



13TH -15TH NOV CONFERENCE PROGRAM

Welcome to

The 19th GCC – CIGRE International Conference and 29th
Exhibition for Electrical Equipment,

GCC POWER 2023,
International Platform to Share Power Knowledge,

Abu Dhabi National Exhibition Centre (ADNEC)



GCC POWER 2023

13th – 15th November 2023.
(29th Rabi Al-Thani – 1st
Jumada Al-Awwal, 1445)

Abu Dhabi, UAE



GCC CIGRE

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ADNEC, Abu Dhabi, UAE



Dear Colleagues,

*I'm delighted to announce the 19th GCC International Conference and Exhibition (**GCC POWER 2023**) which will offer the ideal forum for all those concerned with the power sector to develop business relations and discuss the issues and challenges facing the power sector in the region. The event will be the best opportunity for national and international electricity companies to show the latest technologies and services and for the power officials in the public sector to highlight their sector's current projects and future requirements.*

We, at GCC Cigre, look forward to welcoming you at GCC Power 2023 Conference and Exhibition, and sincerely hope that you will join us at what promises to be an extremely rewarding and enjoyable event.

Yours Sincerely,

Eng. Ahmed N. Al-Nasr

Chairman, Board of Directors



Day One:

Monday 13th November 2023 (29th Rabi-Thani 1445)

Conference Registration & Reception

8:00 - 9:00

Opening Ceremony:

- | | |
|--|----------------------|
| - UAE National Anthem | 09:00 - 09:02 |
| - Welcome statement and Holy Quran | 09:02 - 09:05 |
| - GCC Cigre short video | 09:05 - 09:10 |
| - H.E. Suhail Bin Mohamed Al Mazrouei
UAE Ministry of Energy and Infrastructure | 09:10 - 09:15 |
| - H.E Eng. Awaidha Murshed Al Marar
Chairman of Department of Energy – Abu Dhabi | 09:15 - 09:20 |
| - H.E Eng. Ahmed Naser Al-Naser
Chairman of GCC Cigre | 09:20 - 09:25 |
| - H.E Philippe Adam
Secretary General of Cigre | 09:25 - 09:30 |
| - Power video | 09:30 - 09:35 |
| - Spotlight on UAE Energy Strategy 2050 with H.E Suhail Mohamed Al Mazrouei | 09:35 - 09:50 |
| - Honoring Conference sponsors and guests | 09:50 - 10:00 |



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10:00 – 10:30

BREAK & EXHIBITION VISIT

KEYNOTE PANEL

GCC Power Systems Resilience and Sustainability throughout Energy Transition

Moderator: H.E Eng. Ahmed Ali Al-Ebrahim: CEO, GCCIA

The GCC Countries are playing a significant role in supporting global efforts to address climate change acknowledged by 130 nations worldwide and committing to achieving net-zero targets by mid-century. The GCC countries are endowed with great potential for renewable energy resources and have set huge plans for developing clean and renewable energy resources in the coming years.

For example, Saudi Arabia aims to generate up to 50 percent of its power from renewable sources by 2030, as part of the Saudi Green Initiative, while the UAE in 2022 increased its targets of reducing greenhouse gas emissions to 31 percent by 2030.

As of 2021, 90 percent of installed renewable energy capacity in the GCC came from solar power facilities, according to the International Renewable Energy Agency, which introduces a profound change in the nature of GCC power systems with high level of penetration of variable renewable energy (VRE) which represents a challenge to system operators in terms of increased flexibility requirements and stability.

The panel discusses such plans and related challenges, and ways to mitigate them towards a resilient GCC power system with sustainable power resources which can withstand, respond to, and recover rapidly from major power disruptions as system planners, System operators and Market operators anticipate, prepare for, and adapt to a changing grid environment under the Energy Transition.

Topics include:

- Policies and plans of the GCC countries towards Net-Zero by 2050-2060.
- -Mitigation of the integration of variable renewable energy (VRE).
- -Requirements for adaptation of new policies and regulation towards a more resilient grid
- -Balancing the sustainability and resilience needs of power grids of the future.
- Developments and changes to the power Trade and market environment to accommodate Energy Transition.
- Role of interconnections to support Energy Transition.
- The need for investments in “Transmission” to support the “Transition.”
- Technologies and systems needed for the new future grid to support resilience.

13th November 2023
10:30 – 12:30



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12:30 – 13:00

BREAK, PRAYERS, SHOW CASE 1 & EXHIBITION VISIT

13th November 2023 13:00 – 15:00

Tutorial One

Systems Blackout Causes, Lessons Learned, competence development and Recommendations

- **NERC 101**
 - History of NERC, the Electric Reliability Organization (ERO) and the ERO Enterprise
 - Stakeholder Process
 - Functional Model
 - Standards
 - System Operator Certification and Continuing Education
- **Blackouts, Restoration and Resilience**
 - 2003 Blackout - Causes and Recommendations
 - The August 14 Blackout Compared With Previous Major North American Outages
 - Physical and Cyber Security Aspects of the Blackout
 - Recommendations to Prevent or Minimize the Scope of Future Blackouts
 - Blue Cut Fire, Odessa I and II disturbance reports – causes and recommendations. (IBR issues)
 - NERC Emergency Operations (EOP) standards
- **Certified Power System Operator (CPSO) Scheme aims to improve the competence of power system operators/dispatchers.**
 - Standardize Power Dispatcher/System Operator practices.
 - Ensure continuing education programs.
 - System challenge preparedness
 - ISO 17024 accredited program

Tutorial Two

Building A Power System Based on New Energy

The key technologies about the construction of new power systems include ultra-high voltage technology in power grid transmission, digital technology in power grid distribution, and electric-hydrogen coupling technology.

• UHV and Flexible DC Transmission Technology

Dr. Hu Rong, R&D Manager of State Grid Smart Grid Research Institute co.,Ltd , His research interests are UHV technology, Flexible DC transmission technology, he has designed four UHV transmission and transformation projects, such as $\pm 800\text{kV}$ Baihetan-jiangsu UHV project in China

The Framework of Prevention and Control System for Wide-band Oscillations in New-Type Power Systems

Dr. Ding Maosheng, CEO of State Grid Ningxia Electrical Institute, His research interests are applications of control and estimation theory on power systems stability, micro and smart grids, renewable energy systems and integration, and process control.

• Resilience-constrained Planning and Operation of Hydrogen-electrical Smart Distribution Networks.

Prof. Chen Shi, He is an Assistant Dean and doctoral supervisor at Sichuan University, His research interests are electric hydrogen conversion system control and power grid access, he won IEEE PES General Meeting Best Papers Award in 2020.

15:00

LUNCH & END OF DAY ONE

20:00

GALA DINNER

Calling women in energy!



cigre

Women in Energy





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Day Two:

Tuesday 14th November 2023 (30th Rabi-Thani 1445)

Conference Registration

8:00 - 8:30

14 th November 2023 08:30 – 10:00	TRACK – A		TRACK - B	
	A1: Electricity Markets and Regulation & System Development & Economics		B1: Asset Management for Power Systems & HVDC and FACTS Technology	
	Chaired by: Eng. Abdulrhman Ahli		Chaired by: Eng. Mohammed AL-Muaili	
	A101	Modeling the Impact of Solar Power Generation on the Grid with Stochastic DC OPF Optimization using Expected Value Method. By: Faisal Mohamed Alobeidli, TRANSCO: United Arab Emirates	B101	An 100% renewable power system through innovative HVDC technology-based power system architecture. By: Mauro Monge, Hitachi Energy: Sweden
	A102	Automated Power Flow Analyser to support Transmission Planning in Energy Transition Era. By: Ahmed Atiah, TRANSCO: United Arab Emirates	B102	Efficient & Reliable Network with Condition Based Asset Management (CBAM) in KAHRAMAA. By: Abdulla Ebrahim Ahmad, Kahramaa: Qatar
	A103	Performance of Grid-Forming and Grid-Following Battery Energy Storage System in Mitigating Sub-Synchronous Control Interactions. By: Gaurav Bansal, TRANSCO: United Arab Emirates	B103	Determination Asset Useful Life and Decision making for better Asset Performance Management. By: Balasubramanian NAINAR, Transco: United Arab Emirates
	A104	AUTOMATION APPROACH FOR ENERGY SYSTEMS DYNAMIC STABILITY ASSESSMENT IN POWERFACTORY SOFTWARE. By: ANNA PRYKHODKO, "DMCC-Engineering" Ltd.:Ukraine	B104	The approach of symptomatic analysis for root cause analysis for failure and fire incidents of Distribution assets. By: Eng. Nasser Al-Dahmashi, Water and Electricity Regulatory Authority (WERA)
	A105	Developing an approach to Evaluate and Select Electrical Systems A Case Study: Saudi Electricity Company. By: BASIM SALEH ALHARBI, Saudi Electricity Company: Saudi Arabia	B105	Experience in the condition assessment of a 400kV XLPE direct buried cable through online Partial Discharge monitoring. By: Ali Rashid Ali Al Marri, KAHRAMAA: Qatar
	Q&A		Q&A	
10:00 – 10:45	BREAK, POSTER 1, SHOW CASE 2 & EXHIBITION VISIT		Women in Energy Moderator: Dr. Abeer Al-Maimouni Enhancing The Role of Women in Energy Sector	
10:45 – 11:15	BREAK, POSTER 2, SHOW CASE 3 & EXHIBITION VISIT			
11:15 – 11:30	BREAK			

14th November 2023
08:30 – 10:00



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TRACK – A		TRACK - B	
Session A2: Renewable Energy and Nuclear Power for the Gulf States Chaired by: Eng. Sanaa Al-Ghareeb		Session B2: Transformer Design, Manufacturing, Life Cycle and Performance Chaired by: Eng. Fahad Al-Zahrani	
A201	Study of Dust sensor protection system for solar PV system. By: Khaled Shatwi, Saudi Electricity Company: Saudi Arabia	B201	The effectiveness of different Transformer maintenance strategies. By: Kessler, Siemens Energy: Germany
A202	Investigating the Influence of the BESS on the Grid Stability within Different Voltage Levels. By: Amer Salman Alsalman, SEC - National Grid SA: Saudi Arabia	B202	Using Vibro-Acoustic Advanced Method for Power Transformer's Onload Tap Changer Diagnostics. By: Sofiane Bakkay, OMICRON MEA Bahrein: Tunisia
A203	Analysis of the Renewable Energy Auctions globally and the GCC experience. By: Salman Mohammed Alowaiji, Saudi Power Procurement Company(Principle Buyer) : Saudi Arabia	B203	Revolutionizing Power Transformer Insulating oil Maintenance: Machine Learning-Based Fault Diagnosis and Predictive Maintenance using Modern Technologies and Approaches". By: Murali Krishna Boddu, University of Technology & Applied Science-Shinas: Oman
A204	DIMENSIONING OF OPERATING RESERVE REQUIREMENT IN MIS WITH PV SOLAR POWER INTEGRATION. By: Malik Salim Al-Shabibi, OETC: Oman	B204	Dissolved Gas Analysis of Oil filled Cable Boxes in KAHRAMAA Transmission Network Transformers. By: SARA HAMAD ALBUHENDI, KAHRAMAA: Qatar
A205	The development of a hybrid microgrid system to improve the robustness of electrical services in Al Uyaynah City, Saudi Arabia. By: Hamad Turki Alsubaie, Saudi Electricity Company - National Grid: Saudi Arabia	B205	RESIN-IMPREGNATED HV BUSHING INSULATION ASSESSMENT – FIELD AND FACTORY EXPERIENCE USING DIELECTRIC FREQUENCY RESPONSE. By: Diego Robalino, Megger: United States
A206	Increasing share of renewable energy in Sultanate of Oman energy mix: Challenges and Opportunities. By: SAID AL MASHAIKHI, NAMA DHOFAR SERVICES: Oman	B206	EFFECTIVE DISTRIBUTION TRANSFORMER FIELD DRY-OUT UNDER CONTINUOUS MONITORING. By: Diego Robalino, Megger: United States
Q&A		Q&A	
13:00 – 13:30		BREAK, PRAYERS, POSTER 3, SHOW CASE 4 & EXHIBITION VISIT	

14th November 2023
11:30 – 13:00



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14th November 2023 13:30 – 15:00	TRACK – A		TRACK - B	
	A3: SYSTEM OPERATION & CONTROL Chaired by: Eng. Omar Al-Ghamdi		NGN SESSION AI AND MACHINE LEARNING IN POWER SYSTEM Moderator: Eng. Tariq AlEbri	
	A301	Development of a Reactive Power & Voltage Control Strategy in KSA through Optimization. By: Abdulaziz Saleh Alhabdan, National Grid SA.: Saudi Arabia		
	A302	Costs and Benefits of Demand Side Management Programmes in the Kingdom of Saudi Arabia. By: Mutaz Alaql, Saudi Electricity Company: Saudi Arabia	AI and Machine Learning in Power System: Dr. Khalfan Al-Kharusi	
	A303	Study & Design of Implementing Fault current Limiter 132kV System in Oman. By: Al Yaqdhan Al Kathiri, Oman Electricity Transmission Company: Oman	Electric Vehicles Load Forecasting using AI/ML Techniques in Residential Sectors BY: Sheetal Kunal Deshmukh	
	A304	GCCIA System Operational Challenges due to Penetration of Renewable Energy Sources. By: BANDR FARAJ ALMIRRI, GCCIA: Saudi Arabia	Revolutionizing the Power Industry with Virtual Reality: Najoud Mohamed Ali	
	A305	Review on Synchrophasor-Based Real-Time Contingency Analysis in Control Rooms. By: Yaqoub Hamed Al Shamli , OETC: Oman	Energy based Machine Learning Spectrum Sensing in 5G Cognitive Radios BY: Eng. Mahra Al Ali	
	A306	Methodology for the development of dynamic equivalent models for power system stability studies. By: Milos Mitrovic, Go2Power Consulting: Serbia	Machine Learning in Energy Audit and Efficiency By: Eng. Mahra Al Ali	
	Q&A		Q&A	
	15:00 – 15:30 LUNCH AND END OF DAY TWO			
17:00 GCC CIGRE BOARD MEETING				

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13:30 – 15:00



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Day Three: Wednesday 15th November 2023 (1st Jumada Al-Awwal 1445)

Conference Registration

8:00 - 8:30

TRACK – A		TRACK - B	
Session A4: Smart Grids		B3: Overhead Lines and Insulated Cables	
Chaired by: Eng. Abdulla AL-Ghamdi		Chaired by: Eng. Aqeel AL-Awady	
A401	Detection of Live Downed Conductor Utilizing Smart Distribution Equipment. By: Ashraf Khalil Al-Maslamani, Saudi Electricity Company: Saudi Arabia	B301	Partial Discharge Diagnostic of High Voltage Power Cables with associated Accessories and the Human Experience for installation. By: Mostafa Mokhtar Hassanein Ahmed, sec : Saudi Arabia
A402	Elektrilevi's Advanced Remote Engineering Platform. By: Ameen Hamdon, SUBNET Solutions inc : Canada	B302	Lightning Protection Solutions of Saudi Electricity Company (SEC) 13.8-kV/33-kV Overhead Distribution Lines and Equipment. By: Mohammed Rafiq Tiro, Saudi Electricity Company: Saudi Arabia
A403	PERFORMANCE AND ANALYSIS OF FREE SPACE OPTICAL COMMUNICATION (FSO). By: Naif Faisal AL-Harbi, Saudi Electricity company: Saudi Arabia	B303	An extensive assessment of the impact of a series current limiting reactor on an existing overhead line circuit breaker and mitigation measures. By: Gaurav Bansal, TRANSCO : United Arab Emirates
A404	Strategic Solution for Remote Data Archiving. By: Abdul Quadeer, Saudi Electricity Company: Saudi Arabia	B304	Online Partial Discharge Monitoring for Predictive Maintenance of Captive Transformer Cable Termination Boxes. By: Dr. Ghulam Hashmi SAUDI ARAMCO Saudi Arabia
A405	Process Interface Units (PIU) and its advantages for Full Digital Substations. By: Rajesh Ananth, General Electric: United Arab Emirates	B305	Autonomous Inspection and Fault Detection of Line Component Using Unmanned Aerial Vehicle (UAV). By: Dr. Abdel Rahman Alheyasat NEPCO Jordan
		B306	Effects of Induced Circulating Current and Short Circuit Return Current on Parallel FOC Armour. By: MOHAMAD MUSTAQ KHAN, ELECTRICITE DE FRANCE: United Arab Emirates
Q&A		Q&A	
10:15 – 10:30		BREAK, EXHIBITION VISIT	

15th November 2023
08:30 – 10:15



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TRACK – A		TRACK - B	
A5: Distribution Systems		B4: Substation Protection and Automation	
Chaired by: Eng. Bader AL-Mamari		Chaired by: Eng. Mohamed ElShair	
A501	Distribution Voltage Transformer Blown Fuses Due to Cable Discharge. <i>By: Mohammed Majrashi, Saudi Aramco: Saudi Arabia</i>	B401	Challenges of distance protection application in multi terminal lines and possible solutions. <i>By: Haifa Almutairi, TRANSCO: United Arab Emirates</i>
A502	Reduce the Termination Failures on Electrical Distribution system. <i>By: YOUNIS KHAMIS SALIM AL MALKI, Petroleum Development Oman: Oman</i>	B402	Special protection schemes to meet complex generation-demand scenarios. <i>By: Peter Prasad, TRANSCO: United Arab Emirates</i>
A503	Optimal Power Distribution Network Planning-through Data Analytics and Innovative methods. <i>By: Ankur Sangwan, Tata Power- Delhi Distribution Limited: India</i>	B403	Impact of Renewable Energy Sources on Line Protection Roberto. <i>By: Cimadevilla, ZIV: Spain</i>
A504	Integrated Smart Monitoring and Decision Support System for Distribution Networks. <i>By: Mohammed Rafiq Tiro, Saudi Electricity Company: Saudi Arabia</i>	B404	Current Sensor Measurement Method for Testing the Circuit Breaker of Gas Insulated Switchgears with Both Sides Grounded. <i>By: Mohamed Ebrahim Ali Alsaif, OMICRON electronics Middle East :Bahrain</i>
A505	Network disturbance due to Metro operation. <i>By: SUKANT BHATTACHARYA DNV AS DUBAI BRANCH: United Arab Emirates</i>	B405	Impact of Inverter Based Resources on Power System Protective Relaying, Fault Calculation and Protection Setting: A Systematic Literature Review. <i>By: Wael Al Sulami, National Grid, SA: Saudi Arabia</i>
A506	The Model to Perform Quantitative assessment of Security of Supply. <i>By: Ashutosh Sharma, DNV: United Arab Emirates</i>	B406	Negative-Sequence based Directional Overcurrent Adaptive Protection Scheme for Distributed Generation. <i>By: Neelamraju Venkata Naga Jagadish, Saudi Electricity Company: Saudi Arabia</i>
Q&A		Q&A	
12:00 – 12:45		BREAK, SHOW CASE 5 & EXHIBITION VISIT	

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10:30 – 12:00



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CLOSING SESSION

- ***GCC Cigre Chairman Closing Statement*** **12:45 – 12:50**
- ***GCC Cigre Secretary General Announcements*** **12:50 – 12:55**
- ***Technical Committee Chairman Remarks & Recommendations*** **12:55 – 13:10**
- ***Closing*** **13:10 – 13:15**

13:15

LUNCH AND END OF THE EVENT

**Learn more about
CIGRE's Study
Committees scope
of work**

Learn more



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Poster Sessions

Poster –1	
<div>14th November 2023</div> <div>10:00 – 10:45</div>	P101 A comparative study of power system losses minimization for complex systems. <i>By: Wael Abdullah Alsulami, National Grid SA : Saudi Arabia</i>
	P102 Impact of Tap Staggering on Power Transformers and Transmission Networks. <i>By: Ahmed Ebrahim, Saudi Electricity Company : Saudi Arabia</i>
	P103 Subsynchronous Oscillations and their Mitigation in Power System with a Generation Mix: Synchronous Machine, Type-3 WTG, Type-4 WTG. <i>By: Gaurav Bansal TRANSCO Netherlands</i>
	P104 Ancillary Services Overview in Modern Electric Power System. <i>By: JAMSHED SALEEM, GCCIA: Saudi Arabia</i>
	P105 Operating Challenges of Integrated Electrical systems at OQ SR Complex and its Solutions. <i>By: Kaltham Al Balushi , OQ - RPI : Oman</i>
	P106 Transformer auto-close (TRAC) scheme and Neutral grounding reactor (NGR) for uninterruptible power supply. <i>By: Abdulrahman Ahli, TRANSCO : United Arab Emirates</i>
	P107 REVIEW ON APPLICATION OF ARTIFICIAL NEURAL NETWORK INTO POWER TRANSMISSION OPERATIONS. <i>By: Dr. Dawood AlAli, Dubai Electricity and Water Authority : United Arab Emirates</i>
	P108 Mechanism and control method of high frequency harmonic oscillation suppression in renewable energy field stations by applying SVG. <i>By: Donghui Zhang, Sieyuan Qingneng Electric & Electronics Co., Ltd : China</i>
	P109 Fault Indication Guides. <i>By: Fayez AlGheathi, NGSA, SEC : Saudi Arabia</i>



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Poster –2	
14th November 2023 10:45 – 11:30	P201 "Powering through the Winter: Tackling Operational Challenges with Renewables and Nuclear Generation". <i>By: Ehtesham Ud Din, Emirates Water and electricity Company (EWEC) : United Arab Emirates</i>
	P202 Grid Code requirements for the connection of renewable plants – comparison of requirements for different GCCIA Member States. <i>By: Nenad Belcevic, Go2Power Consulting : Serbia</i>
	P203 EWEC System Control Enhancements to Mitigate the Impacts of Clean Energy Penetration. <i>By: Hany Salah Ashour Abdelwahed, EWEC : United Arab Emirates</i>
	P204 Sub-Synchronous Resonance Coordinated Detection, Protection, and Damping for continuous operation of a Solar Power Plant with SSR Risk. <i>By: Sam Maleki, EPE: Canada</i>
	P205 Electricity generation from the animals manure - A case study on Bio - Methane power plant. <i>By: Qutaibah Abdullah Alhazaimah, Irbid District Electricity Company : Jordan</i>
	P206 Impact of large penetration of renewables on system strength, inertia, and frequency stability. <i>By: Abdullah S. Al Shehri, Saudi Electricity Company: Saudi Arabia</i>
	P207 A Systematic Approach to Mitigating Arc Flash Hazards in a Distribution System . <i>By: Pulak Pal, Petrokemya : Saudi Arabia</i>
	P208 ETOS Asset Intelligence: A Bayesian Network-Based System for Transformer Fault Diagnosis. <i>By: Alexander Alber, Maschinenfabrik Reinhausen : Germany</i>



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Poster –3	
14th November 2023 13:00 – 13:30	P301 Technical and economic study of green gas for grid (G3) instead of sulfur hexafluoride (SF6). By: Hamod Ghorm Alshomrani, Saudi Electricity Company : Saudi Arabia
	P302 Mitigation techniques of zero missing phenomenon on high voltage submarine cable systems with variable shunt reactors. By: Nagaraj Neradhalam, DAR International for Engineering Consultancy : Saudi Arabia
	P303 Quality Issues of Gapped-Core Shunt Reactors. By: MUKUNDAN P. NARAYANAN NAMBIAR, DUBAI ELECTRICITY AND WATER AUTHORITY : United Arab Emirates
	P304 The future landscape of insulating liquids. By: Dr. Bruce Pahlavanpour Dr. Bruce Pahlavanpour , Ergon International Inc : United Kingdom
	P305 34.5 KV Power Cable Outages- Case Study. By: Mohammed Balhaddad, SABIC-AN : Saudi Arabia
	P306 TRANSCO's experiences in different High Voltage Testing of 220 kV and 400 kV Cables. By: SULTAN FADHIL ALI AL KATIRI, TRANSCO : United Arab Emirates
	P307 Protection of High Voltage Submarine Power Cables. By: Saoud Hassan Alnaama , KAHRAMAA : Qatar
	P308 Challenges for 230kV Subsea Cable Looped Network feeding offshore oil & gas facilities (A case study). By: YOGESH M PATIL, SAUDI ARAMCO : Saudi Arabia
	P309 Short Circuit Fault Prediction using Machine Learning in SEC – EOA. By: Ahmed AlAwami, Saudi Electricity Company : Saudi Arabia
	P310 Combined qualification according to IEC & ICEA of 245kV cable system components for the GCC countries. By: Muneer Ahmed, ducab :United Arab Emirates



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Showcase

No	Date / Time	Organization	Title
1	13 th November 2023 12:30 – 13:00	Higher Colleges of Technology	Design and Implementation of Solar-Powered Remote-Controlled Boat for Water Quality Monitoring Mission
2	14 th November 2023 10:00 – 10:45	Nynas AB	New generation transformer oils-pathway to a sustainable future
3	14 th November 2023 10:45 – 11:30	Higher Collage of Technology	Electrical Power Subsystem for CubeSat
4	14 th November 2023 13:00 – 13:30	Polytechnics University	Application of energy efficient electric motors
5	15 th November 2023 12:00 – 12:45	Polytechnics University	Smart power supply of a military Robot