Nathan Sokal short Biography and most relevant contributions:

He received B.S. and M.S. degrees in Electrical Engineering from the Massachusetts Institute of Technology, Cambridge, Massachusetts, in 1950.

During 1950-1965 he held engineering and supervisory positions for design, manufacture, and applications-engineering of analog and digital equipment.

In 1965, Mr. Sokal founded Design Automation, Inc., a consulting company doing electronics design review, product design, and solving “unsolvable” problems, for equipment-manufacturing clients. Much of that work has been on high-efficiency switching-mode RF power amplifiers at frequencies up to 2.5 GHz, and in switching-mode dc-dc power conversion.

Mr. Sokal holds eight patents in power electronics, and is the author or co-author of two books and more than a hundred technical papers, mostly in high-efficiency generation of RF power and dc power.

Nathan Sokal was elected a Fellow of the IEEE, for contributions to the technology of high-efficiency power conversion and RF power amplification.

He also received the IEEE 2007 Microwave Pioneer Award "in recognition of a major, lasting, contribution ...the Class-E RF power amplifier." The award recognizes a "major, lasting contribution" in the society's field of interest made at least 20 years before the award is bestowed.

He is a Technical Adviser to the American Radio Relay League, on RF power amplifiers and dc power supplies, and a member of the Electromagnetics Society, Eta Kappa Nu, and Sigma Xi honorary professional societies.

Among his most important contributions to science and engineering come the fore the Class-E amplifier and converter. He is considered the “father” of Class-E amplification and power conversion. His works have been referenced thousands of times in scientific papers on power electronics and communications electronics.

The Class-E is a switching-mode high-efficiency power amplifier and converter that is small, lightweight, and relatively easy to design. At the present it is considered one of the basis of modern high efficiency transmitters. Class-E principles are used to reduce the energy consumption of almost any class of radio transmitters and it used in applications such as mobile communications systems, broadcasting (radio and TV), RADAR, satellite communications, etc.
Recent advances both in solid state technology (such as GaN technology) and communication circuits and techniques (such as Envelope Elimination and restoration and Envelope tracking) are contributing to boost the interest on the Class-E amplification because their inherent benefits can be extended to microwave frequencies and complex communication applications demanding highly linear power amplifiers.

It is expected that Class-E technology will play an important role in the recently so called “Green Radios and Networks” (energy efficient radio systems).

Selected IEEE publications:


Sokal, N.O.; Redl, R., “Control algorithms and circuit designs for optimal flyback-charging of an energy-storage capacitor (e.g., for flash lamp or defibrillator)”, Power Electronics, IEEE Transactions on, Vol. 12 , No. 5 , pp. 885 – 894, Sep 1997.


Books

**Dynamic Analysis of Switching-Mode Dc/Dc Converters**
Author: Nathan O. Sokal, Richard Redl, Andre S. Kislovski
Publish Date: June 1991
ISBN-10: 0442239165

**Switchmode RF Power Amplifiers**
Author: Nathan O. Sokal, Andrei Grebennikov
Publish Date: June 2007
ISBN-10: 075067962X
**Selected Patents:**

**United States Patent 3,919,656**

**High-efficiency tuned switching power amplifier**

Inventors: Sokal; Nathan O. (Lexington, MA), Sokal; Alan D. (Lexington, MA)

Appl. No.: 05/353,588


**United States Patent 3,900,823**

**Amplifying and processing apparatus for modulated carrier signals**

Inventors: Sokal; Nathan O. (Lexington, MA), Sokal; Alan D. (Lexington, MA)

Appl. No.: 05/345,509

Filed: March 28, 1973

**United States Patent 4,607,323**

**Class E high-frequency high-efficiency dc/dc power converter, YS pat 4,607,323**

Inventors: Sokal; Nathan O. (Lexington, MA), Redl; Richard (Budapest H-1502, HU), Molnar; Bela (Budapest H-1502, HU)

Appl. No.: 06/601,381

Filed: April 17, 1984

**United States Patent 4,928,200**

**Overcurrent protection for switching mode power converter**

Inventors: Redl; Richard (Concord, MA), Sokal; Nathan O. (Lexington, MA)

Assignee: Cherry Semiconductor Corporation (East Greenwich, RI)

Appl. No.: 07/106,698

Filed: October 6, 1987
United States Patent 4,719,559

**Current-mode control of capacitively coupled power converters**

Inventors: Sokal; Nathan O. (Lexington, MA), Redl; Richard (Arlington, MA)

Assignee: Cherry Semiconductor Corporation (Greenwich, RI)

Appl. No.: 06/922,006

Filed: October 22, 1986

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United States Patent 5,485,361

**Flyback charging with current mode controlled flyback converter**

Inventors: Sokal; Nathan O. (Lexington, MA)

Appl. No.: 08/461,127

Filed: June 5, 1995

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United States Patent 4,607,323

**Class E high-frequency high-efficiency dc/dc power converter**

Inventors: Sokal; Nathan O. (Lexington, MA), Redl; Richard (Budapest H-1502, HU), Molnar; Bela (Budapest H-1502, HU)

Appl. No.: 06/601,381

Filed: April 17, 1984