Electrical, Electronics and Computer Engineering Talk 2017

“New Results on Energy Transmission Grids: Efficiency by Architecture”

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The Institution of Engineers, Singapore (IES)

Electrical, Electronics and Computer Engineering Technical Committee (EECETC)

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SIT-IES Student Chapter
News Articles/ Media Sources:

**Blackouts in Singapore: People in the seat of power**
The Straits Times-5 Aug 2017  
The nerve centre of Singapore's power grid is in two control rooms in a ... One room is operated by EMA and controls the transmission of...

**Blackouts in Singapore: Forget the lights, we're worried about the...**
The Straits Times-5 Aug 2017  
Blackouts in Singapore: Forget the lights, we're worried about the fridge ... surveys over the last few years by global energy consultancy Det Norske ... National grid operator SP Group told The Sunday Times it achieved an all-time ... The authorities blamed it on a downed transmission line in Panama that...

**Taiwan to review electrical grid after flawed power supply...**
The Straits Times-15 Aug 2017  
TAIPEI - Taiwan will conduct a comprehensive review of its weak electrical grid, a day after the island suffered its worst blackout in nearly two...
Date: 6 September 2017 (Wednesday)

Time: 4pm – 6.30pm (1600 hours to 1830 hours)

Registration starts at 3.45pm (1545 hours).
Networking Tea Session starts from 4pm (1600 hours).

Venue: Singapore Institute of Technology @ Singapore Polytechnic (SIT@SP)
LT5A, SIT@SP
Singapore Polytechnic Campus
510 Dover Road
Singapore 139660
Campus map link: https://goo.gl/maps/eXvszpJnPCK2

CPD/ PDU/:

- PDUs for PEB PEs (for all engineering branches/ disciplines); pending approval.
- PDUs for IES CEngs (for prescribed engineering branches/ disciplines); pending approval.
- PDUs for IES SCEMs; pending approval.

Fees:

All price(s) is/ are inclusive of prevailing GST and 1 dinner.

$30.00/- for IES, Co-Organizer(s) and/ or Supporting Partners’ Members.
Complimentary for IES Student Members
$50.00/- for Non-members
$10.00/- for Non-student Members
Speaker’s Profile

**Prof. Dr.-Ing. Wolfgang Utschick**
Chair, Signal Processing Methods  
Department of Electrical and Computer Engineering  
Technische Universität München (TUM)  
Germany

Contact Details
Visitenkarte in TUMonline

**Prof. Dr.-Ing. Wolfgang Utschick** is a professor at the Technical University of Munich (TUM) and a regular guest professor at the Singapore Institute of Technology (SIT).

He is the dean of the Department for Electrical and Computer Engineering and directs the Signal Processing Chair at TUM. His courses span topics in signal processing, stochastic processes, and optimization theory with applications in wireless communications and power systems.

He holds several patents, has authored and co-authored a multitude of technical articles, and edited several books. He is a member of VDE and senior member of IEEE, where he currently serves as the chair of the German Signal Processing Section.

Abstract of the Talk: New Results on Energy Transmission Grids: Efficiency by Architecture

In several countries, the recent rise of electricity generation based on renewable energy sources increases the demand for transmission capacity. However, conventional capacity expansion via the construction of new transmission lines often receives considerable public opposition due to its impact on landscape and adjacent environment.

In this Talk, we present the hybrid architecture, i.e., a landscape-preserving expansion approach that relies on the conversion of certain existing AC lines and transformers to HVDC operation.

This systematic conversion induces a transformation of system structure, which does not only increase the effective capacity but also introduces methodological as well as operational advantages. We have shown that the hybrid architecture improves decision making by enabling an exact convex relaxation of the optimal power flow problem and providing computationally efficient and accurate nodal pricing methods.

Furthermore, the flow control of VSC HVDC systems supports the handling of grid congestion and their reactive power capability enables extensive voltage support. In a study of the German transmission grid, we illustrate that the hybrid architecture can substantially improve the utilization of the existing grid topology and, therewith, considerably reduce the need for new lines.

Programme

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Online Registration & Payment Modes

- Please visit https://ies.org.sg/event_view.php?event_id=2107 to register online and transact payment via your VISA/ MasterCard or other appropriate modes.

All fees payment via cheque
- Account payable/ crossed Cheque to ‘IES’ via post
- (At the back of your Cheque, please indicate your Name and NRETG)
- Postal Address:
The Institution of Engineers, Singapore
70 Bukit Tinggi Road, Singapore 289758
Attention: Mr. Colin Fong

All Fees Can be Transacted via Island-wide AXS Kiosks
- Please select/ input/ key in:
  - Course/ Event ID 2107
  - Remarks NRETG
- Please keep, retain and furnish your proof of payment(s), receipt(s) or e-receipt(s), if any, during registration.

Contact Person
Colin Fong (e): colin.fong@iesnet.org.sg (d): +65 6461 1236 (t): + 65 6469 5000

Other Details, Information and Remarks

- Confirmation of registration will be emailed within 7-working days prior to the Seminar’s commencement date.

- In the event, you are not able to attend, please duly inform us in writing at least 3-working days before the Seminar’s commencement date. Otherwise, full payment is applicable if you are not able to attend the Seminar.

The Institution and/or the Organiser(s) reserves the right to make appropriate changes at its discretion although every effort will be made to inform participants in time.

# Fees is/ are inclusive prevailing GST and 1 tea break of light refreshments.

# If vegetarian meal is required, please indicate during your online registration.

# Seminar's duration excludes registration, meal and/or break time(s).

# For IES Student Members, please input your Membership Number and register online accordingly.

# For Non-student Members, please register online and transact payment via your VISA/ MasterCard or other appropriate modes.

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# No certificate of attendance will be issued, however, an email will be sent within 14 to 21-working days after the event to certifying your attendance.

# Accreditation of CPD PDU for Professional Engineers Board Singapore (PEB) Professional Engineer/Attendee; your Name and Reg. PE Registration Number will be filed to PEB, normally within 14 to 21-working days after the Talk.

# Accreditation of CPD PDU for IES Chartered Engineer/Attendee; your Name and Reg. C.Eng Registration Number will be filed to IES C.Eng Professional Registry, normally within 14 to 21-working days after the Talk. CPD PDU for IES C.Eng will be duly accredited/awarded correspondingly/similarly to those approved/confirmed by PEB.

# Accreditation of CPD PDU for IES Singapore Certified Energy Manager/Attendee; your Name and Reg. SCEM Registration Number will be filed to IES SCEM Professional Registry, normally within 14 to 21-working days after the Talk.