Paris Session 2022 For power system expertise IEC 61850 Principles and Applications to **Electric Power System** SC B5 PS2 Question 2.02: Application of Emerging Technology for PACS Q2.02 What are the expected benefits of using digital substation concepts and how to meet these benefits during industrial application Nirmal NAIR, New Zealand



Group Discussion Meeting

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IEC 61850 as Digital Substation Enabler

•This contribution based on recently published CIGRE B5 Green Book

• To answer question 2.02, check out the introductory chapters of this green book.

•The Chapter on Applying IEC 61580 beyond substation have details around examples of this technology being adopted and reaching maturity levels in railways traction, hydro generation plants and wind-farm standard PACS design.

•Several emerging applications like HVDC, Electric Vehicle, Batteries etc. still in R&D but reaching maturity through standardization has also been identified.

Group Discussion Meeting

	Compact Studies
	CIGRE Study Committee B5: Protection and Automation - Peter Bishop - Nirmal-Kumar C. Nair Editors
	IEC 61850 Principles and Applications to Electric Power Systems
	This book offers a compact guide to IEC 61850 systems, including wide-area implementation, as it has been applied to real substations worldwide. It utilises technical brochures and papers based on existing practice of IEC 61850 systems that give stakeholders from different disciplines an understanding of systems in use, their features, how they are applied and approach for implementation.
	The book offers a holistic practical view considering all relevant interfaces and possibilities. It includes the different applications, practical implementation considerations and choices made for IEC 61850 PACS (Protection Automation & Control System) designs. Power system engineers, planners, technicians and researchers will find the book useful for exploring, developing and delivering these systems.
181 182	IEC 61850 as an Enabler to Meet Power System Challenges
183 184	Introduction to IEC 61850 Systems
185 186	IEC 61850 User Specifications, Standards and End-Users
187 188	IEC 61850 Communication Architectures and Services
189 190	Time Synchronisation for IEC 61850 Systems 95 Richard Hunt, Calum Dalmeny, and Marcel Geor 95
191 192	Cybersecurity Integration with IEC 61850 Systems
193 194	Planning and Design for IEC 61850 Implementation 167 Pablo Humeres Flores
195 196	Implementation for IEC 61850 Functional Schemes
197 198	Testing of IEC 61850 System Solutions
199 200	Vendor Interoperability of IEC 61850 Systems
201 202	CT/VT Sampled Value Acquisition Applied to IEC 61850 303 Janez Zakonjšek
203 204	Process bus Applications in IEC 61850
205 206	Wide Area Implementations of IEC 61850 Substation Systems
207	IEC 61850 for SCADA Applications

207 IEC 61850 for SCADA Applications 208 Pablo Humeres Flores

Compact Studies

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IEC 61850 Principles and Applications to Electric Power Systems

CIGRE Study Committee B5: Protection and Automation

Peter Bishop Nirmal-Kumar C. Nair *Editors*

IEC 61850 Principles and Applications to Electric Power Systems

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