

# Project Pioneer:

## Rudolph “Rudy” W. Hensel

Today, at 86, AEDC Fellow Rudolph “Rudy” W. Hensel is an investments adviser. The business owner, whose office walls are filled with memorabilia of his previous career, is eager to tell his story of AEDC beginnings.

Mr. Hensel was the facility chief for the center’s Propulsion Wind Tunnel (PWT) before retiring in 1980 with 27 years at AEDC working for only one contractor, Arnold Research Organization (ARO).

He has an aeronautical engineering degree (first study program offered in the United States in fields of compressible fluids and jet propulsion) from the California Institute of Technology, as well as a Bachelor and Master of Science in aeronautical engineering from Massachusetts Institute of Technology.

Before coming to AEDC, Mr. Hensel was stationed, during World War II, at Wright Field Aircraft Lab, Wind Tunnel Branch, Ohio. His two bosses, Dr. Frank Wattendorf and Col. Frank Warburton, were instrumental in the beginnings of AEDC. As history would have it, Dr. Wattendorf wrote the visionary statement for what was to become an engineering and development center.

“With these two guys as my bosses, naturally I got involved in the process,” he explained. “I had a little to do in the early planning days.”

In 1945-47, Mr. Hensel participated in the initial design concepts of AEDC’s PWT and served as the liaison officer in transfer of German engine test facility components to AEDC.

“The Germans were actually building and had well under construction, a large wind tunnel eight meters in diameter, when we captured it. It was a rather unique piece of equipment; what we built at PWT was in some sense a version of that, but not exactly.”

His job during active duty was being in charge of a 10-foot wind tunnel, a smaller version of 16T, but was a little behind the times comparable to a few wind tunnels in Germany and one that was being built at CALTECH, known as the cooperative wind tunnel.

“When the war was over, we gathered a lot of the German scientists who were working in the aeronautics part of the Nazi operation and brought them to Wright Field,” he explained. “One of them included Dr. Bernhard Goethert, who had a significant hand in designing the PWT tunnels when he came to AEDC in 1952.”

From the mid-1950-60s at AEDC, he provided the technical and management leadership to bring the transonic and large supersonic wind tunnels from construction into routine operation. At that time, these were the largest most technically advanced units in the world.

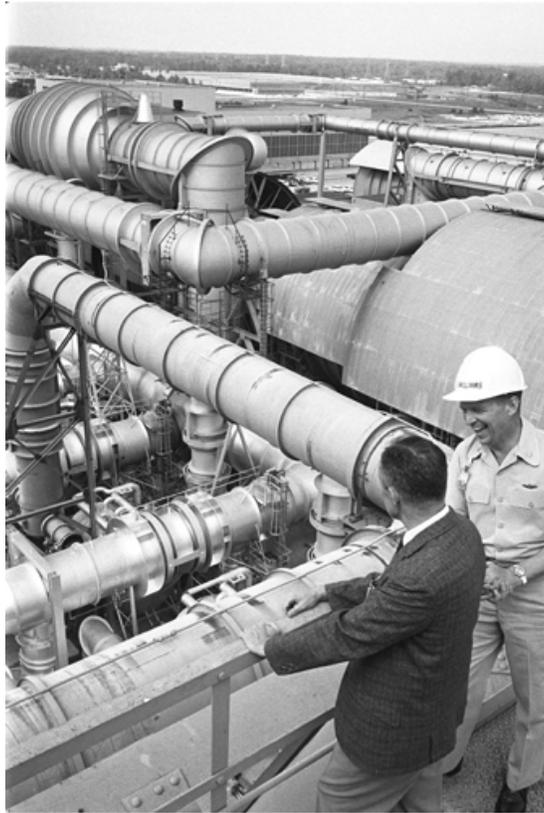
He provided leadership for all phases of the activation of PWT's transonic and supersonic 16-foot wind tunnels (16T and 16S), ranging from the training of engineering and operational personnel to the identification and implementation of a number of design and hardware changes to improve performance. He developed a solution to problems related to tunnel starting and stopping loads, exhaust gas scavenging scoop performance, scavenging scoop aerodynamic interference, tunnel flow quality and on-line data system operation.

After PWT became operational, he focused most of his attention on optimizing productivity and data quality from this large, high-powered facility. From 1959 to 1969, he led the evolution of 16T into a high-output workhorse tunnel, which attracted a large and continuous backlog of work. At the same time he was boosting productivity in the tunnel, Mr. Hensel was placing an emphasis on improving the quality of test results. His quality initiatives included improved understanding of wall interference, calibration of tunnel flow, definition of measurement uncertainty and enhancements to on-line data processing systems.

He also directed the restoration of the 16T compressor following catastrophic failure of original steel compressor blades in the early 1960s. It was quickly restored to service with new high technology fiberglass composite blades. In the late 1960s, he spearheaded an advocacy campaign that resulted in \$1.25 million funding for the design and construction of the PWT 4-foot transonic tunnel.

Earlier in his career, Mr. Hensel organized and led the contractor's support to the research and development program for AEDC's advanced low density and true temperature wind tunnels. Although never built, these efforts directly supported the acquisition of two AEDC arc heater test units.

In recognition of his contributions to AEDC, Mr. Hensel was inducted as an AEDC Fellow in June 1990.



Atop the Propulsion Wind Tunnel craneway Facility Chief Rudy Hensel and Air Force Facility representative Maj. Frank Williams are shown against a backdrop of the maze of pipes, ducts and valves, which comprise PWT in 1964. At the time, this made PWT the largest of AEDC's test facilities.



Model sting support—positioned in the circuit's 16-foot test section is pointed out by Rudy Hensel, then PWT chief. Here, a test probe unit used during calibration runs is mounted on the support. During actual testing, the models under test will be attached to the support.