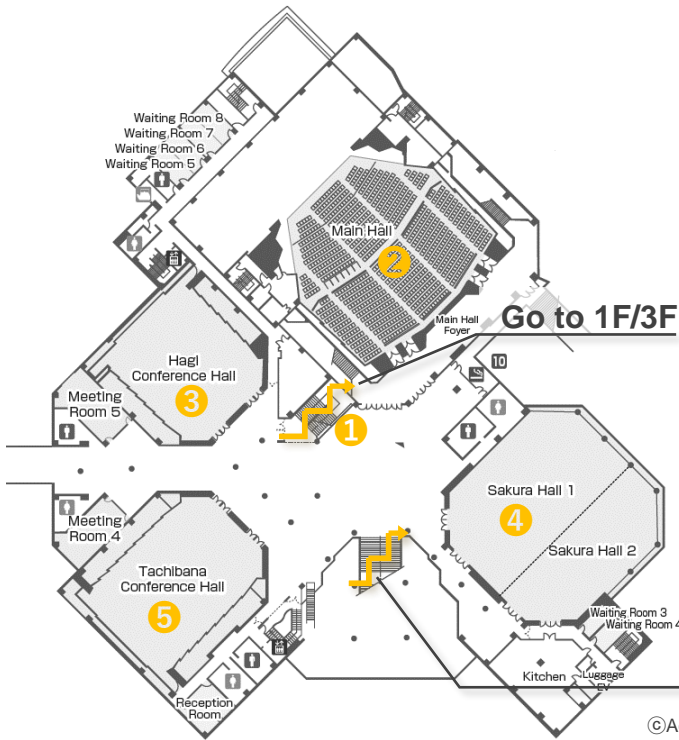
Sendai International Center Conference Building

International Center
Station

1F



2F



- ① Reception Desk
- ② Session Room 1 (Main Hall)
- ③ Session Room 2 (Hagi)
- ④ Exhibition Hall (Sakura 1 & 2)
- ⑤ Lunch Room (Tachibana)

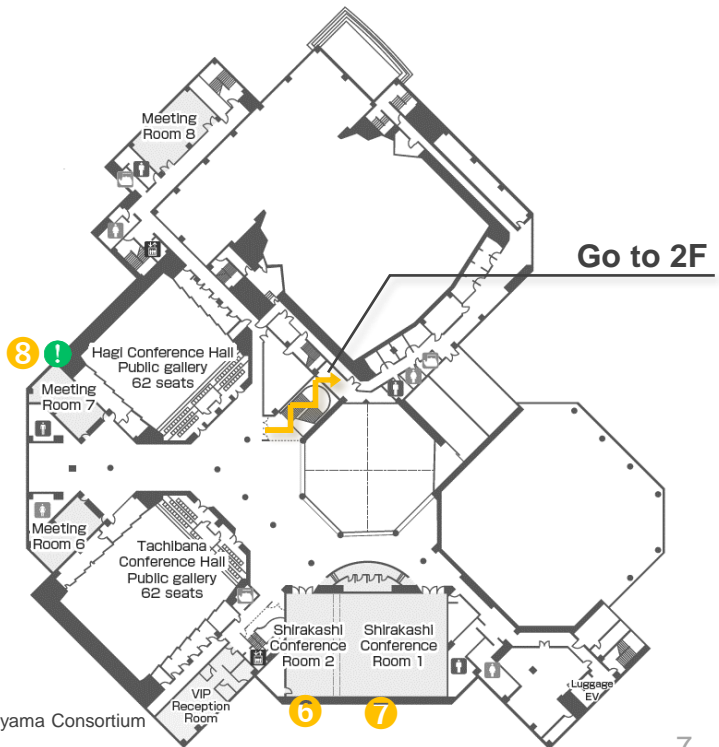
Go to 1F/3F

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3F

- ⑥ Session Room 3 (Shirakashi 2)
- ⑦ Tutorial Room (Shirakashi 1)
- ⑧ Work Space

! You are free to use this room.



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Conference Venue

Reception Desk

- ✓ The reception desk is located on the 2nd floor of the Sendai International Center.
(During the WGs, which will be held from 29 September to 3 October, the reception desk is located on the 3rd floor of the Sendai International Center.)
 - ✓ There is no cloakroom at the venue.
 - ✓ On the day of the event, please give the receptionist the "inquiry number" that was included in the emails you received when you registered for AMARYS.
- ① You can find your inquiry number in either "[CIGRE2023] Personal Information Mail to confirm registration" or "[CIGRE2023] Registration Mail to confirm registration" sent to you when you registered on AMARYS.

General Information

• Registration

Registration for Colloquium already start at the web site:

<https://www.cigre2023sendai.jp/registration/>

On-site registration will not be accepted during Colloquium.

Participants must register and pay online through AMARYS by 25 September JST.



• Visa

Due to the time required to prepare the necessary documents for visa applications, registrations and applications should be submitted by the end of July. To apply for visa documentation, please contact the email address below.

CIGRE 2023 Sendai Colloquium Organizing Committee

info@cigre2023sendai.jp

• Safety Measures (COVID-19)

- ✓ Japanese Border Measures
Valid vaccination certificate or pre-departure test is not required.
For more information, see the overview at
<https://www.mhlw.go.jp/stf/covid-19/bordercontrol.html>



- ✓ Infection control measures and mask-wearing
Wearing a mask is left up to the judgement of individuals.
Hand washing and hand sanitizing are recommended.
For more information, see the overview at

https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000164708_00079.html





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Program

Program at a Glance

Date	Time	Event	Place
Tuesday October 3	14:30-17:00	Tutorials (B2/C4)	Tutorial Room (Shirakashi 1)
		Tutorials (C3/C4)	Session Room 3 (Shirakashi 2)
	17:30-19:30	Welcome Party	Aoba no Kaze Terrace
Wednesday October 4	09:00-10:00	Opening Ceremony	Session Room 1 (Main Hall)
	10:10-17:00	Oral Sessions	Session Room 1 (Main Hall) & Session Room 2 (Hagi) & Session Room 3 (Shirakashi 2)
	14:25-15:40	Poster Session	Exhibition Hall (Sakura 1 & 2)
	15:45-17:00	NGN/WiE Forum (1)	Session Room 2 (Hagi)
	19:00-21:00	Gala Dinner	Hotel Metropolitan Sendai Venue
Thursday October 5	09:00-10:10	Special Session	Session Room 1 (Main Hall)
	10:20-16:05	Oral Sessions	Session Room 1 (Main Hall) & Session Room 2 (Hagi) & Session Room 3 (Shirakashi 2)
	14:50-16:05	NGN/WiE Forum (2)	Session Room 2 (Hagi)
	16:10-16:25	Coffee Break	Lunch Room (Tachibana)
	16:30-17:00	Closing Ceremony 	Session Room 1 (Main Hall)
Friday -Saturday October 6 - 7		Technical Tour	Sendai – Fukushima – Ibaraki – Tokyo

 During the Closing Ceremony, the Best Paper Award will be presented to the best oral presenter.

Welcome Speaker

Mr. Toshiyuki Yamada

Representative Director & Executive Vice President,
Tohoku Electric Power Network Co., Inc.



Toshiyuki Yamada received the B. Eng. and M. Eng. degrees in electrical engineering from Tohoku University, Sendai, Miyagi, Japan, in 1983 and 1985, respectively. He joined Tohoku Electric Power Co., Inc. and has more than 30 years of experience in power system planning and operations. During his career, he has lectured on the challenges and latest approaches to expanding renewable energy interconnection as one of Japan's leading specialists at a prestigious business seminar. In addition, he participated in CIGRE activities related to SC B5, including presentations on grid protection. Recently, he contributed to the Great Disturbances Workshop of the CIGRE 2022 Paris Session.



Keynote Speakers

Dr. Hiroshi Okamoto (Wednesday October 4) ; Keynote Speech 1



Chairman, The Japanese National Committee of CIGRE
Chief Technology Officer, Executive Vice President, TEPCO Power Grid, Inc.

Hiroshi Okamoto received Dr. Eng. Degrees in electrical engineering from the University of Tokyo, Japan, in 1993. He started his career with Tokyo Electric Power Company (TEPCO) in 1993. In 2017, Dr. Okamoto jointly published a book entitled "Utility 3.0: Game change in energy industry 2050". He also published many articles and several books regarding electric power systems. Currently, he is member of Market Strategy Board of International Electro-technical Commission (IEC/MSB) and member of Steering Committee of CIGRE.

Dr. Pierre Van Dyke (Thursday October 5) ; Keynote Speech 2



Chair, CIGRE SC B2
Senior Research Scientist, Hydro-Quebec Research Institute (IREQ)

Pierre Van Dyke received B.Eng. and M.A.Sc. in mechanical engineering at École Polytechnique de Montreal in 1983 and 1985. He received Masters Certificate in Project Management at Laval university in 2005, and Ph.D. at Sherbrooke University in 2007. He has over 30 years of experience in R&D and consulting on aeolian vibrations, wake induced oscillations, conductor galloping, and climatic loads on overhead lines. He was the convenor of CIGRE Technical Advisory Group B2.06 Mechanical behaviour of conductors and fittings and Canadian representative of CIGRE B2 Overhead Lines. He is a recipient of the 2020 CIGRE B2 technical council award.

Ms. Mercedes Vázquez Miranda (Thursday October 5) ; Keynote Speech 3



Chair, CIGRE SC C3
Responsible for Climate Change, Red Eléctrica de España

Mercedes Vázquez received Master's degree of "Agricultural Engineering" at Universidad Politécnica de Madrid, "Environmental management and auditing" at Universidad de las Palmas de Gran Canaria, "Corporate Responsibility. Social accountability and auditing" at Universidad de Barcelona, and "Design, Building and Maintenance of Electrical Infrastructures" at Universidad Pontificia de Comillas in 1999, 2004, 2007 and 2011 respectively. She has over 20 years of experience as a technician or consultant in the environmental field. She is now focusing on sustainability issues and mainly on climate change. Her first experience in CIGRE was in 2007, as WG C3-02 member and since then she has contributed in a number of different roles. She was SC3 secretary from 2012 to 2020. She got CIGRE Study Committee Award in 2016.

Keynote Speakers

Dr. Chiyoji Ohkubo (Thursday October 5) ; Keynote Speech 4



Director, Japan EMF Information Center (JEIC)

Chiyoji Ohkubo is a member of International Advisory Committee, WHO International EMF Project and Chairperson of the Committee on the Possible Adverse Health Effects of Radio Frequency Electromagnetic Fields, the Ministry of Internal Affairs and Communications, Japan. He was a Scientist at the International EMF Project, Radiation and Environmental Health Unit, PHE/SDE, WHO Head Quarter, Geneva. He was a member of Scientific Expert Group (SEG), ICNIRP, and Director, Department of Environmental Health, National Institute of Public Health, Japan. He received The Order of the Sacred Treasure, Gold Rays with Rosette and Minister of Internal Affairs and Communications Commendation.

Dr. Hideki Motoyama (Thursday October 5) ; Keynote Speech 5



Former Secretary of CIGRE SC C4

Associate Vice President / Head of Strategy and Planning Division, Grid Innovation Research Laboratory, CRIEPI (Central Research Institute of Electric Power Industry), Japan

Hideki Motoyama received the B. Eng., M. Eng., and Dr. Eng. degrees in electrical engineering from Doshisha University, Kyoto, Japan, in 1985, 1987, and 1998, respectively. Since 1987, he has been with CRIEPI, Japan, and working on lightning surge analysis, modelling and measurement of surge phenomena, experimental and theoretical studies on breakdown characteristics of long air gaps, modelling and measurement of grounding phenomena, insulation coordination, lightning protection, and EMC in electric power systems. From 2012 to 2018, he was the Secretary of the CIGRE SC C4.



Tutorials

Date & Time

Tuesday 3 October 14:30 – 17:00

Venue

Tutorial Room (3F - Shirakashi 1) for SCB2/C4

Session Room 3 (3F - Shirakashi 2) for SCC3/C4

Program & Time Schedules

Time	Tutorial Room (3F - Shirakashi 1)	Session Room 3 (3F - Shirakashi 2)
14:30-14:40	Opening	Opening
14:40-15:20	Tutorial 1-1 (B2/C4) [WG B2/C4.76] Lightning & Grounding Considerations for Overhead Line Rebuilding and Refurbishing Projects, AC and DC	Tutorial 2-1 (C3) [AG C3.01] Electric field, magnetic field and human health
	Presenter: Dr. William A. Chisholm, Dr. Nadiah Hudi	Presenter: Dr. Michel Plante
15:20-16:00	Tutorial 1-2 (B2) [WG B2.66] Installation of HTLS conductors <i>(*HTLS: High Temperature Low Sag)</i>	Tutorial 2-2 (C4/A3) [WG C4/A3.53] Applying Low-Residual-Voltage Surge Arresters to Suppress Overvoltages in UHV AC Systems
	Presenter: Mr. Vivek T. Chari, Mr. Hans Jorg Krispin	Presenter: Dr. Hideki Motoyama
16:00-16:40	Tutorial 1-3 (B2) [New Green Book] Structural Dynamic Loading Effects on Overhead Lines: Impact on Supports and Foundations	Tutorial 2-3 (C4) [WG C4.59] Real-time Lightning Protection of the Electricity Supply Systems of the Future
	Presenter: Dr. Leon Kempner, Dr. Asim Haldar, Mr. João B.G.F. da SILVA	Presenter: Dr. Haocong Xie
16:40-17:00	Closing	Closing

Tutorials

Presenters

Tutorial 1-1 (B2/C4)

[WG B2/C4.76] Lightning & Grounding Considerations for Overhead Line Rebuilding and Refurbishing Projects, AC and DC

Dr. William A. Chisholm



Dr. William A. Chisholm received his Ph.D. in Electrical Engineering from the University of Waterloo (CA) in 1983. His primary research in 30 years at Kinectrics, the former Ontario Hydro Research Division, was in lightning protection, grounding, thermal rating of conductors and icing flashover performance of insulators. He co-authored four books, including a 2022 CIGRE Green Book; fifteen book and CIGRE Technical Brochure chapters; four IEEE Standards and more than 20 refereed journal papers. He chaired the IEEE Power and Energy Society, Transmission and Distribution Committee in 2013–2014.

Dr. Nadiyah Hudi



Dr. Nadiyah Hudi received her Ph.D. from the University of Southampton (GB) in 2005 and has been working in the field of overhead transmission lines for 17 years, with main interest in improvement of lightning and grounding issues. Her current roles at Tenaga Nasional Perhad (TNB), Malaysia include assessing and evaluating new overhead line products/technology, reviewing line performance and providing technical support to operational teams. She has been a member of CIGRE Study Committee B2 since 2019 and has also been active in the AORC-CIGRE B2 Panel Group since 2014.

Tutorial 1-2 (B2)

[WG B2.66] Installation of HTLS conductors

Mr. Vivek T Chari



Vivek T Chari received a B.E. in Mechanical Engineering from the University of Madras, Chennai in 2001 and M.Sc. in Industrial Engineering from University of Michigan, Ann Arbor in 2003. He has an experience of 20 years in design, manufacturing and testing of overhead line fittings and accessories for conductors, insulators, OPGW cables for 66 kV to 800 KV transmission lines and over 10 years in testing of conductors for overhead lines. He is the Director of Operations at TAG Corporation, Chennai, India. He has been member of CIGRE since 2014, Convenor of Working Group B2.66 and is currently the Secretary of Study Committee B2.

Mr. Hans Joerg Krispin



Hans Joerg Krispin is working in the field of OHTL (Overhead Transmission Lines) for more than 35 years with a focus on application engineering with regard to conductors and fittings. Since 1991, he has been member of several Working Groups of CIGRE SC B2, and is currently serving as secretary of WG B2.66.

Tutorials

Presenters

Tutorial 1-3 (B2)

[New Green Book] Structural Dynamic Loading Effects on Overhead Lines: Impact on Supports and Foundations

Dr. Leon Kempner Jr.



Dr. Leon Kempner Jr. is the Principal Civil (Structural) Engineer for the Bonneville Power Administration. He has a Ph.D. in System Science: Civil Engineering (structural emphasis), Portland State University, M.Sc. in Civil engineering (structural emphasis), Oregon State University, and a B.Sc. in Civil engineering (structural emphasis), University of Nebraska, Omaha. He has 49 years of experience with structural engineering analysis, design, and research of transmission line and substation structures.

Dr. Asim Haldar



Dr. Asim Haldar received his M.Eng. and Ph.D. degrees in Ocean Engineering (specialization in offshore structure dynamics), from Memorial University of Newfoundland, Canada in 1977 and 1985 respectively. He has 44 years of applied research experience with structural engineering analysis and design of HV/EHV overhead transmission lines. Asim has published more than 90 technical papers and reports in his field of expertise, many of them have a worldwide circulation. Dr. Haldar is at present the Technical Advisor of Overhead Transmission Design (OTD) Interest Group of Centre for Energy Advancement through Technological Innovation (CEATI, www.ceati.com), Canada. He is an active member of the CIGRE Study Committee SCB2 on overhead lines and a member of WG B2.65.

Mr. João B.G.F. da SILVA



João BGF da Silva obtained his master degree in Civil Engineering by the Federal University of Minas Gerais, Brazil, where he was Professor of Steel Structures from 1975 to 2012. At the industry, he has been working in many companies, being responsible for engineering and/or construction of many high voltage OHL projects in Brazil and other American countries. Currently, he is the Technical Director of Paranaíba Transmissora de Energia S.A., being also member of the Consulting Council of the Brazilian Electric Power Research Center – CEPEL. In CIGRE, he has been member of the Study Committee B2 – Overhead Lines since 1985. He was Convener of the former WGB2.08 – Transmission Line Structures, being nowadays the OHL Components Technical Advisory Group Chairman. He was also President of the Brazilian National Committee, and further, Chairman of Iberian American Region of CIGRE. He is an honorary member of CIGRE, having also received the “CIGRE Medal” in 2008.

Tutorials

Presenters

Tutorial 2-1 (C3)

[AG C3.01] Electric field, magnetic field and human health

Dr. Michel Plante



Dr. Michel Plante is a medical doctor who graduated from University of Montreal in 1979. Since 1982, he has been a medical advisor for Hydro-Québec, a large electric utility which provides generation, transmission and distribution of electricity in Canada. He is one of the founder of UTIC, the Utilities Threshold International Consortium, a research initiative established in 2013 dedicated to studying the effects of magnetic fields on the human brain, including the thresholds at which these effects occur. Dr. Plante has been involved with CIGRE since 1994. He is the convener of CIGRE's Advisory Group on EMF and health.

Tutorial 2-2 (C4/A3)

[WG C4/A3.53] Applying Low-Residual-Voltage Surge Arresters to Suppress Overvoltages in UHV AC Systems

Dr. Hideki Motoyama



Hideki Motoyama received the B. Eng., M. Eng., and Dr. Eng. degrees in electrical engineering from Doshisha University, Kyoto, Japan, in 1985, 1987, and 1998, respectively. Since 1987, he has been with CRIEPI, Japan, and working on lightning surge analysis, modelling and measurement of surge phenomena, experimental and theoretical studies on breakdown characteristics of long air gaps, modelling and measurement of grounding phenomena, insulation coordination, lightning protection, and EMC in electric power systems. From 2012 to 2018, he was the Secretary of the CIGRE SC C4.

Tutorial 2-3 (C4)

[WG C4.59] Real-time Lightning Protection of the Electricity Supply Systems of the Future

Dr. Haocong Xie



Prof. He received the Ph.D. degree from Tsinghua University, Beijing, China, in 1994. Now he is a Changjiang Scholar Professor of China Education Ministry, and the Chair of High Voltage Engineering Research Institute in Tsinghua University. His research interest covers advanced power transmission technology, lightning protection technology, smart sensors and big data, and smart nanodielectric materials.

Opening Ceremony

Date & Time

Wednesday 4 October 09:00 – 10:00

Venue

Session Room 1 (2F - Main Hall)

Program & Time Schedules

Time	Session Room 1 (2F - Main Hall)
09:00-09:10	Opening
09:10-09:20	Welcome Speech Mr. Toshiyuki Yamada, Representative Director & Executive Vice President, Tohoku Electric Power Network Co., Inc.
09:20-09:25	Opening Address Mr. Yuko Kuranari, Chair, Colloquium Organizing Committee, CIGRE SC B2 of Japanese National Committee, Executive Officer & General Manager, Tohoku Electric Power Network Co., Inc.
09:25-09:40	Keynote Speech 1 Dr. Hiroshi Okamoto, Chairman, The Japanese National Committee of CIGRE Chief Technology Officer, Executive Vice President, TEPCO Power Grid, Inc.
09:40-10:00	Closing



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Oral Session

Date & Time

Wednesday 4 October 09:00 – 17:00

Thursday 5 October 09:00 – 17:00

Venue

Session Room 1 (2F - Main Hall) for B2

Session Room 2 (2F - Hagi) for C3/C4

Session Room 3 (3F - Shirakashi 2) for B2

Program & Time Schedules

Wednesday 4 October

Time	Session Room 1 (2F - Main Hall)	Session Room 2 (2F - Hagi)	Session Room 3 (3F - Shirakashi 2)
09:00-10:00	Opening Ceremony Keynote Speech 1	---	---
10:10-11:25	Oral Session 1 (B2) Life extension [vibration damper, HTLS, etc.]	Oral Session 2 (C3) Environment [landscape, bird, etc.]	Oral Session 3 (B2) Recovery techniques [reinforce tower, jumper failure, etc.]
11:30-12:45	Oral Session 4 (B2) DLR [DLR, SLR, etc.]	Oral Session 5 (C3) EMF [EMF, EMC, etc.]	Oral Session 6 (B2) Snow & Wind loadings [snow accretion, snow loading, etc.]
12:50-14:20	Lunch @ Lunch Room (Tachibana) 2F		
14:25-15:40	Poster Session (B2/C3/C4) @ Exhibition Hall (Sakura Hall 1 & 2) 2F		
15:45-17:00	Oral Session 7 (B2) Upgrading [HTLS conductor, uprate, etc.]	NGN/WiE Forum (1) NGN/WiE speeches	Oral Session 8 (B2) Drones & Live Line [UAV inspection, LLW, Induction, etc.]

Oral Session

Program & Time Schedules

Thursday 5 October

Time	Session Room 1 (2F - Main Hall)	Session Room 2 (2F - Hagi)	Session Room 3 (3F - Shirakashi 2)
09:00-10:10	Special Session Keynote Speech 2 - 5		
10:20-11:35	Oral Session 9 (B2) Advanced technology [tower, foundation, accessory, etc.]	Oral Session 10 (C4) Lightning overvoltage, Insulation coordination, Power quality [lightning, inverter, reactor]	Oral Session 11 (B2) Resiliency [climate change, abnormal weather, etc.]
11:40-13:25	Lunch @ Lunch Room (Tachibana) 2F		
13:30-14:45	Oral Session 12 (B2) Monitoring [corrosion, diagnosis, landslide, etc.]	Oral Session 13 (C4) Systematic analysis [substation, DER, DTR, etc.]	Oral Session 14 (B2) Environmental impact [LCA, forest fire, etc.]
14:50-16:05	Oral Session 15 (B2) Digitalization [AI, image analysis, LiDAR, etc.]	NGN/WiE Forum (2) Experienced Speeches	Oral Session 16 (B2) Composite insulators [composite insulators, HVDC, etc.]
16:10-16:25	Coffee Break @ Lunch Room (Tachibana) 2F		
16:30-17:00	Closing Ceremony !		

! During the Closing Ceremony, the Best Paper Award will be presented to the best oral presenter.

Oral Session

Session 1 (B2) - Life Extension

Vibration Countermeasures, Damper, HTLS, Asset Management, DLR

Presentation order	Paper No. / Title / Author (*Main Author)
S1-1	5221510 Aeolian vibration damping of an AACSR conductor with trapezoidal wires used to uprate a river crossing <i>Pierre VAN DYKE*, Josée PARADIS, Simon PRUD'HOMME</i>
S1-2	5305332 Investigating the energy dissipation efficiency of an ACSR-type damper loops <i>Shima ZAMANIAN*, Sébastien LANGLOIS, Boris ADUM</i>
S1-3	5304603 The Impact of Wind Turbine Wake on Overhead Lines - Development of a Vibration Risk Assessment Approach using CFD Modelling and Line Characteristics <i>Jason NOCTOR*, Colin THOMPSON</i>
S1-4	5305849 Testing OHL conductor's vibration response under different electrical loadings <i>Haoji LIU, Konstantinos KOPSIDAS*, Peter WATERWORTH, John LIGHT</i>
S1-5	5305280 Integration Possibilities of Health Monitoring Function into Dynamic Line Rating System <i>Levente RÁCZ*, Dávid SZABÓ, Gábor GÖCSEI, Bálint NÉMETH</i>

Session Chairs



Pierre Van Dyke
Hydro-Québec



Manabu Sakata
Nippon Katan Co., Ltd.

Oral Session

Session 2 (C3) - Environment

Landscape, Bird

Presentation order	Paper No. / Title / Author (*Main Author)
S2-1	5302448 Development of landscape simulation tools using 3D software technology <i>Hideyuki KOJIMA*</i> , Hisanari SATO, Kazuki AOKI
S2-2	5305246 Joint preferred-route finding: on stakeholder engagement and recommendations for effective route alternative comparison tools <i>Joris DEN BREEJEN*</i> , Sander VAN SLUIS
S2-3	5301077 Experimental Approaches for Minimizing Bird-Induced Damage to Transmission Towers and Overhead Lines <i>Masaki SHIRAI*</i> , Momoyo FUJIOKA
S2-4	_____
S2-5	5306308 Comparative field study of benthic colonisation on powered and un-powered subsea cables in a shallow coastal French ecosystem <i>Yann PATRY, Antoine CARLIER, Benjamin GUYONNET, Damien SAFFROY*</i>

Session Chairs



Mercedes V Miranda
Redeia



Masaki Shirai
Central Research Institute of
Electric Power Industry

Oral Session

Session 3 (B2) - Recovery techniques

Reinforcement, Replacement, Damaged facilities, Jumper failure

Presentation order	Paper No. / Title / Author (*Main Author)
S3-1	5305259 Research on reinforcing method of steel tower main posts <i>Keito MURAKAMI*</i> , <i>Keigo TANAKA</i> , <i>Kentaro ISHIKAWA</i> , <i>Motoyuki YAMAZAKI</i> , <i>Tomohiro ISHIDA</i> , <i>Shunichi TAKAGI</i>
S3-2	5304195 Removal of Damaged Transmission Facilities in the Great East Japan Earthquake <i>Makoto HAYATSU*</i> , <i>Takashi KIMURA</i>
S3-3	5305195 Process to Clarify Damage Mechanism of Transmission Towers Caused by Natural Disasters <i>Motoyuki YAMAZAKI*</i> , <i>Keito MURAKAMI</i> , <i>Tomonori SHIRAISHI</i>
S3-4	5304962 Failure cases and countermeasures for jumper on heavy-angle towers <i>T.GOTO</i> , <i>K.MATSUDA</i> , <i>Y.AOYAMA</i> , <i>M.SHIMIZU*</i>
S3-5	5305006 Method of replacing the main leg members at the top of a 500kV steel pipe tower <i>Nobuyuki TSUTSUI*</i> , <i>Kenichi GORAI</i> , <i>Hiroki OMOTE</i> , <i>Kazunori WATANABE</i> , <i>Hiroki MIZOE</i>

Session Chairs



Bing Lin
Aurecon

Soichiro Sugimoto
Central Research Institute of
Electric Power Industry



Oral Session

Session 4 (B2) - DLR

Dynamic Line Rating (DLR), Monitoring

Presentation order	Paper No. / Title / Author (*Main Author)
S4-1	5305082 Comparison of Conductor Temperatures and wind speeds measured by multiple kinds of sensors for Dynamic Line Rating <i>Takuhiko OHASHI*, Tomonori SHIRAISHI, Osamu SAKAI, Narumi IWAMA, Tomoki KITASHIMA, Brian BERRY</i>
S4-2	5305306 Reducing Low Carbon Generation Curtailment with Dynamic Line Ratings on the England and Wales Transmission System <i>Kristine ENGEL*, Nicholas GOULD</i>
S4-3	5304596 Estimation of Rating enhancement and optimised conductor monitoring for Dynamic Line Rating on long transmission circuits by integration of modern meteorological practice <i>Benjamin BRINT*, David BORRIE, Colin THOMPSON</i>
S4-4	5304040 Verification of Feasibility of Dynamic Line Rating Using Vibration Data of Optical Fiber Composite Overhead Ground Wire (OPGW) <i>Naoya HIRAHARA</i>
S4-5	5304602 Wind Adjusted Static Line Ratings for Wind Generator Integration <i>Brian TOWNSEND*, Rob SUNDERLAND</i>

Session Chairs



Bálint Németh
Budapest University of
Technology and Economics

Tomoki Kitashima
Furukawa Electric Power
Systems Co., Ltd.



Oral Session

Session 5 (C3) - EMF

Electromagnetic Field (EMF), Electromagnetic Compatibility (EMC)

Presentation order	Paper No. / Title / Author (*Main Author)
S5-1	5304868 Efforts in CRIEPI to elucidate the causal relationship between power-frequency magnetic field and childhood leukemia <i>Masayuki TAKAHASHI*</i>
S5-2	5325533 Improving identification of interaction mechanisms of EMF exposure through biomathematical models <i>Julien MODOLO*, Alexandre LEGROS</i>
S5-3	5304883 Establishing Reference Models for Calculation of Magnetic Fields near Electric Power Facilities <i>Takeo SHIINA*, Kenichi YAMAZAKI, Yuki OHMURA, Tomomichi OMOTE, Norihiro MINAMI, Yukio MIZUNO</i>
S5-4	5305222 Efforts in CRIEPI to Evaluate Stimulus Effects in Neuronal Activity on Low-Frequency Magnetic Field Exposure <i>Atsushi SAITO*, Masayuki TAKAHASHI, Satoshi NAKASONO</i>
S5-5	5326823 Importance of UTIC research from a Standards and Guidelines perspective <i>Alexandre LEGROS*, Eléonore FRESNEL, Nicolas BOUISSET, Julien MODOLO, Satoshi NAKASONO, Michel PLANTE</i>

Session Chairs



Alexandre Legros
Lawson Health Research Institute



Michel Plante
Hydro-Québec

Satoshi Nakasono
Central Research Institute of
Electric Power Industry



Oral Session

Session 6 (B2) - Snow & Wind loadings

Snow accretion, Strong wind, Vibration

Presentation order	Paper No. / Title / Author (*Main Author)
S6-1	5305072 Principles of Combined Wind and Snow Loads in the Japanese Standard of Transmission Tower Design <i>Hisato MATSUMIYA*</i> , Soichiro SUGIMOTO, Shinya HATAKEYAMA, Takeshi YOSHIMI, Shinya NIISEKI
S6-2	5304941 Countermeasures against snow accumulation on transmission towers achieving improved costs and reliability <i>Kento FUJII*</i> , Katsuyuki ENDO, Akihiro WATANABE, Koichi MINAGAWA, Isamu HIROTA
S6-3	5305264 Modeling and simulation of wind-induced cascading collapse of transmission towers <i>Rémi CAPILLON*</i> , Vincent ROULET, Julien SAID, Maxime GUEGUIN, Jean-Michel GHIDAGLIA
S6-4	5311914 Investigation of Snow Accretion Characteristics of a Single Conductor with Loose Counterweight <i>Saki TARUISHI*</i> , Hisato MATSUMIYA, Tomonori SHIRAISHI, Masanori OSADA, Ryota AIDA, Hiroshi MASUYA
S6-5	5315457 Study on Galloping Characteristic of Single Conductor Installed with Counterweights or Loose-Counterweights <i>Ryota AIDA*</i> , Hiroshi MASUYA, Tomoki KITASHIMA, Masanori OSADA, Shohei TAKAHASHI, Hisato MATSUMIYA

Session Chairs



Herbert Lugschitz
Former Chair of CIGRE SC B2

Hisato Matsumiya
Kyoto University



Oral Session

Session 7 (B2) - Uprating

HTLS Conductor, Thermal-resistance, Uprate

Presentation order	Paper No. / Title / Author (*Main Author)
S7-1	5305033 Design of alternative composite core conductors for new overhead lines <i>Baptiste GARY*, Maxime DELBOVE</i>
S7-2	5304875 Field Evaluation of High Temperature Low Sag Conductor with Composite Core <i>Takahiro IWAGAKI*, Masaki TAKAYAMA, Nadiyah Salwi Hudi, Mohd Imran Bin Shamsudin, Nabil Ahmad Nasuruiddin</i>
S7-3	5304232 Experience in evaluating HTLS conductor for the future use of uprating of overhead transmission lines towards supporting the ESG initiative in Malaysia <i>Mohd Imran SHAMSUDIN*, Nadiyah Salwi HUDI</i>
S7-4	5304361 High-Conductive, Thermal-Resistant Aluminum Alloy Conductor for Overhead Transmission Lines That Contributes to a Decarbonized Society <i>Masato WATABE*, Hiroyuki NAKAGAWA, Shinya OKAMOTO, Isao IWAYAMA, Yasuhiro AKASOFU, Hiroshi KOJIMA</i>
S7-5	5315995 Resistance-Temperature Characteristics of the Splice Connectors in the Aluminum Conductors Steel Reinforced in Overhead Transmission Lines <i>Meysam HASSANIPOUR*, Sylvain CANUEL</i>

Session Chairs



Vivek T Chari
TAG Corporation



Toshinobu Tsuji
Sumitomo Electric Industries, Ltd.

Oral Session

Session 8 (B2) - Drones & Live Line

Drone (UAV) inspection, Live Live Work, Induction

Presentation order	Paper No. / Title / Author (*Main Author)
S8-1	5304676 Introduction of R&D of the quadcopter drone used for inspection of power lines and overhead ground wires <i>Yusuke OTA</i>
S8-2	5304385 Autonomous Drone System for Multi- and Single-conductor Overhead Transmission Line Inspection <i>Nobuhiro KISHIGAKI*, Daisuke OTA, Noriaki TAKEUCHI, Takuro MIYAJIMA, Toshiyuki SAITO, Tomonori SHIRAISHI</i>
S8-3	5302008 Remotely Piloted Aircraft Systems for the Inspections of Powerlines <i>Siyanda BIYELA*, Tefo SEKGWELEO</i>
S8-4	5264977 Hazards of Electrostatic and Electromagnetic Induction in Unilateral Power Cut Operation of Parallel Two Circuit Transmission Line <i>Hiroyuki KANEKO*, Kenichi MARUYAMA, Takashi TAKAGI, Teru ARAYA, Tomohiro SHINYA</i>
S8-5	5305279 Possibilities of Expanding Working Safety during Live-Line and Vicinity Working <i>Bálint NÉMETH*, Dávid SZABÓ, Levente RÁCZ, Gábor GÖCSEI, Eduardo RAMIREZ BETTONI</i>

Session Chairs



Javier Iglesias
Red Eléctrica de España



Ko Nakaya
Central Research Institute of
Electric Power Industry

Oral Session

Session 9 (B2) - Advanced technology

New technologies for tower, foundation, accessory of conductor, etc.

Presentation order	Paper No. / Title / Author (*Main Author)
S9-1	5300733 Construction and performance test of precast foundation for transmission line tower <i>Tatsuya SUZUKI*, Shota INOUE, Koudai NAKAHASHI, Koji SHIGEKI</i>
S9-2	5304931 Performance Evaluation Tests of Zinc- Rich Paints for used on Power Transmission Towers <i>Tomonori KAMIBAYASHI*, Noritaka SAITO, Tasuku MUROI, Yurie SHIMAHARA , Akira MORIMOTO</i>
S9-3	_____
S9-4	5301210 Arm Damper Development <i>Meihuan FULK, David PARRISH, Ken AKIKI, Andrew PHILLIPS</i>
S9-5	5303681 THE INVESTIGATION OF VERTICALLY INSTALLED INTER-PHASE SPACERS FOR THE ENHANCEMENT OF CLEARANCE IN OVERHEAD LINES <i>Hassan BAKHSHI, Bita ESMAEILI JAMAKANI, Somayeh DERIKVAND, Masoud ABDOLHOSSEINPOUR*</i>

Session Chairs



João da Silva
Paranaíba Transmissora de Energia

Tomoki Kitashima
Furukawa Electric Power Systems Co., Ltd.



Oral Session

Session 10 (C4) - Lightning overvoltage, Insulation coordination, Power quality

Lightning, Inverter, Reactor

Presentation order	Paper No. / Title / Author (*Main Author)
S10-1	5304619 Investigation of Concurrent Flashover Characteristics of Parallel Gaps in Air for 66/77 and 154 kV Overhead Transmission Lines under Short-tail Lightning Impulse Voltage <i>Ryuichi NAKANE*</i> , Toru MIKI, Megumu MIKI
S10-2	5304442 Interaction of Neutral Ground Reactor Sizing with Secondary Arc and Rate of Recovery Voltage during Single Phase Auto Reclosure of 500 kV Main Grid in Thailand Power System <i>KET-URAI Varaporn*</i> , KLINHOM Nawin, CHITNUMSAB Pipat
S10-3	5314909 Rural Digital Substation (RDS) <i>Ganesh Murlidhar MANE*</i> , Anil Kumar OJHA, Boban CHACKO, Sukhendu DASH, Om Prakash RATHORE
S10-4	5315498 Investigation on Inverter Duty Transformer Failures at Grid Connected Solar Photovoltaic Plants: Challenges and Recommendations <i>Mahendra V CHILUKURI*</i> , Palanisamy K, Rajasekhar N, Manas KUNDU

Session Chairs



Hideki Motoyama
Central Research Institute of
Electric Power Industry



Toshihiro Tsuboi
Tokyo Electric Power
Company Holdings, Inc.

Oral Session

Session 11 (B2) - Resiliency

Climate change, Abnormal weather

Presentation order	Paper No. / Title / Author (*Main Author)
S11-1	5306460 Network resilience under extreme weather events and regulatory challenges <i>Asif BHANGOR</i>
S11-2	5305296 Understanding and mitigating the effects of climate change on overhead transmission lines: recent developments in Italy <i>Michele de NIGRIS, Emanuele CIAPESSONI, Paola FAGGIAN, Riccardo BONANNO, Simone SPERATI, Francesca VITERBO</i>
S11-3	5301084 Project Climate Check – Climatological changes, landslide potentials and new applications for system grid operators <i>Kerstin WEINDL*, Klemens REICH</i>
S11-4	5305852 Optimizing Future Overhead Line Networks for Flexible and Resilient Operation <i>Omer ELMOGAMER, Konstantinos KOPSIDAS</i>
S11-5	5303928 CRHyME (Climatic Rainfall Hydrogeological Model Experiment): a model for geo-hydrological hazards quantification to electrical infrastructures <i>Andrea Abbate</i>

Session Chairs



Asif Bhangor
GS E&C Corp.



Junko Mori
Meteorological Research
Institute for Technology co., ltd

Oral Session

Session 12 (B2) - Monitoring

Corrosion, Diagnosis technology, Deterioration estimation, Landslide, Foundation

Presentation order	Paper No. / Title / Author (*Main Author)
S12-1	_____
S12-2	5303284 Development of the monitoring system for the base displacement of the transmission steel towers using the inclination sensors <i>Tatsuya KURIHARA*</i> , <i>Masayuki SAEKI</i> , <i>Tsutomu AIZAWA</i> , <i>Naoki NAKAMURA</i>
S12-3	5304456 Novel maintenance measures to combat the effects of steel member theft on overhead power lines in South Africa <i>Shaina GRANT*</i> , <i>Bertie JACOBS</i> , <i>Ockert FOURIE</i> , <i>Dan DUKHAN</i>
S12-4	5304497 Estimation of the mechanism of under-film corrosion by cross-sectional observation <i>Keiichi YOSHINO*</i> , <i>Hiromitsu IJICHI</i> , <i>Teruhisa TATSUOKA</i> , <i>Yuuki YAMATO</i> , <i>Motoyuki YAMAZAKI</i> , <i>Tomonori SHIRAISHI</i>
S12-5	5297802 Ageing Model for Aluminum Conductors Steel Reinforced Using a Non-Destructive Corrosion Detector (LineCore) <i>Meysam HASSANIPOUR*</i> , <i>Toualith Jean-Marc MEANGO</i> , <i>Jonathan BELLEMARE</i>

Session Chairs



John McCormack
Transgrid



Motoyuki Yamazaki
TEPCO Power Grid, Inc.

Oral Session

Session 13 (C4) - Systematic analysis

Substation, DER, DTR

Presentation order	Paper No. / Title / Author (*Main Author)
S13-1	5302315 Stability Enhancement of Future Japanese Grid using Enhanced STATCOM <i>Ruriko HARAGUCHI*</i> , Tomoyuki HATAKEYAMA, Andrew OWENS, Shih-Feng CHOU
S13-2	5302885 Development of Evaluation Process for Demand-Side Resilience against Power Outage <i>Norio SAKAI*</i> , Takuro TOBO, Reiko TAKAHASHI, Yutaka IINO, Kuniaki YABE, Yasuhiro HAYASHI
S13-3	5304570 Dynamic thermal performance of transformers and lines for wind power grid connection <i>Tor LANERYD</i>
S13-4	5304529 Design & Implementation of “Intelligent Alarm” application for Situational Awareness and Systematic Analysis <i>Manoj KUMAR, G SRIMANNARAYANA, Vikas BISHNOI*</i>

Session Chairs



Masahide Hojo
Tokushima University



Hayato Sato
Central Research Institute of
Electric Power Industry

Oral Session

Session 14 (B2) - Environmental impact

Environmental impact reduction measures, Life Cycle Assessment (LCA), forest fire

Presentation order	Paper No. / Title / Author (*Main Author)
S14-1	5304993 Design & Development of Floating Dead end insulator assembly for minimizing the Environmental impact of Transmission lines <i>Ashish kumar SINGH, Chandra KANT*, Abhaya KUMAR, Rajesh KUMAR</i>
S14-2	5315821 Assessment of CO2 emissions in transmission line construction for a carbon-neutral society <i>Yuto MORIWAKE*, Takahiko YATSUDA</i>
S14-3	5313561 Use of Remote Sensing Data for Assessing Forest Fire Risk of Overhead Line Route <i>Hilloi BISWAS*, Muthyala MANOJ KUMAR</i>
S14-4	5305202 Improving the efficiency of transportation work in overhead power transmission facility construction <i>Takafumi HIROSE</i>
S14-5	5305266 New Benchmark for planning of Transmission system to mitigate environmental challenges <i>Rakesh KUMAR*, K K SARKAR, Sourov CHAKRABORTY, Ashok PAL, P C GARG</i>

Session Chairs



Klemens Reich
Austrian Power Grid



Yuko Kuranari
Tohoku Electric Power Network
Co., Inc.

Oral Session

Session 15 (B2) - Digitalization

AI, Image analysis, LiDAR

Presentation order	Paper No. / Title / Author (*Main Author)
S15-1	5304813 Development of Power Line Abnormality Detection System utilizing AI and image analysis <i>Mizuki IWAMOTO*</i> , <i>Kousei SATOU</i> , <i>Manabu MORISHITA</i> , <i>Toru AOKI</i> , <i>Tomohiko KAMIJO</i> , <i>Takeo TANAKA</i>
S15-2	5304893 Development of automatic diagnostic AI for overhead wire accessories and insulators <i>Shohei TAKAHASHI*</i> , <i>Shinzo TANIGUCHI</i> , <i>Daisuke OTA</i> , <i>Noriaki TAKEUCHI</i> , <i>Toshiyuki SAITO</i> , <i>Tomonori SHIRAISHI</i>
S15-3	5304812 Development of Image Processing Methods for OHTL Conductor Inspection <i>Ryo YUZAWA*</i> , <i>Seiya TAKEHATA</i> , <i>Kenta HAYAKAWA</i>
S15-4	5315475 Vegetation Management in RoW of Power Transmission lines using Image processing of satellite imagery <i>Subir SEN</i> , <i>V K BHASKAR</i> , <i>N K BHASKAR</i> , <i>Pradeep Singh CHAUHAN</i> , <i>Shalini DUBEY</i> , <i>Pradeep SEERVI*</i>
S15-5	5305265 Improving reliability of RTE's asset database from aerial LIDAR measurements <i>Jean-Philippe SAUT*</i> , <i>Sylvain JONCHERY</i> , <i>Maxime GUEGUIN</i> , <i>Louis LE TARNEC</i> , <i>Fikri HAFID</i> , <i>Pascale PRIEUR</i>

Session Chairs



Janos Toth
RecognAlse



Tomonori Shiraishi
TEPCO Power Grid, Inc.

Oral Session

Session 16 (B2) - Composite insulators

Composite insulators, HVDC interconnection, Power system monitoring

Presentation order	Paper No. / Title / Author (*Main Author)
S16-1	5287958 Evaluation of reliability of OHL through inspection-based maintenance of composite insulators <i>Igor GUTMAN, Johan LUNDENGÅRD, Matthew HEATH, Charles KURNIAWAN</i>
S16-2	5303877 Service experience compared with electric field criteria for composite insulators <i>Peter SIDENVALL*, Igor GUTMAN, Fabian LEHRETZ, Kübranur VARLI</i>
S16-3	5304629 Today's Composite Insulator Application Technology <i>Minoru UEHARA*, Kentaro SUEMOTO, Nobuhiko UJIHARA, Manabu SAKATA</i>
S16-4	5302827 Prevention effects of single unit flashover with insulator strings in HVDC lines <i>Noriyuki TAKADA, Yoshiaki AOKI, Kuniaki KONDO*, Atsushi ITO</i>
S16-5	5321261 TRANSMISSION LINE UTILIZATION ON THAILAND – LAOS INTERCONNECTION USING MONITORING AND CONTROL SYSTEM <i>LEKKRUASUWAN Anucha*, SAWATPIPAT Panat, PIMJAIPONG Witchaya</i>

Session Chairs



Konstantin Papailiou
Former Chair of CIGRE SC B2



Manabu Sakata
Nippon Katan Co., Ltd.

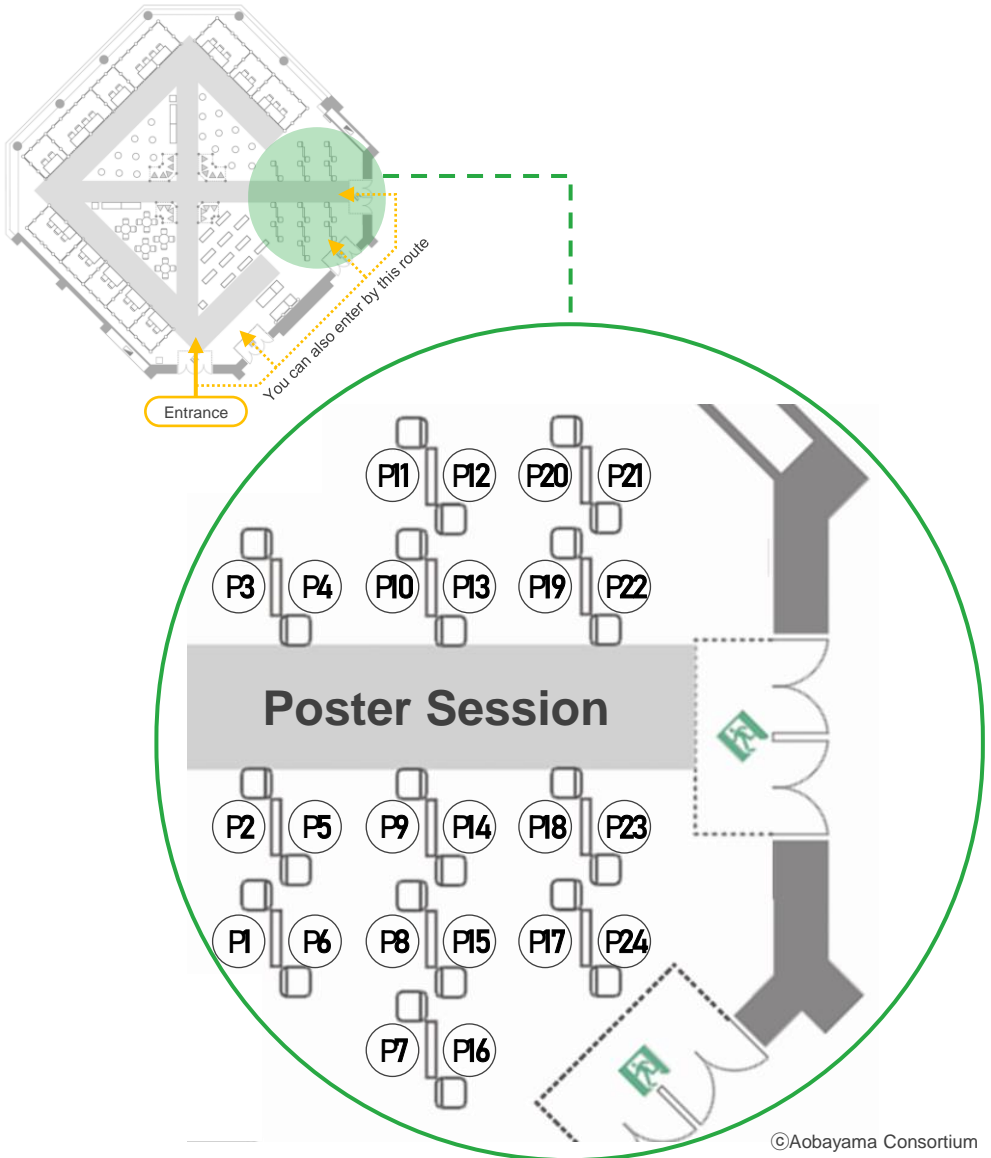
Poster Session

Date & Time

Wednesday 4 October 14:25 – 15:40

Venue

Exhibition Hall (2F – Sakura 1 & 2)



Poster Session

List of Poster Session Papers (B2)

Panel No.	SC / Paper No. / Title / Author (*Main Author)
P1	[B2] 5305306 Reducing Low Carbon Generation Curtailment with Dynamic Line Ratings on the England and Wales Transmission System <i>Kristine ENGEL*, Nicholas GOULD</i>
P2	[B2] 5304596 Estimation of Rating enhancement and optimised conductor monitoring for Dynamic Line Rating on long transmission circuits by integration of modern meteorological practice <i>Benjamin BRINT*, David BORRIE, Colin THOMPSON</i>
P3	[B2] 5304602 Wind Adjusted Static Line Ratings for Wind Generator Integration <i>Brian TOWNSEND*, Rob SUNDERLAND</i>
P4	[B2] 5305033 Design of alternative composite core conductors for new overhead lines <i>Baptiste GARY*, Maxime DELBOVE</i>
P5	[B2] 5304686 Effect of raindrop-attaching on surface of polygonal low wind-load conductor and snow-accretion on it <i>Naoshi KIKUCHI*, Takao KANEKO</i>
P6	[B2] 5304663 Application of Cable Jumper Construction Method for 154kV Transmission Line <i>Toshihiro TSUBOI*, Fumito MINOURA, Tatsuya ISHIKAWA, Sakae TANIGUCHI, Tomonori SHIRAISHI</i>
P7	[B2] 5304848 Faults Sector Systems for Overhead/Underground Transmission Lines <i>Osamu FURUKAWA*, Seiichi YAMASHITA, Sho YAMASHIRO, Junya NAMBU, Osamu SAKAI</i>
P8	[B2] 5298460 Application of High Corrosion-Resistant Zinc Alloy Coated to Overhead Ground Wires and Overhead Transmission Conductors <i>Junichi TAKAHASHI*, Kiyonobu NARA, Kouichi MIYAZAKI, Kazuyuki FUJII, Masayuki ENDOU, Masanori YAMAMOTO</i>
P9	[B2] 5304455 Consideration of Causes of Transmission Line Faults by Surge Waveform Analysis Using Non-Contact Electromagnetic Field Sensors <i>Hiroyuki Igarashi*, Akira SAKAI, Takayoshi SAWADA</i>
P10	[B2] 5304841 Development of Dead-end Grips for ACSR Stringing Work <i>Yuuta YAMAMOTO*, Shungo KOBAYASHI</i>

Poster Session

List of Poster Session Papers (B2)

Panel No.	SC / Paper No. / Title / Author (*Main Author)
P11	[B2] 5303472 Development of Deterioration Diagnosis Method for Concrete Foundation Using Imaging Device of capturing the wall of small-diameter core bored cavity <i>Masato FUJIKAWA*, Kouji NII, Masaaki SUTO</i>
P12	[B2] 5305083 Method to estimate the aging of overheated compression joints <i>Takuhiko OHASHI*, Tomonori SHIRAIISHI, Yuta MATUDA, Masanori ISOZAKI</i>
P13	[B2] 5311964 AI Estimation of AC Overhead Power Line Insulation Failure <i>Shinya NIISEKI*, Manabu KUSUMOTO, Toshiaki TANAKA</i>
P14	[B2] 5305085 Insulation Performance Evaluation of Aging Polymer Insulators for Overhead Transmission Lines <i>T. ISHIKAWA*, S. TANIGUCHI, T. SHIRAIISHI, T. TSUBOI, T. TATSUOKA</i>
P15	[B2] 5304443 The First Project of 230 kV HVAC Submarine Cable Development to Samui Island for System Security Enhancement <i>YOKCHAROEN Pheerin*, KLINHOM Nawin, CHITNUMSAB Pipat</i>
P16	[B2] 5321261 TRANSMISSION LINE UTILIZATION ON THAILAND - LAOS INTERCONNECTION USING MONITORING AND CONTROL SYSTEM <i>LEKKRUASUWAN Anucha*, SAWATPIPAT Panat, PIMJAIPONG Witchaya</i>
P17	[B2] 5315457 Study on Galloping Characteristic of Single Conductor Installed with Counterweights or Loose-Counterweights <i>Ryota AIDA*, Hiroshi MASUYA, Tomoki KITASHIMA, Masanori OSADA, Shohei TAKAHASHI, Hisato MATSUMIYA</i>
P18	[B2] 5304093 Formation Process of Packed Snow Accretion on Insulators of Overhead Transmission Lines - Field Observation at Service Line - <i>Hiroki MIZOE*, Masayoshi MASUDA, Ryota ICHIKAWA, Manabu SAKATA, Yukihito TSUJI</i>
P19	[B2] 5305204 Research on measures to prevent tower snow cover <i>Ryoma MIZOUE</i>

Poster Session

List of Poster Session Papers (C3/C4)

Panel No.	SC / Paper No. / Title / Author (*Main Author)
P20	[C4] 5304442 Interaction of Neutral Ground Reactor Sizing with Secondary Arc and Rate of Recovery Voltage during Single Phase Auto Reclosure of 500 kV Main Grid in Thailand Power System <i>KET-URAI Varaporn*, KLINHOM Nawin, CHITNUMSAB Pipat</i>
P21	[C3] 5297764 Calculation of Transmission Wheeling Charge for Third-Party Access for the utilities company under the emerging of Renewable Energy and Prosumer into the grid <i>Noppadol CHUANCHAIYAKUL</i>
P22	_____
P23	_____
P24	[C3] 5304660 Relation between Power Flow and Magnetic Field Strength of Overhead Transmission Lines <i>Daiki SASAKI*, Norihiro MINAMI, Tomomichi OMOTE, Chiyoji OHKUBO</i>

NGN/WiE Forum

Date & Time

Wednesday 4 October 15:45 – 17:00

Thursday 5 October 14:50 – 16:05

Venue

Session Room 2 (2F - Hagi)

Theme

Integration of CIGRE & your work

- Sharing & utilization of technical information in CIGRE -

Organized by

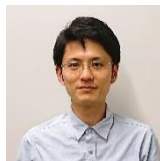
Japan NGN (Next Generation Network)

Moderator



Yoshihisa Nakashima

Japan NGN Chair



Daijiro Herai

Japan NGN Vice Chair



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NGN/WiE Forum

Program & Time Schedules

Wednesday 4 October, NGN/WiE Forum (1) ; Presentations by each countries

Time	Title	Speaker
15:45-15:50	Opening	Daijiro Herai, Japan NGN Vice Chair
15:50-15:55	Welcome Speech Status of NGN Activities in the World	Phil Coughlan, NGN IEC Chair (online)
15:55-16:00	Special Speech Experience of CIGRE/NGN/WiE	Ana Lovrenčič, Slovenia NGN Chair, SCB2 NGN Chair (online)
16:00-16:30	Presentation: NGN initiatives in each country (1) NGN Austria (2) NGN Australia (3) NGN United States (4) NGN Netherland	NGN Speakers (1) Ms. Kerstin Weindl (2) Mr. Bing Lin (3) Ms. Kristine Engel (4) Mr. Harish Krishnappa (online)
16:30-16:45	Discussion	All
16:45-16:50	Presentation: Activities in Japan NGN	Yoshihisa Nakashima, Japan NGN Chair
16:50-16:55	Presentation: Activities in Japan WiE	Nobuko Otaka, SCB3 Regular member additional
16:55-17:00	Closing	Japan NGN

Welcome Speech



Phil Coughlan,
NGN IEC Chair

Special Speech



Ana Lovrenčič,
Slovenia NGN Chair,
SCB2 NGN Chair

NGN initiatives in each country

Ms. Kerstin Weindl, Austria



After studying “Energy supply and sustainable development” Kerstin Weindl started working at Austrian Power Grid in 2019. Kerstin works in Asset Management and supervises a variety of projects. Projects range from maintenance projects regarding Aging Assets to research projects such as climate change adaption projects. As a young engineer, Kerstin is part of the Next Generation Network Austria, supporting and connecting students and other young professionals in the industry.

Mr. Bingxiang (Bing) Lin, Australia



Bing is a civil and structural engineer in the transmission line industry, graduated from the University of Adelaide in 2011. Bing worked in the transmission line utility named ElectraNet for the first six years and have been working in consultancy firms since then. Bing was the panel NGN liaison for APB2 (Australian panel on Overhead Lines) during 2015-2017 and the CIGRE Australia NGN Co-chair between 2018-2021. Bing is currently the working group member for B2.81 “Increasing the Strength Capacity of Existing Overhead Transmission Line Structures”, and the working group convenor for B2.85 ‘Emergency Restoration System for Overhead Lines – Guide for Design, Planning and Installation”.

Ms. Kristine Engel, United States



Kristine Engel leads Solutions Engineering at LineVision where she applies her expertise and technical insights for advancements in real-time conductor monitoring. Kristine started her career as a field engineer in the oil industry and later built her expertise as a transmission line design engineer. Kristine has a Bachelor’s in Mechanical Engineering and a Master’s in Sustainable Systems Engineering from the University of Wisconsin - Madison. She is a registered Professional Engineer in Wisconsin, Vice Chair of the IEEE Grid Enhancing Technologies Working Group, and International Collaboration Co-Chair for the CIGRE USNC NGN.

Mr. Harish Krishnappa, Netherland



Harish Krishnappa received Master’s degree in “Electrical Power Engineering” from Delft University of Technology, the Netherlands. He has 8 years of industry experience, working at the TSOs in The Netherlands and India covering aspects related to grid operations (SCADA/EMS/ADMS), power system studies, electricity markets and national grid code developments. He is currently active in the working groups of IEC TC57 (WG 13, 14 and 16) and CIGRE SC-D2, covering topics related to power systems management and associated information exchanges. Recently, he has taken the role of business product owner for CIMbion, a CIM conformity service on behalf of ENTSO-E. He has been actively involved with CIGRE Netherlands since 2018.

Presentation about activities of Japan NGN



Yoshihisa Nakashima,
Japan NGN Chair

Presentation about activities of Japan WiE



Nobuko Otaka,
SCB3 Regular member
additional

NGN/WiE Forum

Program & Time Schedules

Thursday 5 October, NGN/WiE Forum (2) ; Speeches of experienced experts

Time	Title	Speaker
14:50-14:55	Opening	Yoshihisa Nakashima, Japan NGN Chair
14:55-15:00	Introduction of Speaker	Japan NGN
15:00-15:30	Speeches of experienced experts	Senior speakers (1) Dr. Tor Laneryd, Hitachi Energy (2) Mr. Herbert Lugschitz, former SCB2 chair (3) Dr. Tal Katz, WiE (online)
15:30-15:55	Q&A Session	All
15:55-16:00	Information on NGN (Registration procedures, etc.)	Japan NGN
16:00-16:05	Closing	Japan NGN

Speeches of experienced experts

Dr. Tor Laneryd, Sweden



Tor Laneryd obtained a Master Degree in Engineering Physics at Chalmers University of Technology in Göteborg, Sweden in 2003, and was conferred the degree of Doctor of Engineering from Kyoto University Graduate School of Engineering, Department of Aeronautics and Astronautics in Kyoto, Japan in 2007. His area of technical responsibility as a Senior Principal Scientist at Hitachi Energy Research in Västerås, Sweden is Fluid Dynamics, Heat and Mass Transfer in Power Devices. He is affiliated faculty at KTH Royal Institute of Technology, School of Electrical Engineering and Computer Science, in Stockholm, Sweden since 2020. He is a member of Cigre Working Group A2.60 "Dynamic Thermal Behaviour of Power Transformers" and Swedish representative of Cigre Study Committee C3.

Mr. Herbert Lugschitz, Austria



Herbert Lugschitz, an electrical engineer, has been working in the field of overhead lines for more than 40 years. This covers technical planning, tower design, authorization procedures including Environmental Impact Assessments, alternative tower design and public relations activities. He has been with Austrian Power Grid, and participated as technical expert for OHL projects in Africa and Asia for the African Development Bank, European Development Bank, GTZ and UNIDO. Mr. Lugschitz has been with CIGRE since the 1980ies, has been a member in several Working Groups of SC B2 "Overhead Lines" and contributed to many Technical Brochures and two Green Books. He was Austrian member in B2, secretary and later B2 chairman till 2022. He is an Austrian delegate at CENELEC for the establishment of the European Standard EN50341 "Overhead electrical lines exceeding 1kV AC" and chairs the Technical Committee "Overhead Lines and Embedding of Power Cables" of the Austrian Electrotechnical Association – OVE.

Dr. Mona Tal Katz, Israel



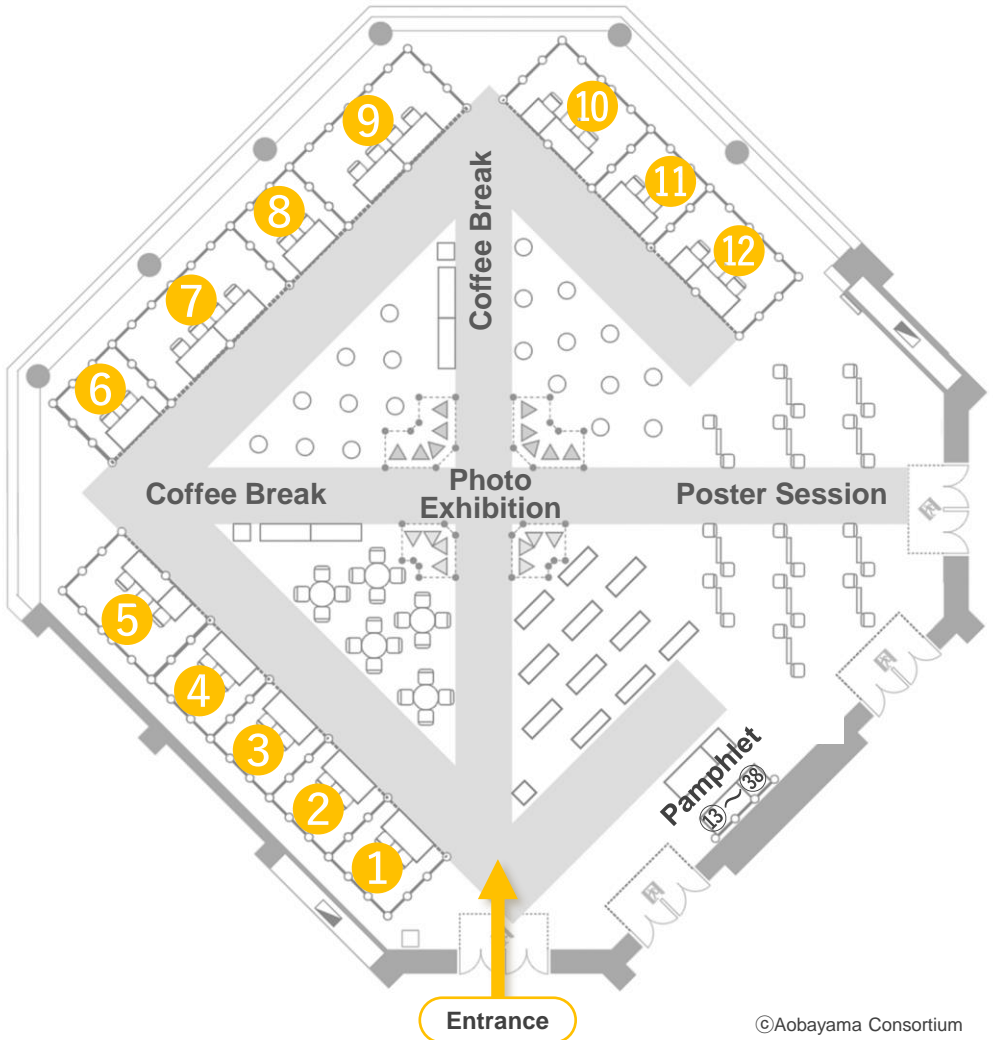
Dr Tal Katz is the Chairwoman of Women in Energy in Israel, has been a professional member of Cigré for almost 14 years, as one of the founding members is involved in Cigré's Women in Energy Net Zero Initiative Task Force and, with over 28 years' experience in the environmental field and energy sector, has been actively representing and specializing in Cigré's System Environmental Performance Study Committee and in numerous SC3 professional Working Groups. In addition, she has been the re-elected Management Member of the Israel Cigré National Committee for several years. As an environmental scientist in the Israel Electric Corporation Ltd., Dr Katz has worked internationally in many parts of the world - for well over a decade in South Africa, and represents Israel and the Middle East region, with fields of expertise in environmental energy-related issues, air pollution and climate change, energy transmission Projects and international electricity interconnections.

Exhibition

Exhibition Hall

Conference Building 2F

Tuesday 3 October 13:00 – Thursday 5 October 15:00



©Aobayama Consortium

Exhibition

Exhibition

- ① Nippon Katan Co., Ltd.
- ② Chubu Electric Power Grid Co., Inc.
- ③ Mitsubishi Electric Corporation
- ④ KINKEI SYSTEM CORPORATION
- ⑤ Tohoku Electric Power Network Co., Inc.
- ⑥ FURUKAWA ELECTRIC POWER SYSTEMS CO., LTD.
- ⑦ Hitachi, Ltd.
- ⑧ FUJITSU LIMITED
- ⑨ Toshiba Energy Systems & Solutions Corporation
- ⑩ TEPCO Power Grid, Incorporated
- ⑪ Sumitomo Electric Industries, Ltd.
- ⑫ Tokyo Rope International Inc.

Pamphlet

- ⑬ DENRO CORPORATION
- ⑭ Kansai Transmission and Distribution, Inc.
- ⑮ SUMITOMO DENSETSU CO.,LTD.
- ⑯ J-POWER Transmission Network Co.,Ltd.
- ⑰ Yurtec Corporation
- ⑱ Hokkaido Electric Power Network, Inc.
- ⑲ Hokuriku Electric Power Transmission & Distribution Company
- ⑳ Kyushu Electric Engineering Consultants Inc.
- ㉑ SWCC Corporation
- ㉒ Chugoku Electric Power Transmission & Distribution Company, Incorporated
- ㉓ NGK INSULATORS, LTD.
- ㉔ Japan Steel Tower Co., Ltd.
- ㉕ Tokyo Electric Power Services Co.,Ltd.
- ㉖ Kyushu Electric Power Transmission and Distribution Co., Inc.
- ㉗ Sumiden Transmission and Distribution System Products, Ltd.
- ㉘ Shikoku Electric Power Transmission & Distribution Company, Incorporated (YONDEN T&D)
- ㉙ Fujikura Energy Systems Ltd.
- ㉚ NIHON NETWORK SUPPORT CO.,LTD.
- ㉛ J-WITEX CORPORATION
- ㉜ Kitanihon Electric Cable Co., Ltd.
- ㉝ TDM Co.,Ltd.
- ㉞ Tsuken Electric Ind Co., Ltd.
- ㉟ Tohoku Ryokka Kankyohozen Co., Ltd.
- ㊱ Tohoku Power Transmission and Distribution Service Co.,Inc.
- ㊲ Tohoku Air Service,Inc.
- ㊳ AERO ASAHI CORPORATION

Special Photo Exhibition

Mr. Satoki Fujimura

(Landscape photographer of OHTL tower)

Born in Aomori in 1979. Lives in Saitama Prefecture of Japan. In 2017, he studied under the landscape photographer Takashi Sato. In pursuit of his favorite scenery of OHTL towers, he photographs different places every day, mainly in the Kanto region of Japan. When he has time, he goes on a "one-prefecture-one-OHTL-tower trip" to find at least one OHTL tower landscape in one prefecture, and travels to different places by car or camping. His goal is to eventually photograph all 47 prefectures in Japan.



- Satoki Fujimura's photographs of OHTL tower landscapes were used for the animation of the song "TETTO (OHTL Tower)" created by Ms. Asaco Nasu, which was broadcast on NHK's Song for everyone (Minna no Uta) from October to November 2019.
- Fujifilm Photo Salon Tokyo, October-November 2020
- Held his first photo exhibition, "Steel Tower Scenery," at Fujifilm's special exhibition "New Stories of Photographers."
- Electricity Newspaper Project, sponsored by the Federation of Electric Power Companies of Japan
- Judged in the "Instagram Photo Contest: Electric Power in Everyday Scenery" in the OHTL Tower category.
- Contributed his work to electric power companies and landscape photography magazines in Japan.





*Welcome Party
&
Gala Dinner*



Welcome Party

No registration



Photo Credit: Aoba no Kaze Terrace

Date

Tuesday 3 October , from 17:30 to 19:30 (Door open 17:00)

Venue

Aoba no Kaze Terrace

- On the evening of Tuesday 3 October (the night before the colloquium), the Welcome party will be held at "Aoba no Kaze Terrace".
- Aoba no Kaze Terrace: International Center Subway Station 2F, Event Hall.
- Light meals are served buffet style.



-
- No registration fee. (included in the registration fee for the colloquium)
 - Please be careful not to eat allergic foods if you have any allergies. (allergic food lists will be provided at this venue)
-



Photo Credit: Aoba no Kaze Terrace

Gala Dinner

Advance registration required



Photo Credit: Hotel Metropolitan Sendai

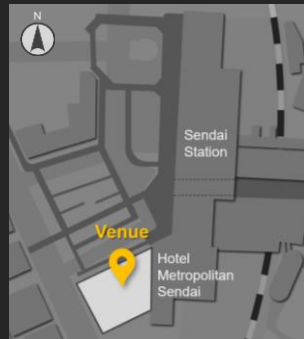
Date

Wednesday 4 October , from 19:00 to 21:00

Venue

Hotel Metropolitan Sendai

- On the evening of Wednesday 4 October (the first night of the colloquium), the Gala Dinner will be held at the Hotel Metropolitan Sendai, Sendai venue.
- Hotel Metropolitan Sendai 4F, Sendai venue.



- The Registration Fee (15,000 JPY) is required.(The registration for the Gala Dinner has already been closed.)
- You will receive your Gala Dinner ticket at the reception desk in the Sendai International Centre, please show your ticket to the staff at the Gala Dinner reception desk to enter the venue.
- Presentations by colloquium sponsors will also be held.
- Several special attractions are being prepared.

Program

18:00 – 18:40	Welcome cocktails
18:40	Doors open
19:00	Start reception Cheers, Dinner ~Sponsors' speeches and Special Attractions will be held.~
21:00	Close reception


Special Attraction


Ms. Asaco Nasu



Official web site

<https://www.nasuasaco.com>

 @nasuasaco

 @nasuasaco

Ms. Asaco Nasu is a piano player and singer with a clear voice. She made her major label debut in 2013. She is a member of Yamaha Music Communications. Overseas, she made her debut in Taiwan and performed at Carnegie Hall in New York in 2019. Her music album "Neutral" produced by 13th Grammy Award-winning engineer Mr. Rafa Sardina (Spanish). In the same year, she created "TETTO(OHTL-Tower)" for NHK's TV program "Minna no Uta" (Songs for Everyone). This pop number was inspired by her own interest in and admiration for the unmoving appearance of steel towers. The song's point of view and the tune that one cannot get out of one's ears once they hear it have become the talk of the town. More success is expected in the future.

Ko-kyo-kai



A dynamic Taiko (Japanese drum) performance is planned as a special attraction at the Gala Dinner by the Tohoku Electric Power Company's Ko-kyo-kai. The "Ko-kyo-kai" was formed in March 1996 by volunteer employees of Tohoku Electric Power Company working at the company's offices in Iwaki City at the time. The group has performed at events in the various prefectures where Tohoku Electric Power Company offices are located.

After the Great East Japan Earthquake in 2011, the group has been enlivening the Tohoku region with its taiko performances to bring energy and courage to the people affected by the disaster.

Technical Tour

Destination

- General Education & Training Center of Tohoku Electric Power Network Co., Inc. (Minamisoma, Fukushima)
- TEPCO Decommissioning Archive Center (Tomioka, Fukushima)
- Hitachi Origin Park (Hitachi, Ibaraki)

The technical tour will introduce the recovery from the Great East Japan Earthquake, safety measures and Japan's technological capabilities, while deepening the exchange among engineers. We will guide you with the spirit of Japanese hospitality.

Friday 6 October (Day 1)



Saturday 7 October (Day 2)





General Education & Training Center



TEPCO Decommissioning Archive Center



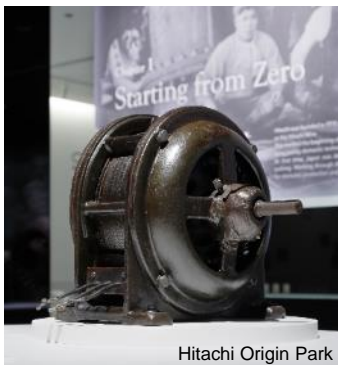
Tsurugajo Castle



Akabeko Painting



Spa Resort Hawaiians



Hitachi Origin Park



Hitachi Origin Park

Photo Credit: Tohoku Electric Power Network Co., Inc. / Tokyo Electric Power Company Holdings, Inc. / Hitachi, Ltd. Fukushima Prefectural Tourism and Product Exchange Association / Spa Resort Hawaiians

❗ Please be sure to check our website for a detailed map of the meeting location.

Factory Tour

Destination

- Kitanihon Electric Cable Co, Ltd. –The Funaoka Factory (Shibata-machi, Miyagi)

Kitanihon Electric Cable Co, Ltd. is a manufacturer that manufactures and sells distribution lines and overhead power lines as a member of the Tohoku Electric Power Group.

During the factory tour, you will see the main manufacturing processes such as copper and aluminum conductor drawing and stranding. In addition, we plan to introduce products such as overhead transmission lines (SBACFR, LN-SBACSR, ACSR/GSR) and explain the results of surveys on the corrosion status of removed conductor.

- DENRO CORPORATION –The Tohoku Factory (Soma, Fukushima)

DENRO CORPORATION is a diversified engineering company with three divisions: the Steel Structural Division, whose main products are steel towers, the Plant Division, whose main products are industrial machinery and equipment for surface treatment, heat treatment, etc., and the Job Galvanizing Division for steel products.

The Tohoku Factory to be visited for this tour is the eastern base of the steel tower factory started operation in 1992. You can see the different operations with the machines, equipment, and cranes designed and manufactured by the Plant Division such as an automated angle steel processing line, automatic welding equipment for forged flanges, plate laser processing machines, and hot dip galvanizing equipment.

Monday 2 October

09:30 JR Sendai Station / East Exit Charter Bus Stop

10:30~12:00 Kitanihon Electric Cable Co, Ltd.
The Funaoka Factory

12:45~14:10 Lunch (Tori-no-umi)

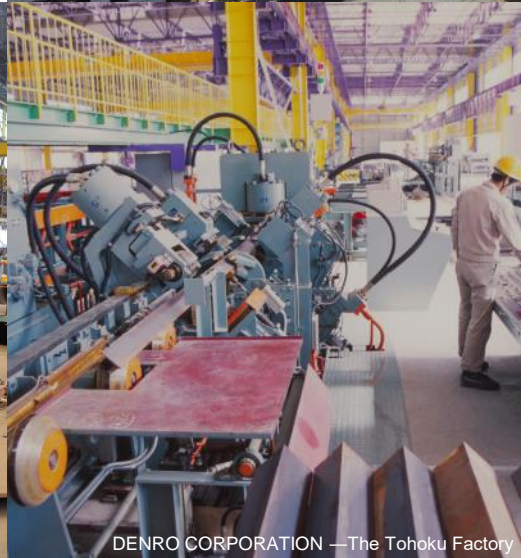
14:40~16:10 DENRO CORPORATION
The Tohoku Factory

17:30 JR Sendai Station / East Exit Charter Bus Stop

① Please be sure to check our website for a detailed map of the meeting location.



Kitanihon Electric Cable Co., Ltd. — The Funaoka Factory



DENRO CORPORATION — The Tohoku Factory

Photo Credit: Kitanihon Electric Cable Co., Ltd. / DENRO CORPORATION

Companion Tour – Hiraizumi

Destination

- Genbikei Gorge (Ichinoseki, Iwate)
- Takkoku no Iwaya Bishamondō Hall (Hiraizumi, Iwate) ※From the car window
- Motsu-ji Temple (Hiraizumi, Iwate)
- Chuson-ji Temple (Hiraizumi, Iwate)

This tour visits Hiraizumi, a World Heritage Site located in southern Iwate Prefecture next to Miyagi Prefecture, and its surrounding area. The first stop is the Genbikei Gorge. The river has eroded huge rocks over a long period of time, creating the unique beauty of the valley.

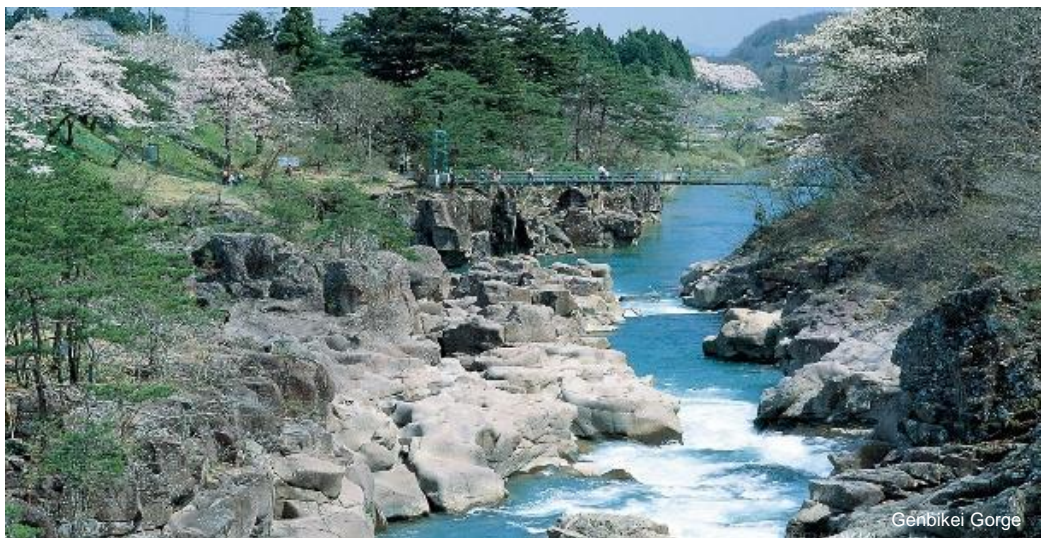
On the way to Hiraizumi, we visit Takkoku no Iwaya Bishamondō Hall, which has a Bishamondō Hall integrated with a rock cave and the Great Buddha with a face carved in the 11th century. In Hiraizumi, the main part of the tour, we will visit two World Heritage Sites, Motsu-ji and Chuson-ji. At Motsu-ji, we will visit the Pure Land Garden, which integrates a Buddhist hall and pond, and at Chuson-ji, we will visit the Konjikido, which reflects the wealth of the Oshu Fujiwara clan, and the Sankouzō, which houses over 3,000 cultural artifacts left by the Fujiwara clan.

Sunday 1 October

09:00	JR Sendai Station / East Exit Charter Bus Stop
10:40~11:00	Genbikei Gorge
11:20~11:30	Takkoku no Iwaya Bishamondo Hall
11:40~12:40	Motsu-ji Temple
12:50~13:30	Lunch (Hiraizumi Rest House)
13:45~15:20	Chuson-ji Temple
17:00	JR Sendai Station / East Exit Charter Bus Stop

❗ Please understand that the Chuson-ji Temple will not look like it does in the photo on the day of the tour, as it is still too early for the autumn leaves season.

❗ Please be sure to check our website for a detailed map of the meeting location.



Genbiki Gorge



Takkoku-no-Iwaya



Motsu-ji Temple



Chuson-ji Temple

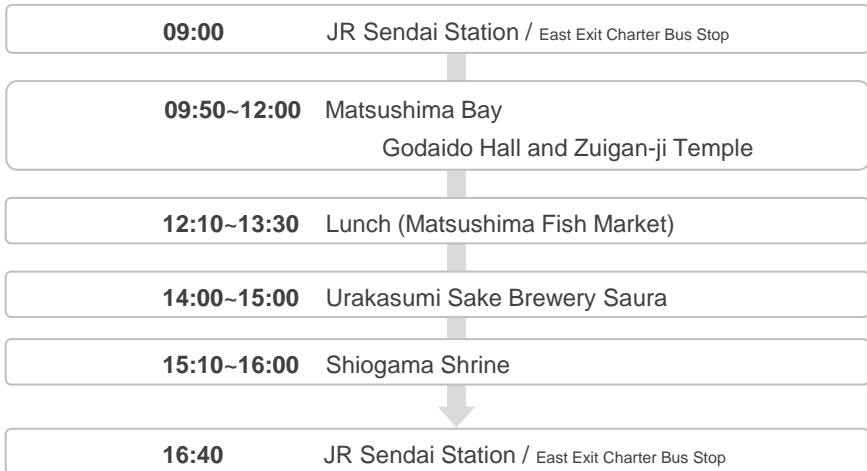
Companion Tour – Matsushima

Destination

- Matsushima Bay (Matsushima, Miyagi) ※Boarding a Sightseeing Boat
- Godaido Hall and Zuigan-ji Temple (Matsushima, Miyagi)
- Urakasumi Sake Brewery Saura (Shiogama, Miyagi) ※If conditions allow
- Shiogama Shrine (Shiogama, Miyagi)

This tour visits Matsushima Town, one of the three most scenic places in Japan, and Shiogama City, located in the center of Matsushima and Sendai. Matsushima Town, located in the central part of the prefecture, is one of the "Three Great Views of Japan" for its scenery of Matsushima Bay formed by many islands. First, you will board a sightseeing boat to enjoy the scenery. After disembarking, you will visit Godaido Hall and Zuigan-ji Temple, a family temple of the Date family. After lunch, we will have free time to explore the area. After lunch, we visit Shiogama City, which flourished as a gate and port town and is home to several nationally famous sake breweries. We visit Shiogama Shrine, one of the most famous shrines in the Tohoku region. The shrine pavilion has been designated as a National Important Cultural Property. If conditions allow, the tour will also include a visit to a sake brewery in Shiogama City.

Tuesday 3 October



ⓘ Please be sure to check our website for a detailed map of the meeting location.



Matsushima Bay



Zuigan-ji Temple



Godaido Hall



Urakasumi Sake Brewery Saura

Companion Tour – Sendai City

Destination

- Statue of Lord Masamune Date (Sendai)
- Aoba Castle Museum (Sendai)
- Lunch & Shopping

This tour visits the ruins of Sendai Castle, which was the residence of 620,000 Goku※ of the Sendai clan. If you stand in front of the equestrian statue of Lord Masamune Date, which is also the main image on the CIGRE 2023 Sendai website, you will be able to view the city from the same vantage point as Lord Masamune.

After a buffet lunch at the hotel, we will have some free time at a shopping mall.

※Goku is a unit of territory expressed in rice.

Wednesday 4 October

10:00 JR Sendai Station / East Exit Charter Bus Stop

10:20~11:30 Statue of Lord Masamune Date
Aoba Castle Museum

12:20~13:40 Lunch (Sendai Royal Park Hotel)

14:00~16:00 Shopping (Sendai-Izumi Premium Outlet
& Tapio shopping mall)

16:40 JR Sendai Station / East Exit Charter Bus Stop

📌 Please be sure to check our website for a detailed map of the meeting location.



Statue of Masamune Date



Aoba Castle Museum



Sendai Royal Park Hotel

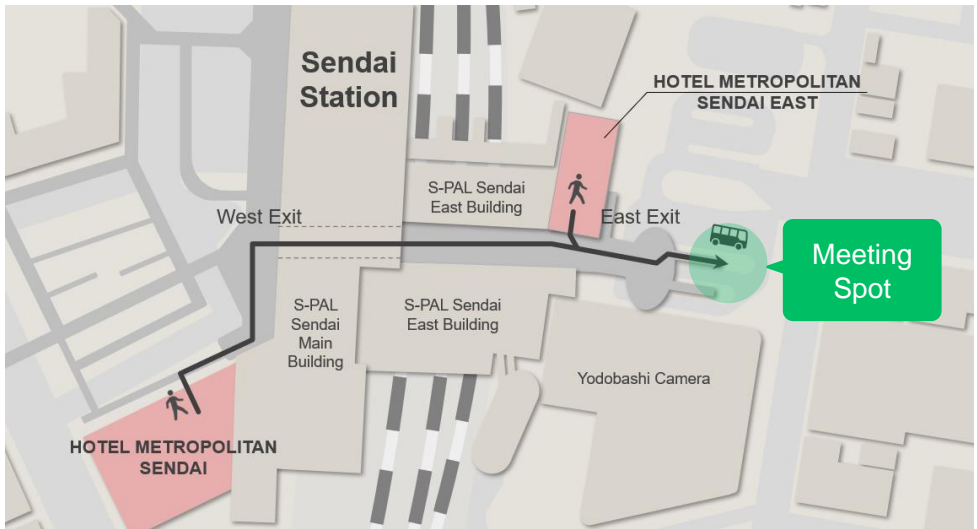


Sendai-Izumi Premium Outlet & Tapio shopping mall

Meeting Location for Tours

For all tours, we will meet you all at the same meeting spot.

Sunday	1 October	Companion Tour (Hiraizumi, Iwate)
Monday	2 October	Factory Tour
Tuesday	3 October	Companion Tour (Matsushima, Miyagi)
Wednesday	4 October	Companion Tour (Sightseeing in Sendai City, Miyagi)
Friday	6 October	Technical Tour



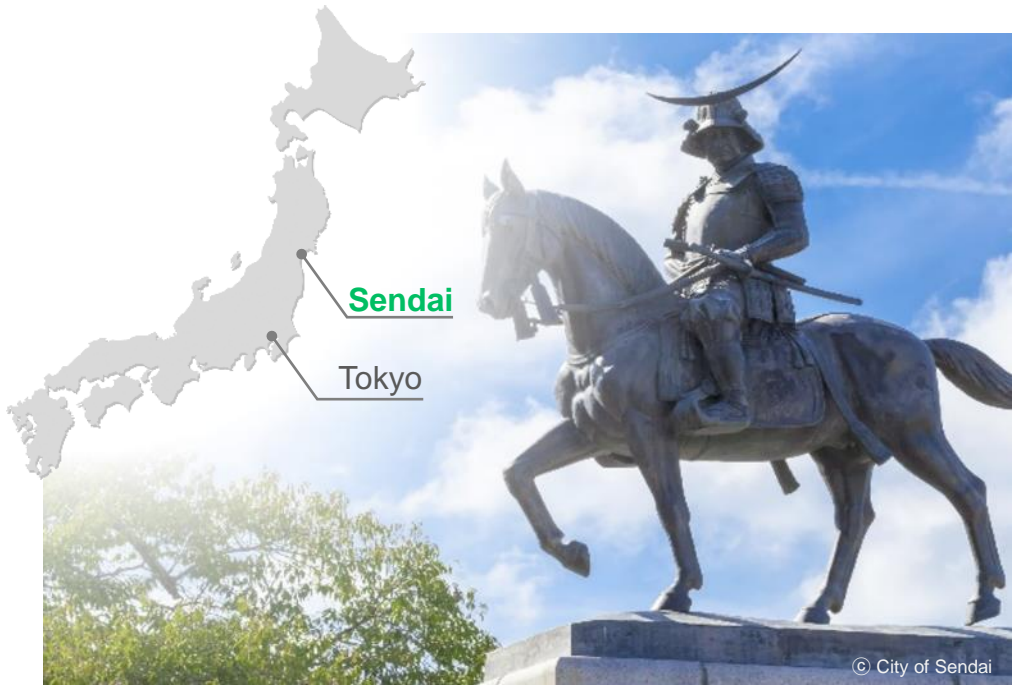
The staff will be holding up this board near the meeting location

! Please be sure to check our website for a detailed map of the meeting location.

<https://www.cigre2023sendai.jp/tours/>



Sightseeing Information



About Sendai

The city of Sendai dates back to 1601, when it was opened as a settlement by the famous warlord Masamune Date.

Sendai is a city located in the central part of Miyagi Prefecture, about 300 km north-northeast of Tokyo. With a population of about 1.09 million, it is the largest city in the Tohoku region of Japan in terms of population and economic scale.

Although Sendai is a large city, it is known throughout Japan as a modern city in harmony with nature. The city has beautiful scenery, such as the Hirose River, which runs through the center of Sendai, and the lush Zelkova trees that line its streets.

Greenery is especially abundant in the center of the city, which has tree-lined streets and parks. As a result, Sendai is also known as the “City of Trees”.

You will find a city that breathes with history and tradition dating back to the time of Lord Masamune Date, seasonal events and colorful expressions of nature, distinctive culinary delights with a rich variety of local specialties as well as the latest cutting-edge shopping experiences.



Detailed information by SENDAI Official Tourist Information

<https://www.sentabi.jp/>



ALWAYS, いつも、 ANYTIME. どんなときも。

Our regional service has overcome many natural disasters, including the Great East Japan Earthquake, despite the particularly wide service area (approximately 20% of Japan) and often harsh natural conditions. Each time, our disaster recovery expertise and technical capabilities have been strengthened and enhanced to fulfill our mission of providing stable power to our customers.

While continuing to use new technologies such as AI and IoT actively, we shall streamline facility formation and upgrade maintenance and inspection technologies to achieve stable supply at lower cost.

Our service area covers six prefectures in the Tohoku region and Niigata Prefecture.



Tohoku Electric Power Network Co., Inc.

Japan currently ranks as the third largest energy consumer in the world (after the US and China).

The amount of energy provided by TEPCO Power Grid to the Tokyo Metropolitan Area - the heart of Japan's economy - accounts for around one-third of the total power consumption rate for Japan. With the responsibility to provide electricity to the Tokyo Metropolitan Area, TEPCO Power Grid continually provides a stable, high quality power supply.



TEPCO Power Grid

ACFR[®]

ALUMINUM CONDUCTOR FIBER REINFORCED

ACFR[®] conductor offers twice the capacity of conventional all-aluminum or steel-reinforced conductor with far less thermal sag that enables higher capacity power lines to operate much more efficiently

- QUALITY STARTS AT THE CORE -

High Capacity

Low Loss

Low Sag

Corrosion Resistance

Lighter & Flexible

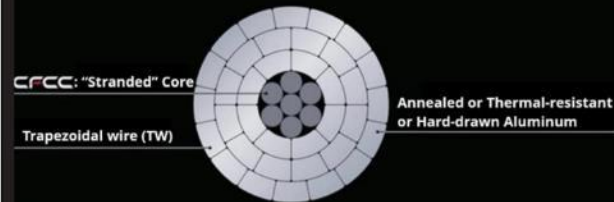
Multi-Stranded Core

Robust & Durable

Install Like ACSR

Since 2002, having the world's first carbon fiber core conductor installed by a TSO, it has been our mission to improve the efficiency, capacity, reliability and resilience of the electric power transmission grids around the world. After years of extensive R&D and trial installation efforts on using stranded carbon fiber composite cable (CFCC[®]) cores for overhead transmission lines, in the late 1990's, TRI finalized the development of the ACFR[®] conductor around the turn of the century. The objective was to develop a conductor that could be used to upgrade existing transmission corridors without structural modifications and be installed using conventional methods and equipment. This objective was achieved on the incorporation of sophisticated stranding technologies and modernized materials science: To create a higher-strength, flexible, lighter-weight, and structurally reliable tension bearing component for the conductor that could incorporate additional conductive aluminum without a weight or diameter or handling characteristic penalty. With the stranding technology we've sharpened for 130 years, the purpose of our division is to expand access to the modernized power grid.

Carbon Fiber Composite Core ⇒ Small thermal expansion, Lighter, Smaller diameter
Multi-strand Core ⇒ Flexible, Structurally redundant
Trapezoidal Wire ⇒ Larger cross-sectional area of conductive aluminum



- **Minimal Thermal Expansion** - minimal sag increase at high power transfer
- **Stranded Core** - flexible, robust and rugged. no single-point-of-failure
- **Easy Installation** - install like ACSR, using conventional methods
- **Compression-type fittings** - familiar hardware
- **Designs for all loading conditions** - longspan, light loading to heavy ice loading
- **Trapezoidal wire (TW) or Round wire available** - optimized design options
- **Annealed (1350-0 Temper) or Thermal-resistant or Hard-drawn Aluminum**



Figure 1: Close-up of Bent CFCC[®]

Figure 2: Stress distribution under bending load

Application:

- **New Lines** - Reduce new line costs by downsizing the volume of structures and foundations. Crossing challenging terrain or reduce visual profile in sensitive areas. Build for a future with high capacity, low sag lines
- **Reconductoring** - Double the capacity of existing ACSR lines. Light conductor weight and low sag allow use of existing structures and ROW, even for lines previously designed with all-aluminum or aluminum alloy (AAC, AAAC, ACAR) conductors
- **Special cases** - Long spans, River crossings, Highway crossings, etc

Highly flexible - Bending stress is distributed over each strand

Hardware

Composite Insulator

Monitoring Camera (SIMODAS)

Monitoring

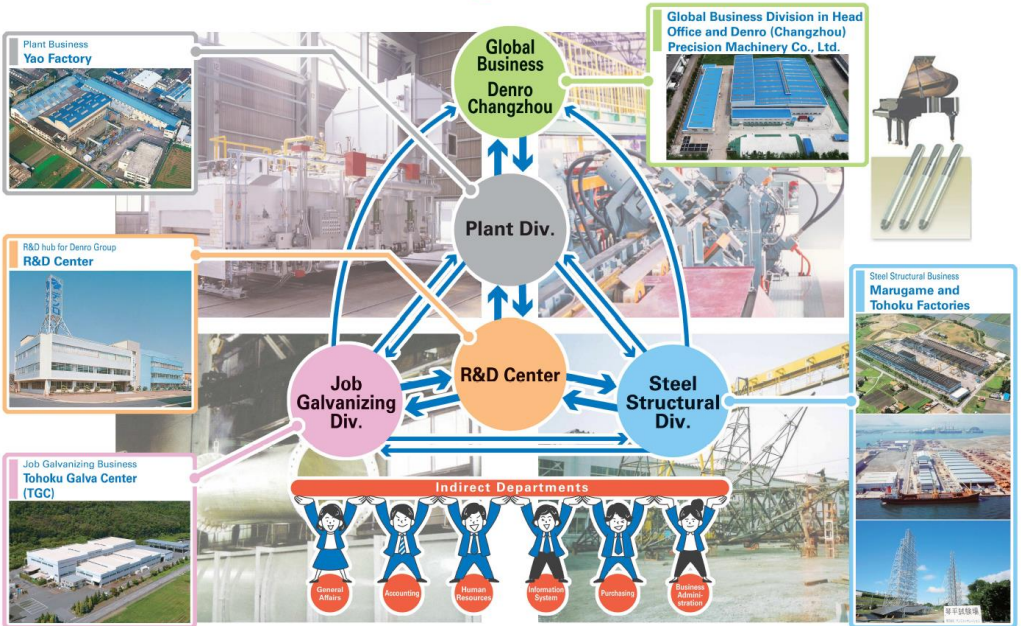
E-field analysis Simulation

Nippon Katan provides a wide range of overhead line hardware and consulting services with our corporate philosophy of **"Better Quality and Unceasing Creativity"** to support a stable power supply.

NIPPON KATAN



Denro Corporation Group has continued providing innovative engineering solutions to customers through interactive collaboration.



Supporting the Future of Energy

Overhead power conductors and cables from Sumitomo Electric provide an environmentally friendly way to implement high-capacity transmission across long distances.

With our advanced cable technologies, we contribute to a sustainable future.

<https://sumitomoelectric.com/>

FEPS



<https://www.feps.co.jp/>

 **FURUKAWA
ELECTRIC GROUP**

Advanced components for power grids



Double Torsional Damper



Loose Spacer
(Anti-galloping device)



Wedge Shaped Clamp



DLR System (by Ampacimon)



Polymer Insulator



KINKEI SYSTEM CORPORATION ~SINCE 1962~

Top-share manufacture of Digital Fault Recorder/ Fault locator in Japan

Kinkei Systems is a leading company of Digital Fault Recorder(DFR) and we've been supporting Japan's electric power supply for 60 years.

By applying DFR's technology, we developed Travelling Wave Type Fault Locator System(TWS) , which has high locating accuracy $\pm 200m$, for transmission line and contribute to efficient response to power system accidents as well as savings in labor and energy costs of client.

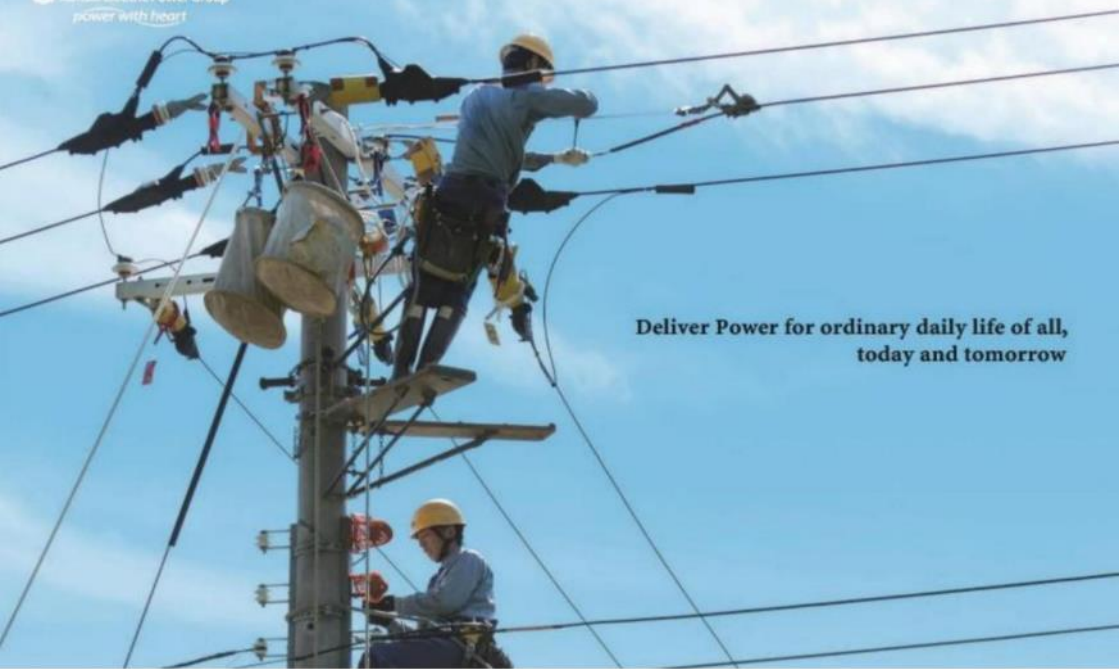
In order to meet power company's mission "Stable Supply of Electric Power in the world", we provide international standards compliant DFR&FL products for overseas.



Contribute to the resilience of the electric power system and the development of industry.

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Kansai Electric Power Group
power with heart



Deliver Power for ordinary daily life of all,
today and tomorrow



Kansai Transmission and Distribution

Times change.
Energy sources as well.

But the need for stable
power supply is *constant*.

As humanity moves toward the achievement of carbon neutrality, proactive initiatives that go beyond simple declarations are needed more than ever. Utilizing independently developed advanced information & communications technologies (ICT) for power grid modernization accumulated over many years, Mitsubishi Electric provides cutting edge solutions that enable the stable supply of renewable energy in everyday life. Not only this, but to preserve the richness of Earth for future generations, we will continue to contribute to the creation of tomorrow's energy resources as well.



SUMITOMO DENSETSU CO.,LTD.



住友電設



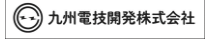
Chubu Electric Power Grid

We operate T&D grid and deliver electricity to people's lives.

To fulfill our responsibilities
and meet society's expectations



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