



GenRad

75  
Years

1915-1990

*A New Way of Thinking*



# 1915

*To Our Customers, Stockholders, and Employees:*

June of 1990 marks the 75th anniversary of the founding of the General Radio Company, today known as GenRad, Inc. This occasion provides an ideal opportunity to reflect on the company's traditions and to look ahead to its future.

When Melville Eastham formed General Radio with two partners in 1915, he had a very clear vision of the new company's mission: to develop precision measuring instruments for the emerging electronics industry. This was before the days when the term "radio" meant "radio receiver", as it does today; "radio" then meant wireless communications, or almost everything that we now describe as "electronics". No one at that time could have imagined the remarkable developments in electronics that were destined to take place in the next 75 years. Still, by calling the new enterprise General Radio, Eastham was staking out a very large chunk of territory in which the company aspired to excel.

From its very beginnings, General Radio was known primarily for two things: quality and innovation. Engineers worldwide thought of General Radio as the supplier of the best instruments anywhere, and the company's list of significant "firsts" grew rapidly. One of the company's first products, the precision air capacitor, was a component in E.H. Armstrong's super-heterodyne receiver, the world's first experimental modern radio receiver. Because General Radio's customers were advanced experimenters, engineers, and scientists, who in many cases were seeking instruments unavailable from any other source, the relationship between the company and its customers was very close.

But General Radio was a pioneer in more ways than technical innovation. Eastham believed that a company ought to be more than an organization for manufacturing products, and that its employees were more than hired help. He felt strongly that the value of employee participation could make a company greater than the sum of its parts. For this reason, General Radio became an innovator in employee relations as well. Benefits such as paid vacations, sick leave, and employer-financed group life insurance were instituted early on, long before they were adopted elsewhere. General Radio's profit-sharing bonus plan, begun in 1917, became a model for other companies. In many ways, Eastham's vision for General Radio amounted to nothing less than "a new way of thinking" about what a company could do and could be.

Today, 75 years later, the continuous search for new ways of thinking has never been more critical. At GenRad, the values of innovation, quality, customer satisfaction, and employee involvement in the company's success remain steadfast, but how those values get implemented in ways that best meet customer needs has changed dramatically.

Engineering innovation is, of course, as important to us as ever. But innovation can no longer be viewed as a singular goal; it must be tightly coupled to an in-depth understanding of cus-



**GenRad**

# 1990

---

customer needs and to manufacturing for innovation, quality, and cost advantage. Throughout the company, we must spare no efforts to satisfy our customers, because that is what will determine our success in the 1990s.

Quality today is even more important than ever, because customer expectations for quality have risen so high. Yet quality can no longer be "inspected in" to products, nor can it require excessively long product development cycles. Quality must be the natural result of the constant effort to improve all of a company's processes—from engineering and manufacturing to sales and support. "Quality" is more than a characteristic of a defect-free product; it is a result of the determination to "do it right the first time", throughout the company.

And surely, employee involvement in every aspect of the company's operations remains vital. As a public company, GenRad faces a more complex set of responsibilities than the privately held General Radio ever did. We must now be attuned to the interests of our stockholders as well as to those of our employees. This requires a careful balance between concerns for short-term and long-term performance. But without the skills, commitment, and loyalty of our employees, we would literally have no means to serve our customers or stockholders.

Twenty-five years ago, on the occasion of General Radio's 50th anniversary, then-chairman Arthur Thiessen noted that General Radio had been in continuous operation longer than any other electronics manufacturer in the United States, and perhaps in the world. He went on to say:

But longevity, while interesting, perhaps even commendable, is itself hardly a virtue. It is the future that counts. Unlike people, organizations can renew themselves. We at GR believe that new people, new ideas, and progressive management are the things that will make the future of this fast-moving art even more productive and more interesting than the past.

As General Radio believed then, we at GenRad believe now. However fascinating the past may be, it is the future that counts. As we have in the past, we will continue to renew ourselves. And as we look ahead to the 1990s and beyond, we pledge to continue forging the new ways of thinking that have been the common thread in our 75-year history.



Robert E. Anderson  
President and Chief Executive Officer  
GenRad, Inc.

---

# “Our top priority is achieving the highest level of C



Melville Eastham  
Founder

**1901** Marconi transmits first transatlantic radio signal.

**1906** DeForest invents the three-element vacuum tube.

**1915** General Radio Company founded by Melville Eastham, to develop measuring instruments for the fledgling radio (i.e., electronics) industry.

**1917-18** Armstrong develops first superheterodyne receiver, forerunner of modern radio, using GR Precision Air Capacitor as a component.

**1919** GR makes first export

sale—a precision variable capacitor to customers in The Netherlands.

**1920** Westinghouse Electric Company pioneers commercial broadcasting over KDKA in Pittsburgh, Pennsylvania.

**1921** GR introduces first capacitance bridge, allowing more accurate measurements of this important radio circuit parameter.

**1927** GR introduces first commercial low-frequency audio oscillator, used to measure the operation of radio

broadcasting circuits at the lowest audible frequencies.

**1928** GR introduces first commercial vacuum-tube voltmeter, used for measurements on high-impedance radio circuits.

**1928-29** Zworkin invents iconoscope and kinescope, forerunners of television.

**1928** GR introduces first commercial standard signal generator, used to measure radio receiver sensitivity. It became a world standard for radio engineers.

## 1915



General Radio's first offices,  
Cambridge, Massachusetts, 1915



General Radio Type 129-C  
Galvanometer



General Radio Cambridge  
facility, 1940

First Radio Wave/Marconi



General Radio Type 759-A  
Sound Level Meter



General Radio demonstration  
lab, Cambridge,  
Massachusetts



General Radio  
Impedance



# Customer Satisfaction, through our Total Quality Comm

**1931** GR introduces first commercial modulation meter. Within a few years, the Federal Radio Commission (predecessor of today's FCC) required all broadcast stations to use this type of meter.

**1932** GR introduces first RF bridge, used to measure circuit impedance at radio frequencies.

**1932** GR introduces first commercial cathode-ray oscilloscope, providing a visual display of electrical waveforms.

**1932** GR introduces the Edgerton Stroboscope, manu-

factured under license granted by Dr. Harold Edgerton, inventor of the electronic stroboscope.

**1933** Armstrong secures patents for FM radio broadcasting, eliminating the problem of natural static characteristics of AM radio.

**1933** GR introduces first commercial sound-level meter, to provide measurements of acoustic sound intensity produced by machinery, loudspeakers, and the environment.

**1933** GR introduces first

continuously adjustable autotransformer (VARIAC®), permitting the gradual adjustment of line voltages. It became the standard for line voltage control in numerous industrial applications.

**1933** GR introduces first wave analyzer, which accurately measured the harmonics and other frequency components of complex electrical waveforms.

**1935** GR introduces first impedance bridge, combining resistance, inductance, and capacitance bridge capabilities

into one instrument. It was used in engineering and college laboratories worldwide.

**1937** GR introduces first RC oscillator, a simpler, less expensive, and wider-range oscillator circuit for radio frequencies. Hewlett-Packard's first product was licensed under the same GR patent.

**1946** Eckert and Mauchly complete ENIAC, the first general-purpose, all-electronic digital computer.

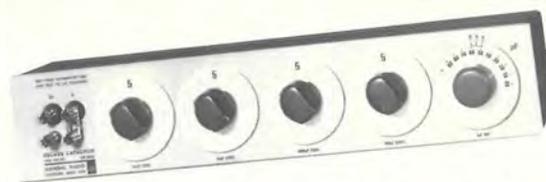
**1945-49** Printed circuit boards begin to come into



bridge



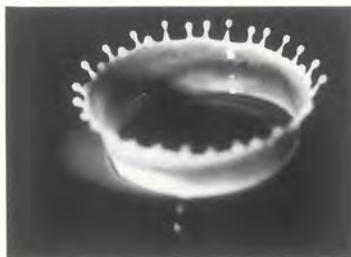
General Radio Strobotac® electronic stroboscope



General Radio 1412-BC Decade Capacitor



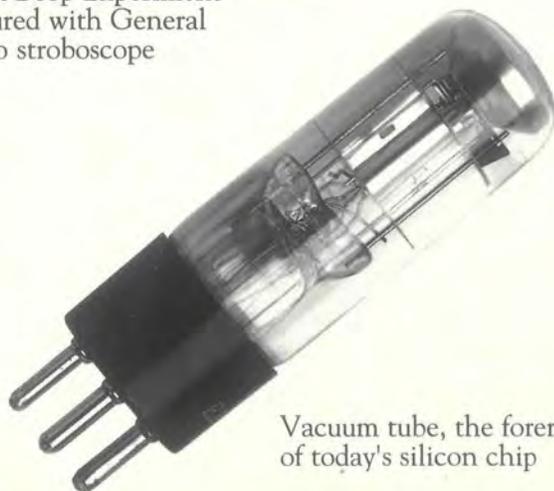
General Radio Concord facility, 1960s



"Milk Drop Experiment" captured with General Radio stroboscope



radio 650-A Bridge



Vacuum tube, the forerunner of today's silicon chip



General Radio 1630-AV Inductance-Measuring System

# commitment. We have a proven ability to develop innovative

common use.

**1948** Bardeen, Brattain, and Shockley invent junction transistor.

**1948** GR introduces first measurement-grade coaxial connector for the VHF and UHF frequency ranges.

**1956** GR introduces first general-purpose comparison bridge, for rapid production testing of electronic components.

**1959** Kilby and Noyce, working independently, invent the integrated circuit.

**1961** GR opens first European sales and service office in Zurich, Switzerland.

**1964** GR introduces first automatic capacitance bridge, which eliminated the need for an operator to make manual adjustments. It could automatically send measurements directly to printers, card punches, and out-of-limit warning devices.

**1968-73** GR refocuses business, shifting from benchtop manual instruments for design engineers to computer-con-

trolled systems for manufacturing testing.

**1969** GR introduces first commercial, computer-controlled logic circuit analyzer (1790), inventing the automatic pc board testing industry.

**1970** GR acquires Time-Data (now Structural Test Products division—STP), which had developed the first commercial digital signal analyzer.

**1971** Intel introduces the 8008, the first microprocessor.

**1972** GR introduces first software simulator for complex

circuits (CAPS™), providing rapid and accurate fault diagnostics in pc board testing.

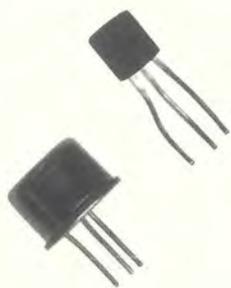
**1972** GR enters Japanese systems market with establishment of distributorship with Tokyo Electron Limited.

**1975** General Radio renamed GenRad, Inc.

**1978** GenRad becomes a public company.

**1978** GR introduces 2270 In-Circuit Test System. It captures leading market share within two years.

**1978** GR introduces first



GenRad Computer-Aided Programming Software



GR2750 Performance Test System



General Radio 1790 Logic Circuit Analyzer



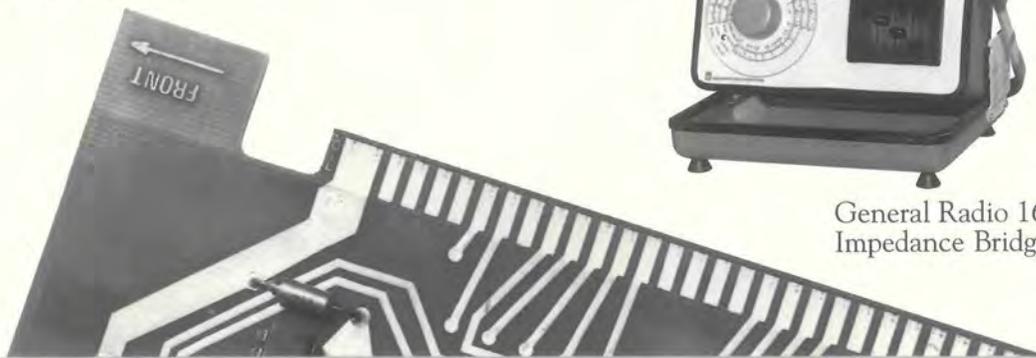
GR2270 Board Test System



General Radio 1656 Impedance Bridge



1693 Digibridge® RLC Test System



# solutions to new test and measurement problems.”

Robert E. Anderson

Automatic Test Generation software for in-circuit testing, dramatically reducing test program preparation time.

**1979** GR introduces 2500 Series, the first fully programmable mechanical test systems.

**1980** GenRad listed on New York Stock Exchange.

**1981** IBM introduces the PC.

**1981** GR introduces TRACS®, the first quality management system for electronics manufacturing.

**1982** GR enters design automation market with initial

investment in Cirrus Computers (developers of System HILO™); fully acquired in 1983.

**1986** GR introduces the Jaguar Diagnostic System, the first commercial automotive service tester for the new generation of microprocessor-intensive cars.

**1987** GR introduces 2750 Performance Test System, the first pc board tester to provide strategy-independent testing for the most complex electronic circuits, and GENESIS™, the first strategy-independent test

generation system.

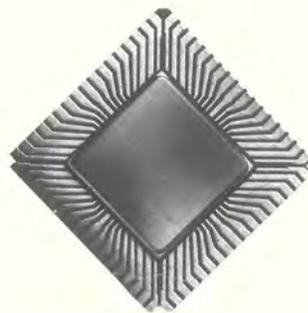
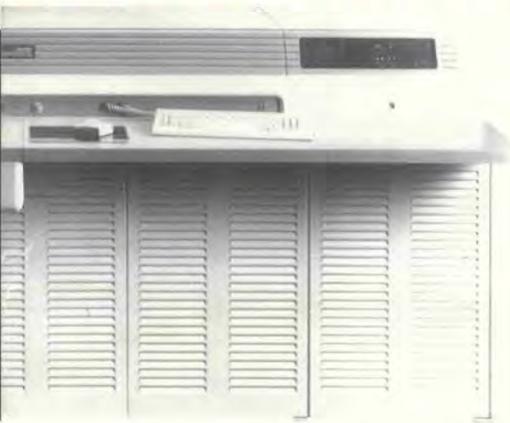
**1988-89** GR introduces 2282 and 2286 Production Test Systems, a new family of high productivity board test systems.

**1989** GR acquires Structural Measurement Systems; integrated into STP.



Robert E. Anderson  
President and CEO  
1988 - Present

# 1990



GR2530 Random Vibration Controller



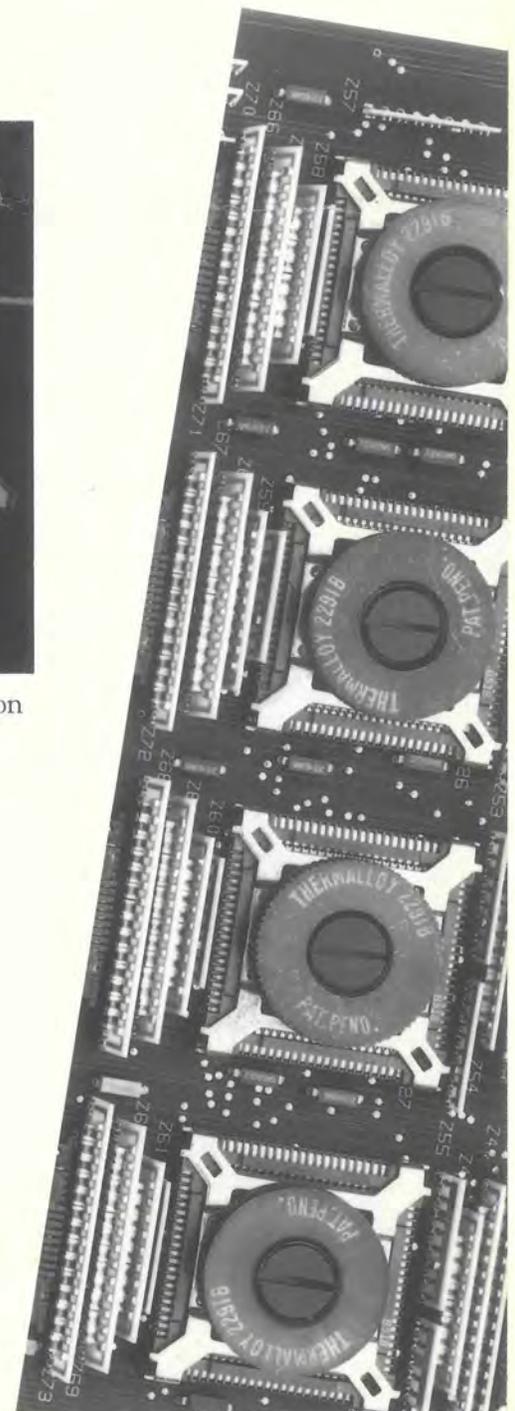
GR2286 Production Test System



ster



GR2515 Computer-Aided Test System



The evolution of the GR logo:  
General Radio's first logo (top)  
appeared on the cover of the com-  
pany's 1919 catalog. Our current  
logo (bottom) was designed in 1975  
when the company was renamed  
GenRad, Inc.



GR has marketed its products  
internationally almost since its  
founding. Locations of our current  
sales and service offices are listed  
below.



**U.S.A.**  
1-800-GENRAD

**Canada**  
TEL. 416 890-0160  
TLX. 06-986766 TOR

**Austria**  
TEL. 0222-812 16 18  
TLX. 111 734 GENRAD A

**France**  
TEL. (1) 47970739  
TLX. GENRA 220991F

**Germany**  
TEL. 089/431990  
TLX. 529917 GEND

**Italy**  
TEL. (02) 502951  
TLX. 320373 GENRAD I

**Switzerland**  
TEL. 01/552420  
TLX. 816828 GENRA CH

**United Kingdom**  
TEL. 0628 82 6941  
TLX. 848321 GENRAD G

**Asia Pacific**  
Japan  
TEL. (81) 0423-33-8024  
TLX. 24291-LABTEL-J

Singapore  
TEL. 65-278-4400  
TLX. RS37808 GRASIA

**All Other Countries**  
International Department  
300 Baker Avenue  
Concord, Massachusetts 01742  
U.S.A.  
TEL. 508 369-4400  
TLX. 95-1037 or 200272