

Curriculum Vitae

Prof. David Berla

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Part A

1. Personal Details

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2. Higher Education

Undergraduate and Graduate Studies

Period of Study	Name of Institution and Department	Degree	Year of Approval of Degree
1998-2003	Tel Aviv University Faculty of Engineering Electrical Engineering - Department of Interdisciplinary Studies	Ph.D.	2004
1988-1992	Tel Aviv University Faculty of Engineering Department of Electrical Engineering-Systems	M.Sc. (Summa Cum Laude)	1992
1987-1991	Tel Aviv University Faculty of Management - Business Administration	MBA (Magna Cum Laude)	1991
1980-1984	Tel Aviv University Faculty of Engineering Department of Electrical and Electronics Engineering	B.Sc. (Magna Cum Laude)	1984

3. Academic Ranks and Tenure in Institutes of Higher Education

Dates	Name of Institution and Department	Rank/Position
2022- Present	Afeka, Tel Aviv Academic College of Engineering - Electrical Department	Associate Professor (Professor of Practice)
2005- 2022	Afeka, Tel Aviv Academic College of Engineering - Electrical Department	Senior Lecturer
2004-2005	Afeka, Tel Aviv Academic College of Engineering - Electrical Department	Lecturer
2002-2004	Afeka, Tel Aviv Academic College of Engineering - Electrical and Electronics Engineering	Adjunct Lecturer
2000-2004	ORT Tel-Aviv Academic College	Lecturer
2003-2004	Tel-Aviv University, Faculty of Electrical Engineering	Adjunct Lecturer
1990-2002	Tel-Aviv University, Faculty of Electrical Engineering	- Teaching assistant (Frontal Exerciser) - Chief Instructor at the Energy Conversion Lab.

4. Offices in Academic Administration

Years	Name of Institution	Position & Role
2024 - present	Ruppin Academic Center Emek Hefer	Dean of the Faculty of Engineering - Management of 4 undergraduate programs: - Electrical and Electronics Engineering - Computer Engineering - Industrial Engineering and Management - Computer Science - Management of the MA program in Logistics and Global Supply Chain
2016 - 2024	Afeka - Tel Aviv Academic College of Engineering	Head of the School of Electrical Engineering: - Management of the undergraduate program in Electrical Engineering - Management of the Master's degree program in Systems Engineering - Ongoing management of over 600 students and 45 faculty members - Recruitment and professional accompaniment of academic staff - Building strategic and managerial plans

		• Leading the activities of school teaching committees • Establishment and updating laboratories. • Reviewing the entire curriculum • Activities with the Council for Higher Education • Leading a pilot incorporating advanced technological tools for enhancing study and teaching • Leading the implementation of up-to-date pedagogical approaches
2016 - 2023	Afeka - Tel Aviv Academic College of Engineering	Head of the Master's degree program in Systems Engineering: • Ongoing management of over 60 students and 9 faculty members • Building strategic and managerial plans • Leading the activity of the program teaching committee • Establishment and updating laboratories • Reviewing the entire curriculum • Activities with the Council for Higher Education
2007- Present	Afeka - Tel Aviv Academic College of Engineering	Head of the Power Systems & Energy track, undergraduate Electrical Engineering Program: • Establishment of the field of power systems and energy • Activity for approving the track by the state authorities • Recruitment and professional accompaniment of academic staff • Characterization and construction of the energy conversion laboratory and the laboratory for power electronics • Writing the syllabi for all the courses in the field
2020 - Present	Afeka - Tel Aviv Academic College of Engineering	Member of the Committee for Graduate Studies with a Thesis
2019 - Present	Afeka - Tel Aviv Academic College of Engineering	Member of the Steering Committee for a Master's Degree in Energy Systems Engineering and Electric Power
2015 - Present	Afeka - Tel Aviv Academic	Member of the Appointments Committee for Juniors' faculty and Teachers

	College of Engineering	
2014 - Present	Afeka - Tel Aviv Academic College of Engineering	Member of the Academic Council
2010-2020	Afeka - Tel Aviv Academic College of Engineering	Member of the Steering Committee for a Master's Degree in Energy Engineering
2014-2016	Afeka - Tel Aviv Academic College of Engineering	Head of the Electrical Engineering Department: • Management of the undergraduate program in Electrical Engineering • Ongoing management of over 540 students and 36 faculty members • Building strategic and managerial plans • Leading the activities of the program teaching committees • Recruitment and professional accompaniment of academic staff • Establishment and updating laboratories • Reviewing the entire curriculum • Activities with the Council for Higher Education • Leading a pilot incorporating advanced technological tools for enhancing study and teaching
2015	Afeka - Tel Aviv Academic College of Engineering	Head of the Committee for determining recommendations for Afeka's next five-year program (2015-2021) regarding the undergraduate students' programs
2008-2011	Afeka - Tel Aviv Academic College of Engineering	Head of the "Afeka Etgarim" program for the 2% upper outstanding students. The program was founded for encouraging the students to curiosity, creativity, entrepreneurship, and personal achievement in an engineering environment.
2004-2008	Afeka - Tel Aviv Academic College of Engineering	Disciplinary Officer
1990-2002	Tel-Aviv University	Chief Instructor at the Energy Conversion Lab.

5. Positions and Activities outside the Institution (AFEKA)

a. *Academic Employment*

Years	Employer	Subject
2000-2005	ORT Tel-Aviv Academic College	Lecturer in courses for undergraduate students: Introduction to Electrical Engineering, Energy Conversion, Digital Electronic Circuits, Electromagnetic Fields
1989-2004	Tel-Aviv University	Lecturer & Frontal Exerciser in courses for undergraduate students: Power Systems Courses
1990-2002	Tel-Aviv University	Chief Instructor at the Energy Conversion Lab.

b. *Public Professional Activities*

Years	Activities
2017 - Present	The Standards Institution of Israel (SII): - Member of the 5200, Central Committee for Electrical Standards (Appointment of the Council for Higher Education) - Chairman of the Committee of Experts 580201 - Protection against lightning strikes, Israeli standard 62305. - Member of the Technical Committee 5265 - Electricity Quality - Member of the Technical Committee 5209 - Batteries - Chairman of the Committee of Experts 80904 - Conducted Disorders in the Feeding Network - Expert invited to the Committee of Experts 526501- Electrical Quality - Member of the Mirror Committee 26500 - Standards for the Quality of Electricity A committee whose purpose is to influence the content of international or regional standards and to actively participate at the level of P in the work of international and regional standards.
2006 - Present	Member of the Academy of the Hebrew Language for Electronics Terms at the Israel Standards Institute
2000 - 2017	The Standards Institution of Israel (SII): Member of the Technical Committee 809 - Electromagnetic Compatibility

	• Member of the Committee of Experts 80904 - Conducted Disorders in the Feed Network • Member of the Committee of Experts 20221 - Protections from Voltage and Current Surges • Invited expert of the Committee of Experts 80201 - revision of Israeli Standard 1173 Part 1, Lightning Damage Protection Systems for Buildings and Facilities, Israel Standards Institute. • Invited expert of the Committee of Experts 2605 - Electricity Quality
2012	Member of the Steering Committee on the National Robotics Program, Ministry of Education
2004	Member of an advisory committee to the Commissioner for Electricity in the Ministry of Industry and Trade regarding electricity regulations
1990 - 2017	Member of the professional committees in the Ministry of Education of the following professional tracks: – Electronic Engineering – Command and Control Power Systems – Software Engineering – ICT systems

c. Scientific Editing

Years	Activities
1991- 2012	• Scientific editor of the books (Hebrew version): - Power Electronics Part II, School of Technology of the Open University, 2012 - Power Electronics Part I, The Open University School of Technology, 2011 • Didactic consultant of the books (Hebrew version): - Control Systems, School of Technology of the Open University, 2004 - Experimental Control Systems, School of Technology of the Open University, 2004 • Reviewer of more than 12 technical books for high school, published by the Center for Educational Technology (CET)

d. Membership in Professional Societies

Years	Membership in
2003 - Present	The Society of Electrical and Electronics Engineers in Israel [SEEEI], Member
2003-2016	Member of IEEE Societies: - Electromagnetic Compatibility - Magnetics - Power & Energy - Power Electronics - Circuits and System Society
1989-2003	Association of Engineers, Architects, and Graduates of Technological Sciences in Israel, Society of Electrical and Electronics Engineers, Member

6. Participation in Scholarly Conferences

a. Active Participation

International Meetings - Oral Presentations

Date	Name of Conference	Place of Conference	The subject of Lecture/ Discussion	Role
2007	POWERENG 2007 International Conference on Power Engineering, Energy and Electrical Drives	Setúbal, Portugal	Lightning strokes	Article partner
2004	MedPower 04 Conference	Lemosos, Cyprus	Lightning Protection	Presentation
1997	IEEE International Symposium on Industrial Electronics	Guimaraes, Portugal	Surge Protection Networks	Article partner
1994	22 nd International Conference on Lightning Protection (ICLP)	Budapest, Hungary	Lightning Protection	Presentation

Israeli Meetings - Oral Presentations

Date	Name of Conference	Place of Conference	The subject of Lecture/ Discussion	Role
2019	Research and development conference in transportation - innovation and findings of research in transportation	Tel Aviv, Israel	Electric Public Transport	Presentation
2014	The 15th International Convention of the Society of Electrical and Electronics Engineers in Israel	Eilat, Israel	Power Micro Grid	Presentation
2006	The 24th IEEE Conference of Electrical and Electronics Engineers in Israel	Eilat, Israel	External Lightning Protection	Presentation
2006	Technical Aspects of Surge and Lightning Protection Concepts, Transient Absorption Technology Congress	Ramat-Gan, Israel	Lightning Protection Concepts	Presentation
2001	Lightning Protection for Electronic devices, Israeli Society of Electric and Electronics Engineers - seminar on Lightning	Tel Aviv, Israel	Lightning Protection	Presentation

b. Organization of Conferences and Sessions

Date	Name of Conference	Place of Conference	The subject of Lecture/Discussion	Role
2019	Afeka 5 th Smart Energy Conference	Tel Aviv, Israel	Energy in Romania & Israel	Member of the Scientific Committee and Organizing Committee
2018	Afeka 4 th Smart Energy Conference	Tel Aviv, Israel	Energy Efficiency and Green Building	Member of the Scientific Committee and

				Organizing Committee
2017	Afeka 3 rd Smart Energy Conference	Tel Aviv, Israel	Energy Management and Efficiency	Member of the Scientific Committee and Organizing Committee
2016	Afeka 2 nd Smart Energy Conference	Tel Aviv, Israel	Tools for Energy Efficiency	Member of the Scientific Committee and Organizing Committee
2015	Afeka 1 st Smart Energy Conference	Tel Aviv, Israel	Extremely Energetic	Member of the Scientific Committee and Organizing Committee
2015	Seminar on Electrical Engineering is facing where?	Tel Aviv, Israel	Power Engineering	Chair
2001	Lightning Protection for Electronic devices, Israeli Society of Electric and Electronics Engineers seminar on Lightning	Tel Aviv, Israel	Lightning Protection	Member of the Scientific Committee and Organizing Committee

7. Research Grants

Grants Awarded

Role in Research	Co-Researchers	Topic	Funded by/Amount	Year
Principal Investigator	Mr. Dan Hermann	Alternatives to public tiny electric transportation implementation with economic feasibility in	Ministry of Transport and Road Safety, Israel NIS 500,000	2017-2019

		the Israeli urban space		
Principal Investigator	Dr. Moshe Tshuva Dr. Sharon Gat	Support Tool for Energy Efficiency Programs in Medical Centers (STEER)	Horizon 2020 - Research and Innovation Framework Program, MARIE SKLODOWSKA-CURIE action, €1,206,000 [The part of Afeka - Tel Aviv Academic College of Engineering - €54,000]	2014-2018

8. Scholarships, Awards, and Prizes

Awards and Honors

Year	Award
2014-2024	Management & Teaching Excellence Prize , Afeka Academic College of Engineering, Tel Aviv
2006-2013	Teaching Excellence Prize , Department of Electrical Engineering, Afeka Academic College of Engineering, Tel Aviv
1992	M.Sc. in Electrical Engineering - Summa Cum Laude
1991	MBA - Magna Cum Laude
1990	Excellence Scholarship , Faculty of Management, Tel Aviv University
1989	Excellence Scholarship , Faculty of Management, Tel Aviv University
1984	B.Sc. in Electrical Engineering – Magna Cum Laude
1980-1992	Dean's List , 4 times during B.Sc. and MBA studies

9. Teaching

a. Coursed Taught in Recent Years

Year	Name of Course	Type of Course	Degree	Number of Students per year
2004-2024	Power System I	Lecture	B.Sc.	Dozens
2004-2024	Power System II	Lecture	B.Sc.	Dozens
2005-2024	Electrical Engineering I	Lecture	B.Sc.	Dozens
2006-2024	Power Electronics Lab.	Instruction	B.Sc.	Dozens
2024	Energy Conversion Lab.	Instruction	B.Sc.	Dozens

2012-2024	Voltage and Current Surges Protection	Lecture	B.Sc.	Dozens
2012-2022	Electrical Energy Conversion	Lecture	M.Sc.	Dozens
2012-2016	Energy Efficiency	Lecture	M.Sc.	Dozens
2005-2014	Electrical Engineering II	Lecture	B.Sc.	Dozens
2003-2014	Power Electronics	Lecture	B.Sc.	Dozens
2004-2010	Energy Conversion	Lecture	B.Sc.	Dozens
2006-2007	Energy Economics	Lecture	B.Sc.	Dozens
2002-2004	Digital Electronic Circuits, Electromagnetic Fields	Lecture	B.Sc.	Dozens
1989-2002	Operation of Power Systems Under Abnormal Conditions	Frontal Exercise	B.Sc.	Dozens
1989-2002	Techno-Economic Problems of Power Systems	Frontal Exercise	B.Sc.	Dozens

b. Supervision of Graduate Students

Name of Student	Title of Thesis	Degree	Institution	Date of Completion/in Progress
Gal Haneman-Neuman	Behavior Analysis Model of Protection System against Current and Voltage Surges due to Lightning Strokes <i>Co-supervision with Prof. Arie Braunstein</i>	M.Sc. (Thesis)	Tel-Aviv University	In Progress
Tal Barak & Evgeniy Rohmistov	Electrical Energy Efficiency in Medical Centers <i>Part of "STEER - Horizon 2020, Research, and Innovation Framework Program</i>	M.Sc.	Afeka Tel Aviv Academic College of Engineering	2019
Yakov Danilov & Ilan Drey	"BAZAN" Oil Refinery LTD - Improving Energy Efficiency of the Factory in Haifa in Terms of Power Factor and Electricity Quality	M.Sc.	Afeka Tel Aviv Academic College of Engineering	2016
Ilan Gal & Ofek Sagiv	Energy Optimization and Energy Efficiency -	M.Sc.	Afeka Tel Aviv Academic	2015

	"ATID" Colleges and High Schools Network		College of Engineering	
Oz Klimian & Yaron Haim	Micro-Grid System Design	M.Sc.	Afeka Tel Aviv Academic College of Engineering	2014

10. Miscellaneous

a. Academic Development Activities

Year	Activity
2020	Involvement in leading the development of a home laboratory experience environment for students in conducting experiments in electrical, analog, and digital electronics, as part of a response to the needs of online learning.
2019	Partner in the preparation of the application for the opening of an M.Sc. program in energy systems engineering and electrical power, with a thesis, submitted to the Council for Higher Education.
2018	Course updates: protection against voltage and currents surges, as well as power systems I & II, for teaching and learning by PBL approach/ Including assimilation of essential skills for students, use of contemporary pedagogical tools including flip class.
2017-2018	Leading the submission of an application to open a degree program in teaching and technology (B.Ed.Tech) in collaboration with Afeka College and the Kibbutzim Seminar.
2016-2017	Leading the application to open an M.Sc. degree program in electrical engineering with a thesis submitted to the Council for Higher Education.
2016	Development of a new digital systems experiment kit.
2014	Establishment of a supplementary program for external studies in power systems for holders of a bachelor's degree in electronic engineering.
2012	Constructing a new Power Electronics Laboratory & Student's lab briefing. The laboratory was praised by the International Committee for Quality Assessment in the field of electrical engineering in Israel, 2016.
2012	Constructing a new Energy Conversion Laboratory & Student's lab briefing. The laboratory was praised by the International Committee for Quality Assessment in the field of electrical engineering in Israel, 2016.

2011	Development of a new course in electrical energy conversion for graduate students in energy engineering Development of a new course in energy efficiency for graduate students in energy engineering
2010	Development of a new course on protection against voltage and current surges.
2009-2010	Partner in the preparation of the application for the opening of an M.Sc. degree program in energy engineering submitted to the Council for Higher Education
2009	Development of the "Afeka Etgarim" program for excellent students. The program was founded for encouraging the students to curiosity, creativity, entrepreneurship, and personal achievement in an engineering environment.
2008	Development of Energy Conversion Laboratory & Student's lab briefing.
2007	Development of a new course on Switching Converters and Power Management.
2006	- Establishing the Energy and Power Systems track at the Electrical Engineering Program. - Development of a new course on Power system A and B courses
2003	Development of new courses on Energy Conversion and Power Electronics provided to undergraduate students in electrical engineering and mechanical engineering.

b. Research Activities

Year	Activity
2017- 2019	<i>Principal Investigator, Alternatives to public tiny electric transportation implementation with economic feasibility in the Israeli urban space¹.</i> The techno-economically study, examined the cost of service of small electric vehicles, in a variety of types of urban spaces (metropolitan areas) in the State of Israel. This is to formulate insights into the implementation of miniature public transportation services in Israel, including recommendations on vehicles and various means by the various metropolitan areas in the country.

¹ https://www.gov.il/he/departments/publications/reports/kenes_mehkar_vepituah

	The study examined operational and economic aspects of using small public vehicles, which are electrically driven and defined in the Transport Regulations as Class A (8 to 22 passengers - some sitting and some standing). A mathematical model was built for techno-economic calculation of the level of service, based on the "Advisor" simulator, as a tool for predicting the energy consumption of a given line for a given vehicle, including validation.
2014-2018	<i>Principal investigator, Horizon2020 - Research and Innovation Framework Program, MARIE SKŁODOWSKA-CURIE: Support Tool for Energy Efficiency Programs in Medical Centers (STEER)².</i> The STEER joint international group is composed of nine different institutions academic researchers, industry, and representatives from six different countries. Leading the Israeli research group in Afeka, focusing on electrical energy efficiency in hospitals. During the project, supervised 2 students in their master's work on this project. The STEER project's strategic goal was to support the entire process of forecasting the effects of actions aimed at reducing energy consumption in medical centers. Study the energy consumption, energy efficiency, energy-saving measures, etc., at some typical hospitals. Analyzing the data to establish a general comprehensive novel mathematical model, of energy consumption for conducting and managing an energy efficiency process. As well as, to create a tool that will provide medical centers and any other large institution, involved in their energy efficiency programs (governmental institutions, utility providers, lending establishments, independent auditors, managers, and technical staff), with information on the medical center's ideal energy consumption in different scenarios and on the most appropriate energy reduction plan for the medium-long term. It will be used by energy managers and decision-makers to evaluate and compare future investments and actions to reduce energy consumption, also based on their economic return. The product was tested in the four medical centers that support the project.

² <http://steer.ctadventure.com/>

Part B

PUBLICATIONS

a. Ph.D. Dissertation and M.Sc. Thesis

Degree	Supervisor	Title of Thesis	Institute
Ph.D.	Prof. Arie Braunstein	Induced voltages in loops caused by direct and indirect lightning strokes and analysis of protection networks for electrical and electronics systems	Tel-Aviv University
M.Sc.	Prof. Arie Braunstein	Induced voltages at air gaps, due to electromagnetic field caused by direct and indirect lightning strokes	Tel-Aviv University

b. Articled in Conference Proceedings (Oral Presentations)

1. **Berla D.**, Braunstein A., "Vector method for calculating the induced voltages due to electromagnetic field caused by direct and indirect lightning strokes", *Proc. 22nd International Conference on Lightning Protection (ICLP)*, Budapest, Hungary, 1994, paper R 4-03.
2. Braunstein, A., **Berla D.**, "Analysis of the topology and response of surge protection devices (SPD) network to dangerous voltage/current waves", *Proc. IEEE International Symposium on Industrial Electronics ISIE'97*, Guimaraes, Portugal, vol. 2, pp. 445-451, 1997.
3. **Berla D.**, Braunstein A., "A novel approach for coordination analysis of lightning protection networks against lightning current surges based on wave theory concept", *MedPower'04 Conference*, Lemesos, Cyprus, 2004.
4. Braunstein, A., **Berla D.**, Beck Y., "External lightning protection-Israeli standard and code of practice", *Proc. IEEE 24th Convention of Electrical & Electronics Engineers in Israel*, Eilat, Israel, pp. 57-61. 2006.
5. Braunstein, A., Beck Y., **Berla D.**, "Lightning strokes - theoretical model and determination of possible striking points", *Proc. IEEE International Conference on Power Engineering, Energy and Electrical Drive POWERENG 2007*, Setúbal, Portugal, pp. 707-712, 2007.
6. **Berla D.**, Haim Y., Klimian O., "Design and techno-economic management of micro-grid system", *The 15th International Convention of the Society of Electrical and Electronics Engineers in Israel*, Eilat, Israel, 2014, (Hebrew Version).
7. Tshuva M., Avineri E., Bengeou Y., Rappaport Y., **Berla D.**, Gat S., "Energy efficiency of lighting systems in medical centers", *Proc. of the 8th Annual International*

Conference on Sustainable Energy and Environmental Sciences, Singapore, pp. 23-28, 2019.

c. Technical Reports and Documents (representative sample)

1. New Control Tower Ben-Gurion Airport - The Inspectors' Arbor - an external protection system, acceptance check, 5 p., *December 2015, submitted to Israel Airports Authority (in Hebrew).*
2. New Control Tower Ben-Gurion Airport - The inspectors' arbor - external download system, execution details, 5 p., *February 2015, submitted to Israel Airports Authority (in Hebrew).*
3. New Control Tower Ben-Gurion Airport - External lightning protection initial survey and recommendations, 7 p., *August 2014, submitted to Israel Airports Authority (in Hebrew).*
4. ELM/2084 Mobile Site – External lightning protection, 21 p., *October 2013, submitted to Elta Systems Ltd.*
5. Kaenary - Inspection and maintenance instructions, 25 p., *May 2013, submitted to Elta Systems Ltd.*
6. ELM/2084 - Catenary air rod as external lightning protection for a fixed site - technical specification and engineering principles, 9 p., *June 2012, submitted to Elta Systems Ltd.*
7. Kaenary - Calculating the height of an air rod for external lightning protection on Elta's radar, 3 p., *May 2012, submitted to Elta Systems Ltd.*
8. ELM/2084 - Technical characterization and engineering principles for implementation of horizontal air termination (catenary) for external protection due to lightning stroke to the antenna system in a fixed structure, 8 p., *May 2012, submitted to Elta Systems Ltd (in Hebrew).*
9. Kaenary - Comments to pre-design of the external lightning protection system, 6 p., *February 2012, submitted to Elta Systems Ltd.*
10. Kaenary - Grounding system facilities general requirements, 4 p., *May 2011, submitted to Elta Systems Ltd.*
11. ELM/2084 - Lightning protection system - facilities requirements document (FRD), 24 p., *November 2010, submitted to Elta Systems Ltd.*
12. ELM/2084 - Lightning protection system risk assessment at fixed and mobile sites, 24 p., *November 2010, submitted to Elta Systems Ltd.*
13. Basic principles for lightning protection to ESCBAZ cameras installed on masts and guard towers, 6 p. *September 2009, submitted to ESCBAZ Ltd (in Hebrew).*

14. Survey on the subject of protection against lightning strokes at the MABAT Yehud plant, buildings 61 and 63, 34 p., *January 2007, submitted to IAI MABAT (in Hebrew)*.
15. GEENS - Comments to the site survey report for IAI ASIA PTE LTD, carried out by Lightning Eliminators & Consultants, Asia, 11p., *August 2005, submitted to Elta Systems Ltd.*
16. Calculation of heights of Lightning rods for external protection due to lightning strokes to the Elta's radar, 5 p., *May 2005, submitted to HOMA and Elta Systems Ltd (in Hebrew)*.
17. HOMA - Probability assessment for direct lightning stroke in a compound and to radar and, and selected a defense efficiency, 6 p., *May 2005, submitted to "HOMA" Directorate Israel (in Hebrew)*.
18. Report of recommendations for the planning and execution of grounding in a ground communication facility, 34 p., *January 2003, submitted to Cellcom Israel Ltd (in Hebrew)*.
19. Survey of lighting protections in a common facility of TV with cable and satellite channels, 43 p., *March 2002, submitted to Ministry of Communication- Division for Multi-Channel Broadcasts to Subscribers (in Hebrew)*.
20. GEENS -Technical specification Hig-1, 20 p., *September 2000, submitted to Elta Systems Ltd.*
21. GEENS -Technical specification – coax cables grounding, 2 p., *June 2000, submitted to Elta Systems Ltd.*
22. Lightning protection survey - Tamash K.D., Israeli Security Agency (ISA), 34 p., *March 2000, submitted to the ISA (in Hebrew; Confidential)*.
23. Lightning protection survey and risk analysis in the headquarters building and computer center of the Israeli Security Agency (ISA), *March 1992, submitted to ISA (in Hebrew; Confidential)*.
24. Lightning vulnerability analysis report on MDF cabinets and communication cards - recommendations for developing protection cards, *January 1992, submitted to Telrad Ltd (Unavailable)*
25. Frutarom - Lightning protection survey, *October 1991, submitted to Frutarom Industries Ltd (In Hebrew; Unavailable)*.

Part C

a. Professional Background and Expertise - Detailed in section C

b. Industrial Employment

Years	Employer	Subject
2007-2016	Dr. David Berla Consulting	• Consulting and planning of: ▪ Risk analysis and risk assessment for structures and systems due to lightning flashes on earth ▪ Risk management by lightning protection systems ▪ Lightning Protection due to: ○ Direct and indirect lightning strokes ○ Lightning Electro-Magnetic Impulse [LEMP] ▪ Design of dedicated grounding systems • Power and Energy Systems failure analysis • Energy Efficiency • Technical professional opinions and expert opinions for courts
1988-2007	Prof. Braunstein & Dr. Berla Consulting	Consulting and planning of: • LEMP and Lightning Protection systems • Power and Energy Systems failure analysis • Designated Grounding Systems • Electrical Power Engineering
1989-2007 (Part-time)	ORT Organization	Head of the Electrical & Electronics Engineering knowledge field: • Professional management of over 400 teachers in high schools and colleges • Characterization and establishment of professional laboratories • Leading the opening of an electrical and electronics department in high schools and colleges

1984-1988	IDF Intelligence Corps	• R&D Senior Engineer in the field of Power Electronics: ○ Applied research in the application of topologies of efficient dc/dc switching converters of very small and large power domains ○ Development of dc/dc switching converters for special military systems and the intelligence community • System Engineering
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c. Professional Experience

With over three decades of expertise in lightning protection, power systems, and energy systems, my professional career has been dedicated to advancing both theoretical understanding and practical applications in these critical areas. Throughout this period, I have led the design and implementation of advanced protection systems against direct lightning strikes for various critical infrastructures, including those associated with military installations, public institutions, security forces, and industrial facilities. Additionally, I have developed comprehensive surge protection systems for electrical, electronic, communication, and computer systems, mitigating the effects of current and voltage surges resulting from lightning events.

In the domain of power and energy systems, I have served as a consultant on numerous projects involving the operational stability of power systems, with particular emphasis on diagnosing operational failures and malfunctions. My contributions include formulating expert reports, often for judicial review, based on extensive failure analysis and system dynamics.

My expertise is grounded in rigorous academic research. My Master's thesis [1] focused on developing an algorithm for calculating induced voltages in various geometric models subjected to electromagnetic fields generated by direct and indirect lightning strikes. The algorithm, based on a modification of Braunstein's [3] scientific model of reverse wave pairs of compensating currents (CC), allowed for precise voltage estimations, thereby facilitating the selection of appropriate protective measures against surge currents induced by lightning.

Building on this foundation, my Doctoral dissertation [2] expanded these principles by developing a sophisticated numerical model for calculating induced voltages in arbitrary loops, including complex geometries such as sharp corners. This model, an extension of Braunstein's work to orthogonal current wave pairs [2,4,5], enables the accurate prediction of voltages in intricate configurations. A significant aspect of my doctoral work also involved

the development of a dynamic behavior model for electrical lightning protection networks (DBoELPN) [2], enabling the evaluation of lightning protection topologies comprising Surge Protection Devices (SPDs) [6,7]. This work laid the groundwork for the design of highly efficient, well-coordinated lightning protection circuits [8] across a wide range of applications, including power supply, communication, computer systems, control systems, as well as other galvanic lines, against surges of voltage and current due to lightning currents of different and widely-ranged characteristics.

Based on the above, a complex numerical model was further developed for calculating the probabilities of lightning strokes on various objects, in a given space and a given environment [9,10]. Based on this model, we can calculate, manage, and reduce risks due to lightning events and design appropriate protection systems under techno-economic constraints.

My contributions to the field of lightning protection have been widely recognized, culminating in a six-year tenure as a pivotal member of the expert committee 80201 of the Standards Institution of Israel. During this period, I contributed to the 2008 revision of Israeli Standard 1173, Part 1 [11], which governs the design and implementation of external lightning protection systems for buildings and facilities. My involvement in this work included extensive simulation and numerical analysis to establish key design parameters and practical execution guidelines.

In 2023, I was appointed Chair of Expert Committee 580201 at the Standards Institution of Israel, tasked with leading the adaptation of the IEC 62305 series of lightning protection standards. This position requires a critical evaluation of the standards' applicability to both local and international contexts, ensuring they reflect the latest advancements in lightning protection technologies and risk mitigation strategies. Under my leadership, the committee is engaged in a rigorous review process to harmonize national regulatory frameworks with the evolving complexities of infrastructures, thereby enhancing the resilience of critical installations and public safety.

For over three decades, my professional experience in power and energy systems has encompassed a broad spectrum of issues, particularly analyzing and resolving stability problems and system failures. In the last decade, my research and professional focus expanded to include emerging areas such as energy efficiency, micro-grid technologies, and electric power transportation, where I have contributed both to industry practices and academic research. Over the past 30 years, I have also taught various advanced courses in these disciplines both undergraduate and graduate students.

In addition to my academic work, I have served as a key expert in legal proceedings [12], providing professional opinions on engineering design failures in electrical systems failures that have resulted in significant property damage and, in some cases, loss of life. My expertise has been sought by global entities such as General Electric, USA [13], for whom I have authored critical engineering assessments. Furthermore, I have contributed expert opinions in class action lawsuits [14], leveraging my extensive knowledge of power systems' abnormal behavior, acquired through decades of research and applied experience.

Recognizing my unique expertise, the Council for Higher Education appointed me to the 5200 Central Committee of the Standards Institution of Israel in 2017 [15].

Throughout my career, I have successfully led and completed more than 100 projects, each involving complex scientific and engineering analyses, risk management assessments, advanced modeling, and simulation techniques. These projects spanned the design and implementation of external lightning protection systems, aimed at mitigating direct strike risks, and internal surge protection systems, specifically targeting galvanic lines vulnerable to lightning-induced surges. A significant number of these projects have been executed for high-stakes, sensitive facilities, including military and homeland security installations. Additionally, I have provided protection systems for commercial and industrial facilities with elevated environmental risks, such as those dealing with explosive or toxic materials.

The following works are a representative sample of works with different aspects and a wide variety of my professional work.

1) The new control tower at Ben Gurion Airport (2014-5)

A control tower that rises to a height of about 100 m, with architectural uniqueness, which includes an inspectors' arbor on the top floor, and above it a roof full of critical systems, antennas, and radars of various types.

- A survey of the structure, galvanic infrastructure, and systems installed in the control tower with an emphasis on the inspectors' arbor, determining initial recommendations for the implementation of an external lightning protection system for the tower [20].
- Analysis of the unique needs and design of a unique external protection system against lightning strokes directly to the inspectors' arbor. The unique design took into account the need to prevent the concealment of the inspectors' line of sight to the movement of aircraft in the envelope space, engineering constraints of withstanding extreme weather conditions, as well as stringent architectural constraints. The requirement to use durable materials over the years, as well as considerations of preventing disruption to service and routine maintenance. These constraints required analysis of the current distribution in the download system for optimal design. Including mechanical design, considerations to prevent visual disturbances, as well as the use of materials that would ensure long-term survival [19].
- Design of protections against lightning direct strokes to critical metal installations and a variety of antennas and radar systems, concerning transmission lobe constraints and minimal concealment. Optimal protection angles were calculated for the modes of the positioning of the protection measures, meeting severe and extreme weather

conditions, including winds of 160 km/h, as well as survivability requirements over the years. All of these required unique individual solutions for each antenna and radar.

- Planning a hierarchy of protection against voltage and current surges due to direct and indirect lightning strokes. The protections were designed for high reliability of electrical, communication, command and control lines, and others, due to the criticality in the continuous operation of the facility.
- Supervising and acceptance tests of the external and internal lightning protection systems [18].

2) Strategic military facilities abroad

a) *ELM/2084 Project, Southeast Asia (2009-2015)*

Design of a lightning protection system in a project with a very large financial scope, as part of the country's defense system against missiles. The project includes the establishment of radar systems and command, control, and monitoring systems at several permanent sites. As well as sites for mobile deployment (mobile systems) with time constraints for deployment and folding. The work was done for Elta Systems Ltd., which won the construction tender.

- Development of numerical simulation programs for determining the possible lightning stroke points and their probabilities by the unique characteristics of each fixed and mobile site. Analysis of the lightning threats on the sites for risk assessment and risk management, based on the 2 comparative computational simulation models. One was based on the Electro-Magnetic Wave Pairs Model [2,3,9,10] and the other was done according to the IEC 62305-2 standard, based on the Electro Geometrical Model (EGM) approach, the Rolling Sphere (RS) model [16]. These, are to decide the strategic implications arising from the findings of the simulations regarding the determination of policies and recommendations for the protection levels of critical buildings, facilities, and systems [29].
- Study of the scientific and engineering literature on lightning protection approaches of mobile weapon systems. Development of a dedicated and unique lightning protection concept. Based on the Electro Geometrical Model (EGM) approach, regard to the requirements of the protected equipment: rotary radar system, electric system, command and control carriages, their moving vehicles, and cabling systems. This is to ensure the expected shortest set for deployment and folding times. The unique protection systems included a hierarchy of insulated protection to reduce the likelihood of direct damage to critical systems, including building a functional grounding field that allows for quick set-up and disassembly and transport to the next deployment site [21].
- Engineering design for PDR and CDR, as well as a detailed design of external lightning protection against direct strokes and internal lightning protection against

voltage and current surges due to lightning events, at a permanent site and sites for mobile deployment [23,25].

- Preparing Facilities Requirements Document (FRD), in the context of infrastructure requirements and interfaces required between the company's systems and the customer's systems at permanent sites and mobile deployment sites [28].
- Accompanying the construction and subcontractors, as well as supervising and acceptance tests of the external and internal lightning protection systems.

b) KAENARY Project, South Korea (2010-2014)

A total lightning protection system in a project of two new military sites in the north of the country, as part of the state's defensive system against missiles. The project included the construction of a set of buildings, advanced radar systems, critical electrical supply systems, and control and monitoring systems. The work was carried out for Elta Systems Ltd.

- Analysis of lightning threats on the sites for risk assessment and risk management, according to the IEC 62305-2 standard was made using the Electro Geometrical Models (EGM). These, are to decide the strategic implications arising from the findings of the simulations, regarding the determination of policies and recommendations for the external and internal lightning protection levels, of critical buildings, facilities, and radar systems.
- Engineering design for PDR and CDR, as well as a detailed design of external lightning protections for dedicated buildings and facilities, including a protection system to reduce the probability of damage to radar systems, with an emphasis on minimizing radar concealment ranges [24,26].
- Engineering design for PDR and CDR, as well as detailed design of internal lightning protections for cabling of the radar systems, command, control, and monitoring systems, against voltage and current surges, due to lightning events at the site and its surroundings.
- Facilities Requirements Document (FRD), in the context of infrastructure requirements and interfaces required between ELTA's systems and the customer's systems [27].
- Accompanying the construction and subcontractors, as well as supervising and acceptance tests of the external and internal lightning protection systems [22].

c) "GEENS" Project, Southeast Asia (2000-2002)

Lightning protection system in a project that includes the construction of full rotating radars, located on two buildings, installed inside protective domes (Radomes),

including their command and control systems. As well as, a radar system on a stage in a tall tower bearing antennas. The work was done for Elta Systems Ltd.

- Study of the scientific and engineering literature on lightning protection approaches to protective domes, incorporating galvanic and non-galvanic elements.
- Characterization of the structure of the protective domes in combination with a unique air termination and download strips, to protect the radar from direct lightning stroke, using unique types of materials while minimizing radar concealment.
- Detailed design of the protection systems integrated into the protective domes, including dedicated external and internal lightning protection systems in the buildings [37], and the antenna tower.
- Detailed planning of the cabling from the radar to the supporting systems. Development of a direct galvanic coupling method for COAX cables, to reduce the influence of intrusion of current surges that may develop due to direct and/or indirect stroke to the tower and/or its surroundings [38].
- Construction of Facilities Requirements Document (FRD) for Elta in front of the customer, in the context of required infrastructure requirements and interfaces between the ELTA's systems and the customer's systems.
- Accompanying the construction and sub-contractors as well as supervising and acceptance tests of the external and internal lightning protection systems [32].

3) "HOMA" Directorate – The "HETZ" System (2005-2008)

The Homa Directorate is a unit of the Directorate for Research, Development of Weapons, and Technological Infrastructure (Mapat) in the Ministry of Defense. Responsible for the development of all the "Hetz" systems as a weapon system, including the missile and launcher, the radar, and the interception management center.

The works at the infrastructure level were carried out in front of HOMA as a client, while works about the radar systems and the systems that support them (electrical supply and command systems, control and monitoring systems) were carried out in front of Elta Systems Ltd. The works were carried out at two sites:

- Tal Shazar site - based on the "Oren Yarok" radar (2005-2007)
- Ein Shemer site - based on the "Oren Adir" radar (2007-2008)
- Preparation of a strategic policy report that forms the basis for determining the lightning protection concept on radar systems at the permanent sites of the "Hetz" project.
- Analysis of lightning stroke threats at the sites and to the radar systems in particular, for risk assessment and risk management. Development of a computational

mathematical model, based on the Electro-Magnetic Wave Pairs Model (EMWPM) approach, to determine the striking points and their probabilities. The model was built to run simulations of various defense configurations, to determine strategic implications. Unique recommendations for the protection of the various types of radar, under the constraints of reducing concealment interference to the transmission lobes, when the radar is aiming for different directions [33,34].

- Based on the analytical findings of the Tal Shahar site, 2 articles were published at conferences [9,17]. Engineering design as well as a detailed design of the external protection, due to direct lightning strokes, including an isolated protection system, to reduce the probability of damages, particularly to the radar system, installed at each site.
- Detailed design of the internal lightning protection for cabling of the radar systems, the electrical feed systems for radar, and command, control, and monitoring systems, against surges of voltage and current, due to lightning events at the site and its surroundings.
- Accompanying the construction and the subcontractors, including supervision and acceptance tests of the external and internal protection systems, at the infrastructure level as well as of Elta's systems.

4) IAI – MABAT, Missile Division, Yehud (2006-2007)

- A risk assessment survey to determine the need to install direct and indirect lightning protection systems on buildings, sensitive facilities, and bunkers in the company's territory. The survey recommendations included: detailing protection approaches, determining protection levels and their effectiveness, and prioritizing implementation stages concerning risks and techno-economic costs [31].
- Following the survey findings, it was conducted by the implementation of external and internal lightning protection on several buildings and facilities defined as essential for immediate protection. The work included detailed planning, schemes, bills of quantities, accompaniment of contractors, and top supervision of work

5) Israeli Security Agency (ISA) (1992-2003)

For more than a decade, dozens of unique and complex projects have been carried out, for facilities and systems at the headquarters sites and many other sites of the organization. Risk analysis and risk management surveys, which included mathematical calculations and computational models for simulations of probabilities and risks calculations, due to lightning strokes to critical structures and systems [39,40].

Following the survey findings, it was conducted on the implementation of lightning protection. Detailed planning, technical specifications, schemes, bills of quantities, accompaniment of contractors, and top supervision of work.

- External lightning protection against direct strokes to buildings, facilities, relay stations, computer and information centers, communication centers, masts and antennas, energy centers, command and control systems, and other critical systems, at the headquarters, and various units of the organization deployed in the country.
- Designing unique protections for antenna arrays and other intelligence equipment installed on masts and towers at various sites.
- Designing unique lightning protection networks, based on well-coordinated Surge Protection Devices (SPDs), against surges of voltage and current in critical systems, galvanic and optical combined with galvanic cables, outdoor and indoor: electrical supply lines, communication, and computer lines, command and control lines and more. For the implementation of it, an efficient approach has been developed, based on a simulated model, testing various protection levels for a combination of SPDs, for maximum efficiency in the energy coordination aspect. With an emphasis on ensuring the continuity of operation of the systems, including during significant events.
- Accompanying the construction and the subcontractors, including supervision and acceptance tests of the external and internal protection systems.

6) Ministry of Communication (2002)

Professional opinion, on the subject of risk assessment and risk management due to direct and indirect lightning strokes in a common facility of cable television (telecom) and satellite channels in buildings [36].

The opinion was commissioned in preparation for the updating of regulatory regulations in the context of protection against lightning strokes in cooperative infrastructure systems per subscriber.

- Development of a computational model based on the Electro-Magnetic Wave Pairs Model (EMWPM), for calculating the probabilities of direct lightning strokes:
 - Direct strokes to a satellite channel - to the plate and/or the galvanic parts of the bearing column and/or along the exposed coaxial cable from the LNB to the place of penetration into the structure. The calculations were performed for several typical buildings: private houses and condominiums with a different number of floors and high-rises. The calculations were performed for buildings in several cities in a representative geographical location to create a representative cross-section of the isokeraunic layout in Israel.
 - Direct strokes to the exposed parts of the cable television system - in secondary and tertiary lines, installed in an exposed installation (overhead line) in a built-up

and unbuilt area, in several cities in a representative geographical location to create a representative cross-section of the isokeraunic layout in Israel.

- Recommendations for the implementation of external lightning protection on exposed systems in the satellite channel and accordance with a relevant update of IS 799 standard- Antennas for shared reception and individual antenna facilities and a vertical antenna pole for radio enthusiasts.
- Recommendations for topologies and protection circuits, against voltage and current surges due to direct and/or indirect strokes, using Surge Protection Devices (SPDs) protection levels.
- Cost estimates for the implementation of the recommendations.

7) Cellcom Israel Ltd (1995-2004)

- Risk analysis surveys and risk management, due to direct lightning strokes and determination of the need to install external lightning protection systems at ground station sites, according to the Israeli Standard SI 1173.
The survey was conducted following several lightning events that caused significant damage to the sites (Shefayim, Mesubim Junction, Azor, Kiryat Haim Infrastructure and Oil Company complex, Katzrin, etc.) and damage to the supply lines of the Israel Electric Company (IEC) at some of these sites.
- Analysis of the earthing field types, to determine policies and principles for implementing the structure of the grounding system that should be installed in a ground station site, by the type of antenna mast, the structure of the mast elements (plates, weights, pile), the type of soil and other equipment in the facility [35].
- Analysis of incident damages to electrical supply systems at ground station sites due to surges of voltage and current, following lightning stroke events. The findings of the analysis formed the basis for the design of a dedicated protection board on a feed line with 3 levels of protection.
- Following the survey findings, it was conducted on the implementation of lightning protection. Detailed planning, technical specifications, schemes, bills of quantities, accompaniment of contractors, and top supervision of work. The lightning protection included external protection against direct lightning strokes, and internal protection against the intrusion of voltage and current surges in the company's communication and computing centers (switches): Or Yehuda, Ramla, Netanya, Haifa, and Kiryat Gat.
- The unique design of methods for performing dedicated grounding for armor sheaths and traction tendons of optical cables along with their burial, at manholes, enclosure systems, in switch entry, and within communication bases in switches.
- Development and planning of infrastructure for locating optical cables embedded in underground piping, including examination points at crossing manholes.

8) Partner Communications Ltd. (1998-1999)

The works for Partner were carried out in a contract with Baran-Raviv Construction and Entrepreneurship Ltd., (Baran Group).

Designing lightning protection systems against direct and indirect strokes, as well as protection against conducted and projected voltage and current surges in the company's communication and computing centers (switches): Haifa, Jerusalem, and Rosh HaAyin. Preparing detailed planning, preparation of technical specifications document and bills of quantities, accompaniment of contractors, and top supervision.

9) IDF Construction / Ministry of Defense (1993-1999)

- Conducting surveys to examine the need for lightning protection due to direct and indirect strokes, according to the Israeli Standard SI 1173.
- Detailed design of external and internal lightning protection systems by unique needs for buildings and facilities (ammunition, missiles, hazardous materials, and bombs) with high sensitivity and risk to the environment.
- Detailed design of workstations with missiles that include a system for handling Electro Static Discharge (ESD) effect on missiles at service centers.
- Preparing detailed planning, preparation of technical specifications document and bills of quantities, accompaniment of contractors, and top supervision.
- The works were carried out at the following sites:
 - Ammunition and missile facility, IDF MARTHA 6400
 - Sheds for gas storage, MASA 7100
 - MARTAK MATNATZ , IDF M.K. 460
 - IDF NEMERA facility
 - IDF NAHAL SOREK M.K. 297
 - GEVA facility

10) Sorek Nuclear Research Center, MAMAG (1992 ,1995)

Detailed design of external lightning protection due to direct lightning strokes directly to the structure of the reactor, exposed above the ground and other structures.

Preparing detailed planning, preparation of technical specifications document and bills of quantities, accompaniment of contractors, and top supervision.

11) Azrieli Center, Tel Aviv (Phase I: 1994-1998, Phase II: 2006-2007)

A complex of three skyscrapers, the tallest of which is 49 floors and 187 meters high, which are connected by a common shopping center.

The complexity of the buildings, innovative construction methods for this period, the method of perimeter cladding of the buildings, and the massive galvanic systems

installed on the roofs, required unique lightning protection design solutions. In addition, a unique design was required for the structure that includes a helipad.

- A unique design of lightning grounding systems for complex buildings.
- Unique external lightning protection system, taking into account the heights of the buildings and the perimeter cladding method, the roof systems, and the helipad
- Designing internal lightning protection systems against voltage and current surges in main electrical panels in the energy center.
- Preparing detailed planning, preparation of technical specifications document and bills of quantities, accompaniment of contractors, and top supervision.

12) ESC BAZ (2009)

A company engaged in the development and production of smart video and surveillance systems for perimeter protection for sensitive facilities in Israel and abroad.

The work included preparing a guidance document for lightning protection measures against direct lightning strokes, for the company's camera types, which are installed on masts and guard towers depending on their installation methods [30].

13) Frutarom Industries Ltd. (1991)

Frutarom is an Israeli company engaged in the production and marketing of raw materials for the flavor and fragrance industry and flavor and fragrance blends for the food and cosmetics industries. The company was one of the 10 largest companies in the world.

Risk analysis and risk management survey, due to a direct lightning stroke determine the need to install external and internal lightning protection systems for buildings, large and very complex industrial facilities (process industry), as well as plant control and monitoring facilities [42].

The survey was conducted following several lightning events that caused significant damage to the plant.

14) Telrad Ltd. (1992)

In 1992, lightning strokes severely affected telephony systems made by Telrad that were installed in urban MDF cabinets in the southern United States. The company operated in this area in cooperation with Nortel (Nortel Networks Corporation), a Canadian company.

Following numerous damages to Telrad's communications cards, a report was ordered to analyze the failures due to the lightning events and to recommend of development of new protection cards at the entrances and exits of the galvanic lines in the communication cards. To perform the analysis of the events, a trip was made to the

damaged sites in the United States, to collect field data and examine the MDF cabinets and the damage to the communication cards [41].

15) Dr. Miron Chemical Factory Ltd (2013)

The factory develops and produces substances for plant protection and animal protection, with some of the chemicals being flammable and some of them toxic (pesticides).

- A survey to examine the risks to the plant and its surroundings, due to direct lightning and/or indirect strokes to the plant's facilities and systems, concerning the hazardous materials found in the plant.
- Examining the need to install external lightning protection systems on the buildings and facilities in the plant, to reduce and manage risks, according to the Israeli Standard SI 1173 part 1.

16) Osem-Nestle Company Logistics Center, Shoham Industrial Park - Modi'in Region(2006)

A huge logistics center spread over an area of approximately 35,000 square meters. The work included a survey to examine and determine the need to install external lightning protection systems, according to the Israeli Standard SI 1173 on buildings, warehouses, energy centers, and water treatment centers.

17) Pi Gilot Oil and Pipeline Terminals Ltd., Ashdod Terminal (1995)

A survey to examine the risks and to determine the need for lightning protection to the terminal and its surroundings, due to direct lightning and/or indirect strokes. As well as, recommendations for performing lightning protection against damages at the company's facilities in the port of Ashdod: control center, tank loading bridges, foam institute No 4, main and secondary electrical rooms, and pumping stations for fuels.

Designing unique lightning protection due to direct stroke to different types of tanks for storing fuel with a floating roof.

18)Additional projects

In addition to all the above, many projects were carried out in the field of risk surveys, risk analysis, and management, as well as planning large-scale external and internal lightning protection. These are for companies, factories, and institutions including Bank Hapoalim Communication Center, Tadiran, Desanim Haifa, Bezeq, Tel Aviv University, ECI, Prison Sheta, Knesset of Israel, and many more.

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