



Lear was founded in 1982 by Dennis Swing, an electrical engineer with considerable design experience in industrial and aerospace projects. The new company's first project was the development of a portable, light weight, battery powered diameter measurement device for use on magnet wire lines. Light beams would be used to measure the diameter of wire moving at high speed to an accuracy of a few millionths of an inch.

Magnet wire is a very common product whose primary function is to produce a magnetic field as needed to power motors, transformers, relays, and similar products as found in industry, automobiles, homes, and appliances including TV's and microwaves.

General Electric was to be the first customer and helped to define the general operating characteristics and specifications for the first " *Lear Gun* ". Three additional design engineers, each with his own specialty, were added to help develop the gun which was to be about the size of a pistol. Developing the LEAR GUN would require technologies now found in digital video cameras, not to come around for another 15 years. This was a unique and risky technical venture, to say the least.

The project was a success and magnet wire plants all over the world used several of these guns as an alternative to a tremendously more expensive network of as many as 500 fixed place gauges. As durability, accuracy, and ease of use on the production floor improved, other uses opened up. Additional technicians and machines were added to help with assembly and fabrication of intricate parts that were inside the gun. Having to create a market, we bought an airplane and used it to visit magnet wire plants all over the mid-west and southern states.

In 1993, we moved to a brand new building in a manufacturing friendly area near Dayton , Ohio , which is still our manufacturing center.

Variations of the original Lear Gun models are used across the tire wire industry for on-line measurement of the diameter of the small wire used in steel belted radial tires. Other models are used during the extrusion or drawing of a variety of round products made of metal, glass, or plastic, where the need is for a light, hand carried device that can be easily carried from line to line. Building on that success, other products and systems resulted where the challenge was usually to measure something on the production line where no other device existed to do the job. These projects included:

- Optically scanning turbine blades as used in automotive turbochargers, digitally processing the data, and directing a saw to release newly molded blades from a multiple mold web.
- Designing and installing a system of computer controlled optical gauge heads which optically measured the diameter of superconducting wire during three stages of the prototype production process. Closed loop process control resulted which established continuous manufacturing processes for this special product.

One popular use of this special wire is to create the huge magnetic fields necessary in MRI scanners, which are used for medical purposes, to "see" inside the human body. Another use is in the manufacture of particle accelerators as used by researchers in the field of atomic physics.

A similar system was developed and installed at a NASA supplier plant to assist in the manufacture of ultra strong carbon fibers used in the structure of rocket nose cones.

More recently, large scale on-line bead and blister detection systems combined with high voltage insulation tests were developed for use on magnet wire lines. These computerized systems have enabled manufacturers to greatly reduce the population of the troublesome enamel surface defects. As many as 24 lines can be inspected by one system.

These computer controlled systems proved to be of such a benefit to manufacturers (and users) of the wire that systems of this type have been shipped to most of the leading manufacturers throughout the world. The resulting system, now called the "*Lear Fusion System*", has lowered the defect rate even further and has become our most popular product.

Because of our many years experience with magnet wire producers and building high tech products unique to their needs, they now represent 90% of our business. The relatively new Fusion System is increasing that percentage. Magnet wire manufacturers have generously told us that their customers, companies who build their products using this tested wire, often ask for this system to be used during manufacture of their wire. They also tell us that their returns (rejected wire that is returned in semi-trailer loads) are way down. We like that a lot.

We now have equipment in 29 different countries with offices in Korea , England , China , Florida and Dayton , Ohio . The Lear Technical Center , located in Mt. Dora , Florida , together with the Ohio plant, develops and builds our products and system software.

- *Dennis Swing, President*