1. Curriculum Vitae

Alfredo Vaccaro

- è nato a il

- Si è laureato con lode ed encomio della Commissione in Ingegneria Elettronica nell'Anno Accademico 1996/97 presso l'Università degli Studi di Salerno.

- Ha conseguito il **Ph.D.** in **Electrical and Computer Engineering** presso la *University of Waterloo, Ontario, Canada.*

- Da marzo 2002 a Gennaio 2011 è stato **Ricercatore Universitario**, *Settore Scientifico Disciplinare ING-IND/33 (Sistemi Elettrici per l'Energia),* presso il Dipartimento d'Ingegneria dell'Università degli Studi del Sannio.

- Da Febbraio 2011 a Dicembre 2013 è stato **Direttore Scientifico** della sede del Centro di Ricerca in Matematica Pura ed Applicata presso il Dipartimento di Ingegneria dell'Università degli studi del Sannio.

- Da Novembre 2014 ad Aprile 2023 è stato **Professore Associato**, *Settore Scientifico Disciplinare ING.IND-33 (Sistemi Elettrici per l'Energia),* presso il Dipartimento d'Ingegneria dell'Università degli Studi del Sannio.

- Da Maggio 2023 è **Professore Ordinario**, *Settore Scientifico Disciplinare ING.IND-33 (Sistemi Elettrici per l'Energia),* presso il Dipartimento d'Ingegneria dell'Università degli Studi del Sannio.

- Nel 2025 è stato nominato **FELLOW** dell'IEEE (Institute of Electrical and Electronics Engineers) "for his contributions to power system analysis with data uncertainty"

2. Attività Scientifica

2.1. Temi di Ricerca

1. **Modellistica, controllo e monitoraggio distribuito di reti energetiche multivettore**
    a. Sviluppo di metodologie matematiche per l'analisi e la gestione ottimizzata di hub-energetici geograficamente distribuiti.
    b. Sviluppo di modelli matematici per il controllo robusto di hub-energetici in reti energetiche multivettore.
2. **Sistemi di comunicazione e misura sincronizzata per il monitoraggio, protezione e controllo di reti elettriche distribuite su larga scala geografica**
    a. Analisi sperimentali tese a caratterizzare le reali prestazioni di piattaforme di comunicazione satellitari a supporto di architetture WAMPACs (*Wide Area Monitoring Protection And Control Systems)*.
    b. Analisi di vulnerabilità di sistemi di monitoraggio sincronizzato rispetto a cyber-attacchi ed interferenze esterne.
    c. Caratterizzazione sperimentale di algoritmi basati su PTP-*Precise Time Protocol* per la sincronizzazione temporale di *Phasor Measurement Units* (PMU).
3. **Metodologie per l'analisi di reti elettriche in presenza di dati incerti mediante modelli di *reliable computing***
    a. Concettualizzazione di paradigmi di calcolo basati su *Aritmetica Affine* e *Matematica degli Intervalli* per l'analisi di reti elettriche in presenza di forte incertezza di esercizio indotta da una elevata penetrazione di sistemi di generazione non programmabili.
    b. Stima robusta della inerzia di sistemi elettrici di trasmissione mediante elaborazione di dati massivi.
4. **Tecnologie abilitanti l'analisi della sicurezza ed il monitoraggio di reti elettriche distribuite su larga scala geografica**
    a. Decomposizione di funzioni WAMPACS su reti non-gerarchiche, scalabili ed adattative di PMU "intelligenti" e cooperative.
    b. Sviluppo di architetture di calcolo proattive, distribuite ed altamente scalabili per l'analisi in linea della sicurezza di reti elettriche distribuite su

larga scala.

c. Sviluppo di modelli adattativi basati su architetture di identificazione di tipo semi-fisico per la previsione su breve/medio termine dei profili di producibilità energetica di impianti eolici.
d. Definizione di paradigmi di calcolo innovativi basati su modelli dinamici artificiali per l'analisi in linea di reti elettriche in presenza di pervasione massiva di risorse distribuite.

5. **Metodi e tecnologie per ed il Dynamic Thermal Rating di componenti elettrici**
    a. Sviluppo e prototipazione di unità di controllo basate su sistemi esperti e tecniche di *Computational Intelligence* per la stima dinamica dei margini di caricabilità dei componenti del sistema di trasmissione.
    b. Metodologie matematiche basate su paradigmi di *Self-Validating Computing* per la protezione termica dei componenti del sistema di trasmissione in presenza di dati incerti.
    c. Sviluppo e prototipazione di reti di sensori cooperativi per la stima dinamica della curva di caricabilità di linee elettriche aeree.
6. **Concettualizzazione di paradigmi decentralizzati, cooperativi e resilienti per il controllo e la gestione ottimizzata di risorse distribuite in *Smart Grids***
    a. Integrazione di strumenti di *Information and Communication Technology (*ICT) per lo sviluppo di sistemi avanzati per il controllo, la protezione e la diagnostica di *Smart Grids*.
    b. Sviluppo di *Sistemi Esperti* per la regolazione della tensione in *Smart Grids* in presenza di forte pervasione di generazione distribuita.
    c. Studio di modelli di calcolo cooperativi basati su meccanismi di interazione biologica per la risoluzione di problemi di *Optimal Power Flow*.
    d. Studio di reti pervasive ed auto-organizzanti di "*smart sensors*" per la elaborazione delle informazioni in *Smart Grids* mediante l'impiego di paradigmi di *Information Spreading* (algoritmi di *Gossiping* e protocolli di consenso distribuito).

2.2 Indici bibliometrici

Alfredo Vaccaro ha pubblicato 2 Brevetti, 4 Libri, 14 capitoli su libro, 113 articoli su rivista internazionale e 104 articoli su conferenze internazionali.

I suoi lavori hanno ottenuto **4547 citazioni,** a cui corrisponde un **H-index pari a 34** *(fonte SCOPUS).*

Scopus Author Identifier: 57200014765

ORCID Identifier: https://orcid.org/0000-0001-7256-2705

2.3 Organizzazione, direzione e coordinamento di gruppi di ricerca nazionali e internazionali

- E' il **coordinatore scientifico** del *gruppo di ricerca in Sistemi Elettrici per l'Energia* dell'Università degli studi del Sannio, che risulta composto da un Ricercatore di tipo B, due studentesse di dottorato di ricerca, tre borsisti di ricerca, e da un numero variabile di tirocinanti e tesisti.

- E' il **responsabile scientifico** dell'Unità di Ricerca dell'Università degli studi del Sannio afferente al *Gruppo Universitario Sistemi Elettrici per l'Energia* (GUSEE) ed al *Consorzio interuniversitario nazionale per energia e sistemi elettrici* (ENSIEL).

- E' il **responsabile scientifico** del *Laboratorio di Sistemi Elettrici per l'Energia* dell'Università degli studi del Sannio, che sviluppa attività sperimentali nel settore dei sistemi WAMPAC, simulazione real-time di reti elettriche, testing di sistemi di protezione e controllo di reti elettriche mediante piattaforma hardware-in-the-loop, prototipazione di reti di sensori cooperative per il DTR (*Dynamic Thermal Rating*) di linee elettriche. Il laboratorio è anche utilizzato da tirocinanti e tesisti per lo sviluppo delle attività sperimentali oggetto dei relativi progetti formativi.

- E' il **Coordinatore** (*Chair*) dello *IEEE Power System Operation, Planning and Economics – Technologies and Innovation Sub-Committee (PSOPE-T&I),* a cui afferiscono circa 50 membri internazionali di derivazione accademica ed

industriale. In tale ambito, coordina le attività del comitato in materia di organizzazione di conferenze internazionali, organizzazione di *special sessions* e *panel sections* nelle conferenze internazionali sponsorizzate dalla IEEE *Power and Energy Society (PES)*, monitoraggio delle attività delle *Task Forces*, nonchè valutazione delle proposte per la istituzione di nuove *Task Forces* e *Working Groups*.

- E' il **coordinatore** (*Chair*) della **Task Force** "Enabling technologies for Dynamic Thermal Rating of Power Components" dello *IEEE Power System Operation, Planning and Economics – Technologies and Innovation Subcommittee (PSOPE-T&I)*. La *Task Force*, che vede la partecipazione di circa 20 membri internazionali, ha lo scopo di analizzare le tecnologie abilitanti il *DTR*, di definire una possibile architettura standard per la realizzazione di funzioni *DTR*, e di analizzare in senso critico le principali esperienze sperimentali condotte in ambito internazionale.

- E' stato **coordinatore** (*Chair*) della **Task Force** "*Enabling Paradigms for High-performance Computing in Wide Area Monitoring Protective and Control systems*" dello *IEEE Power System Operation, Planning and Economics – Technologies and Innovation Subcommittee (PSOPE-T&I)*. La *Task Force* ha coinvolto circa 15 membri provenienti dal mondo accademico ed industriale, e si è resa promotrice dell'organizzazione di numerose *special sections* in conferenze di rilevo internazionale e di *special issues* di riviste scientifiche. La *Task Force* ha, inoltre, pubblicato il report tecnico PES-TR94 *"Enabling Computing Techniques for Wide-Area Power System Applications"*

- E' stato il **coordinatore** (Chair) della **Task Force** "*Guidelines for Synchronization Techniques Accuracy and Availability*" nell'ambito del *North American SynchroPhasor Initiative* NASPI-*Performance & Standards Task Team* (PSTT). Tale *Task Force* ha affrontato, in particolare, le problematiche relative alla resilienza delle unità di sincronizzazione temporale di sistemi WAMPAC (Wide Area Monitoring Protection And Control Systems) rispetto a cyber-attacchi ed interferenze esterne.

- E' stato il coordinatore della **Task Force "Reliable Electricity"** nell'ambito

della *Humanitarian Technology Challenge*, una partnership tra la **IEEE** e la **Fondazione delle Nazioni Unite** finalizzata a sviluppare tecnologie abilitanti per la salvaguardia della salute pubblica e lo sviluppo delle aree depresse nei paesi in via di sviluppo. Nell'ambito di questa prestigiosa iniziativa la *Task Force* ha prodotto un report tecnico descrittivo delle potenziali tecnologie abilitanti per l'alimentazione elettrica di aree remote in paesi in via di sviluppo.

- E' **il responsabile scientifico** dell'Accordo di Programma tra il Dipartimento di Ingegneria dell'Università degli studi del Sannio e l'*Istituto Superiore delle Comunicazioni e delle Tecnologie dell'Informazione* (ISCTI), organo tecnico del *Ministero delle imprese e del made in Italy*, finalizzato allo studio ed allo sviluppo di soluzioni innovative per la sincronizzazione robusta di sensori distribuiti in infrastrutture elettriche critiche ed allo sviluppo di servizi di sincronizzazione basati sull'*Orologio Nazionale di Riferimento* dell'ISCTI per l'acquisizione robusta di grandezze fasoriali in reti elettriche.

- E' stato **il responsabile scientifico** della Convenzione di Ricerca tra il Dipartimento di Ingegneria dell'Università degli studi del Sannio e la società *Thales-Alenia Space Spa*, finalizzata allo studio di soluzioni innovative per la sincronizzazione temporale di unità di misura dei fasori *PMU*, resilienti ad interferenze elettromagnetiche ed attacchi esterni (*cyber-attacks*).

- E' stato **il responsabile scientifico** di tre Convenzioni di Ricerca tra il Dipartimento di Ingegneria dell'Università degli studi del Sannio, il *Consorzio interuniversitario nazionale per energia e sistemi elettrici* (ENSIEL) e *Terna SpA*, finalizzate allo sviluppo di sistemi di monitoraggio, previsione e impatto sulla sicurezza del sistema elettrico della produzione elettrica da Fonti Energetiche Rinnovabili.

- Nel 2005 è stato **Tutor Scientifico** delle attività della *Mediterranean Agency for Remote Sensing and Environmental Control* (MARSec SpA) nel monitoraggio delle infrastrutture elettriche critiche mediante telerilevamento satellitare, e nella Supervisione, Monitoraggio e controllo di sistemi a larga scala mediante l'ausilio di sistemi di telecomunicazione satellitare.

- Da Gennaio 2009 a Dicembre 2014 è stato **Task Leader** delle iniziative

scientifiche strategiche del *Research Consortium on Agent Systems* (CORISA) nel settore degli Smart Energy Networks.

- Nel 2009 è stato **Project Tutor** delle attività del *Centro interdipartimentale sulle Tecnologie per la Diagnostica Ambientale e lo Sviluppo Sostenibile* (TEDASS), nel settore delle metodologie satellitari per il monitoraggio ed il controllo su larga scala di reti elettriche in presenza di forte pervasione di sistemi di generazione non programmabili

- Da Febbraio 2011 a Dicembre 2013 ha **diretto** la sede del *Centro di Ricerca in Matematica Pura ed Applicata* presso il Dipartimento di Ingegneria dell'Università degli studi del Sannio

- Ha coordinato, in qualità di **responsabile scientifico,** i seguenti progetti finanziati sulla base di bandi competitivi:
  1. "**Studio di un sistema di controllo avanzato per la gestione ed il monitoraggio remoto di veicoli per il trasporto pubblico**" finanziato dal MURST nell' ambito delle iniziative di ricerca condotte da giovani ricercatori - Anno 2000.
  2. "**Sviluppo di modelli termici adattativi per la protezione termica di componenti nei sistemi elettrici per l'energia**" finanziato dal MURST per iniziative condotte da giovani ricercatori - Anno 2002.
  3. "**Soluzioni innovative per l'incremento del tasso di utilizzo di infrastrutture elettriche attraverso la stima dinamica delle capacità di carico dei componenti**" finanziato nell'ambito del Bando per il finanziamento di progetti di ricerca di cui alla Legge Regionale 28 marzo 2002, n. 5, per l'annualità 2008, pubblicato sul Bollettino Ufficiale della Regione Campania n. 23, del 14 aprile 2009.

- E' stato il **Coordinatore scientifico** dei seguenti sub-task nell'ambito del progetto europeo OSMOSE (Multiple services provided by grid devices, large demand-response and RES generation coordinated in a smart management system) finanziato nell'ambito della Call: H2020-LCE-2016-2017 (COMPETITIVE LOW-CARBON ENERGY):
  1. Subtask 5.1.4 Analysis and design of advanced features for dynamic transmission grid management services (**Coordinatore per il progetto**).
  2. Subtask 5.2.1: Forecasting models for RES generation and loads (**Coordinatore per il progetto**).

- E' stato il **responsabile scientifico nazionale** della proposta progettuale

"Gestore avanzato scambi di potenza in alta tensione per reti energetiche Difesa" - ITER (SMART CIG ZA8291F6D4) **finanziata nell'ambito del Piano Nazionale di Ricerca Militare** 2019.

2.4 Partecipazione a Task Force e Working Groups

1. IEEE Working Group C-4, **Industry Experiences With System Integrity Protection Schemes (SIPS)**.
2. IEEE Working Group C-11, **Power System Protection Testing**.
3. North American SynchroPhasor Initiative (NASPI).
4. IEEE Task Force on **Autonomic and Trusted Computing** of the Emergent Technologies Technical Committee (ETTC) – Computational Intelligence Society (CIS).
5. IEEE Working Group on **Interval Arithmetic**.
6. PES/IEEE Working Group on **Power Engineering Careers**.
7. CIGRE Working Group B5.14 **Wide Area Protection & Control Technologies**.
8. CIGRE Working Group B5.43 **Coordination of Protection & Automation for Future Networks**.
9. IEEE System Man Cybernetics Standards Committee on **Smart Cities Terminology**.
10. IEEE **Smart City Standard** Study Group.
11. IEEE Working Group on **Big Data & Analytics for Transmission Systems**.

2.5 Direzione e partecipazione a comitati editoriali di riviste scientifiche

- E' **Editor in Chief**, della rivista, *Technology and Economics of Smart Grids and Sustainable Energy* - Ed. Springer Nature.
- E' **Associate Editor** della rivista *IEEE Transactions on Smart Grids.*
- E' **Associate Editor** della rivista *IEEE Transactions on Power Systems.*
- E' **Associate Editor** della rivista *IEEE Power Engineering Letters.*
- E' stato **Associate Editor** della rivista *IEEE Transactions on Industrial Informatics.*
- E' stato **Editor in Chief** ed **Executive Editor** della Rivista *International Journal of Renewable Energy Technology*, Ed. Inderscience Publishers.
- E' stato **co-editor** dei seguenti testi:
    1. "Ocean Energy Technologies" edito da *Elsevier*, co-editors proff. A.F.

Zobaa della Brunel University e M. M. Canteli della University of Cantabria.

2. "Computational Intelligence Applications in Smart Grids" edito *da Imperial College Press,* co-editor prof. A.F. Zobaa della Brunel University.
3. "Wide Area Monitoring, Protection and Control Systems: The Enabler for Smarter Grids" edito dalla *Institution of Engineering and Technology-IET,* co-editor il prof. A.F. Zobaa della Brunel University.
4. "Innovations in Power Systems Reliability", *Springer Series in Reliability Engineering,* edito da *Springer*, co-editor il prof. George J. Anders.

- E' stato **Guest Editor** dei seguenti special issues:
  1. "Enabling Technologies and Methodologies for Knowledge Discovery and Data Mining in Smart Grids" della rivista *IEEE Transactions on Industrial Informatics*.
  2. "Emerging Technologies and Methodologies for Power Systems Reliability and Security Assessment" della rivista *International Journal of Reliability and Safety*, edita dalla Inderscience.
  3. "Smart Grid Cyber Security", e "New Technologies for Smart Distribution Grid" della rivista *Electronics*, edita da MPDI.
  4. "Data Mining in Smart Grids " per la rivista *Energies*, edita MPDI.
  5. "Enabling Paradigms for Information Processing in Smart Grids" della rivista *International Journal of Electrical Power & Energy Systems*, edita da Elsevier.

- E' **membro del comitato editoriale** della seguenti riviste**:**
  1. *International Journal of Electrical Power & Energy Systems*, Ed. Elsevier
  2. *IET-Renewable Power Generation*, Ed. Institution of Engineering and Technology-IET

2.6 Conseguimento della titolarità di brevetti

- E' il detentore (al 55%) del seguente **brevetto internazionale**:
  - **A. Vaccaro**, T. H. M. El-Fouly, C. A. Cañizares, K. Bhattacharya, Gord Ellis, "System, Method and Computer Program for Forecasting Energy Price," Application number: WO2012CA01056 20121114, WO2013071414(A1) — 2013-05-23, Priority number:US201161559295P 20111114, Data di Pubblicazione: 23 Maggio 2013.

  Il brevetto è stato utilizzato dalla *Energent Incorporated* per la definizione di politiche di approvvigionamento ottimale di energia sul mercato elettrico canadese.

- E’ il detentore (al 20%) del seguente **brevetto nazionale**:
    - Università degli studi del Sannio, A. Pepiciello, **A. Vaccaro**, D. Villacci, “Sistema di rilevamento di interferenze di segnali di sincronizzazione temporale in ingresso a dispositivi di misura di sincrofasori in sistemi elettrici di potenza”, Domanda n. 102021000023765, Data di deposito: 15 Settembre 2021.

2.7 Partecipazione in qualità di relatore invitato a congressi e convegni nazionali e internazionali

E’ stato “**relatore invitato**” ai seguenti **convegni/workshop internazionali**:

1. *Strategies and Roadmaps Grid Assessment, Strengths & Vulnerabilities, and Innovative Collaborations*, San Francisco, March 2007 organizzato da EPRI e Pacific Gas & Electric Co, **titolo dell’intervento**: “*Application of integrated satellite technologies in large scale power systems monitoring and control*”.
2. *North American SynchroPhasor Initiative Working Group Meeting*, Montreal, September 2007, **titolo dell’intervento**: “*Synchrophasor activities in Italy*”.
3. i-PCGRID Workshop 2008 *Innovations in Protection and Control for Greater Reliability Infrastructure Development*, San Francisco, March 2008, organizzato da Missisipi State University, the Quanta Technology and the Pacific Gas & Electric Co, **titolo dell’intervento**: “*Cooperative smart sensor networks for power lines dynamic thermal rating prediction*”.
4. the *4th International IT Summit Conference 2013 - The Next Generation Information Technology Summit*- 26-27 Settembre 2013, Noida, Uttar Pradesh, India, **titolo dell’intervento**: “*Wide Area Synchronized Smart Grids Monitoring by Bio inspired and Self Organizing Sensor Networks*”.
5. i-PCGRID Workshop 2014 *Innovations in Protection and Control for Greater Reliability Infrastructure Development*, San Francisco, March 2014, organizzato da Missisipi State University, the Quanta Technology and the Pacific Gas & Electric Co, **titolo dell’intervento**: “*Knowledge Extraction from Power Systems Measurements by Principal Component Analysis”.*
6. *European meets 5G Mobile Networks*, II Expert meeting, 22 Novembre 2017, European Commission, Directorate-General for Energy, Bruxelles, **titolo dell’intervento**: “Integrating Galileo and 5G services: the enabler for reliable synchronized smart grid monitoring and control”.
7. *10th International Workshop on Constraint Programming and Decision Making, CoProD 17,* 3 Novembre 2017, University of Texas at El Paso, USA, **titolo dell’intervento**: “The role of Affine Arithmetic in Robust Optimal Power Flow Analysis”.
8. *2019 IEEE General Meeting, PESGM 2019, 4-8* Agosto 2019, Atlanta, USA*,* Panel: “International Practices Used in Smart Grid for Smart City Application”, **titolo dell’intervento**: “Information Processing in Smart

Grids by Self-Organizing Dynamic Agents".

9. *2020 IEEE General Meeting, PESGM 2020, 3-6* Agosto 2020, (Virtuale), Panel: "Energy Internet (EI) integration", **titolo dell'intervento**: "Consensus-based control of decentralized energy resources".
10. *2022 IEEE General Meeting, PESGM 2022*, 17-21 Luglio 2022, Denver, USA, Panel: "Smart Grid for Smart City: Recommendation and Guidelines", **titolo dell'intervento:** "Enabling Architectures for Self-Organizing Smart Grid Controllers".
11. 14th Mediterranean Conference on Power Generation Transmission, Distribution and Energy Conversion (MEDPOWER24), 3-6 Novembre 2024, Atene, **titolo dell'intervento:** "Orchestration of Cooperative and Self-Organizing Electric Vehicles for Implementing V2G-based Ancillary Services in User-Centric Smart Cities"
12. 2025 IMEKO TC-6 INTERNATIONAL CONFERENCE ON Metrology and Digital Transformation, 3-6 Settembre 2025, Benevento, **titolo dell'intervento:** "Enabling smart grid technologies for the digitalization of electrical power systems"

2.8 Componente del comitato scientifico di congressi e convegni nazionali e internazionali

E' il **General Chair** del 12th Bulk Power System Dynamics and Control Symposium **IREP'2025**

E' componente del **comitato scientifico** dei seguenti convegni internazionali:

1. *Power Systems Computation Conference,* **Member of the Technical Programme Committee.**
2. *Bulk Power Systems Dynamics and Control Symposia*, IREP, **Member of the Technical Programme Committee.**

E' stato componente del **comitato scientifico** dei seguenti convegni internazionali:

1. *IEEE Workshop on Environmental, Energy, and Structural Monitoring Systems,* 2016, **Co-Program Chair.**
2. *IEEE International Conference on Fuzzy Systems*, FUZZ-IEEE 2017, **Area Chair-Fuzzy Logic Applications**.
3. *IEEE Global Humanitarian Technology Conference*, GHTC 2016, **Energy Track Chair.**
4. *International Conference on Renewable Energies and Power Quality, ICREPQ, 2013-2014,* **Member of the International Scientific Committee**.
5. *IET Renewable Power Generation Conference*, IET-RPG, 2011-2012-2013, **Member of the Programme Committee.**
6. *International Conference on Environment and Electrical Engineering,*

EEIC, 2011-2012*,* **Member of the Programme Committee.**

7. *IEEE International Conference on Power and Energy, PECON 2012* **Member of the Programme Committee.**
8. *IEEE Conference on Clean Energy and Technology, 2013,* **Member of the Programme Committee.**

2.9 Conseguimento di premi e riconoscimenti nazionali e internazionali per attività di ricerca

- Nel Gennaio 2025 è stato nominato **FELLOW** della IEEE "for his contributions to power system analysis with data uncertainty"

- E' stato autore di due **Invited Papers** sulla prestigiosa rivista scientifica *IEEE Proceedings*:
  1. G. Andersson, K.Frohlich, T. Krause, **A.Vaccaro**, "Multiple Energy Carriers: Modeling of Production, Delivery and Consumption", **Invited Paper** - *IEEE Proceedings*, Volume 99(1), pp. 15-27, Gennaio 2011.
  2. **A.Vaccaro**, M. Popov, D.Villacci, V. Terzija, "An Integrated Framework for Microgrids Modeling, Control, Communication and Verification", **Invited Paper** - *IEEE Proceedings*, Volume 99(1), pp. 119-132, Gennaio 2011.

- Da Gennaio 2019 a Gennaio 2022 è stato il **coordinatore** (chair) dello **IEEE-Power and Energy Society Awards and Recognition Committee**, che ha la funzione di coordinare le attività delle 21 commissioni di selezione per l'assegnazione dei *PES Society-Level Awards*.

- A Dicembre 2021 è stato nominato **Top Associate Editor** della rivista **IEEE transactions on Smart Grids**

- L'articolo dal titolo "A Reliable Multi-Objective Methodology for Strategic Bidding of Wind Energy", Autori: F. de Caro, **A.Vaccaro**, D. Villacci, è stato premiato in quanto rientrante nei Top 5% Paper della *55th Universities Power Engineering Conference* (UPEC 2020).

2.10 Altre attività di coordinamento ed esperienza di rilievo scientifico maturata nel campo della ricerca nazionale ed internazionale.

- Ha svolo i seguenti **incarichi di ricerca** presso atenei internazionali:

1. Department of Electrical and Computer Engineering, Faculty of Engineering, University of Waterloo, Ontario, Canada, periodo 09/2008-02/2009.
2. Department of Electrical and Computer Engineering, Faculty of Engineering, University of Waterloo, Ontario, Canada, periodo 02/2010-03/2010.
3. Department of Electrical and Computer Engineering, Faculty of Engineering, University of Waterloo, Ontario, Canada, periodo: 09/2011-10/2011.

- E' stato il socio fondatore al 50% della società AV2 srl, **Spin-off Accademico dell'Università degli studi del Sannio**, società specializzata nello sviluppo di soluzioni innovative per l'uso intelligente e razionale dell'energia elettrica in reti user-centriche.

- E' stato l'**organizzatore** ed il **co-chair** del Workshop CIGRE' dal titolo "*International Workshop on Wide Area Monitoring Protection and Control Systems: the Enabler of Smarter Grids*".

- Ha **organizzato** e **coordinato** le seguenti *special sections* in convegni scientifici internazionali*:*
  1. "Microgrids and Smart grids" e "Renewable energies for developing countries", *International Conference on Renewable Energies and Power Quality (ICREPQ'13) and (ICREPQ'14)*.
  2. "Fuzzy Systems on Smart Grid", *2017 International Conference on Fuzzy Systems (FUZZ-IEEE)*.

- E' stato **Chair** delle seguenti sessioni in convegni scientifici internazionali:
  1. "Environment Monitoring", *2016 IEEE Workshop on Environmental, Energy, and Structural Monitoring Systems*, EESMS 2016.
  2. "Emerging Methodologies and Technologies for Large Scale Integration of Renewable Power Generators in Electrical Distribution Systems", 2008 *IEEE International Symposium on Industrial Electronics*, IEEE ISIE 2008.
  3. "Emerging Topics II", Bulk Power Systems Dynamics and Control Symposia, IREP 2022.
  4. "Power Flow Analysis", Power System Computation Conference, PSCC2022.

- E' stato **organizzatore e chair** dei seguenti **Panel** in convegni scientifici internazionali:
  1. "Computational Intelligence Techniques for Smart Grids", *2011*

International Conference on Fuzzy Systems (FUZZ-IEEE).

2. "Decentralized architectures for power system protection, estimation and control", *2017 IEEE PES General Meeting*, Chicago.
3. "Decentralized Computing in Wide Area Monitoring Protective and Control Systems (WAMPACs)", *2018 IEEE PES General Meeting*, Portland.
4. "Challenges and Enabling Technologies for Wide Area Protection of Future Power Systems", *2019 IEEE PES General Meeting*, Atlanta.
5. "Enabling Technologies and Methodologies for Wide Area Monitoring Protection and Control Systems", *13th IEEE PowerTech* 2019, Milano.
6. "Methodologies and Technologies for Knowledge Discovery from Wide Area Monitoring Protective and Control Systems", *2020 IEEE PES General Meeting* (Virtuale).
7. "Enabling Technologies for Data Analytics in Wide Area Monitoring Protective and Control Systems", *2021 IEEE PES General Meeting* (Virtuale).
8. "New Technologies for Data Analytics in Wide Area Monitoring Protective and Control Systems", *2022 IEEE PES General Meeting*, Denver.
9. "Enabling Technologies for Enhancing Power System Resiliency by Wide Area Monitoring Protective and Control Systems", *2022 International Conference on Smart Grid Synchronized Measurements and Analytics* – SGSMA, Split, Croatia, 2022.

- Nel 2012 ha tenuto, in qualità di **relatore invitato**, un **webinar** dal titolo "Decentralized Coordination in Smart Grids by Self Organizing Dynamic Fuzzy Agents", organizzato dalla *IEEE Computational Intelligence Society.*

- Nel 2022 è stato **relatore invitato** al Webinar "Il Dynamic Thermal Rating delle linee elettriche aeree di trasmissione: aspetti teorici e applicativi" organizzato dalla AEIT, dove ha tenuto un intervento dal titolo "Il Dynamic Thermal Rating basato su reti di sensori".

- Nel 2022 è stato **relatore invitato** all' International Smart Grid Action Network ISGAN Academy Webinar (ISGAN), dove ha tenuto un intervento nell'ambito dello "Smart management of the grid: exploiting line temperature and load forecasts (OSMOSE project)".

3. Attività Didattica

3.1. Corsi Universitari

E' stato **titolare**, su incarico del Consiglio di Facoltà/Dipartimento di Ingegneria dell'Università degli studi del Sannio, dei seguenti corsi:

1. **Sistemi Elettrici Industriali**, Corso di Laurea in Ingegneria Energetica, *A.A. 2008/2009* (6 CFU), S.S.D. ING-IND/33.
2. **Automazione dei Sistemi Elettrici per l'Energia**, Corso di Laurea in Ingegneria Energetica, *A.A. 2003/2004, 2004/2005, 2005/2006,* (3 CFU), S.S.D. ING-IND/33.
3. **Affidabilità e Diagnostica dei Sistemi Elettrici per l'Energia**, Corso di Laurea in Ingegneria Energetica, *A.A. 2006/2007*, (6 CFU), S.S.D. ING-IND/33.
4. **Elementi di Conversione Elettromeccanica II**, Corso di Laurea in Ingegneria Energetica, *A.A. 2004/2005, 2005/2006, 2006/2007, 2007/2008,* (3 CFU), S.S.D. ING-IND/31.
5. **Conversione Elettromeccanica II**, Corso di Laurea in Ingegneria Energetica, *A.A. 2008/2009, 2009/2010, 2010/2011* (3 CFU), S.S.D. ING-IND/31.
6. **Impianti Elettrici**, Corso di Laurea in Ingegneria Civile, *A.A. 2002/2003, 2003/2004, 2004/2005, 2005/2006, 2006/2007, 2007/2008, 2008/2009* (3 CFU), S.S.D. ING-IND/33.
7. **Energia Elettrica Economia ed Ambiente**, Corso di Laurea in Ingegneria Energetica, *A.A. 2004/2005, 2005/2006, 2006/2007* (3 CFU), S.S.D. ING-IND/33.
8. **Elettrotecnica**, Corso di Laurea in Ingegneria Informatica, *A.A. 2004/2005* (6 CFU), S.S.D. ING-IND/31.
9. **Sistemi Elettrici Industriali**, Corso di Laurea in Ingegneria Energetica, *A.A. 2013/2014, 2014/2015, 2015/16, 2016/17, 2017/18, 2018/19, 2019/2020, 2020/21, 2021/22, 2022/23,* 2023/24, 2024/25 (9 CFU), S.S.D. ING-IND/33.
10. **Ingegneria della Sicurezza**, Corso di Laurea in Ingegneria Energetica, *A.A.2016/17 (6 CFU).*
11. **Affidabilità e Diagnostica dei Sistemi Elettrici**, Corso di Laurea Specialistica in Ingegneria Energetica, *A.A. 2010/2011* (6 CFU), S.S.D. ING-IND/33.
12. **Complementi di Sistemi Elettrici**, Corso di Laurea Specialistica in Ingegneria Energetica, *A.A. 2009/2010* (6 CFU), S.S.D. ING-IND/33.
13. **Pianificazione e Gestione dei Sistemi Elettrici per l'Energia**, Corso di Laurea Magistrale in Ingegneria Energetica, *A.A. 2011/2012, 2012/2013, 2014/2015, 2015/16, 2016/17, 2017/18, 2018/19, 2019/2020, 2020/21, 2021/22, 2022/23,* 2023/24, 2024/25 (1 Modulo da 6 CFU), S.S.D. ING-IND/33.
14. **Laboratorio di Calcolo Numerico**, Corso di Laurea Magistrale in Ingegneria Energetica, *A.A.2017/18 (3 CFU).*
15. **Sistemi elettrici di trasporto**, Corso di Laurea Magistrale in Ingegneria

Energetica, 2021/22, 2022/23, 2023/24, 2024/25 (9 CFU), S.S.D. ING-IND/33.

16. **Automazione dei sistemi elettrici**, Corso di Laurea Magistrale in Ingegneria Energetica, 2021/22, 2022/23, 2023/24, 2024/25 (6 CFU), S.S.D. ING-IND/33.
17. **Metodologie e tecnologie abilitanti per le smart grids,** Corso per studenti di Dottorato di Ricerca in Tecnologie dell'Informazione per l'Ingegneria, *A.A. 2016/17, 2017/18 (4CFU).*

3.2. Seminari didattici su invito (Invited Talks) destinati a ricercatori e studenti di dottorato

- Gennaio 2002, *Artificial Intelligence research laboratory (IRIDIA) dell'Université Libre de Bruxelles*, su invito del prof. **H Bersini** ha tenuto un seminario dal titolo "*Application of local learning based algorithms for real time estimation of power transformer loading capability*".

- Gennaio 2009, *Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign*, su invito del prof. **G. Gross** ha tenuto un seminario dal titolo "*The role of self-validated computing in power flow analysis in the presence of data uncertainty*".

- Aprile 2009, *Département d'Informatique, Université Libre de Bruxelles*, su invito del prof. **G. Bontempi** ha tenuto un seminario dal titolo "*The role of cooperative sensor networks in smart grids*".

- Settembre 2012, *Département d'Informatique, Université Libre de Bruxelles*, su invito del prof. **G. Bontempi** ha tenuto un seminario dal titolo "*The role of Self Organizing Dynamic Agents for Decentralized Optimization in Smart Grids*".

- Giugno 2013, University of Manchester, School of Electrical and Electronic Engineering, su invito del prof. **V. Terzija** ha tenuto un seminario dal titolo "*Wide Area Synchronized Smart Grids Monitoring by Bio inspired and Self Organizing Sensor Networks*".

- Giugno 2013, Delft University of Technology, Department of Electrical and Sustainable Energy, su invito del prof. **M. Popov** ha tenuto un seminario dal titolo "*A Decentralized and Self Organizing Architecture for Wide Area*

Synchronized Monitoring of Smart Grids".

- Giugno 2013, Technical University of Eindhoven, Department of Industrial Engineering, Innovation Sciences & Information Systems, su invito del prof. **P. Grefen** ha tenuto un seminario dal titolo *"Solution of Mathematical Programming Problems in Smart Grids by Artificial Dynamic Models".*

- Ottobre 2015, UCD School of Electrical and Electronic Engineering, University College Dublin, su invito del prof. **F. Milano** ha tenuto un seminario dal titolo "*Solving Optimal Power Flow Problems in the presence of Data Uncertainty by Affine Arithmetic*".

- Novembre 2017, New Mexico State University, Center for Smart Grid Technologies, su invito del **prof. Enrico Pontelli**, ha tenuto un seminario dal titolo: "*The Role of Self-Validated Numerical Methods in solving Optimal Power Flow Problems in the Presence of Data Uncertainty*".

- Dicembre 2018, Politecnico di Milano, su invito del **prof. Alberto Berizzi** ha tenuto un seminario dal titolo: "*Solving Uncertain Optimal Power Flow Problems by Affine Arithmetic*".

3.3. Seminari didattici (Tutorials) tenuti in Conferenze Internazionali

- **Conferenza**: *Research and Technologies for Society and Industry* RTSI 2015, Titolo del **tutorial**: "Solving Power Flow and Optimal Power Flow Problems in The presence of Data Uncertainty by Affine Arithmetic".

- **Conferenza**: *Research and Technologies for Society and Industry* RTSI 2016, Titolo del **tutorial**: "Decentralized Computing in Smart Grids by Self-Organizing Sensor Networks".

4. Attività istituzionali, organizzative e di servizio

4.1 Incarichi e/o funzioni svolte in organi collegiali

- **Presidente del Corso di Laurea in Ingegneria Energetica** dell'Università degli studi del Sannio per i trienni 2019/2022 e 2022/2025.

- **Presidente del Corso di Laurea Magistrale interateneo in Ingegenria Energetica** dell'Università degli studi del Sannio e dell'Università degli studi di Napoli "Federico II" per i trienni 2019/2022 e 2022/2025.

- **Rappresentante eletto dei Ricercatori** in seno al **Consiglio di Facoltà di Ingegneria** dell'Università degli studi del Sannio dal 2001 al 2007.

- **Rappresentante eletto dei Ricercatori** in seno al **Consiglio di Amministrazione** dell'Università degli studi del Sannio dal 2007 al 2013.

- **Membro eletto** del **Collegio di Disciplina** dell'Università degli Studi di Salerno, 2022-2024.

- **Membro del Collegio del Dottorato di Ricerca in "Tecnologie dell'Informazione per l'Ingegneria",** dal 2021-in corso

- **Membro** del **Comitato Didattica** del **Dipartimento di Ingegneria** dell'Università degli studi del Sannio per i trienni 2019/2022 e 2022/2025.

4.2 Cariche istituzionali ricoperte

- **Delegato del Rettore** dell'Università degli studi del Sannio alla *Innovazione dei Sistemi Tecnologici di Ateneo,* da Novembre 2009 a Ottobre 2013.

- **Delegato del Rettore** dell'Università degli studi del Sannio alla *Prevenzione, Protezione e Sicurezza sul Lavoro*, da Ottobre 2011 a Ottobre 2013.

- **Safety & Security Manager** dell'Università degli studi del Sannio su **delega del Rettore**, Ottobre 2019 – in corso.

- **Direttore Scientifico** della sede del Centro di Ricerca in Matematica Pura ed Applicata attiva presso il Dipartimento di Ingegneria dell'Università degli studi del Sannio, da Febbraio 2011 a Dicembre 2013.

- Componente in seno al **Comitato tecnico-scientifico** della Fondazione "Istituto

Tecnico Superiore per l'efficienza Energetica - Energy lab" in rappresentanza dell'Università degli Studi del Sannio per il triennio 2021-2023.

- Rappresentante dell'Università degli Studi del Sannio in seno **Consiglio Direttivo** del Consorzio Interuniversitario Nazionale per Energia e Sistemi Elettrici, EnSiEL, per il triennio compreso tra il 19 giugno 2022 ed il 18 giugno 2025.

5. Elenco Completo delle Pubblicazioni Scientifiche

BREVETTI INTERNAZIONALI

[1.Pi] **A. Vaccaro**, T. H. M. El-Fouly, C. A. Cañizares, K. Bhattacharya, Gord Ellis, "System, Method and Computer Program for Forecasting Energy Price", Application number: WO2012CA01056 20121114, WO2013071414 (A1) — 2013-05-23, Priority number:US201161559295P 20111114, Data di pubblicazione: 23 Maggio 2013.

BREVETTI NAZIONALI

[1.Pn] Università degli studi del Sannio, A. Pepiciello, **A. Vaccaro**, D. Villacci, "Sistema di rilevamento di interferenze di segnali di sincronizzazione temporale in ingresso a dispositivi di misura di sincrofasori in sistemi elettrici di potenza", Domanda n. 102021000023765, Data di deposito: 15 Settembre 2021.

LIBRI (AUTHOR)

[1.BA] A. Pepiciello, **A. Vaccaro,** "Affine Arithmetic-Based Methods for Uncertain Power System Analysis" Ed. *Elsevier*, ISBN: 978-032390502-2, 978-032390503-9,2022

[2.BA] **A. Vaccaro,** "Interval Methods for Uncertain Power System Analysis" Ed. *WILEY IEEE Press*, Print ISBN:9781119855040, 2023

[3.BA] **A. Vaccaro,** "Self-Organizing Dynamic Agents for the Operation of Decentralized Smart Grids" Ed. *Institution of Engineering and Technology-IET*, ISBN: 183953687X , Gennaio 2024

[4.BA] **A. Vaccaro**, Silvia Iuliano, "Metodi matematici per la gestione dei sistemi elettrici" Ed. *Esculapio*, ISBN: 8893854457, 2024

LIBRI (EDITOR)

[1.B] G.J.Anders, **A.Vaccaro**, "Innovations in Power Systems Reliability" *Springer Series in Reliability Engineering*, ISBN: 978-0-85729-087-8, Gennaio 2011.

[2.B] A.F. Zobaa, **A.Vaccaro**, "Computational Intelligence Applications in Smart Grids: Enabling Methodologies for Proactive and Self-Organizing Power Systems" *Imperial College Press*, ISBN: 978-1-78326-587-9, Gennaio 2014.

[3.B] **A.Vaccaro**, A.F. Zobaa, "Wide Area Monitoring, Protection and Control Systems: The enabler for smarter grids", *The Institution of Engineering and Technology – IET*, ISBN: 978-1-84919-830-1, 2016

CAPITOLI IN LIBRI

[1.CH] A. Dimitrovski, K.Tomsovich**, A.Vaccaro** "Reliable Algorithms for Power Flow Analysis in the Presence of Data Uncertainties" in "Innovations in Power Systems Reliability" Ed. *Springer*, ISBN: 978-0-85729-087-8, Chapter 10, pp. 329-357, 2011.

[2.CH] G.Velotto, **A.Vaccaro**, "Dispatching of Generating Units Characterized by a Condition-Dependent Failure Rate" in "Focus on Energy Management, Series: Energy Science, Engineering and Technology", Ed. *Nova Science Publisher*, ISBN: 978-1-61209-632-2, pp.147-161, 2011.

[3.CH] **A. Vaccaro**, E. Zimeo, "A Distributed Framework for Smart Grid Modelling Monitoring and Control" in "Smart Grids: Clouds, Communications, Open Source, and Automation", Series: Devices, Circuits, and Systems, Ed. *CRC Press*, ISBN 9781482206111 pp.115-132, 2014.

[4.CH] **A. Vaccaro**, A.Iacoviello, M. Popov, "Cooperative and Self Organizing Sensor Networks: the Enabler for Smarter Grids" in "Handbook of Sensor Networks for Sustainable Development", Ed. *CRC Press*, ISBN: 1466582065 pp.175-194, 2014.

[5.CH] F.Torelli, **A.Vaccaro,** "A Novel State Estimation Paradigm based on the Dynamic Systems Theory" in "Computational Intelligence Applications in Smart Grids" in "Computational Intelligence Applications in Smart Grids: Enabling Methodologies for Proactive and Self-Organizing Power Sytems" *Imperial College Press,* ISBN: 978-1-78326-587-9, pp. 141-164, 2014.

[6.CH] V. Loia, S. Tomasiello, **A. Vaccaro** "A fuzzy-based data mining paradigm for on-line optimal power flow analysis" in "Wide Area Monitoring, Protection and Control Systems: The enabler for smarter grids" Ed. *The Institution of Engineering and Technology – IET*, ISBN: 978-1-84919-830-1, pp. 135-154, 2016

[7.CH] **A. Vaccaro**, C. A. Cañizares, "An affine arithmetic-based framework for uncertain power flow and optimal power flow analyses" in "Advances in Power System Modelling, Control and Stability Analysis" *Ed. The Institution of Engineering and Technology – IET*, ISBN: 978-1-78561-001-1 pp.45-75, 2016

[8.CH] S.L. Ullo, **A.Vaccaro**, "Decentralised Protocols for Power Quality Monitoring in Pervasive Networks-Case Study: The Smart Grids", in "Power Quality", *Ed. Cambridge Scholar Publishing*, ISBN:978-1-4438-9493-7, 2016

[9.CH] E. Mejuto, S. Rampone, **A.Vaccaro**, "Defining the fuzzy transform on radial basis" in "Lecture Notes in Computer Science", Ed. *Springer*, Volume 10147 LNAI, Pages 73 – 81, 2017, ISSN: 03029743

[10.CH] G. Acampora, D. Caruso, **A. Vaccaro,** A. Vitiello, A.F. Zobaa, "The Role of Nature-inspired Metaheuristic Algorithms for Optimal Voltage Regulation in Urban Smart Grids", in "From Smart Grids to Smart Cities: New Challenges in Optimizing Energy Grids", *Ed. Wiley*, pp. 89-128, 2018.

[11.CH] G. Coletta, A. Vaccaro, D. Villacci, A.F. Zobaa, "Application of cluster analysis for enhancing power consumption awareness in smart grids" in "Application of Smart Grid Technologies: Case Studies in Saving Electricity in Different Parts of the World", Ed. *Academic Press*, pp. 397-414, ISBN: 978-012803128-5, 978-012803143-8, 2018.

[12.CH] **A. Vaccaro**, "The Role of Affine Arithmetic in Robust Optimal Power Flow Analysis", in "Studies in Systems, Decision and Control", *Ed. Springer*, ,Volume 276, Pages 189 – 196, ISSN:21984182, 2020.

[13.CH] **A. Vaccaro**, C. A. Cañizares, A. Pepiciello, "Reliable Solutions of Uncertain Optimal Power Flow Problems by Affine Arithmetic", in "Advances in Power System Modelling, Control and Stability Analysis" Second Edition, Ed. *The Institution of Engineering and Technology – IET*, ISBN: 978-1-83953-575-8, 2022

[14.CH] A. Pepiciello, T. Pietropaoli, **A. Vaccaro**, "Enabling Technologies for Resilient Time Synchronization of Wide Area Power System Monitoring" in "The Encyclopedia of Power Engineering", ISBN: 9780128212042, Ed. *Elsevier*, 2022.

RIVISTE INTERNAZIONALI

[1.RI] V.Galdi, L.Ippolito, A.Piccolo, **A.Vaccaro,** "Neural diagnostic system for transformer thermal overload protection", *IEE proceeding Electric Power Application* vol.147 N°5 Sep 2000

[2.RI] V.Galdi, L.Ippolito, A.Piccolo, **A.Vaccaro,** "A genetic based methodology for Hybrid Electric vehicle sizing", *Soft Computing* Ed. Springer Volume 5 Issue 6 (2001) pp 451-457

[3.RI] V. Galdi, L. Ippolito, A. Piccolo, **A. Vaccaro**, "Application of local memory-based techniques for power transformer thermal overload protection", *IEE Proceeding - Electric Power Application* vol.148 N°2 Mar 2001

[4.RI] V. Galdi, L. Ippolito, A. Piccolo, **A. Vaccaro**, "Parameters identification of Power transformers thermal model via genetic algorithms", *Electric Power System Research*, Vol 60/2, pp 107-112, Jan 2002

[5.RI] L.Ippolito, **A.Vaccaro**, D.Villacci, "The Use of Affine Arithmetic for Thermal State Estimation of Substation Distribution Transformers", *International Journal for Computation and Mathematics in Electrical and Electronic Engineering* (COMPEL), vol.23 n.1 2004 pp.237-249

[6.RI] G. Bontempi, **A.Vaccaro**, D.Villacci, "Semi-physical modelling architecture for dynamic assessment of power components loading capability", *IEE Proceedings - Generation, Transmission and Distribution* - Volume 151, Issue 04. July 2004, pp.533-542.

[7.RI] M. Di Santo, **A.Vaccaro**, D. Villacci, E. Zimeo, "A Distributed Architecture for on-line Power Systems Security Analysis", *IEEE trans on Industrial Electronics* (Special Issue on Distributed Network-Based Control Systems and Applications)Volume 51, Numero 6, Dec 2004 .

[8.RI] A. Piccolo, **A. Vaccaro**, D.Villacci, "Thermal rating assessment of Overhead Lines by Affine Arithmetic", *Electric Power Systems Research* Volume 71, Issue 3, Nov. 2004, pp.275-283

[9.RI] G. Bontempi, **A.Vaccaro**, D.Villacci, "Power cables thermal protection by interval simulation of imprecise dynamical systems", *IEE generation transmission and distribution*, Volume 151, Numero 06, Nov 2004, pp.673-680.

[10.RI] D.Villacci, G. Bontempi, **A.Vaccaro**, M. Birattari, "The role of learning methods in the dynamic assessment of power components loading capability", *IEEE trans. on Industrial Electronics,* Volume 52, Number 1, February 2005, pp. 280-290.

[11.RI] **A. Vaccaro**, D.Villacci, "Performance Analysis of Low Earth Orbit Satellites for Power System Communication", *Electric Power System Research* Vol 73/3 pp 287-294, March 2005

[12.RI] G.D'Alessio, S.Corgnati, **A.Vaccaro**, D.Villacci, "A novel architecture for the optimal control and management of electricity distribution systems", *European Transactions on Electrical Power* (ETEP) - Volume 15 Issue 5, March-April 2005 pp171-187.

[13.RI] A.Piccolo**, A. Vaccaro**, D.Villacci, "Fuzzy logic based optimal power flow management in Hybrid Electric Vehicles", *Iranian Journal of Electrical and Computer Engineering,* SUMMER-FALL 2005 vol. 4 n.2 PP. 83-93.

[14.RI] Q.Morante, N.Ranaldo, **A.Vaccaro**, E. Zimeo, ”Pervasive Grid for Large-Scale Power Systems Contingency Analysis”, *IEEE trans. on Industrial Informatics,* Volume 2, Number 3, August 2006 Page(s): 165-175

[15.RI] D.Villacci, G. Bontempi, **A.Vaccaro**,”An adaptive local learning based methodology for voltage regulation in distribution networks with dispersed generation” *IEEE trans. on Power Systems* vol.21(3), August 2006, pp.1131-1140

[16.RI] **A.Vaccaro**, D.Villacci, ”Transient tolerance analysis of power cables thermal dynamic by interval mathematic”, *Electric Power Systems Research*, Vol 77/3-4 pp 308-314 Mar 2007

[17.RI] R. Bernini, A. Minardo, G.V. Persiano, **A.Vaccaro**, D.Villacci, L.Zeni, ”Dynamic Loading of Overhead Lines by Adaptive Learning Techniques and Distributed Temperature Sensing”, *IET Generation Transmission and Distribution,* Volume 1, Issue 6, p. 912-919 November 2007

[18.RI] **A.Vaccaro**, D.Villacci, ”An Interval Computation Approach for Power Components Overload Protection in the presence of Data Uncertainty”, *International Journal of Reliability and Safety* (IJRS), Vol. 1, No. 4, 2007 pp.513-531

[19.RI] V.Galdi, **A.Vaccaro**, D.Villacci, “Voltage regulation in MV networks with dispersed generations by a neural based multiobjective methodology”, *Electric Power Systems Research*, Vol. 78, Issue 5, (May 2008) pp. 785-793

[20.RI] G.Bontempi, **A.Vaccaro**, D.Villacci, “Data-driven calibration of power conductors thermal model for overhead lines overload protection”, *International Journal of Reliability and Safety* (IJRS) Vol. 2, No. ½, 2008, pp.5-18

[21.RI] **A.Vaccaro**, D.Villacci, ”An Adaptive Smart Sensor Network for Overhead Lines Thermal Rating Prediction”, *International Journal of Emerging Electric Power Systems*, Vol. 9, Iss. 4, 2008.

[22.RI] **A.Vaccaro**, D.Villacci, ”Radial Power Flow Tolerance Analysis by Interval Constraint Propagation”, *IEEE trans. on Power Systems,* vol. 24(1) , pp. 28-39, Feb. 2009.

[23.RI] **A.Vaccaro**, C. Canizares, D.Villacci, ”An Affine Arithmetic based Methodology for Reliable Power Flow Analysis in the presence of Data Uncertainty*”, IEEE trans. on Power Systems*, Volume 25, Issue2, pp: 624 – 632, May 2010.

[24.RI] S. Ullo, **A. Vaccaro**, G. Velotto" Performance Analysis of IEEE 802.15.4 based Sensor Networks for Smart Grids Communications" *Journal of Electrical Engineering: Theory and Application* (JEETA) Vol. 1 (3) pp.129-134. June 2010

[25.RI] G. Andersson, K.Frohlich, T. Krause, **A.Vaccaro**, ”Multiple Energy Carriers: Modeling of Production, Delivery and Consumption”, **Invited Paper -** *IEEE Proceedings***,** Vol.99 Issue 1, pp. 15-27, Jan. 2011.

[26.RI] **A.Vaccaro**, M. Popov, D.Villacci, V. Terzija, ”An Integrated Framework for Microgrids Modeling, Control, Communication and Verification”, **Invited Paper -** *IEEE Proceedings,* Vol.99 Issue 1, pp. 119-132, Jan. 2011.

[27.RI] **A. Vaccaro**, P. Mercogliano, P.Schiano, D.Villacci, ”An Adaptive Framework based on Multi-Model Data Fusion for one day ahead Wind Power Forecasting” *Electric Power Systems Research*, Volume 81, Issue 3, Pages 775-782, March 2011.

[28.RI] **A.Vaccaro**, A. Zobaa, ”Cooperative Fuzzy Controllers for Autonomous Voltage Regulation in Smart Grids”, *Journal of Ambient Intelligence and Humanized Computing,* Vol.2 issue 1, pp.1-10, March 2011.

[29.RI] **A. Vaccaro**, G. Velotto, A. F. Zobaa, ”A Decentralized and Cooperative Architecture for Optimal Voltage Regulation in Smart Grids”, *IEEE trans. on Industrial Electronics*, Vol.58 (10), pp. 4593-4602, October 2011.

[30.RI] **A. Vaccaro**, G. Bontempi, S. Ben Taieb, D. Villacci, ”Adaptive Local Learning Techniques for Multiple-step-ahead Wind Energy Forecasting”, *Electric Power Systems Research*, Vol. 83 issue 2, pp- 129-135, February 2012.

[31.RI] S.L. Ullo, **A.Vaccaro**, “Gossip sensor networks for power quality monitoring in smart grids”, *Renewable Energy and Power Quality Journal*, Vol. 1(10), pp. 1639-1643, 2012.

[32.RI] C. del Vecchio, A. Parisio, **A. Vaccaro**, “A Robust Optimization Approach to Energy Hub Management”, *International Journal of Electrical Power and Energy Systems*, Elsevier, vol.42 issue 1, pp. 98-104, November 2012.

[33.RI] **A.Vaccaro**, A.F. Zobaa, "Voltage Regulation in Active Power Networks by Distributed and Cooperative Meta-Heuristic Optimizers" *Electric Power Systems Research*, Vol. 99, pp.9-17, June 2013.

[34.RI] **A. Vaccaro**, C. Cañizares, K. Bhattacharya, “A Range Arithmetic based Optimization Model for Power Flow Analysis under Interval Uncertainty“, *IEEE trans. on Power Systems*, Vol. 28 Issue 2 pp. 1179 - 1186 May 2013.

[35.RI] D. Furno, V. Loia, **A. Vaccaro,** “Decentralised Smart Grids Monitoring by Swarm based Semantic Sensor Data Analysis”, *International Journal of Systems, Control and Communications,* Vol. 5, No. 1, pp. 1-14, January 2013.

[36.RI] N. Xie, F. Torelli, E. Bompard, **A. Vaccaro,** “Dynamic Computing Paradigm for Comprehensive Power Flow Analysis“, *IET Generation Transmission and Distribution*, Vol. 7 issue 8, pp.832-842, August 2013

[37.RI] V.Loia, **A.Vaccaro**, K. Vaisakh, “A Self Organizing Architecture based on Cooperative Fuzzy Agents for Smart Grid Voltage Control“, *IEEE trans. on Industrial Informatics*, Vol. 9 issue 3, pp. 1415 – 1422, August 2013.

[38.RI] F. Torelli, **A. Vaccaro**, N. Xie, “A Novel Optimal Power Flow Formulation based on the Lyapunov Theory“, *IEEE trans. on Power Systems*, Vol. 28, N. 4, pp. 4405-4415, November 2013.

[39.RI] J. Munoz, C.Canizares, K. Bhattacharya, **A. Vaccaro,** “An Affine Arithmetic Based Method for Voltage Stability Assessment of Power Systems with Intermittent Generation Resources“, *IEEE trans. on Power Systems,* Vol. 28, N. 4, pp.4475-4487, November 2013.

[40.RI] G. Formato, V.Loia, V. Paciello, **A. Vaccaro**, “A Decentralized and Self Organizing Architecture for Wide Area Synchronized Monitoring of Smart Grids“, *Journal of High Speed Networks* – IOS Press, Vol. 19 issue 3, pp. 165–179, September 2013.

[41.RI] **A.Vaccaro**, A.F. Zobaa, G.Formato, “Vulnerability Analysis of Satellite based Synchronized Smart Grids Monitoring Systems”, *Electric Power Components and Systems*, Volume 42, Issue 3-4, Special Issue: The Smart Grid—State-of-the-art and Future Trends, pp. 408-417, February 2014.

[42.RI] V.Loia, **A.Vaccaro**, "Decentralized Economic Dispatch in Smart Grids by Self Organizing Dynamic Agents", *IEEE trans. on Systems, Man, and Cybernetics: Systems*, Volume 44, Issue: 4, pp. 397 – 408, April 2014.

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