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Birth

15th of January, 1957
Frankfurt/Main, Germany

University

- Saarbruecken University, Electrical Engineering, Basic Studies, 1976-1979, Saarbruecken, Germany
- Braunschweig Technical University, Electrical Engineering, Power Technologies, Braunschweig, Germany, 1979–1983

Degrees

- Diploma Engineer Braunschweig Technical University, Germany, 1983
- Doctor-Engineer Technical University Braunschweig, Germany, 1987
[Coupling of energy into linear pulsed power accelerators]

Positions held

- Project engineer, Institute for High Voltage Engineering, Braunschweig Technical University, Germany, 1983-1987
- Project and Senior Engineer (1987-1996)/Deputy of the Department leader (1995-1996), Department Pulsed Power Technology, Rheinmetall Forschung GmbH, Unterlues, Germany
- Professor, Faculty Electrical Engineering, Gelsenkirchen Univ. of Applied Sciences, since 1996
- Director, Laboratory of High Voltage and Pulsed Power Engineering, Energy Institute, Faculty of Electrical Engineering, Gelsenkirchen University of Applied Sciences, since 1996
- Chairman of the International Society on Pulsed Power Applications e.V., 1997-2011.
- Speaker of the Master Degree Course Energy System Technology, 2002-2008.
- Vice-Director Internatinal Affairs, European Pulsed Power Laboratories, since 2010.

Experience

A. Fields of research activity in pulsed power technology and industrial practice

- High power electrical mass accelerators:
 - plasma launchers
 - rail launchers
 - coil launchers
- Microwave and Laser devices
- Commercial applications of pulsed power:
 - Electrical disintegration of rocks and other brittle materials
 - Electrical treatment of biological substances/materials
 - Replacement of explosives by electrodetonative means
 - Electrodetonative Forming
 - Power supplies: inductive and capacitive pulsed power supplies (up to 30 MJ)

B. Teaching:

Lectures on

- Basics of Electrical Engineering (AC Technology)
- High Voltage Technology

- Pulsed Power Technology
- Electromagnetic Compatibility
- Computer Aided Engineering Mathematics

C. Projects:

- Optimisation of coils for high magnetic fields.
- Optimisation of coils for high magnetic fields for magnetic limiters in fusion reactors.
- Specification of a 6-MJ capacitive facility for rail guns.
- Operation of a 6-MJ capacitor bank.
- Electrothermal acceleration.
- Integration of electrical guns in fieldable systems.
- German-French technology programme on electromagnetic accelerators.
- Concept of critical components of two highly flexible 300-kJ capacitor banks.
- Feasibility Study on the Empirical Determination of the Minimum Required Electrical Energy for Cylindrical Electro-Hydraulic Crushers.
- Dimensioning of a transmission system generating magnetic fields of 30 to 300 nT at frequencies between 1500 and 2500 Hz in depths of 1000 m.
- Electrothermal pulsed disintegration of brittle materials.
- Reproducible fragmentation of compound bodies.
- Treatment of sewage sludge with pulsed electric fields.
- Electrically pulsed blasting of concrete structures.
- Electrically pulsed cleaning of power plant vessels.
- Generation of pulsed large arc areas.
- Conductivity of dust in welding facilities.
- Conceptuation of a magnetic forming facility.
- Cleaning of heat exchanger vessels with electrical discharges.
- Electrodetonative Forming.
- Electromagnetic Twin Gun for Symmetric Taylor Test.
- High Magnetic Field Sensor for the Detection of the Velocity Skin Effect.
- High Voltage Battery.
- Wire explosions in strong electric fields.
- Insulator lifetime tests.
- Development of a resistor for a SEPTUM in a linear accelerator.
- Development of a code for the simulation of a 420-kV isolating switch.
- Development of an autonomous current sensor for a 3-phase 420-kV transmission line.

Memberships

- International Society on Pulsed Power Applications e.V.
- Member of the Executive Board of the Gelsenkirchen Energy Institute
- Member of several commissions of the Gelsenkirchen University of Applied Sciences
- Member of the Executive Board of the company Propuls GmbH, Bottrop, Germany, 1998-2009.

Conferences&Workshops

Organisation and chairmanship of international conferences:

- Electromagnetic Launch Conference, Celle, Germany, 1993
- International Conference on Pulsed Power Applications, Gelsenkirchen, Germany, 2001
- European Pulsed Power Symposium, Saint Louis, France, 2002
- 2nd European Pulsed Power Symposium, DESY, Hamburg, Germany, 2004
- 2nd Euro-Asian Pulsed Power Conference, Vilnius, Lithuania, 2008

Co-chairmanship of international conferences:

- IEE Pulsed Power Symposium 2001. London, 1-2 May 2001
- 1st Euro-Asian Pulsed Power Conference, Chengdu, China, September 2006

Organisation of international workshops/courses:

- Workshop on electromagnetic flux compression generators, March 2001
- Special course on Power Semiconductors, September 2002
- Special course on Nanopowder production, June 2006
- Special course on Entrepreneurship, April 2006

Publications

Witt, W. Löffler, M	Die elektrische Kanone - auf dem Weg zum Waffensystem., Jahrbuch der Wehrtechnik 17, Koblenz 1987, 5. 12-24.
Löffler, M.	Über die Einkopplung elektromagnetischer Energie in lineare Hochleistungs-pulsbeschleuniger; Dissertation, Technische Universität Braunschweig, 1988.
Löffler, M..	Coilgun. COILDEMO - a demonstration program. Proceedings 4th European Symposium on Electromagnetic Launch Technology, 02.-06.05.93, Celle; Paper Nr. 703.
Löffler, M.	Recoil forces in electromagnetic accelerators - a short review. Proceedings 4th European Symposium on Electromagnetic Launch Technology, 02.-06.05.93, Celle; Paper Nr. 1510.
Löffler, M. Gründl, A.	Coilgun. Velocity Limits. Proceedings 4th European Symposium on Electromagnetic Launch Technology, 02.-06.05.93, Celle; Paper Nr. 1510.
Mailfert, R. Moisson, F. Hoffmann, B. Löffler, M.	Coilgun. Energy coupling and currentfeeding. Proceedings 4th European Symposium on Electromagnetic Launch Technology, 02.-06.05.93, Celle; Paper Nr. 702.
Weh, H. Moisson, F. Löffler, M. Jacquelin, J.	Coilgun. Concepts. Proceedings 4th European Symposium on Electromagnetic Launch Technology, 02.-06.05.93, Celle; Paper Nr. 701.
Salge, J. Löffler, M. Braunsberger, U.	Integrated magnetic acceleration- and energy storage system. 5th IEEE International Pulsed Power Conference, 1985, S. 548-551.
Weise, T. Löffler, M. et al.	The generation of flat-top pressure pulses for electrothermal mass acceleration. 2nd European Symposium on Electromagnetic Launch Technology, 27.-29.09.1989, Saint Louis, IV-5
Weise, T. Löffler, M.	Experimental investigations on rockfractioning by replacing explosives with electrically generated pressure pulses. 9th IEEE International Pulsed Power Conference, 1993, Albuquerque, S. 19-22.
Weise, T. Löffler, M.	Overview on Pulsed Power Applications. International Conference on Pulsed Power Applications, 2001, Gelsenkirchen
Löffler, M. Schmidt, W. Schuhmann, R.	Treatment of Sewage Sludge with Pulsed Electric Fields. International Conference on Pulsed Power Applications, 2001, Gelsenkirchen
Löffler, M. Wieland, H.A.	Electrical Wire Explosions as a Basis for Alternative Blasting Techniques. International Conference on Pulsed Power Applications, 2001, Gelsenkirchen
Löffler, M.	Pulsed Power from a German Perspective. Pulsed Power 2001. IEE Pulsed Power Symposium 2001. London, 1-2 May 2001. Doi. 10.1049/ic:20010126
Löffler, M.	Commercial Pulsed Power Applications in Germany. Japan-US Symposium on Pulsed Power and Plasma Applications. 4-8 August 2003, Kailua-Kona, USA. Paper No. PPT-02-37.
Balevičius, S. Žurauskienė, N. Stankevič, V. Cimpmperman, P. Novickij, J. Kačianauskas, R. Altgilbers, L.L. Löffler, M.J.	Technical applications of colossal magnetoresistance in thin manganite films for high pulsed magnetic field measurements. Proc. 2 nd European Pulsed Power Symposium EPPS 2004, 20.-23.09.2004, DESY, Hamburg. S. 195-197. ISBN 3-8322-3217-6.
Novickij, J. Stankevič, V. S. Balevičius, V. Žurauskienė, N. Cimpmperman, P. Kačianauskas, R. Stupak, E. Kačeniauskas, A. Löffler, M.J.	Manganite sensor for measurements of magnetic field disturbances of pulsed actuators. Solid State Phenomena (2005).
Koners, U. Heinz, V. Knorr, D. Löffler, M. Schmidt, W.	Disintegration by implementing pulsed electric fields (PEF) – release of COD and DOC and changes in COD/DOC-ratio of the excess sludge supernatant. IWA, Moscow. IWA – International Water Association - Sustainable sludge management: state of the art, challenges and perspectives. S.95-99. ISSN/ISBN 5-9900677-2-0.
Koners, U.	The effect of implemented pulsed electric field (PEF) treatment on the dehydrogenase

Heinz, V. Knorr, D. Löffler, M. Schmidt, W.	activity (DHA) of activated sludge. WITpress, WIT Transactions on Ecology and the Environment, Vol. 95, Ashurst. Water Pollution VIII – Modelling, Management and Pollution. S. 379-388. ISSN/ISBN 1746-448X / 1-84564-042-X.
Koners, U. Heinz, V. Knorr, D. Löffler, M.J. Schmidt, W.	Effects of pulsed electric field (PEF) application on activated wastewater treatment sludge. 1st Euro-Asian Pulsed Power Conference (EAPPC'06), 18-22 Sep. 2006, Chengdu, China. Proceedings. S.596-602. ISBN 0-86341-774-4.
Wötzel, M. Löffler, M.J. Spahn, E. Ritter, E.	Preliminary examination of high-velocity metal-shaping with electrical wire explosion. 1st Euro-Asian Pulsed Power Conference (EAPPC'06), 18-22 Sep. 2006, Chengdu, China. Proceedings. S.617-622. ISBN 0-86341-774-4.
Liebfried, O. Balevicius, S. Bartkevicius, S. Löffler, M.J. Novickij, J. Schneider, M. Stankevic, V. Zurauskiene, N.	Manganite sensor array for measurements of magnetic field distribution. 1st Euro-Asian Pulsed Power Conference (EAPPC'06), 18-22 Sep. 2006, Chengdu, China. Proceedings. S.582-586. ISBN 0-86341-774-4.
Löffler, M.J.	Real, potential and failed industrial applications of pulsed power. 1st Euro-Asian Pulsed Power Conference (EAPPC'06), 18-22 Sep. 2006, Chengdu, China. Proceedings. Paper Thu-I 09 [on CD]. ISBN 0-86341-774-4.
Löffler, M.J.	Generation and application of high intensity pulsed electric fields. In: Raso, Javier; Heinz, Volker (Eds.): Pulsed Electric Fields Technology for the Food Industry - Fundamentals and Applications. Series: Food Engineering Series. S. 27-72. 2007, XIV, 245 p., 107 illus., Hardcover. ISBN: 978-0-387-31053-4.
Balevičius, S. Stankevič, V. Šimkevičius, Č. Žurauskienė, N. Liebfried, O. Loeffler, M. Schneider, M. Abrutis, A. Plaušinitienė, V.	Thin Film Manganite-Metal Interconnection and "Loop Effect" Studies in CMR-Based High Magnetic Field Sensors. 2 nd Euro-Asian Pulsed Power Conference (EAPPC'08), 22-26 Sep. 2008, Vilnius, Lithuania. Acta Physica Polonica A, Vol. 115, No. 6, June 2009, p. 1133.
Sianen, T. Löffler, M.	Comparison Between Linear Electromagnetic Accelerators. 2 nd Euro-Asian Pulsed Power Conference (EAPPC'08), 22-26 Sep. 2008, Vilnius, Lithuania. Acta Physica Polonica A, Vol. 115, No. 6, June 2009, p. 1089.
Liebfried, O. Schneider, M. Löffler, M. Balevičius, S. Žurauskienė, N. Stankevič, V.	Measurement of the Magnetic Field Distribution in Railguns Using CMR-Sensors. 2 nd Euro-Asian Pulsed Power Conference (EAPPC'08), 22-26 Sep. 2008, Vilnius, Lithuania. . Acta Physica Polonica A, Vol. 115, No. 6, June 2009, p. 1125.
Liebfried, O. Löffler, M. Schneider, M. Balevicius, S. Stankevic, V. Zurauskiene, N. Abrutis, A. Plausinaitiene, V.	B-Scalar Measurements by CMR-Based Sensors of Highly Inhomogeneous Transient Magnetic Field. IEEE Trans. Magn., Vol. 45, No. 12, December 2009, pp 5301-5306.

Patents

- 1989: Vorrichtung zur Beschleunigung von Projektilen, Offenlegungsschrift DE 3814332 A 1; Französisches Patent Nr. 89 5330; Englischs Patent Nr. 2 217 820, US-Patent Nr. 5,042,359. [*Device to accelerate projectiles*]
- 1987: Vorrichtung zur Beschleunigung von Projektilen durch ein elektrisch aufgeheiztes Plasma, Europäische Patentschrift 0 242 500 B1; Patentschrift DE 36 13259 C 2 [*Device to accelerate projectiles using an electrically heated plasma*]
- 1987: Vorrichtung zur Beschleunigung von Projektilen durch ein elektrisch aufgeheiztes Plasma, Patentschrift DE 36 13 260 C 2 [*Device to accelerate projectiles using an electrically heated plasma*]

- 1991: Elektromagnetischer Beschleuniger in Flachspulenordnung; US-Patent Nr. 5,294,850; Patentschrift DE 41 31595 C2 [*Electromagnetic accelerator in flat-coil set-up*]
- 1994: Induktiver Energiewandler und Verwendung des induktiven Energiewandlers als elektromagnetische Kanone sowie zur Energieversorgung von Geräten; Patentschrift DE 39 05 059 C 2; UK-Patent 2 228 306, 17.02.93; US-Patent 4,996,455, 26.02.91. [*Inductive energy converter and application of the inductive energy converter as an electromagnetic gun as well as for the energy supply of devices*]
- Elektrothermische Kanone; Deutsche Patentanmeldung P 39 10 566.0-15
- 1994: Schienenkanone; Patentschrift DE 41 35 274 C 2; Französisches Patent Nr. 92 12395; US-Patentanmeldung Serial No. 07/957,767 [*Railgun*]
- 1996: EMK mit Hochspannungrohr; Patentanmeldung P 41 32 657.1; US-Patent Nr. 5,331,879; Französisches Patent Nr. 92 11309. [*Electromagnetic gun with high voltage tube*]
- 1989: Rotierende Geschoßarmatur; Offenlegungsschrift Nr. DE 38 16299 A 1; Französisches Patent Nr. 89 06265; Israelisches Patent Nr. 90276; UK-Patent Nr. 2 218 496; US-Patent Nr. 4,930,395. [*Rotating projectile armature*]
- 1989: Kartusche für elektrothermische Abschussvorrichtungen; Offenlegungsschrift DE 38 16300 A 1; US-Patent Nr. 5,115,743; UK-Patent Nr. 2218495. [*Cartridge for electrothermal shooting devices*]
- 2000: Verfahren zur Beseitigung von Ablagerungen oder Anhaftungen in thermischen Anlagen; Deutsches Patent Nr. 19852217. [*Procedure for the removal of sediments or of adhesions in thermal facilities*]

Internet

<http://hochleistungspulstechnik.fh-gelsenkirchen.de>

<http://www.pulsed-power.de>

<http://www.pulsed-power.org>