KAVEH NIAYESH

Professor of Electric Power Engineering
Norwegian University of Science and Technology (NTNU), Trondheim, Norway

Faculty of Information technology and Electrical Engineering
Norwegian University of Science and Technology
O. S. Bragstads plass 2E
NO-7034 Trondheim, Norway

Office: +47 735 94282
Cell: +47 92 119160
E-mail: kaveh.niayesh@ntnu.no

RESEARCH INTERESTS

- High voltage and High current test and measurement techniques
- Power switchgear, current interruption and limitation in power networks
- Diagnostic and condition assessment of power system equipment
- Pulsed Power technology

EDUCATION

2001 Dr.-Ing., Electrical engineering, RWTH Aachen, Germany

with the dissertation: “Wiederzündmechanismen von Vakuumschaltstrecken nach Unterbrechung hochfrequenter Ströme bei kleinen Kontaktabständen“

1996 M.Sc., Electrical engineering, University of Tehran (UT), Iran

1993 B.Sc. (with honor), Electrical Engineering, University of Tehran, Iran

POSITIONS HELD

2015 – Present	Professor, Department of Electric Power Engineering, Norwegian University of Science and Technology (NTNU), Trondheim, Norway
2014 – 2015	Principal Engineer, ABB Medium Voltage, Ratingen, Germany
2012 – 2014	Sabbatical leave from UT, Alexander von Humboldt Fellow, Leibniz University of Hanover, Germany
2009 – 2014	Associate Professor, University of Tehran, Iran
2008	Manager, Basic Research Department, AREVA T&D, Regensburg, Germany
2005 – 2008	Assistant Professor, University of Tehran, Iran
2003 – 2005	Principal Scientist, ABB Corporate Research, Baden – Dättwil, Switzerland
2001 – 2003	Scientist, ABB Corporate Research, Baden – Dättwil, Switzerland

1997 – 2001 Research Assistant, Institut für Allgemeine Elektrotechnik und Hochspannungstechnik, RWTH – Aachen, Germany

OTHER ACTIVITIES / AWARDS

- Editor, IEEE Transactions on Power Delivery
- Vice chair of IEEE Norway section (01.2016 – 12.2019)
- IEEE Senior Member (since 11.2008)
- Technical Advisor, NUVENTURA (since 10.2017)
- Head of Power Engineering Department, University of Tehran, Iran (01.2010 – 06.2012)
- Member of International Society on Pulsed Power Applications
- Member of editorial board, International Journal of Electric Power Generation, Transmission and distribution Researches
- Alexander von Humboldt fellowship
- DAAD Scholarship

GRADUATE STUDENTS SUPERVISED / UNDER SUPERVISION

PhD Students:

1. *Pedjman Pourmohammadiyan*, Novel fault current limitation method using liquid metals. (completed 2010, UT). Dr. Pourmohammadiyan is now manager of HVDC valves department at ABB in Sweden.
2. *Mona Ghassemi*, Modelling of dielectric barrier discharges for high voltage applications. (completed 2012, UT). Dr. Ghassemi is now assistant professor at Virginia Polytechnic Institute and state University.
3. *Vahid Abbassi*, Magneto-hydrodynamic simulation of gas circuit breaker with rotating arc. (completed 2012, UT). Dr. Abbassi is now assistant professor at Kermanshah University of Technology in Iran.
4. *Amir Hossein Abbasi*, Experimental modeling of DC pollution flashover in composite insulators. (competed 2013, UT).
5. *Ali Asghar Razi-Kazemi*, Online Monitoring and condition assessment of power circuit breakers in transmission networks to enhance their reliability through maintenance scheduling. (competed 2013, UT). Dr. Razi-Kazemi is now assistant professor at K.N. University of Technology in Iran.
6. *Ali Kadivar*, Investigation of fast elongating arcs in order to increase the arc voltage. (completed 2014, UT). He is now postdoctoral researcher at NTNU.

7. *Ehsan Hashemi*, Analysis and Simulation of Vacuum Arc Imposed by Transverse Magnetic Field to Increase the Arc Voltage. (completed 2015, UT)
8. *Henning Taxt*, Ablation assisted load current interruption in medium voltage switchgear. (completed, Feb. 2019, NTNU). He is now group leader at SINTEF Energy Research, Trondheim, Norway.
9. Mohammad Ramezani, pulsed power system for low temperature plasma ion mobility spectrometry. (completed, Sept. 2019, UT)
10. *Fahim Abid*, Switching Arc Characteristics in supercritical nitrogen (completed May 2020, NTNU)
11. *Milad Mohammadhosein*, Condition Assessment of the interruption Chamber in High voltage circuit breakers (UT / NTNU)
12. *Naghme Dorraki*, Making Characteristics of load break switches in SF_6-free medium voltage switchgear (NTNU)
13. *Paul Røren,* cost-effective rotational SF_6-free switch for gas insulated switchgear (NTNU)

Master Students:

1. *Gholamreza Alinaghi*, Evaluation of black box arc models for high voltage circuit breakers. (completed 2006, UT).
2. *Saeed Hasanzadeh*, Multiple re-ignitions in vacuum circuit breakers and its influence on other components in power networks. (completed 2007, UT)
3. *Alireza Karimi*, Investigation of the electrical arc characteristics in medium voltage circuit breakers. (completed 2007, UT)
4. *Ehsan Hashemi,* Investigation on Electrical Breakdown in sub-nanosecond switches with pressure below one atmosphere. (completed 2008, UT)
5. *Edris Agheb*, Modeling and optimum design of Tesla Transformers for pulsed power applications. (completed 2009, UT)
6. *Jouya Jadidian*, Simulation and optimization of Flux Compression Generators to be applied in innovative circuit breaker design. (completed 2008, UT)
7. *Ali Asghar Razi Kazemi*, Evaluation of statistical characteristics of the output voltage in compact Marx generators. (completed 2009, UT)
8. *Amir Hossein Abbasi*, Study of characteristics of Semiconductor opening switches for pulsed power applications. (completed 2009, UT)
9. *Elham Forouzan,* Investigation of Impact of Dielectric Barrier on the Electrical breakdown in gaseous insulation systems. (completed 2010, UT)
10. *Mahsa Ziaeenejad,* Investigation of impact of Dielectric Barrier on the Electrical Breakdown in Systems with oil insulation. (completed 2010, UT)
11. *Mehdi Khanali,* Simulation of Arc behavior in SF_6 Circuit Breakers. (completed 2011, UT)
12. *Mehdi Arabshahi,* Simulation and Design of Fault Current Limiters based on application of Positive Temperature Coefficient Materials. (completed 2011, UT)
13. *Youssof Shahbazi Ayat,* Investigation of fault current limiters using nonlinear characteristics of magnetic materials. (completed 2011, UT)

14. *Pedram Gharghabi,* Optimum Design of pulsed electromagnetic forming systems. (completed 2011, UT)
15. *Peyman Dordizadeh,* Simulation and Design of an Electro-dynamic Drive (Thomson Drive) for Ultra fast switches. (completed 2011, UT)
16. *Mehdi Alikhani,* Design and simulation of Nanosecond rise time compact pulsed power generator based on avalanche phenomenon in BJTs. (completed 2013, UT)
17. *Reza Nilchi,* Circuit Breaker condition assessment by model-based diagnosis Approach. (completed 2013, UT)
18. *Mehdi Mohammadi,* Degradation of oil impregnated paper insulation under influence of repetitive fast high voltage impulses. (completed 2014, LUH)
19. *Hamidreza Sezavar,* Design and simulation of a Marx generator based on avalanche breakdown of bipolar junction transistors. (completed 2014, UT)
20. *Asghar Bagherpour,* Condition assessment of high voltage circuit breaker based on arc energy. (completed 2015, UT)
21. *Alejandro Nahum Prieto Almanza*, Design of a circuit for making test of load break switches. (completed 2017, NTNU)
22. *Olav Nyhus,* Air flow and cooling in an load break switch. (completed 2017, NTNU)
23. *Torjus Ramm Settendal*, Conductivity measurements of Switching arcs using Electric probes. (completed 2017, NTNU)
24. *Odd Christian Feet*, Breakdown in gas insulated switchgear with technically rough surfaces (Completed 2018, NTNU).
25. *Morten Torkildsen*, Experimental study of power semiconductor devices exposed to pulse voltage waveforms (completed 2018, NTNU).
26. *Shashidhara Basavapura Thimmappa,* New SF6-free switchgear and substation technologies (completed 2018, NTNU).
27. *Simen Svagård,* Very fast opening switch for a hybrid HVDC circuit breaker (NTNU).
28. *Martin Sanden*, Modeling of electrical contact behavior using COMSOL (NTNU)
29. *Mads Alfer*, Comparison of aging of an insulation system under pure sinusoidal and fast repetitive high voltage pulses (NTNU).
30. *Siri Kjærstad Wetjen*, Investigation of stresses on switching devices in networks with distributed energy resources (NTNU).

TEACHING EXPERIENCE

Current courses:

- IELET1001 Electro technique 1
- High voltage equipment
- High voltage insulation
- Condition Assessment of power system apparatus

Courses taught:

- Electricity and magnetism (1st year bachelor course)
- Electric circuits (2nd year bachelor course)
- Electrical measurement (2nd year bachelor course)
- Design of power transmission systems (4th year bachelor course)
- High voltage technology (graduate level course)
- Pulsed power systems (graduate level course)
- Switching in power transmission and distribution systems (graduate level course)

PUBLICATIONS / PATENTS

a) Book

- K. Niayesh and Runde M., Power Switching Components: Theory, Applications and Future Trends, Springer international publishing, Berlin, 2017.

b) Peer reviewed journal papers

1. A. Razi Kazemi and K. Niayesh, "condition monitoring of high voltage circuit breakers: Past to Future", IEEE Trans. Power Delivery, Early access.
2. F. Abid, K. Niayesh, C. Espedal and N. Støa-Aanensen, "Current Interruption Performance of ultra high pressure nitrogen," *Journal of Physics D: Applied Physics*, March 2020.
3. H. Taxt, K. Niayesh and M. Runde, "Self-blast current interruption and Adaptation to Medium Voltage Load Current Switching," *IEEE Trans. Power Delivery*, Jan 2019.
4. F. Abid, K. Niayesh and N. Støa-Aanensen, "Nozzle Wear and Pressure Rise in Heating Volume of Self-blast type ultra-high pressure Nitrogen Arc," *Plasma Physics and Technology*, August 2019.
5. A. Kadivar and K. Niayesh, "Two-Way Interaction between switching arc and solid surfaces: Distribution of ablated Contacts and Nozzle Materials," *Journal of Physics D: Applied Physics*, July 2019.
6. M. Ramezani, A. Shayegani and K. Niayesh, "Solid-state high voltage pulse generator for Low Temperature Plasma Ion Mobility Spectrometry," *IEEE Trans. Plasma Science*, March 2019.
7. M. Mohammadhosein, K. Niayesh, A. Shayegani, H. Mohseni, "Online Assessment of Contact Erosion in High Voltage Gas Circuit Breakers based on different Physical Quantities," accepted for publication in *IEEE Trans. Power Delivery*, November 2018.
8. A. Razi-Kazemi, K. Niayesh and R. Nilchi, "A Probabilistic Model-aided Failure Prediction Approach for Spring-drive Operating Mechanism of High Voltage Circuit Breakers," accepted for publication in *IEEE Trans. Power Delivery*, November 2018.
9. F. Abid, K. Niayesh, N. Støa-Aanensen, "Ultrahigh-Pressure Nitrogen Arcs Burning inside Cylindrical Tubes," accepted for publication in *IEEE Trans. Plasma Science*, October 2018.
10. H. Taxt, K. Niayesh, M. Runde, "Medium Voltage Load Current Interruption in the Presence of Ablating Polymeric Materials," *IEEE Trans. Power Delivery*, Vol. 33, No. 5, pp. 2535-2540, October 2018.

11. E. Forouzan, A. Shayegani, K. Niayesh, J. Lin, D. Sharma, "Comparative study on various dielectric barriers and their effect on breakdown voltage," *High Voltage*, Vol. 3, No. 1, pp. 51-59, 2018.
12. F. Abid, K. Niayesh, N. Støa-Aanensen, E. Jonsson, M. Runde, "Arc Voltage Characteristics in Ultra-high Pressure Nitrogen Including Supercritical Region," *IEEE Trans. Plasma Science*, Vol. 46, No. 1, pp. 187-193, Jan 2018.
13. V. Abbasi, K. Niayesh, A. Gholami, "Verification of a numerical MHD arc model for high voltage circuit breakers using experimental images," *Magnetohydrodynamics*, Vol. 53, No. 3, pp. 501-510, 2017.
14. A. Bagherpour, S. Rahimi, A. Razi-Kazemi and K. Niayesh, "Online Condition Assessment of Gas Circuit Breakers using Arc Voltage Measurements," *IEEE Trans. Power Delivery*, Vol. 32, No. 4, pp. 1776-1783, Aug. 2017.
15. E. Hashemi, K. Niayesh and H. Mohseni, "Effect of transverse magnetic field on low-pressure argon discharge," *Turkish Journal of Electrical Engineering and Computer Science*, Vol. 24, pp. 4957-4969, Dec. 2016.
16. A. Razi-Kazemi, M. Vakilian, K. Niayesh and M. Lehtonen, "Data Mining of Online Diagnosed Waveforms for Probabilistic Condition Assessment of SF_6 Circuit Breakers," *IEEE Trans. Power Delivery*, Vol. 30, No. 3, pp. 1354-1362, June 2015.
17. K. Niayesh, "Failure Modes of Synthetic test circuits used to evaluate the current interruption capability of High Voltage Circuit Breakers," *International Transactions on Electrical Energy Systems*, Vol. 25, No. 6, pp. 1100-1112, June 2015.
18. A. Kadivar and K. Niayesh, "Practical Methods for Electrical and Mechanical Measurement of High Speed Elongated Arc Parameters," *Measurement*, Vol. 55, pp. 473-486, Sept. 2014.
19. A. Abbasi, A. Shayegani and K. Niayesh, "Contribution of design parameters of SiR Insulators to their DC pollution flashover performance," *IEEE Trans. Power Delivery*, Vol. 29, No. 4, pp. 1814-1821, August 2014.
20. A. Abbasi, A. Shayegani and K. Niayesh, "Pollution Performance of HVDC SiR Insulators at Heavy Pollution Conditions," *IEEE Trans. Dielectrics and Electrical Insulation*, Vol. 21, No. 2, pp. 721-728, April 2014.
21. K. Niayesh and E. Gockenbach, "On the aging mechanism of solid insulating materials exposed to repetitive high voltage pulses," *IEEE Trans. Dielectrics and Electrical Insulation*, Vol. 21, No. 1, pp. 304-310, February 2014.
22. A. Razi-Kazemi, M. Vakilian, K. Niayesh and M. Lehtonen, "Circuit Breaker Automated Failure Tracking based on Coil Current Signature," *IEEE Trans. Power Delivery*, Vol. 29, No. 1, pp. 283-290, February 2014.
23. K. Niayesh, "Gas Pressure Impact on Thermal Interruption Capability of Puffer Type SF_6 Circuit Breakers," *International Review of Electrical Engineering*, Vol. 8, No. 1, pp. 439-445, January 2013.
24. A. Razi-Kazemi, M. Vakilian, K. Niayesh and M. Lehtonen, "Priority Assessment *of* Online Monitoring Investment *for* Power System Circuit Breakers—Part II: Determination of Optimum Number," *IEEE Trans. Power Delivery*, Vol. 28, No. 3, pp. 1440-1446, July 2013.

25. A. Razi-Kazemi, M. Vakilian, K. Niayesh and M. Lehtonen, "Priority Assessment *of* Online Monitoring Investment *for* Power System Circuit Breakers—Part I: Qualitative-Quantitative Approach," *IEEE Trans. Power Delivery*, Vol. 28, No. 2, pp. 928-938, April 2013.
26. V. Abbasi, A. Gholami, K. Niayesh, "The Effects of SF6-Cu Mixture on Arc Characteristics in Medium Voltage Puffer Gas Circuit Breaker Due to Variation of Thermodynamic Properties and Transport Coefficients," *Plasma Science and Technology*, Vol. 15, No. 6, 586-591, 2013.
27. M. Ghassemi, H. Mohseni, K. Niayesh, A. Shayegani, "A Detailed Model for Discharge initiation in Argon at atmospheric pressure in presence of Dielectric Barriers," *IEEE Trans. Dielectrics and Electrical Insulation*, Vol. 19, No. 3, pp. 865-876, June 2012.
28. V. Abbassi, A. Gholami, K. Niayesh, "Impact of External Magnetic Field on Plasma Current Layers Deformation during Contact Opening in Medium Voltage Puffer SF_6 circuit breaker," *IEEE Trans. Plasma Science*, Vol. 40, No. 6, pp. 1759-1767, June 2012.
29. A. Shemshadi, K. Niayesh, A. Akbari-Azirani, "Influence of the Airflow Speed along Flat Plates on the DC Corona Discharge Loss, Using Finite Element Approach," *Physics of Plasmas*, Vol. 19, No. 7, pp. , July 2012.
30. V. Abbasi, A. Gholami, K. Niayesh, "Three-Dimensional Simulation of Plasma Deformation during Contact Opening in Circuit Breaker," *Plasma Science and Technology*, Vol. 14, No. 11, pp. 996-1001, November 2012.
31. P. Dordizadeh, P. Gharghabi, K. Niayesh, "Dynamic Analysis of a fast-acting circuit breaker (Thomson) drive mechanism," *Journal of Korean Physical Society*, Vol. 59, No. 6, pp. 3547-3554, December 2011.
32. P. Gharghabi, P. Dordizadeh, K. Niayesh, "Impact of Metal thickness and Field shaper on the time-varying processes during impulse Electromagnetic Forming in tubular geometries," *Journal of Korean Physical Society*, Vol. 59, No. 6, pp. 3560-3566, December 2011.
33. A. Razi Kazemi, K. Niayesh, "Impact of spark gap breakdown phenomena on the output voltage of Marx generators," *IEEE Trans. Dielectrics and Electrical Insulation*, pp. 1022-1028.
34. J. Jadidian, S. Mohseni, M. Jebeli-Javan, E. Hashemi, A. Shayegani-akmal, K. Niayesh, "Visualization of Copper Wire Explosion in atmospheric pressure air," *IEEE Trans. Plasma Science*, Vol. 39, No. 11, 2842-2843, November 2011.
35. N. Nikpour, K. Niayesh, "An Innovative simple test circuit for single phase short circuit making test of high voltage switching devices," *Journal of Iranian Association of Electrical and Electronics Engineers*, Vol. 7, No. 2, pp. 23-30, 2011.
36. M. Ghassemi, H. Mohseni, K. Niayesh, A. Shayegani-Akmal, "Static Behavior Modeling of Dielectric Barrier Discharges and Dielectric Dynamic Charging in High Voltage Applications," *The Modares Journal of Electrical Engineering*, Vol. 10, No. 3, pp. 87-99, Feb. 2011 (in Persian).
37. P. Pourmohamadiyan, K. Niayesh, "An Arcless Controlled Switch," *Electrical Engineering*, Vol. 92, No. 7-8, pp. 291-301, December 2010.
38. A. Karimi, K. Niayesh, M. Bahmani, "Magnetic field enhancement in Electroforming Systems using anisotropic Materials," *International Journal of Material Forming*, Vol. 3, No. 3, pp. 205-208, September 2010.

39. P. Pourmohamadiyan, K. Niayesh, H. Mohseni, “An Arcless Current Interruption Technique via application of resistive and liquid metal contacts,” *International Review of Electrical Engineering*, Vol. 5, No. 3, pp. 1225-1235, May-June 2010.

40. S. Hasanzadeh, K. Niayesh, H. Mohseni, A. Shayegani-Akmal, “Multiple Re-ignitions in Vacuum Circuit Breaker and its Influence on other Components in Power Networks,” *Journal of faculty of Engineering, University of Tehran*, pp. 831-840, 2009 (in Persian).

41. J. Jadidian, K. Niayesh, E. Hashemi, E. Agheb, A. Shayegani-Akmal, “Numerical Simulation of an explosively driven HVDC circuit breaker,” *Journal of Plasma Fusion Research*, Vol. 8, pp. 1491-1495, 2009.

42. J. Jadidian, K. Niayesh, E. Hashemi, “A Novel Method for High Current Vacuum Arc Interruption Using Externally Applied Ultra High Pulsed Magnetic Field,” *Journal of Plasma Fusion Research*, Vol. 8, pp. 1496-1500, 2009.

43. A. Karimi, K. Niayesh, “A simple evaluation method of the thermal interruption limit of power circuit breakers,” *Electrical Engineering*, Vol. 90, No. 8, pp. 523-528, February 2009.

44. P. Pourmohamadiyan, K. Niayesh, “Conceptual design of a novel arcless controlled switch,” *Electrical Engineering*, Vol. 90, No. 8, pp. 529-538, February 2009.

45. M. Bahmani, K. Niayesh, A. Karimi, “3D Simulation of magnetic field distribution in electromagnetic forming systems with field-shaper,” *Journal of Material Processing Technology*, Vol. 209, No. 5, pp. 2295-2301, March 2009.

46. K. Niayesh, E. Hashemi, E. Agheb, J. Jadidian, “Sub-Nanosecond Breakdown Mechanism of Low Pressure Gaseous Spark Gaps,” *IEEE Trans. Plasma Science*, Vol. 36, No. 4, pp. 930-931, August 2008.

47. K. Niayesh, J. Jadidian, E. Hashemi, E. Agheb, “Improved Output Current Rise time from Modified Helical Flux Compression Generators,” *IEEE Trans. Plasma Science*, Vol. 36, No. 5, pp. 2700 – 2707, October 2008.

48. K. Niayesh, L. Niemeyer, J. Fabian, “Matrix combination of Elementary switches: General considerations and applications to MEMS relays,” *Electrical Engineering*, Vol. 90, No. 1, pp. 19-31, November 2007.

49. K. Niayesh, J. Tepper, F. König, “A Novel Current limitation principle based on Application of Liquid metals,” *IEEE Trans. Components and packaging technology*, Vol. 29, No. 2, pp. 303-309, June 2006.

50. E. Dullni, D. Gentsch, W. Shang, I. Kleberg, K. Niayesh, “Switching of capacitive currents and the correlation of Re-strike and pre-ignition behavior,” *IEEE Trans. Dielectrics and Electrical Insulation*, Vol. 13, No. 1, pp. 65-71, February 2006.

51. K. Niayesh, F. Rager, C. Schacherer, “Electrode phenomena before long delayed breakdowns in vacuum after switching capacitive currents,” *IEEE Trans. Plasma Science*, Vol. 33, No. 2, pp. 258-259, April 2005.

52. K. Niayesh, “Re-ignition development in short vacuum gaps after interruption of high frequency currents,” *IEEE Trans. Plasma Science*, Vol. 30, No. 1, pp. 96-97, February 2002.

53. K. Niayesh, “Re-ignitions in short vacuum gaps after interruption of high frequency currents caused by ion bombardment,” *IEEE Trans. Plasma Science*, Vol. 29, No. 1, pp. 69-74, February 2001.

54. K. Niayesh, “Influence of Electrode Surface Microstructures on the state of short vacuum gaps after interruption of high frequency currents,” *Journal of Physics D: Applied Physics*, Vol. 33, No. 17, pp. 2189-2191, 2000.
55. J. Nayyer, K. Niayesh, M. Yamada, “Dynamic Characteristics of Optical Intersecting-Waveguide Modulators/Switches with Curved Electrodes,” *IEEE Journal of Lightwave Technology*, Vol. 18, No. 5, pp. 693-699, May 2000.
56. J. Nayyer, K. Niayesh, S. Safavi-Naeini, K. Komori, “Chirp-Improvement of Intersecting-Waveguide Switch/Modulators by Electrode Curvature,” *IEEE Photonics Technology Letters*, Vol. 9, No. 12, pp. 1586-1588, December 1997.
57. H. Mohseni, K. Niayesh, “Transformer with saturable core as a two port,” *Memorial of faculty of Eng., University of Tehran*, pp. 1-13, 1994 (in Persian).

c) Peer reviewed conference contributions

1. F. Abid, K. Niayesh and N. Støa-Aanensen, “Post-arc Dielectric Recovery Characteristics of Free-burning Ultrahigh-Pressure Nitrogen Arc,” 5th International Conference on Electric Power Equipment - Switching Technology (ICEPE-ST), Kitakyushu, Japan, Oct. 13-16, 2019.
2. A. Kadivar and K. Niayesh, “Dielectric Recovery of Ultrafast-Commutating Switches used for HVDC and Fault Current Limiting Applications,” 5th International Conference on Electric Power Equipment - Switching Technology (ICEPE-ST), Kitakyushu, Japan, Oct. 13-16, 2019.
3. M. Mohammadhosein, K. Niayesh, A. Shayegani and H. Mohseni, “Sensitivity of Dynamic Resistance of Gas Circuit Breakers to the Arc-induced Contact Erosion,” 5th International Conference on Electric Power Equipment - Switching Technology (ICEPE-ST), Kitakyushu, Japan, Oct. 13-16, 2019.
4. A. Kadivar and K. Niayesh, “Simulation of Free Burning Arcs and Arcs Inside Cylindrical Tubes Initiated by Exploding Wires,” 5th International Conference on Electric Power Equipment - Switching Technology (ICEPE-ST), Kitakyushu, Japan, Oct. 13-16, 2019.
5. M. Mohammadhosein, K. Niayesh, A. Shayegani, H. Mohseni, “Impact of surface Morphology on Arcing Induced Erosion of CuW Contacts in Gas Circuit Breakers,” 29th International Conference on Electrical Contacts Together with 64th IEEE Holm Conference on Electrical Contacts, Albuquerque, NM., Oct. 14-18, 2018
6. O. Feet, F. Mauseth, K. Niayesh, “Influence of Surface Roughness on Breakdown in Air Gaps at Atmospheric Pressure under Lightning Impulse,” IEEE International Conference on High Voltage Engineering and Application (ICHVE 2018), Athens, Greece, Sept. 10-13, 2018.
7. P. Jabs, K. Niayesh, N. Støa-Aanensen, E. Jonsson, M. Runde, “Short Circuit Making of Medium Voltage Load Break Switches Using a Grid Connected Test Circuit,” ,” IEEE International Conference on High Voltage Engineering and Application (ICHVE 2018), Athens, Greece, Sept. 10-13, 2018.
8. H. Taxt, T. Settendal, K. Niayesh, “Arc Voltage Distribution in a Medium Voltage Ablation Dominated Switch,” 22nd International Conference on Gas Discharges and Their Applications, Novi Sad, Serbia, Sept. 2 -7, 2018

9. F. Abid, K. Niayesh, N. Støa-Aanensen, “Arc Voltage measurements of Ultrahigh Pressure Nitrogen Arc in Cylindrical Tubes,” 22nd International Conference on Gas Discharges and Their Applications, Novi Sad, Serbia, Sept. 2 -7, 2018.
10. M. Arab Baferani, M. Rostaghi, N. Fahimi, A. Shayegani, K. Niayesh, “A novel arrangement for improving three phase saturated-core fault current limiter (SCFCL),” 2018 IEEE Texas Power and Energy Conference, College Station, TX, USA, 8-9 Feb. 2018.
11. E. Forouzan, A. Shayegani, K. Niayesh, J. Lin, D. Sharma, H. Sangrody, “Simulation and modeling of dielectric barrier impact on heterogeneous electric field,” 2017 IEEE International Conference on Electro Information Technology (EIT), Lincoln, NE, USA, 14 – 17 May 2017.
12. H. Taxt, K. Niayesh, E. Jonsson and M. Runde, “Ablation-Assisted Interruption of load current – An experimental study of arc-quenching characteristics,” 21st International conference on Gas Discharges and Their Applications, Nagoya, Japan, Sept. 2016.
13. H. Taxt, K. Niayesh, E. Jonsson and M. Runde, “Experimental investigation on ablation-assisted current interruption – Experimental setup and initial results,” 28th International Conference on Electric Contacts, Edinburgh, UK, June 2016.
14. K. Niayesh, B. Temp and S. Schoft, “Oscillatory overvoltage in compact medium voltage switchgear during impulse surge tests,” 19th International Symposium on High Voltage Engineering, Pilsen, Czech Republic, August 2015.
15. K. Niayesh, M. Mohammadi, M. Farahani and E. Gockenbach, “Degradation of Oil impregnated Paper film Insulation under Influence of Repetitive Fast High Voltage Impulses,” XVIII International Symposium on High Voltage Engineering, Seoul, South Korea, August 2013.
16. K. Niayesh, A. Mostajabi A., M. Samimi and A. Shayegani, “Repetitive and optically triggered Marx Generator Using Fast IGBTs,” XIX International Conference on Gas Discharges and Theirs Applications, Beijing, China, September 2012.
17. M. Ghasemi, H. Mohseni, K. Niayesh, A. Shayegani and B. Porkar, “A detailed model for atmospheric pressure oxygen barrier discharge,” pp. 432-435 in the Proceedings of the IEEE Conference on Electrical Insulation and Dielectric Phenomena, Montreal, Canada, Oct. 2012.
18. M. Khanali, K. Keshavarz and K. Niayesh, “A Novel Method to calculate pressure, temperature and shockwave propagation in self-blast circuit breakers,” pp. 548-551 in the Proceedings of the IEEE International Power Modulator and High Voltage Conference, San Diego, USA, June 2012.
19. Y. Shahbazi, K. Niayesh, H. Mohseni, “Finite Element Methode analysis of performance of inductive saturable-core fault current limiter,” pp. 352-355 in the Proceeding of the 1st International Conference on Electric Power Equipment-Switching Technology (ICEPE-ST) at Xian, China, Oct. 2011.
20. M. Arabshahi, K. Niayesh, “Design of a hybrid matrix fault current limiter using low power PTC resistors and fast switches for medium voltage,” XVII international symposium on High Voltage Engineering at Hannover, Germany, Aug. 2011.
21. M. Ghassemi, H. Mohseni, K. Niayesh, A. Shayegani-Akmal, “Dynamic modeling of the dielectric barrier effect for high voltage apparatus,” XVII international symposium on high voltage Engineering at Hannover, Germany, Aug. 2011.

22. M. Ghassemi, H. Mohseni, K. Niayesh, A. Shayegani-Akmal, “Breakdown voltage evaluation of homogeneous insulating systems with dielectric barriers,” XVII international symposium on high voltage Engineering at Hannover, Germany, Aug. 2011.
23. M. Ghassemi, H. Mohseni, K. Niayesh, A. Shayegani-Akmal, “Dielectric Barrier Discharge (DBD dynamic modeling for high voltage insulation,” pp. 156-151 in Proceedings of the IEEE Electrical Insulation Conference 2011, Annapolis, USA, June 2011.
24. M. Arabshahi, K. Niayesh, “Design of a Matrix fault current limiter using low power PTC resistors,” 10th international conference on environment and electrical engineering, Rome, Italy, May 2011.
25. R. Razzaghi, K. Niayesh, “Current limiting reactor allocation in distribution networks in presence of distributed generation,” 10th international conference on environment and electrical engineering, Rome, Italy, May 2011.
26. M. Khanali, K. Niayesh, E. Hashemi, “Exact Determination of light emission characteristics in stabilized high pressure gaseous arcs,” pp. 512-515 in the Proceedings of the International Conference on Gas Discharges and their applications, Greifswald, Germany, Sept. 2010.
27. E. Forouzan, M. Ziaeenejad, A. Shayegani-Akmal, K. Niayesh, “Experimental Investigation of Dielectric Barrier impact on breakdown voltage enhancement of copper wire-plane electrode systems,” pp. 260-263 in the Proceedings of the International Conference on Gas Discharges and their applications at Greifswald, Germany, Sept. 2010.
28. M. Khanali, K. Niayesh, “Optimization of pressure relief in SF_6 circuit breakers,” pp. 86-89 in the Proceedings of the International Conference on Gas Discharges and their applications, Greifswald, Germany, Sept. 2010.
29. A. Razi-Kazemi, k. Niayesh, A. Shayegani-akmal, “Effects of statistical characteristics of the output voltage in compact Marx generator on insulation test results,” 10th IEEE International Conference on Solid Dielectrics, Potsdam, Germany, July 2010.
30. A. Razi-Kazemi, K. Niayesh, “Statistical distribution of the output Voltage in compact Marx generators connected in parallel,” pp. 277-282 in the Proceedings of the 17th Iranian Conference on Electrical Engineering (ICEE), Tehran, Iran, May 2009.
31. A. Abbassi, J. Shakeri, K. Niayesh, “Current Interruption Mechanism in Semiconductor opening switches (SOS),” pp. 190-193 in the Proceedings of the 17th Iranian Conference on Electrical Engineering (ICEE), Tehran, Iran, May 2009.
32. J. Jadidian, K. Niayesh, “2D Simulation of High Current Vacuum Arc in Strong Axial Magnetic Field (AMF),” pp. 524-527 in the Proceedings of the 17th Iranian Conference on Electrical Engineering (ICEE), Tehran, Iran, May 2009.
33. A. Hayati Soloot, A. Gholami, J. Jadidian, K. Niayesh, “Dielectric Recovery of Vacuum Circuit Breakers after interruption of high current arcs in presence of very Intense AMF,” 16th International Symposium on High Voltage Engineering, Johannesburg, South Africa, Aug. 2009.
34. J. Jadidian, S. Mohseni, M. Karbalaie-Zadeh, M. Jebeli-Javan, A. Shayegani-Akmal, K. Niayesh, H. Mohseni, “Investigation of wire explosion phenomena in high current fast opening switches,” 16th International Symposium on High Voltage Engineering, Johannesburg, South Africa, Aug. 2009.
35. A. Abbasi, K. Niayesh, J. Shakeri, “Performance enhancement of High power High repetition rate Semiconductor Opening switches,” second Euro-Asian Pulsed Power Conference, Vilnius, Lithuania, Sept 2008.

36. A. Razi Kazemi, K. Niayesh, “Statistical characteristics of the output voltage in compact marx generators,” second Euro-Asian Pulsed Power conference, Vilnius, Lithuania, Sept 2008.
37. E. Agheb, S. Esmaiilzadeh, K. Niayesh, J. Jadidian, E. Hashemi, “Transfer Function Based Modeling of the Air-Cored Transformers for Very Fast Transient Overvoltage (VFTO) Studies,” second Euro-Asian Pulsed Power conference, Vilnius, Lithuania, Sept 2008.
38. E. Agheb, A. Hayati Soloot, K. Niayesh, E. Hashemi, J. Jadidian, L. Altgilbers, “On The Optimum Design of Air-Cored Tesla Transformers,” second Euro-Asian Pulsed Power Conference, Vilnius, Lithuania, Sept. 2008.
39. E. Hashemi, K. Niayesh, A. Shaygani-Akmal, E. Agheb, J. Jadidian, “Field Emission Enhanced Breakdown of Gaseous Spark Gaps In Sub-nano Second Pulsed Regime,” pp. 361-364 in the Proceedings of the XVII International Conference on Gas Discharge and Their Applications, Wales, United Kingdom, Sept. 2008.
40. E. Hashemi, K. Niayesh, A. Shayegani-Akmal, E. Agheb, “Pulsed breakdown mechanisms in Gaseous Spark Gaps,” 16th Iranian Conference of Electrical Engineering, Tehran, Iran, May 2008.
41. J. Jadidian, K. Niayesh, A. Shaygani-Akmal, “Application of a Cascaded Helical Flux Compression Generator for Producing High Magnetic Field in Large Scale Chambers,” 16th Iranian Conference of Electrical Engineering, Tehran, Iran, May 2008.
42. H. Mohseni, A. Shayegani, J. Jadidian, E. Agheb, E. Hashemi, A. Naeiny, A. Ghorbandaeipour, K. Niayesh, “In-Situ Insulation Test of 400 kV GIS,” IEEE T&D Conference and Exhibition, Chicago, USA, April 2008.
43. H. Mohseni, A. Shayegani, J. Jadidian, E. Hashemi, E. Agheb, A. Naeiny, A. Ghorbandaeipour, K. Niayesh, “Induced Voltage Test of Distribution Transformers Using Static Frequency Inverters,” IEEE T&D Conference and Exhibition, Chicago, USA, April 2008.
44. A. Karimi, K. Niayesh, M. Bahmani, “An Accurate Evaluation method of the Thermal interruption limit of Power Circuit Breakers,” IEEE T&D Conference and Exhibition, Chicago, USA, April 2008.
45. K. Niayesh, J. Jadidian, M. Mohammadzadeh-Niaki, “Optimized Output voltage of flux compression generators by modified detonation method,” IEEE Pulsed Power & Plasma Science Conference, Albuquerque, USA, June 2007.
46. K. Niayesh, E. Hashemi, E. Agheb, “Volume discharged based description of pulsed breakdown in triggered spark gaps in Air,” IEEE Pulsed Power & Plasma Science Conference, Albuquerque, USA, June 2007.
47. A. Shayegani-Akmal, H. Mohseni, K. Niayesh, H. Borsi, E. Gockenbach, “Some Investigations on the Variation of Dielectric Response during Artificial Aging Process of Impregnated Pressboard,” 15th international symposium on High Voltage Engineering, Ljuljana, Slovenia, August 2007.
48. A. Karimi, A. Shayegani-Akmal, K. Niayesh, H. Mohseni, “Method of Capacitor bank switching in distribution networks to decrease the inrush currents,” International Conference of Electrical Engineering (ICEE’07), Tehran, Iran, May 2007 (in Persian).
49. K. Niayesh, A. Karimi, “Application of Field-shapers to localize applied forces during Impulse Electromagnetic Forming Process,” 51th IWK (Devices, Systems, Materials and Technologies for the future), Illmenau, Germany, Sept. 2006.

50. K. Niayesh, P. Pourmohamadiyan, “A Novel Technique for control of Electromagnetic devices: Liquid Metal contact changer,” 51th IWK (Devices, Systems, Materials and Technologies for the future), Illmenau, Germany, Sept. 2006.
51. K. Niayesh, H. Ghorbani, A. Hayati-Soloot, “A Maximum Q inductor design for pulsed power applications,” 51th IWK (Devices, Systems, Materials and Technologies for the future), Illmenau, Germany, Sept. 2006.
52. S. Hasanzadeh, K. Niayesh, Y. Sheikhghomi, J. Pahlevani, “Application of Black-box Modeling of Circuit Breakers to Determine the Most Critical Short Line Fault Conditions,” 21th power system conference (PSC’06), Tehran, Iran, Nov. 2006.
53. S. Hasanzadeh, K. Niayesh, H. Mohseni, “The Influence of a Vacuum Generator Circuit Breaker on the Parameters of Switching Overvoltages Generated during Load Shedding,” 21th power system conference (PSC’06), Tehran, Iran, Nov. 2006.
54. S. Schoft, J. Tepper, K. Niayesh, “Short circuit current limitation by means of Liquid metal Technology,” paper 7-1 in the Proceedings of the 10th Symposium on Switching arc Phenomena (SAP), Lodz, Poland, Sept. 2005.
55. E. Dullni, D. Gentsch, I. Kleberg, K. Niayesh, W. Shang, “Switching of capacitive currents,” paper 2A-27 in the Proceedings of the XXIth International Symposium on Discharges and Electrical Insulation in Vacuum (ISDEIV) at Yalta, Ukraine, Sept. 200,.
56. K. Niayesh, J. Tepper, F. König, “On the Arcless commutation of currents higher than 1 kA,” pp. 388-394 in the Proceedings of the 50th Holm conference on Electrical contacts, Seattle, USA, Sept. 2004.
57. J. Fabian, K. Niayesh, S. Kotilainen, A. Wapelhorst, L. Niemeyer, R. Strumpler, “Matrix combination of MEMS relays,” pp. 861-864 in the Proceedings of 17th IEEE International conference on Micro Electro Mechanical Systems, Maastricht, the Netherlands, Jan. 2004.
58. M. Berth, K. Niayesh, “Cost optimized strategy for overvoltage protection of industrial power systems,” pp. 1301-1305 in the Proceedings of the 38th Industrial applications society annual meeting, Salt Lake City, USA, Oct. 2003.
59. K. Niayesh, M. Berth, “Resonance like phenomena in motor drive circuits caused by multiple re-ignitions of vacuum circuit breakers,” pp. 914-918 in the Proceeding of IEEE-T&D Conference 2002, Yokohama, Japan, Oct. 2002.
60. K. Niayesh, K. Möller, H. Mohseni, “Re-ignition mechanisms of vacuum switching devices after interruption of high frequency currents,” 15th Power System Conference (PSC-2000), Tehran, Iran, Nov. 2000.
61. J. Nayyer, K. Niayesh, “Influence of Absorption Loss and Synchronization on Reflection Quality of Optical Total-Internal-Reflection Type Switch/Modulators with curved Electrodes,” pp. 1135-1139 in the Proceedings of the 49th Electronic Components and Technology Conference (ECTC), San Diego, USA, June 1999.
62. J. Nayyer, T. Yasuhiro, K. Niayesh, “Ultrafast Optical Modulation and Switching of Laser Outputs by Intersecting Single Mode Waveguides,” paper P4-34 in the Proceedings of the 5th International Workshop on Femtosecond Technology (FST’98), Tsukuba, Japan, Feb. 1998.

63. K. Niayesh, J. Nayyer, A. Shooshtari, S. Safavi-Naeini, “Speed-Increase of Optical Switch-Modulators by Intersecting Curved Electrodes,” paper 2B2-4 in the Proceedings of second Optoelectronics and Communications Conference (OECC’97), Seoul, Korea, July 1997.
64. K. Niayesh, J. Nayyer, S. Safavi-Naeini, A. Shooshtari, “An Intersecting Curved Electrode for Reflection-type Optical Switch-Modulators,” Asian and Pacific Microwave Conference (APMC’96), New Delhi, India, Dec.1996.
65. J. Nayyer, K. Niayesh, S. Safavi-Naeini, “Applications of Slightly Curved Exponential Interfaces in Chirp Reduction of Optoelectronic devices and Integrated Circuits,” pp. 462-463 in the Proceedings of the first Optoelectronics and Communications Conference (OECC’96), Makuhari, Japan, July 1996.
66. H. Mohseni, K. Niayesh, M. Gehnen, “Detection of deformation of transformer windings using impedance measurements,” 7th Power System Conference (PSC-1993), Tehran, Iran, Nov. 1993.

d) Patents

1. K. Niayesh (2017): Fault Current Limiter (Patent No. WO2018192826)
2. J. Tepper, F. König, K. Niayesh, S. Schoft (2008): Layered Electrically conductive structure and Potentiometer comprising such a structure. World Patent (Patent No. WO2008/043187)
3. K. Niayesh, J. Fabian, J. Tepper, M. Seeger, O. Hjortsdam (2007): Electrical Contact Assembly. World Patent (Patent No. WO2007/118337)
4. K. Niayesh, M. Berth, A. Dahlquist, M. Tiberg (2005): Method and device for characterizing the linear properties of an electrical component. European Patent (Patent No. EP 0545031.5)
5. K. Niayesh, C. Schacherer, F. Rager (2005): Leistungsschalter mit einer in einer Vakuumkammer angeordneten Schaltstelle. European Patent (Patent No. EP 05405517.3)
6. K. Niayesh, C. Schacherer, F. Rager (2005): Leistungsschalter mit einer in einer Vakuumkammer angeordneten Schaltstelle. European Patent (Patent No. EP 05405516.5)
7. A. Steffens, D. Gentsch, K. Niayesh (2004): Vakuumschaltkammer und Kontaktanordnung fuer einen Vakuumschalter. European Patent (Patent No. EP 04405417.9)
8. K. Niayesh, F. König (2003): Verfahren und Vorrichtung zur Strombegrenzung mit einem selbstbetaetigten Strombegrenzer. European Patent (Patent No. EP 03405519.4)
9. K. Niayesh, F. König (2003): Verfahren und Vorrichtung zur Strombegrenzung mit einem Fluessigmetall Strombegrenzer. European Patent (Patent No. EP 03405518.6)
10. A. Dahlquist, L. Niemeyer, K. Niayesh, F. König (2003): Power switching method for switchgear, using liquid-metal contact film which electrically bridges gap between fixed electrodes and moving electrode. German Patent (Patent No. DE10346301)
11. K. Niayesh, L. Niemeyer, M. Backman, W. Paul, G. Salge (2003): Fast circuit breaker for medium and High voltage. European Patent (Patent No. EP 15444879)
12. K. Niayesh, F. König, A. Dahlquist (2003): Verfahren und Vorrichtung zur Stromschaltung mit einem fluidbetriebenen Fluessigmetall-Stromschalter. European Patent (Patent No. EP 03405520.2)

13. K. Niayesh, S. Stangherlin (2003): Liquid metal switch with piezo electric actuator and method of operation. European Patent (Patent No. EP1496533)
14. M. Berth, K. Niayesh (2002): Rotary electrical machine. European Patent (Patent No. EP 1372247)