Adel M. Sharaf, P.Eng

Position: **Professor**

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Areas: Power Systems/Power Electronics/Electro-technology

Biography

Dr. Sharaf was born in Tanta, Egypt. He obtained his B.Sc. in Electrical Engineering from Cairo University in 1971. From 1971-1974, he was employed as a control and instrumentation engineer with Egypt Air (Cairo, Egypt). He immigrated to Canada in September, 1974 and joined the University of Manitoba as a research assistant and laboratory instructor. He completed his M.Sc. degree in Electrical Engineering 1976 and was employed by Manitoba Hydro as Special Studies Engineer, responsible for engineering and economic feasibility studies in electrical distribution grid planning and expansion. He also obtained his Ph.D. in Electrical Engineering, on a part time basis, in 1979; He joined Trans-Alta Utilities Corporation (Calgary, Alberta) in 1979 as a inductive coordination and planning engineer. Dr. Sharaf was selected as an NSERC-Canada research-assistant professor in 1981 at the University of Manitoba. He joined the University of New Brunswick in 1981 to start a tenure track academic career as an assistant professor. He was awarded tenure in 1986 and full professorship in 1987. He is currently a professor of Electrical Engineering at the University of New Brunswick.

He authored and co-authored over 491 scholarly technical journals(76), conference papers (386) and engineering reports. He did consulting and collaborative research and development work with ASEA- Brown BOVERI, ABB in Switzerland and Sweden, the Canadian Electrical Association (CEA), the Japanese Central Research Institute of the Power Industry (CRIEPI), NANYANG Technological University (Singapore) and electric utilities in Canada and abroad. He did collaborative work with TU-Delft (Holland), Kuwait University (Kuwait City) and numerous Egyptian Universities.

Dr. Sharaf is a senior member of the IEEE since 1984 and a registered professional engineer in the Provinces of Ontario, New Brunswick with formal registration in the

Provinces of Manitoba and Alberta. He is a Registered Consulting Engineer with Professional Engineers of EGYPT.

He is the president of Sharaf Energy Systems, and Intelligent Environmental Energy Systems, INC, a Research and Development and Engineering, Consulting companies incorporated in the Province of New Brunswick, Canada.
Since joining Academia in 1981, he has supervised over (40) graduate students (30) M.Sc. and (12) Ph.D.] since joining Academia in 1981.
He developed a number of undergraduate and graduate courses in electric machines, electric circuits, HVDC transmission and FACTS Technology, Electrical design, power system transients, control, operation and protection. His research areas include electric utility planning, operation, control, protection, renewable energy and village electricity, energy conservation, power electronics & electric motor drives, power quality, intelligent fault - diagnostics and A.I. based monitoring systems, A.I.-Soft Computing Engineering applications in Electro-technical Systems, Interactive Multi-Media Computer- Based Training CBT.

Research Areas include Electric Utility Planning & Operation, Control, Protection, Stability, Security, Power Quality-PQ, Sustainable Green Power-Renewable Energy, FACTS Technology, Power Electronics, Energy Conservation, Power System Control, Protection, Security and Stability and Integrated Renewable Distributed/Dispersed (Wind/PV/Tidal/Small Hydro/Fuel Cells) , Sustainable Green Power-GP and NUG-Generation.

Dr. Sharaf is also Curriculum Consultant to Universities in Kuwait, Egypt, Singapore, United Arab Emirates and Malaysia.
Administrative Experience includes serving as a Chairman of The Electrical Engineering Dept., UAE UNIVERSITY, United Arab Emirates from(1996-2000).

Research Interests

- Electric Power Utility
- Power Electronics
- Motor Drives
- Electro technical Energy Systems
- Power Quality
- FACTS TECHNOLOGY
- Renewable Energy Systems

Education

Ph.D., Electrical Engineering (1979)
University of Manitoba, Winnipeg, MB, Canada

M.Sc., Electrical Engineering (1976)
University of Manitoba, Winnipeg, MB, Canada

Egypt Air, Boeing B707 - Maintenance Training Certificate, Control and Instrumentation Engineer (1972)

B.Sc., Electrical Engineering (1971)
Cairo University, Cairo, Egypt

Sustainability and Experience

(I) Management & Administration Skills

(a) Department Chair / ECE Dept. The University of United Arab Emirates UAE (1996-2000).
(b) Director of both Sharaf- Energy Systems Inc. & President of Intelligent Environmental Energy Systems Inc. since 1985.
(c) Membership in numerous national & international Committees, Engineering and IEEE Standards Associations.
(d) UNB Senate membership and active involvement in Promotion, Assessment, Teaching Excellence & Policy and Selection Committees.

(II) Academic & Professional

(a) Full Tenured Professor since 1986 – UNB, Canada.
(b) Membership of numerous Professional Engineering Associations, Consulting & Selection Committees.
(c) Professional Engineer status Canada, Egypt.
(d) Published over 430 Technical Papers in Journals and Conference proceedings.
(e) Member of grant selection Committees and Thesis Examiner.
(f) Curriculum Development Consultant.

(III) Interpersonal & Communication Skills

(a) MS. & PhD Thesis Supervision of over 40- (Graduate students.
(b) Chair of ECE Dept. at UAE University (1996-2000), United Arab Emirates, AL-AIN , UAE.
(c) President and Technical Director of two incorporated companies in the Province of New Brunswick, Canada.

(d) Established over thirteen International Collaborative-Research Links and Agreements.
(e) Nominated for UNB Excellence in Teaching & Research Merit Award-Four Times, Awarded Two Merit Awards.
(f) Senate membership at The University of New Brunswick.

(IV) Management Skills

(a) Leading the ECE Department at UAE University for full US-ABET Accreditation in the year 2000-full six (6) years maximum limit.
(b) Curricula Consultant & Team Leader-UAE University.
(c) Multi-disciplinary national and international Research and Business Collaboration and Academic links.
(d) Involvement in the Planning, Staffing and Budgetary requirements of the ECE Department at UAE University, United Arab Emirates.
(e) President and Technical Director of two Companies responsible for day-to-day operation of Consulting, R & D and Business transactions.
(f) Research Leader with 40 MS. & PhD Graduate students Supervision in the period of 1981-2004.
(g) Management Style is based on reaching Consensus, Brain-Storming, Consultation, Collegial Decision Making process, Situational-Management Style, Feedback and Quality Assurance.

(V) Promotion & Funding

(a) Attracted numerous funding grants from Government, University, Industry, Electric Utilities and Academic link exchanges both nationally & internationally (Total exceeds 1 Million dollars).
(b) Active involvement in Professional Associations, IEEE, Government Agencies.
(c) Membership in numerous Committees, Conference Organization and Professional Associations.
(d) Numerous international exchanges and collaboration projects (Switzerland, Sweden, Japan, Netherlands, Arab Countries, etc.

(VI) Financial & Budgetary Experience

(a) Responsible for all budgetary, planning & financial management of two Incorporated R & D Engineering Consulting Companies in Canada.
(b) Chairman of ECE Department at UAE University with responsibilities for all planning, staffing, budgetary and financial requirements of the full department for over four (4) years.
(c) Management of Research and consulting funds from Governments,

University and Grant Awarding Agencies.

1) NSERC –Canada
2) 2) EMR-Canada
3) Electric Utility Industry(Canada, Egypt, UAE)
4) CEA-Canada Canadian Electrical Association
5) Sponsored Research and Consulting (Egypt, UAE,….)
6) University of New Brunswick

Field of Specialization

Electric Power Utility, Power Electronics, Motor Drives, FACTS Technology and Electro-technical Energy Systems

Power apparatus and energy systems; power electronics and motor drives; A.I. technologies, smart engineering applications in power systems; power quality and harmonics; power system simulation; power systems control; intelligent sensors and computer monitoring systems; and non-invasive diagnostics and monitoring of power apparatus anomaly/failure; process drive control; energy management and conservation; renewable distributed electrical hybrid systems (wind, solar, mini-hydro); NUG-generators utilization and interface to electric utility systems; digital protection; soft computing; A.I. (Fuzzy, ES, neural network) applications in power systems and motor drives; electrotechnical systems; power electronics and FACTS; interactive multi-media; computer based education (CBE); computer based training (CBT); environmental devices for pollution abatement using electromagnetic/electrostatic systems and devices.

Business, Industry, Engineering Consulting, R&D Experience

President and Technical Director of SES Inc. and IEES Inc., Engineering Consulting and Research and Development incorporated companies in New Brunswick, Canada.

Incorporated two R&D engineering companies and continued to work as the President and Technical Director of both Sharaf Energy Systems and Intelligent Environmental Energy Systems Inc. of Fredericton, New Brunswick Canada. An engineering, design, consulting and R&D companies in environmental and electrotechnical energy systems control, protection power systems, instrumentation, power quality (PQ) and harmonic mitigation, efficient variable adjustable speed (ASD) motor drives, demand side control, energy management and electric energy utilization and conservation, planning, technical feasibility studies, research and product development, renewable energy (wind, PV, hybrid renewable system) electric energy utilization, forensic engineering, intelligent fault diagnostic software systems, A.I. systems monitoring, diagnostics, specialized technical training courses, computer based education (CBE), multi-

media interactive courseware development. The two companies are Engineering Consulting and R&D Innovation and Research Center and have overseas links for technology transfer of specialized smart energy management/power quality, environmental control equipment and renewable energy (wind, PV, small hydro, hybrid) hybrid distributed interface schemes. The two companies have a number of inventions and patent pending devices for ewnvironmental control/pollution abatement and electric energy efficiency / utilization enhancements.

Academic Vision

The Mission of Universities in the new millennium is to provide adequate educational resources and learning services that foster innovation, creativity and discovery as well as embrace an inclusive global culture that is both welcoming and diverse.

The University should harness science and technology for the development and economic prosperity in all walks of life and to provide needed expertise to solve industrial, environmental, health, agricultural and medical problems, hence promote prosperity, welfare and wellness of the whole population.

The University should be fully engaged in community by realizing the three pillars of academic life, namely: teaching, research and community service.

A harmonious University environment has four essential pillars, namely: transparency, collegiality, accountability and diversity.

The training of a fully productive and ethical work fore requires flexible inter-disciplinary and multi-disciplinary programs and associated soft skills of communications, entrepreneurship, design skills and group dynamics.

The Faculty of Engineering and Applied Sciences is always the flagship of any University with the mandate to introduce new programs and innovative curricula and emphasizes the following five areas:

- Design skills, hands-on, communications and soft skills, entrepreneurship, group dynamics and self learning
- Basic sciences and mathematics courses tailored to engineering and open-ended problem solving
- Multi-disciplinary approach to engineering education
- Engineering learning up-front.
- Scholarly teaching.

The role of morality and ethics in the engineering education is very crucial and should be fully entrenched in all aspects of teaching and learning.

** “EDUCATION WITHOUT MORAL VALUES, AS USEFUL AS IT IS, SEEMS RATHER TO MAKE A MAN A MORE CLEVER DEVIL”--- (C.S. Lewis)

** “The Principle Mark of a Genius is not Perfection but Originality, The opening of New Frontiers” (Arthur Koestler)

The need to address rapid world technological changes and their global impact on the international economy and the tilting employment markets are paramount to ensuring the University’s long term competitiveness and responsiveness.

New innovative multi-disciplinary, inter-department and inter-faculty Engineering and Science, Engineering and Arts integrated programs is a shear necessity in new areas of communications and information technology (CY&IT), Bioengineering, Bioinformatics, Biometrics, Nano Technology / Intelligent Sensors, Materials Engineering, Parallel and Super Computing, Engineering Technology Management, Entrepreneurship and Soft Computing, and Distributed Intelligence.

The role of value added research in the enhancement of the process of discovery and scholarly teaching should be fully strengthened. The University environment should promote a vibrant, free and inclusive culture that promotes and rewards excellence as well as embrace and welcome diversity.

Sustainability requires effective recruitment and marketing of excellence that can be strengthened by real partnerships and close links with community, industry, government, NGO and all stakeholders both nationally and internationally. Internationalization of the University is must!

The University should advocate an integrated student centered learning environment and mentorship that sustains both life-long learning and self-learning using technology enabled teaching tools such as distance learning, and satellite/web/internet/on-line learning. International academic links and research channels are crucial for marketing educational, research and consulting assets as a value added commodity both nationally and internationally.

Education quality validation via learning outcome assessment plan and annual quality assurance process using assessment feedback metrics are required to monitor accountability, teaching/learning excellence and in turn, guarantee both sustainability and competitiveness.

Biodata

- Over 15 years of Industrial experience before joining Academia in 1981.
- Excellence in Teaching and Research- awarded two Merit-awards in 1985 and 1995.
- Published over 430 Technical- Journal, Conference Papers and Sponsored engineering-reports.

- Professional leadership as a University Senator (UNB) and Department Chairman, Electrical Engineering Department at the United Arab Emirates University from 1996 – 2000.

- Research Leader, numerous Research grants from Government, Industry and Granting Agencies.

- Technical Director and President of SHARAF Energy Systems, Inc., A Consulting Company Incorporated in the Province of New Brunswick, Canada (1985).

- Technical Director of Intelligent Environmental Energy Systems, Inc.: R&D Engineering Company Incorporated in the Province of New Brunswick, Canada (1995).

- Twice Selected Electrical Engineering Department Chairman, United Arab Emirates University, U.A.E. Two Terms in (1996-1998) and (1998-2000) with responsibility to secure US-ABET Accreditation, which was awarded in the year 2000 for full six –year maximum.

- Member of Faculty Promotion Committee, U.A.E. University.

- Membership in numerous World-Wide Professional Engineering Associations, Committees and International Organizations. (Refer to C.V.)

- Extensive business & management experience as the President and technical director of two fully incorporated companies in New Brunswick, Canada for over fifteen years.

- Excellent Interpersonal and Communication skills that facilitated establishing multi disciplinary Academic links and Research collaborations around the world, with extensive record of scholarly interactions, engineering consulting, business contacts. (Refer to C.V.)

- Supervised over seventeen (19) M.S. and thirteen (13) Ph.D. students since joining University of New Brunswick in 1981.

- Research areas include Electric Utility Planning & Operation, Power Apparatus and Systems, Power Electronics, Protection Control, A I Applications, HVDC, Facts Technology, Electro-Technology, Power Quality-PQ and Sustainable/Renewable Green Power Energy Systems.

- Industrial experience includes professional duties as Planning, Engineer (Trans- Alta, Utility, Canada), Special Studies Engineer (Manitoba Hydro, Canada), and Controls Engineer (Egypt Air, Egypt).

- Numerous Government of Canada & Industry R & D sponsored projects and engineering research.

- Nominated 4 Times for Merit awards for excellence in Teaching, Research and University/Engineering Community services (Awarded two Merit Awards).

- Management style is based on role model, dynamic interactions, open consultations, goal setting, brain storming, group decision making and a transparent management style based on leading, delegation and building consensus.

- A firm believer in the need for a new integrated and innovative engineering curricula reflecting design based learning, entrepreneurial approach to engineering education and new evolving technology with emphasis on innovation, critical thinking skills, self learning, retraining, project based learning and need to integrate multimedia and the internet in Tele-Education.

- Numerous memberships in professional, standards, and engineering organizations worldwide including Professional Engineering (Canada, Egypt Associations) IEEE (senior member), CEA (refer to C.V.)

- Industrial, Business and Engineering management responsibilities include duties as Design and Controls Engineer (Egypt Air), Special Studies Engineer (Manitoba Hydro, Canada), Planning and Coordination Engineer (Trans Alta Utility, Canada), as well as the current Presidency/Technical directorship of two incorporated Engineering and Technology Companies, (New Brunswick, Canada).

- External Ph.D. & M.S. thesis and technical paper reviewer and Faculty Promotion Examiner for national and international Universities, refereed journals and conference proceedings.

- Extensive Consulting experience in the area of Electrical Utility Operation, Control, Protection, Planning, Electro-Technology, HVDC and FACTS Technology Applications, Power Electronics, Power Quality, Renewable Energy, Green Power

and Energy Conservation Measures.

- Registered professional engineer with the provinces of Ontario and New Brunswick (Formally with the Provinces of Manitoba and Alberta).

- Registered Consulting Engineer with the Professional Engineers of Egypt.

Sustainable Electric Energy Center (SEEC)

The 21St Century is facing three key Challenges namely: Energy, Environment and Water Resources.

Energy Sustainability, Conservation and Demand Side Management are strategic issues for any Nation, in particular for the development of Egypt and the Arab countries. So, it is important to solve the problem of energy management to improve the power quality and increase the competition ability of the national industries.

On the other hand, well established problems of energy efficient utilization, Efficiency Enhancement, Loss reduction, Power saving are emerging all over the world as a consequence of limited primary Fossil energy resources available.

Sustainable/Renewable/Green Power-Energy Sources and Efficient Use coupled with ensured levels of Power Quality, Demand Side Management and Energy Conservation must be addressed and utilized by all Engineers and Technologists in all sectors of the Economy. Energy is becoming a rare Commodity and Renewable Green Energy Sources will be the WAY OF THE FUTURE!

The Research-Leader is Professor Dr. Adel M. Sharaf. He has over thirty five (35) years of Industrial, Electric Utility, Business, Engineering-Consulting, Academic Research, R & D experience in Canada and Abroad.

The Sustainable Electric Energy Research Center has an ambitious plan to Lead the Research and Development in the areas of Renewable, Green Power and sustainable Energy Sources, Energy Conservation and Demand Side Management as well as develop technical skills of the academic staff, graduating students and practicing engineers in all industrial and Business sectors in the field of Renewable Energy, Green Power, Hydrogen Technology/Fuel cells, Distributed/Dispersed Generation.

The SEEC-Center will serve as a Catalyst in innovating R & D Value-Added Research in the key areas of:

1) Leading Edge Research and Development and Technology Transfer
2) Quality Training and Human Resource Development
3) International Collaboration with International Centers around the World

4) Innovative & Sustainable Technology Marketing and Licensing

Professor Dr. Adel Mahmoud Sharaf of the University of New Brunswick will also act as an International Liasion Officer and Resource person with both Advisory Duties and Joint Project Coordination and Research supervision.

The New SEEC Research Center aims to be a sustainable vendor of new Technologies and Engineering Marketable Solutions addressing Renewable/Green Energy, Energy Conservation Measures, Energy-Saving Green Plug Devices, Harmonic Active Power Filters, FACTS Technology Based Power Quality and Voltage-Stabilization Solutions and Loss Reduction/Energy Management strategies for Residentail, Commercial, Industrial Electric Loads.
The SEEC-Research Center has an added Educational /Training mission.

SEEC-Objectives

1. Technical Consultation and Engineering Solutions.
2. Research and Development in the field of Energy Management Technologies.
3. Technology transfer and Marketing of Innovative Technologies and Processes.
4. Process Modifications/Retrofitting for Energy Efficiency and Sustainable Use.
5. Training,Educational, Skill Upgrading of Academic Staff, Practising Engineers/Technologists.
6. Help the engineers in all sectors (industry, petroleum, electricity,) to implement the Power Quality and Energy Management Requirements.
7. Training and specialised Workshops and Seminars in all Arab Countries.
8. Novel Energy Sustainable solutions Promotion and Marketing in Canada and Abroad.

SEEC- Research Center Activities will cover:

1. Educational, Training and Course Delivery.
2. Research & Development Test/Validation Laboratory Facilities.
3. Published Guidelines and Promotional Materials and Specialises Books/Monograms.
4. Short Term International Expert Exchanges and Research Liasion with other Advanced Research Centers around the World(Esprecially in USA and CANADA).
5. Specialises Hands-On Training Seminars and Workshops.
6. Dynamic Curricula and Course Development based on Case studies, Project ased Learning and Group Centred Leearning.
7. Industry, Business, Public-Energy Conservation & Sustainable/Efficient Energy USE awareness and promotionl/marketing Programs.

Graduate Students

GRADUATE STUDENTS ACCEPTED and/or CONFIRMED Sept 2006

1. A.S. Maged Eldeib, PhD
2. Mohammad Reza Hesamzadeh, PhD
3. Yasser Ibrahim, PhD
4. Hassan Ali Mahasneh, PhD
5. Houssen Salh Ali Milad, M.Sc.E.
6. Abalbaset Mnider, M.Sc.E.
7. A. Hassan Yakout, PhD

GRADUATE STUDENTS CURRENTLY UNDER SUPERVISION

1. Khaled M. Abo-Al-Ez, M.Sc.E. (ongoing)
2. Atif Saleem, Ph.D. (ongoing)
3. Pierre Kreidi, Ph.D. (ongoing)
3. Hozouri, Ali, PhD, Jan 2003 (ongoing)
4. Abdulalah Aljankawey, M.Sc.E. (ongoing)
5. E. Salem Elbakush, PhD. (ongoing)
6. W. Wang, M.Sc.E. (ongoing)