

Oak Ridge Technical Enterprises Corporation - The ORTEC story (As published in *The Oak Ridger's Historically Speaking* column on November 15, 2011)

Harold W. (Hal) Schmitt asked me at a recent Rotary meeting if I would like to know the story of ORTEC. I said that I sure would. Now I wonder just how many readers remember ORTEC and how many more know what that acronym stands for.

He agreed to share that history with me. I want to share it with you. I would like to begin with introducing you to Hal.

Harold W. (Hal) Schmitt was president and chairman of ORTEC from its founding in June, 1960 until August, 1961, continuing as chairman until 1964. The company was sold to EG&G, a New York Stock Exchange company, in 1967. He received his Ph.D. degree in nuclear physics from the University of Texas at Austin in 1954, having served in nuclear research at Los Alamos Scientific Laboratory from 1952 to 1954. He was a researcher and group leader in nuclear physics at the Oak Ridge National Laboratory for 19 years, authored or co-authored over 90 scientific papers, and holds or co-holds four patents. He then served as president of Environmental Systems Corporation for eight years, following which he co-founded and served as president of Atom Sciences, Inc. for eight years before joining the University of Tennessee in 1989. Dr. Schmitt retired in 1999 from the University of Tennessee, where he was Professor of Engineering Management. He taught courses, consulted, and conducted workshops in strategic management, management of technology, and entrepreneurship, and also served as Director of Industry Programs in the Chancellor's office. Throughout his career he has served as a consultant and/or board member for a number of corporations and non-profit organizations, including the Oak Ridge Civic Music Association, Knoxville Opera Company, Knoxville Symphony Society, Recording for the Blind and Dyslexic, Oak Ridge Institute for Continued Learning, Technology for Energy Corp., Clinch River Home Health Inc., and others.

His hobbies are piano, pipe organ, tennis, and hiking. He is married to Jonell Schmitt, retired journalist and former entertainment editor of the Oak Ridger newspaper; they have three daughters and seven grandchildren.

With that introduction, I would now like to share Hal's story of ORTEC with you.

"ORTEC was incorporated in Tennessee in July, 1960. Its first products were silicon surface barrier detectors for nuclear charged particles, e.g. alpha particles, protons, deuterons, tritons, and heavier particles. The market for the detectors was in nuclear research, which, at that time, was well-funded, certainly by later standards. Researchers at many accelerator laboratories, both in the United States and worldwide, were positioned to benefit from the new detectors, since in those days we (the community of nuclear physicists) were advancing the frontiers of nuclear physics at a rapid pace. We were learning about all kinds of nuclear reactions, discovering nuclear resonances, and developing understandings and theories of nuclear structure and nuclear reactions.

"The principal feature offered by the silicon detectors, when properly operated in conjunction with ultra-low-noise charge-sensitive preamplifiers, was exceptionally good energy resolution – not as high as that of magnetic mass spectrometers, but much higher than the resolutions offered by any other detectors available. And their surface area (up to about two inches diameter at that time) provided much greater detection efficiencies (geometries) than mass spectrometers provided, at less expense by orders of magnitude – attractive indeed to the practicing nuclear physicist.

The creation of ORTEC did not start out as the goal, but rather was the result of failure of efforts within the Oak Ridge National Laboratory to create these unique and effective radiation detectors. Hal and other attempted to work within the system of funding approaches to create the detectors that they knew

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the nuclear physicists needed. All their attempts were unsuccessful although they knew the value of the product. Finally, in frustration a letter was written to the director and deputy director of the laboratory.

"We studied the Standard Practice Procedures, and then on May 31, 1960 wrote a letter (actually a memorandum) to A. M. Weinberg and J. A. Swartout, Director and Deputy Director, respectively, with copies to Fowler [Physics Division director Joe Fowler] and Borkowski [Cas Borkowski, Instrument and Controls Division Director]. This letter began with the following three paragraphs:

'The purpose of this note is to request clarification of Laboratory policy as it relates to the formation and operation of a small company in Oak Ridge to make and sell special items of scientific equipment. The proposed company would be formed by a small group of Laboratory employees who would work with the company on a limited basis as owners, and not as salaried employees. This work would be carried on completely apart from and subsidiary to our ORNL jobs and responsibilities.

'We are interested above all in Oak Ridge National Laboratory; we intend our activities in the proposed company to be only minor 'extra-curricular' activities. We have studied Standard Practice Procedure D-3-5, dated September 3 and 24, 1957, which bears on the present question, and feel that these contemplated activities do conform with the policy stated there. We should like to insure, however, that these activities are governed only by the above-mentioned Standard Practice Procedure and that no conflict exists with Laboratory policy. We would appreciate your reply on this point.

'The remainder of this note will serve to outline the pertinent features of the proposed organization.

This was the true beginning of ORTEC. The company now has locations in Oak Ridge, TN, Wokingham, UK, Meerbusch, Germany, Milan, Italy, Elancourt, France, and Beijing, China. Not bad for a local home grown technical niche company, huh.

Here is what is found on the ORTEC web page today:

"ORTEC was originally founded in 1960 by a group of scientists from the Oak Ridge National Laboratory to provide a commercial source for research grade silicon surface barrier charged particle detectors. ORTEC has grown to provide state of the art solutions in virtually all areas of nuclear measurements.

"The recognition and acceptance of ORTEC brand equipment is based on high quality, reliability, and state-of-the-art advancement. ORTEC continues to lead the industry in innovative techniques and equipment to perform the most rigorous of measurements. These include:

- State-of-the-art, high quality High Purity Germanium detector systems with evolving specifications to meet the demands of today's gamma counting systems
- The first fully integrated Ethernet-based hardware and software platform to allow connection of equipment anywhere in a facility while allowing operators and supervisors to view, edit, configure, control, and analyze data on any hardware from anywhere at any time
- The continuous development of PC-based GammaVision® and AlphaVision quantitative spectroscopy software packages which are more powerful and easier to use than any previously available software
- The first integrated DSP-based hardware systems (the DSPEC and DSPEC-Plus) for High Purity Germanium detectors which improve the performance and stability of the gamma spectroscopy counting systems
- The first fully-integrated DSP-based portable Multi Channel Analyzer designed to operate in the field for a full working day without an external PC
- The first (and only) low-cost mechanical cooler for High Purity Germanium detectors which eliminates the need for, reduces running operational costs of, and eliminates safety hazards associated with Liquid Nitrogen cooling
- The first commercially available High Purity Germanium-base portable nuclide identifier

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More to come in future *Historically Speaking* columns in this series that will give you insights into ORTEC from Hal Schmitt's perspective.



Harold "Hal" Schmitt