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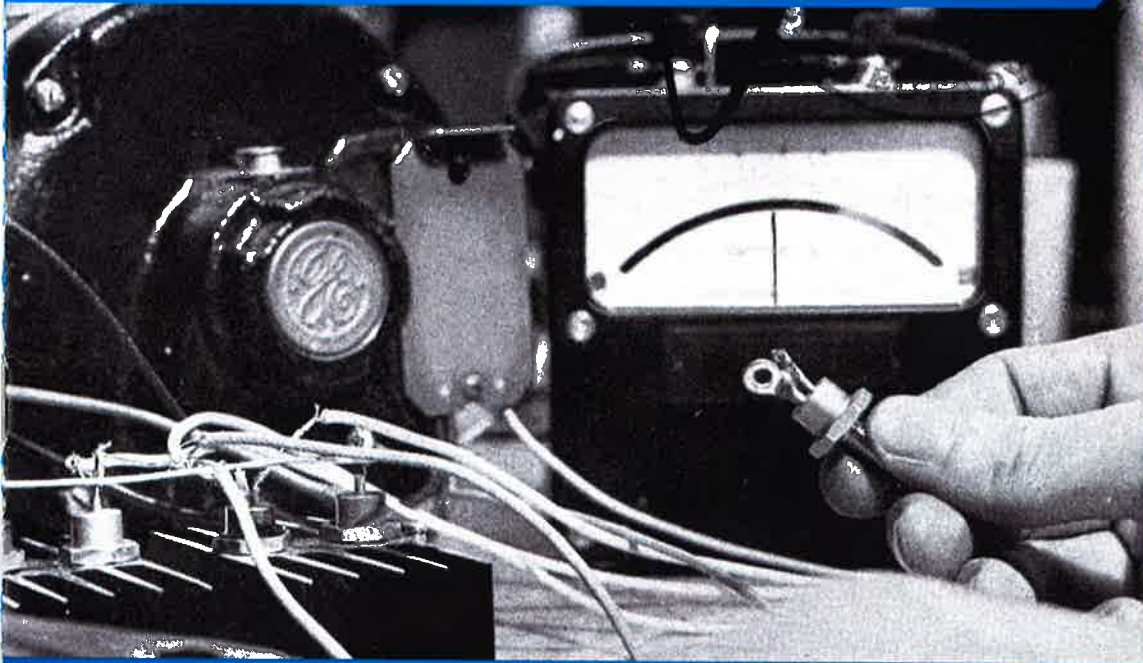
The Institute of Electrical and Electronic Engineers  
and Advanced Atomization Technologies

A Parker Aerospace & GE Aviation Joint Venture

*present the dedication of the*

## Electrical Engineering Milestone Silicon Controlled Rectifier (SCR/Thyristor), 1957

Friday, 14 June 2019 | 124 Columbia Street, Clyde, NY 14433



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## CEREMONY PROGRAM

1:30 pm 

**Registration and Refreshments**

2:00 pm 

**Introduction by Sreeram Dhurjaty**  
IEEE Rochester Section Chair

**Opening Remarks by James Mazzarella**  
Chief Technology Officer, Advanced Atomization  
Technologies

**Welcome by Ahmed Elasser**  
Principal Engineer-Power Electronics, GE

**Welcome by Frede Blaabjerg**  
President, IEEE Power Electronics Society

2:30 pm 

**Keynote Address by JG Kassakian**  
Massachusetts Institute of Technology

3:00 pm 

**Milestone Award Presentation by José Moura**  
President, IEEE

3:15 pm 

**Closing Remarks Gerard Hurley, History Chair**  
IEEE Power Electronics Society

3:30 pm 

**Reception**

# IEEE MILESTONE DEDICATION CEREMONY

Friday, June 14, 2019 Advanced Atomization Technologies  
124 Columbia Street, Clyde, NY 14433

## ACKNOWLEDGEMENTS

### IEEE History Center:

Robert Colburn, Research Coordinator

### Dedication Sponsors:

IEEE Power Electronics Society

### IEEE Section Milestone Sponsor:

Rochester Section

S. Dhurjaty, Rochester Section Chair

### Cover Photo:

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## Welcome to today's IEEE Milestone Dedication Ceremony.

We are indeed honored that the IEEE has selected Clyde, NY, as the site for the first Milestone initiated by the IEEE Power Electronics Society (PELS), to mark the invention of the SCR/Thyristor, on this site in 1957.



The IEEE Milestones program honors significant technical achievements in all areas associated with IEEE. Milestones recognize the technological innovation and excellence for the benefit of humanity found in unique electrical engineering products, services, seminal papers and patents. Each milestone recognizes a significant technical achievement that occurred at least twenty-five years ago in an area of technology represented in IEEE and having at least regional impact. This is the first Milestone sponsored by the IEEE Power Electronics Society.

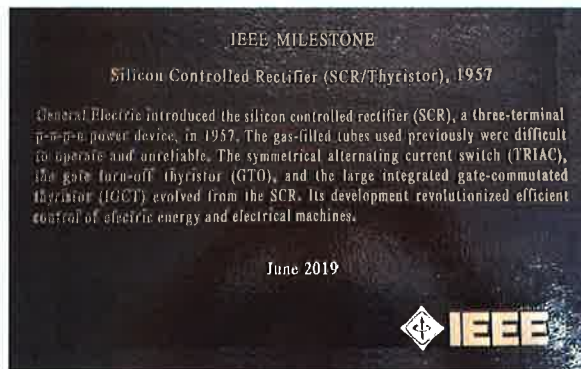
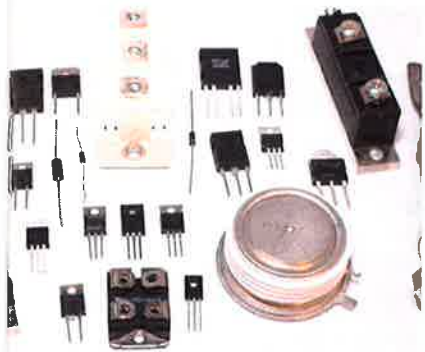
The presence of GE on this site continues to the present day, Parker Aerospace and GE Aviation formed a joint venture in 2012 called Advanced Atomization Technologies. Parker opened its factory in Clyde in 1966 and bought the building

from the Clyde Industrial Development Corporation in 1969. Prior to Parker's arrival, General Electric produced industrial products in the factory for 20 years and it was during that period that the Silicon Controlled Rectifier (SCR) or Thyristor was invented. Advanced Atomization Technologies has grown steadily over the years to its current workforce of 430. The site underwent a major expansion in manufacturing facilities, office building and increased workforce in 2014.

The three-terminal p-n-p-n device introduced by General Electric (GE) in 1957 as the silicon controlled rectifier (SCR, later thyristor) became the dominant control device in the power industry. The development of the SCR revolutionized the control of electrical machines. Prior to 1955, triode vacuum



# IEEE MILESTONE DEDICATION CEREMONY



tubes were used for machine control that were difficult to operate and notoriously unreliable. The symmetrical switch (TRIAC) evolved from the SCR, later still came the gate turn-off thyristor.

The invention of the SCR/Thyristor revolutionized the control of power conversion by replacing vacuum tube mercury-arc controlled rectifier tubes with the SCR, a four layer, three terminal, solid state semiconductor device (the thyatron) with a three terminal semiconductor device. It is a four layer three terminal solid state semiconductor device. It has an anode, a cathode and a gate. The diode is a two terminal device, current flows from the anode to the cathode when a positive voltage is applied between the anode and the cathode. The SCR operates like a diode except that current cannot flow until a small voltage is applied between

the gate and the cathode. Current flow is stopped by reducing the current below the latching value.

The invention of the SCR/Thyristor led to dramatic improvements in the rectification of line voltages and was the basis of modern speed control of ac and dc motors.

The initial application for the SCR was in phased controlled rectification. Rectification involves the conversion of ac voltage to dc voltage. Phase controlled rectification allowed ac voltage to be converted to dc voltage and by delaying the trigger point the average value of the dc output can be regulated. This led to the rapid development of high voltage dc transmission for long distances and for transmission.

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# IEEE MILESTONE DEDICATION CEREMONY

## IEEE

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## IEEE Power Electronics Society

The Power Electronics Society is one of the fastest growing technical societies of the Institute of Electrical and Electronics Engineers (IEEE). For over 30 years, PELS has facilitated and guided the development and innovation in power electronics technology. This technology encompasses the effective use of electronic components, the application of circuit theory and design techniques, and the development of analytical tools toward efficient conversion, control and conditioning of electric power.





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