

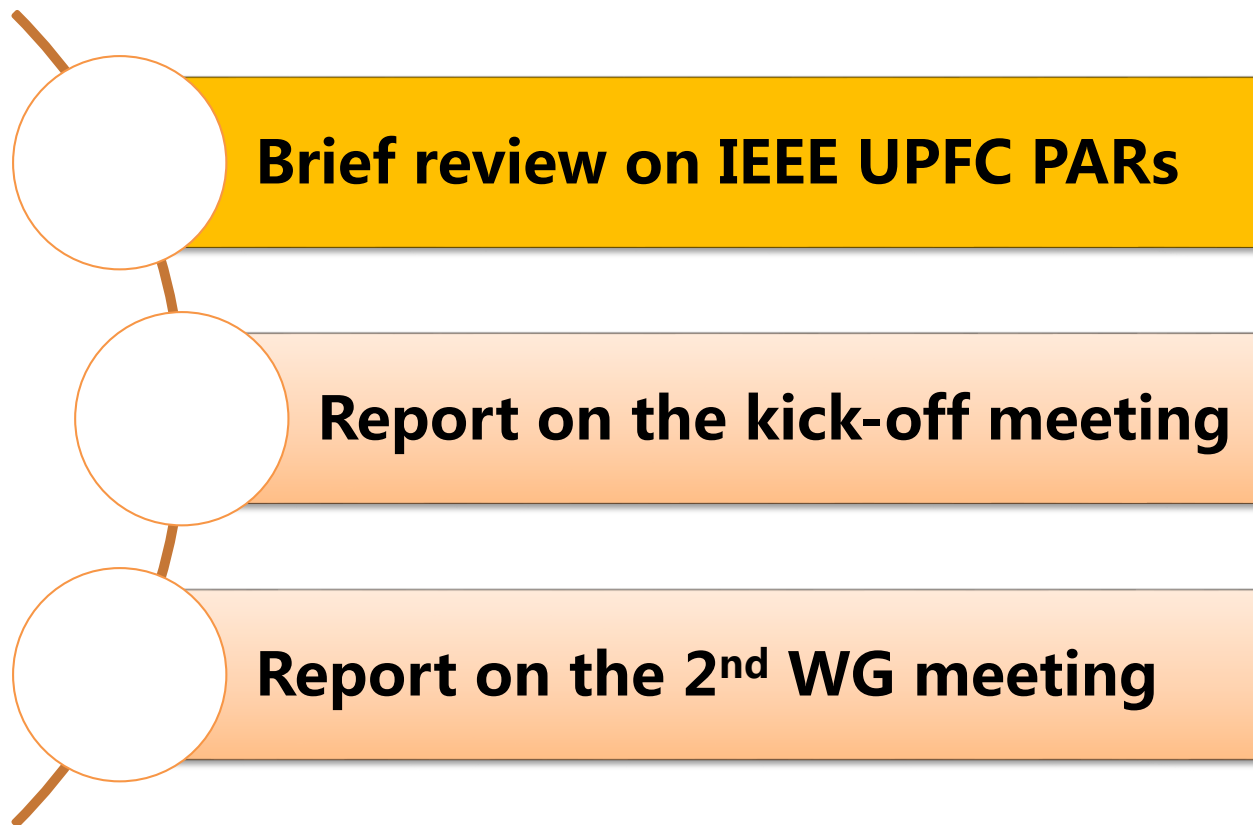
IEEE P2745 Unified Power Flow Controller Working Group Report

Yi Yang

Chair, IEEE PES T&D UPFC WG_P2745 series

State Grid Jiangsu Electric Power Research Institute

August 2018



Brief Review on IEEE UPFC PARs

- **February, 2017**
 - Submit three **IEEE standard PARs** on UPFC to IEEE SA
 - And T&D committee/HVDC & FACTS subcommittee
 - IEEE Guide for technology of unified power flow controller (UPFC) using modular multilevel converter (MMC) **Part 1. Functions**
 - IEEE Guide for technology of unified power flow controller (UPFC) using modular multilevel converter (MMC) **Part 2. Terminology**
 - IEEE Guide for technology of unified power flow controller (UPFC) using modular multilevel converter (MMC) **Part 3. Thyristor bypass switch**

- **July 18 and 19, 2017**

- **IEEE PES GM** in Chicago
- **July 18**, T&D and SGCC UPFC meeting
- **July 19**, HVDC & FACTS subcommittee meeting
- **Report on UPFC** technology and application, discussion
- **Plan: Webinar on UPFC**, new WG to promote the UPFC guide.



- **Oct. 12, 2017**

- IEEE SA organized Webinar
- **IEEE Webinar:** Unified Power Flow Controller (UPFC) Technology and Project Application
- Registration: 422, **online attendees: around 200**
- Q&A: answer over 60 questions from 50 attendees (David Stankiewicz)
- **Modify and resubmit UPFC PARs to SA and subcommittee again.**



- **Jan. 8, 2018**
 - IEEE PES JTCM in Jacksonville
 - **Discuss on the resubmitted three IEEE UPFC PARs.**
 - **Agree to sponsor the PARs and establish a new UPFC WG**



● March 9, 2018

- IEEE-SA Standards Board New Standards Committee (NesCom) in Tokyo, Japan
- **Approve three new PARs (P2745.1, P2745.2, P2745.3)**
- **Sponsored by IEEE PES T&D Committee**

IEEE Standards Association



NesCom Recommendations
IEEE-SA Standards Board New Standards Committee (NesCom) Recommendations
 [SASB approval date: 8-Mar-2018]
 [All votes unanimous unless noted otherwise.]
 Modified PARs:

IEEE Industry Applications Society/Technical Books Coordinating Committee

P2004.7
 Recommended Practice for the Protection of Conductors Used in Industrial and Commercial Power Systems
 Recommendation: Approve modified PAR

IEEE Microwave Theory and Techniques Society/Standards Coordinating Committee

P1765
 Test-Use Recommended Practice for Estimating the Uncertainty in Error Vector Magnitude of Measured Digitally Modulated Signals for Wireless Communications
 Recommendation: Approve modified PAR (5 in favor, 1 reverse [Janetzi])

IEEE Power and Energy Society/Energy Development & Power Generation

P2775
 Technical Guide for Smart Hydroelectric Power Plant
 Recommendation: Approve modified PAR

Extension Requests

IEEE Power and Energy Society/Nuclear Power Engineering

P2411
 Human Factors Engineering Guide for the Validation of System Designs and Integrated Systems Operations at Nuclear Facilities
 Recommendation: Approve request for an extension until December 2020

New PARs

IEEE Engineering in Medicine and Biology Society/Standards Committee

P2727
 Standard for General Vocabulary for Conformity Assessment of Medical Devices with Measuring Function
 Recommendation: Approve new PAR until December 2022

P2727.1
 Standard for Conformity Assessment Testing of Cardiac Defibrillators for Legal Metrology Purposes
 Recommendation: Approve new PAR until December 2022

IEEE STANDARDS ASSOCIATION

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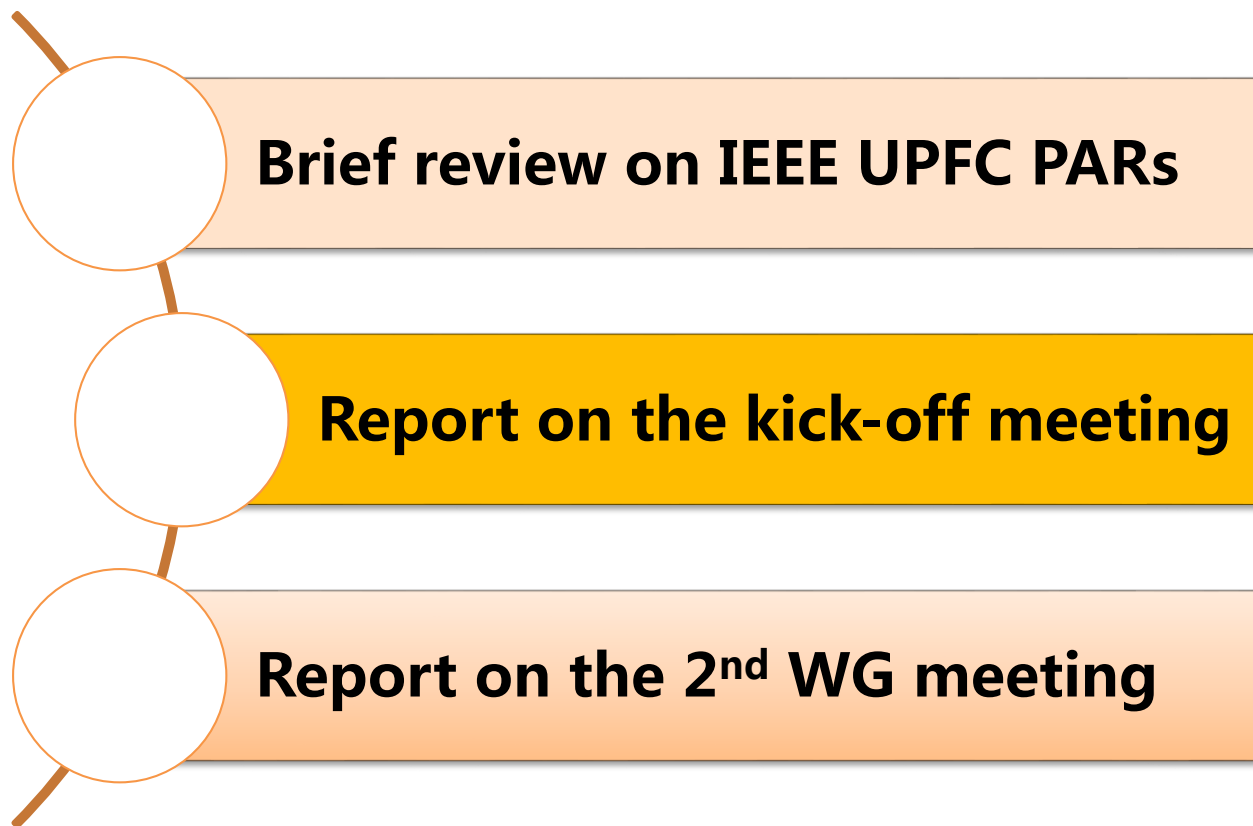
Click on the "PAR Number" to view the most current PAR information. The "Original PAR URL" shows the PAR as it was originally approved.

Approval mmm/dd/yyyy

2745

REFRESH

Sponsor	PAR Number	Title	Original PAR URL	PAR Approval
PE/T&D	P2745.1	Guide for Technology of Unified Power Flow Controller Using Modular Multilevel Converter: Part 1 Functions	https://development.standards.ieee.org/get-file/p2745.1.pdf?t=96328700003	09-Mar-2018
PE/T&D	P2745.2	Guide for Technology of Unified Power Flow Controller Using Modular Multilevel Converter: Part 2 Terminology	https://development.standards.ieee.org/get-file/p2745.2.pdf?t=96329000003	09-Mar-2018
PE/T&D	P2745.3	Guide for Technology of Unified Power Flow Controller Using Modular Multilevel Converter: Part 3 Thyristor Bypass Switch	https://development.standards.ieee.org/get-file/p2745.3.pdf?t=96329300003	09-Mar-2018



Report on the kick-off meeting

- **May 30 – June 2, 2018**, Nanjing dragon heights hotel, Nanjing
 - The kick-off meeting of IEEE UPFC WG_P2745 series in Nanjing
 - **10** entity members, **56** face-to-face attendees, **2** online attendees



IEEE UPFC WG Entity Members :

- State Grid Corporation of China (SGCC)
- China XD Group Corporation
- Electric Power Research Institute (EPRI)
- SIEMENS
- China Energy Engineering Group Co., Ltd.
- Tsinghua University
- Huazhong University of Science and Technology
- Xian Jiaotong University
- Hohai University
- Beijing Sifang Automation Co., Ltd.



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XD CHINA XD GROUP



● 9:00am – 9:30am, May 31, 2018

The kick-off ceremony



- **May 31–June 1, 2018 The kick-off meeting**
- **Call to Order**
 - **10 member entities. 50 Attendees (2 using WebEx).**
 - **New DRs and DRAs of each member entity were declared.**
- **Approval of agenda**
- **IEEE Patent Policy**
- **Appointment of WG Officers**
- **Approval of the WG P&P**
- **Appointment of 3 task force leaders**



- **May 31 – June 1, 2018 The kick-off meeting**

WG Officers

Chair

Yi Yang, yyang09@qub.ac.uk

Vice Chair

Georg Pilz, georg.pilz@siemens.com

Secretary

Xia Chen, cxhust@foxmail.com

Staff Liason

Meng Zhao, m.zhao@vip.163.com

Task Force Leaders

P2745.1

Peng Li, roclarry@163.com

P2745.2

Yi Yang, yyang09@qub.ac.uk

P2745.3

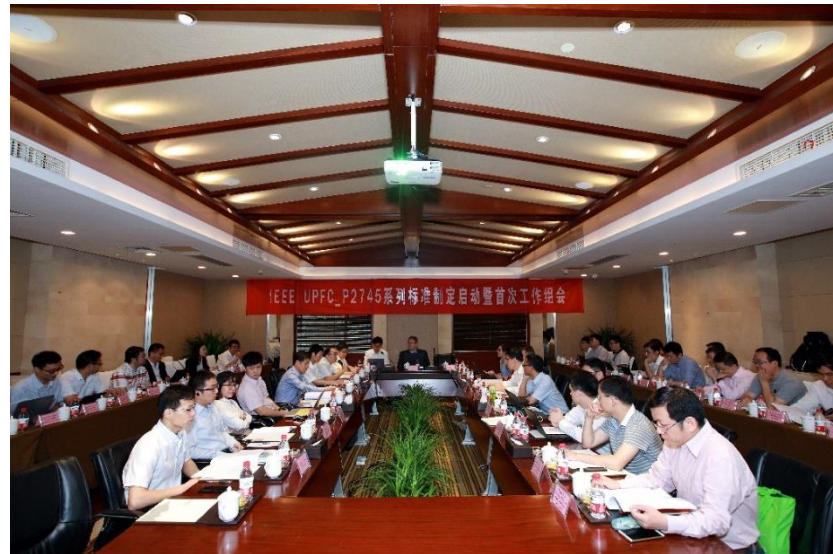
Xiangping Kong, kongxpust@163.com

Sponsor

IEEE Power and Energy Society/Transmission and Distribution (PE/T&D)

Chair

Daniel Sabin, d.sabin@ieee.org



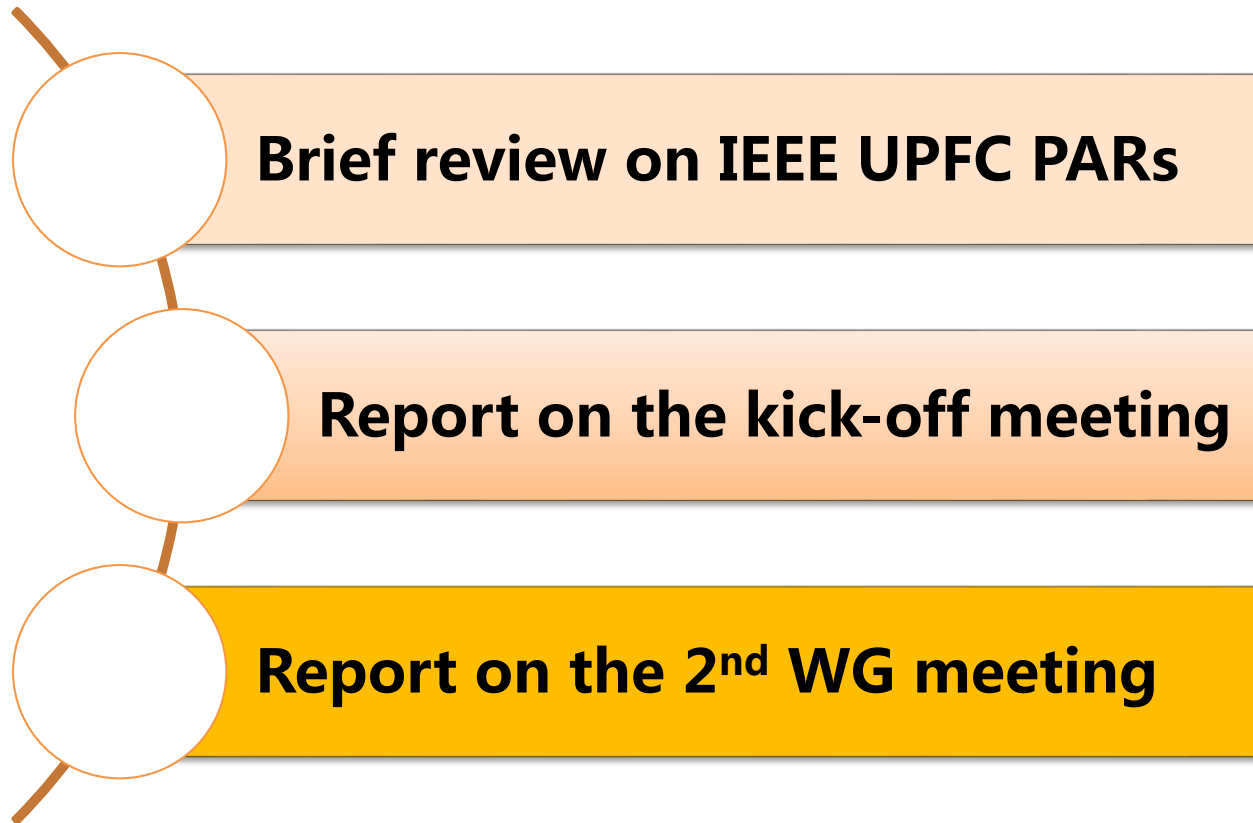
More info: <http://sites.ieee.org/sagroups-2745/>

- **May 31–June 1, 2018 The kick-off meeting**
- **Technical Discussion**
 - Meng Zhao introduces IEEE standard development process.
 - Yi Yang introduces the background and the frameworks of the P2745 series.
 - **The outlines of P2745.1, P2745.2 and P2745.3** were discussed heatedly by all and a consensus is reached by the members of the UPFC WG.
 - In accordance with the approved outlines of P2745.1 and P2745.2, the **documents of P2745.1 and P2745.2** were discussed heatedly by all. The comments for the manuscript were discussed and a consensus on the feedbacks of comments was reached.

- **May 31–June 1, 2018 The kick-off meeting**
- **Discussion on task assignment and schedule**
 - The outlines of P2745 series has be revised by SGCC based on the feedbacks of experts in the working group.
 - The work tasks of P2745.1, P2745.2 and P2745.3 are combed in the minutes.
- **Date and place of next WG meeting**
 - The 2nd WG meeting to be held in IEEE PES General Meeting, Portland, U.S. in August, 7 2018.

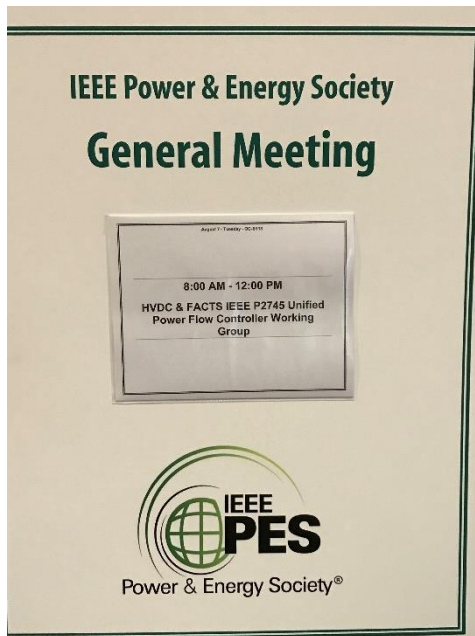
- June 2, 2018, Technical Tour: 220kV Nanjing UPFC project





Report on the 2nd meeting

- **Tuesday, Aug. 7, 2018** B118 ,Oregon Convention Center, Portland.
 - **8** entity members (**3** online entity members)
 - **19** attendees (**4** online attendees)



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- State Grid Corporation of China (SGCC)
- China XD Group Corporation
- Electric Power Research Institute (EPRI)
- SIEMENS
- China Energy Engineering Group Co., Ltd.
- Tsinghua University
- Huazhong University of Science and Technology
- Xian Jiaotong University
- Hohai University
- Beijing Sifang Automation Co., Ltd.



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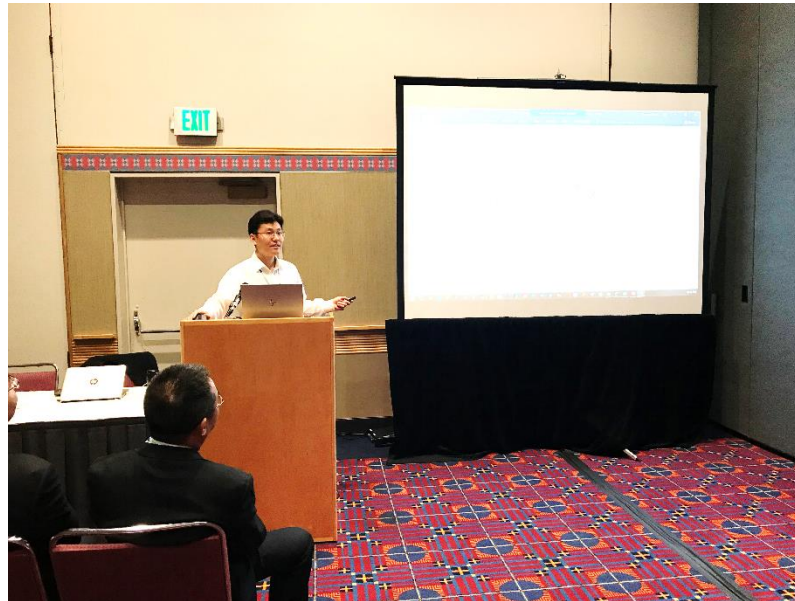


- 8:00 am - 12:00 am
- Aug. 7, 2018
- OC-B118
- Call to order
- Approval of agenda
- IEEE patent policy
- **Review the kick-off WG meeting**
- **The minutes of the kick-off meeting was approved**
- **Discuss the draft and comments of P2745 series**
- Discuss on task assignment and schedules



- **Technical Discussion and Decision:**

- **The collected comments for P2745.1 Draft 1** were discussed heatedly by all and a consensus is reached by the members of the UPFC WG. (**26 comments**)
- **The draft of P2745.1/D1** was discussed heatedly by all, **36 comments** were proposed by experts in the meeting and a consensus is reached by the members of the UPFC WG.



- **Next steps:**

- In accordance with the comments and discussion in the 2nd meeting, the drafts of P2745.1/D1 and P2745.2/D1 will be modified and the updated drafts (P2745.1/D2 and P2745.2/D2) will be sent to WG members for comments again.
- The 3rd WG meeting will be held in Oct./Nov. 2018 in China.
- The new comments for P2745.1/D2 and P2745.2/D2 will be discussion in the 3rd WG meeting.
- The document of P2745.3 will be discussion in the 3rd WG meeting as well.

Thank you for your attention!

More info: <http://sites.ieee.org/sagroups-2745/>



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