
PULSE POWER DIVISION
CORNELL UNIVERSITY


HIGH VOLT LAB
Laboratory Of
Plasma Studies
Cornell University
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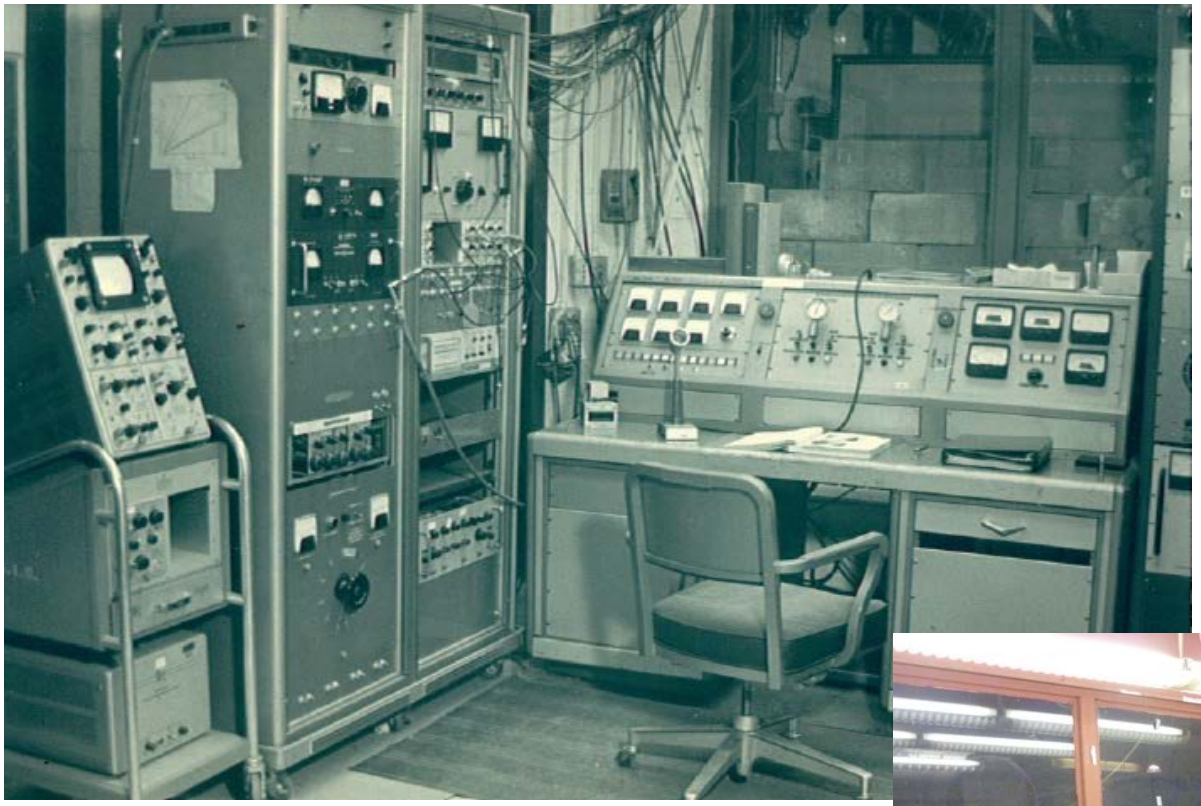

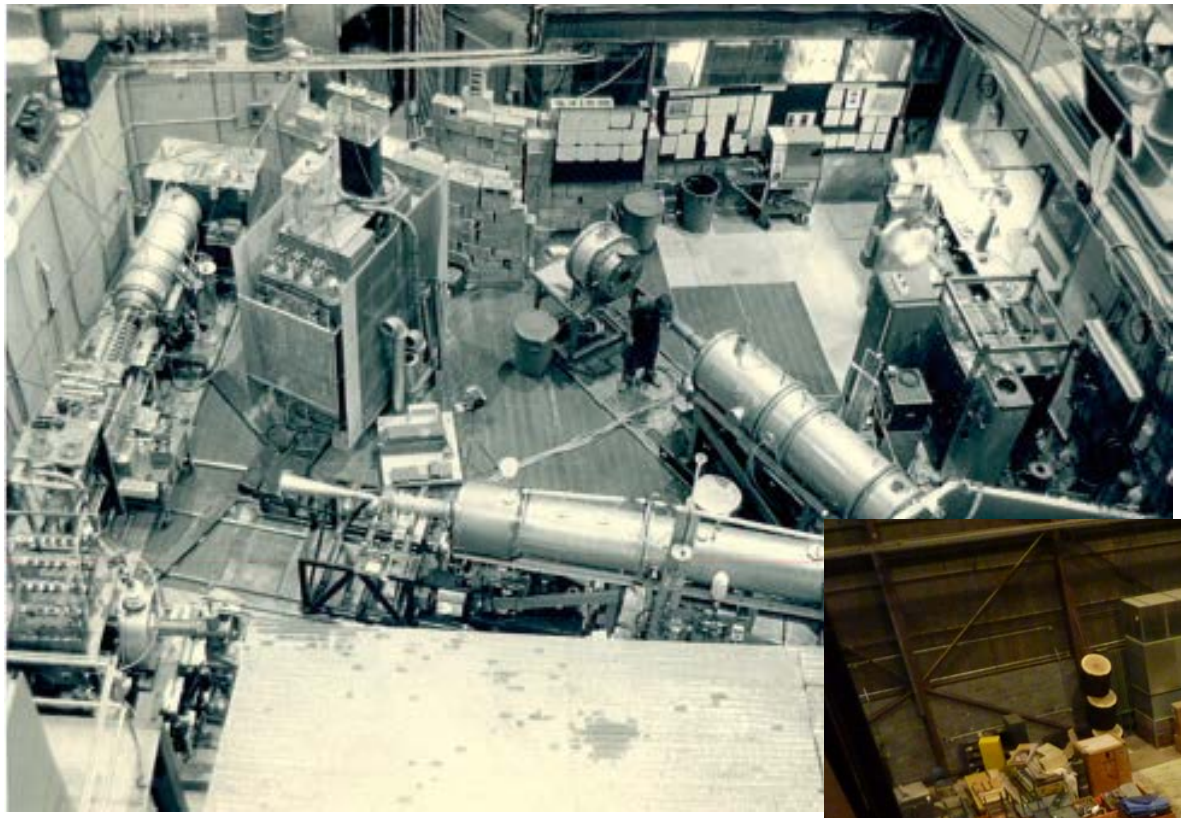

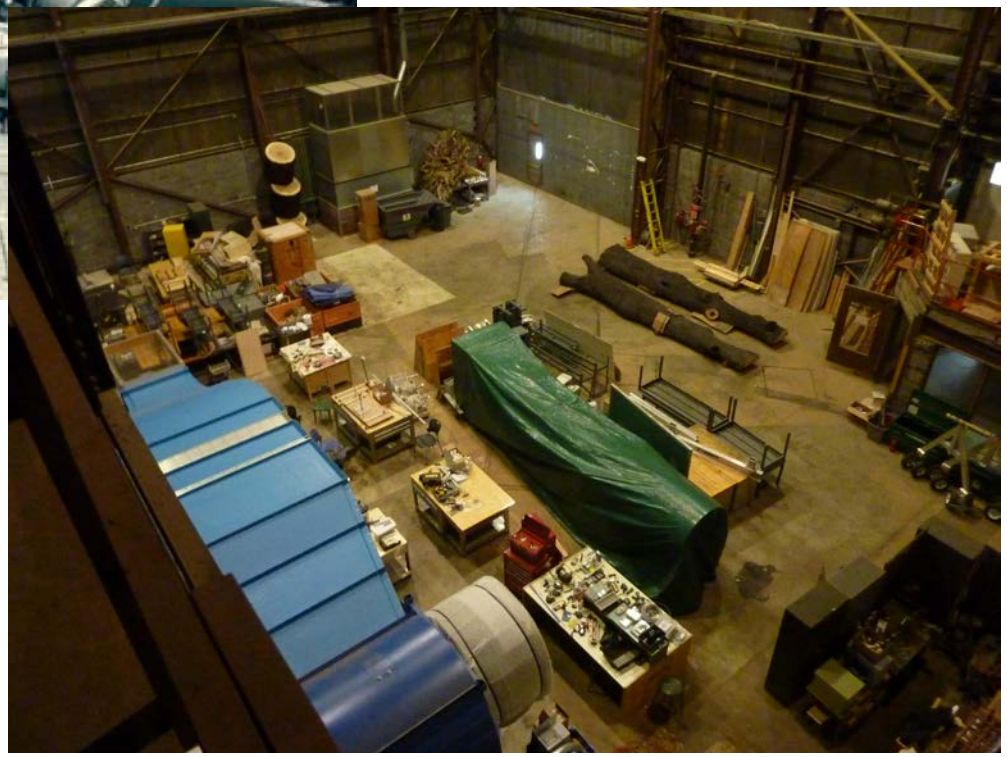

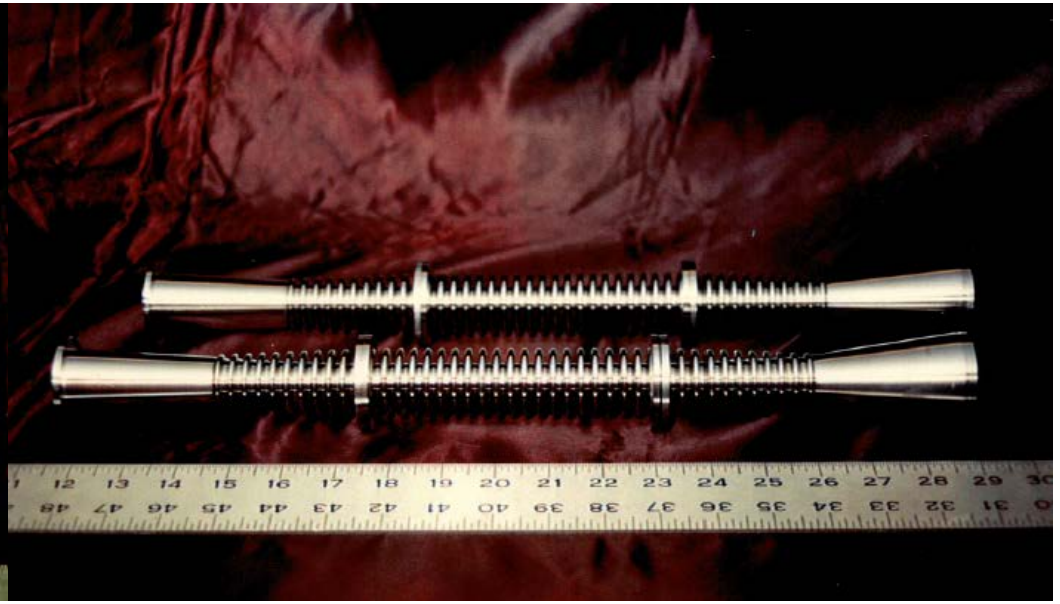

Transit Time Isolation of a High Power Microwave Amplifier

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We report experimental results from a high power X-band traveling wave tube amplifier designed to eliminate sidebands due to reflections from its output. The amplifier has a very low energy velocity, such that the time it takes a wave to be reflected from the output to the input is of the order of, or greater than, the electron beam pulse duration. The bandwidth of the output spectrum is limited by the very narrow passband of the periodic structure. The amplifier has been operated at power levels of up to 160 MW at 9 GHz for pulse durations of 50 ns.

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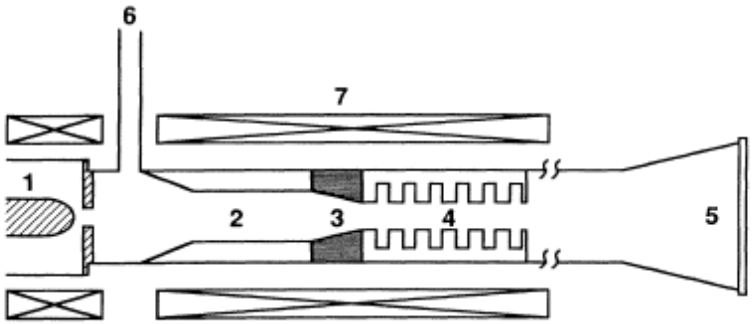
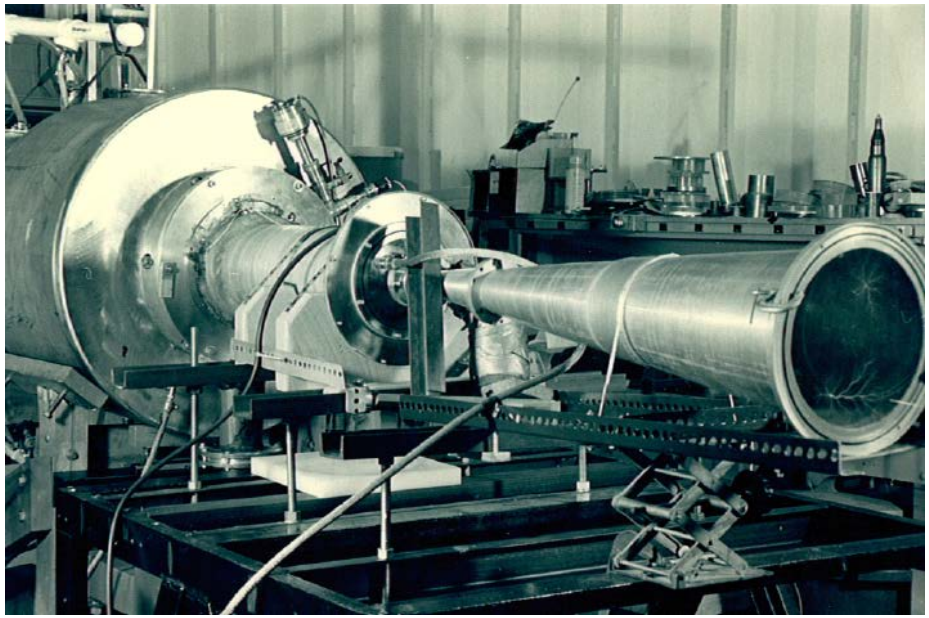


FIG. 2. Schematic showing the assembly of a two-stage severed amplifier. The first stage uses a dielectric loaded amplifier and the second stage a 10 period narrow band (low group velocity) structure. (1) Electron beam diode, (2) dielectric first stage, (3) silicon carbide sever, (4) narrow band structure, (5) output horn, (6) input waveguide, (7) magnetic field coils.



Medtronic Buys XRT

Medtronic Inc. (Minneapolis) has acquired XRT Corp., a privately owned company based in St. Paul, MN, that develops minimally invasive, intravascular radiation therapies.
The acquisition furthers research already underway at Medtronic AVE, and provides a means for joint collaboration going forward. All of XRT's principals have agreed to remain with the company, and XRT will become part of the Medtronic Vascular organization. The acquisition is not dilutive to business -- no further terms of the agreement were disclosed.

"Among the radiation therapies being pursued in the industry, XRT has clearly developed the therapy with the most appeal, both for physicians and patients," said Scott Solano, president of Medtronic Vascular. "XRT's technology is designed to provide the means for preventing restenosis, while eliminating the logistical and environmental concerns associated with other approaches."

It is estimated that the market for treating restenosis with radiation could eventually exceed $500 million annually. Recent studies have indicated that the use of intravascular ionizing radiation may be effective in preventing restenosis, and a number of companies are currently developing products that deliver radiation directly to the site of interventional procedures, utilizing radioactive isotopes.

In contrast, XRT has developed a system that uses a miniaturized x-ray emitter to deliver non-isotope-based ionizing radiation via a catheter. Currently in pre-clinical evaluation, the XRT system is designed to provide tailored radiation dosing to match both the length and the diameter of the vessel segment being treated. The system is designed to provide radiation on-demand and also has the ability to adjust the depth of penetration of the radiation it delivers.

In addition to its ability to provide tailored therapy, the XRT system is also designed to limit the radiation exposure that both the patient and hospital employees receive. The XRT system generates no radioactive waste.