ILSCO Extrusions Inc. Integrating Production of Electrical Connectors

By J.D. Schloz, Contributing Editor

With the acquisition of Signature Aluminum's Greenville, PA, facility in 2010, ILSCO has added vertical integration capabilities to its electrical connector manufacturing operations. With assets including 64 million pounds of extrusion capacity, 110 million pounds of casting capacity, and various fabrication equipment, the creation of ILSCO Extrusions Inc. (IEI) has allowed ILSCO to control a key component of its supply chain. This logical step has resulted in reduced lead times and increased profitability through lower costs. The vertical integration capabilities—and flexibility of optimizing the site's utilization—yield to ILSCO a high potential for commercial success at the Greenville site.

Company History

The Incandescent Light and Stove Company (ILSCO) began operations in 1894, in a 45,000 sq ft facility in Cincinnati, OH. Company founder Joseph Stubbers, a tinsmith by trade and a prolific inventor with 45 patents to his name, was engaged in building gasoline ovens and stoves for the consumer market. With the introduction of municipal lighting systems in 1910, the company's gas fixtures were rendered obsolete, but ILSCO's power distribution systems evolved to make use of this new form of power. During WWI, ILSCO produced battery connectors for such customers as Cooper Battery and Ford Motor Company. A major milestone in electrical connectors was established in 1935 when ILSCO created the "SLU" line, one of the first solderless electrical connectors and the forerunner of many of today's connector designs. Throughout the '30s and '40s, ILSCO continued its development of innovative connector designs for various manufacturers, utility companies, and contractors. In 1954, ILSCO was acquired by the E.H. Bardes Range and Foundry Company as a manufacturing subsidiary. The Bardes family has operated ILSCO continuously since this time, with family members actively serving in executive positions to this day.

Prior to 1959, the connectors produced by ILSCO were copper-based. Following the U.S. Korean conflict, aggressive development by metal producers to find nonmilitary uses for aluminum increased its availability in the general marketplace. This, combined with the material's excellent electrical properties and stable price, was a great incentive for the increased use of aluminum in the electrical power markets. Capitalizing on these conditions, ILSCO pioneered the development of connector designs utilizing this material throughout the 1960s. In 1962, ILSCO expanded its operations with the construction of a new manufacturing center in Mississauga, Ontario, Canada. Company growth continued as ILSCO aggressively targeted consumers outside of its traditional "OEM supplier" role, such as utility companies and electrical contractors. This strong growth continued during the '70s, '80s, and '90s despite the aluminum (and copper) price fluctuations of the mid '70s and late '80s, and largely as a result of innovative new products released during those periods. Further growth and diversification occurred into the 2000s with the purchases of Deerfield Connector, Glenmoor Screw Machine, Kentucky Connector, Kupler, FTZ, Tool Engineering Service, and National Aluminum – Brass Foundry.

The company's current line of products includes a wide range of electrical and mechanical connectors, including transformer lugs, ground bars, cable trays, power distribution blocks, and bus connectors (Figure 1). The company also makes products for solar and wind energy components and cellular tower panels. ILSCO currently employs 623 people in a total of seven facilities, located in Matamoros, Mexico; Mississauga, Ontario, Canada; Brownsville, TX; Simpsonville, SC; Harrison, OH; Greenville, PA; and the company headquarters in Cincinnati, OH.

Figure 1. PTA multi-tap connectors by ILSCO Extrusions, exhibiting the extent of machining required for these small parts.

History of the Site

Originally occupying the Greenville site was a dry cleaning facility, which provided services for a nearby army base serving as a primary transfer point for troops and goods moving from the midwest to the coast during WWII. R.D. Werner (Werner Company) purchased the Greenville property in 1951. Over the next several decades the Werner family acquired adjacent properties to ultimately end up with the site as it exists today. The plant served as a primary producer of extrusions for Werner continuously from 1951 to 2005. In 2005, Werner sold the plant to HIG Capital where it was operated as Signature Aluminum, a manufacturing center for custom extrusions, serving electrical (ILSCO was a major customer), transportation, machinery and equipment, and consumer durables markets. When Signature Aluminum filed Chapter 7 bankruptcy on April 3, 2009, the plant was shut down.

ILSCO's decision to purchase the Greenville facility, though it seemed from the outside a win-win proposition, was the result of detailed and diligent analysis. Prior to the shutdown of the site in 2009, ILSCO's extrusion purchases were spread out over nine different vendors in the U.S. and Canada, with Signature Aluminum chosen as the lead vendor. Since roughly 80% of the ILSCO business relies on aluminum extrusions, it was paramount for the company to accurately balance profitability with risk;

in this case, the risk of supply disruptions. When Signature idled the Greenville plant, much of the extrusion supply was shifted to Kaiser Aluminum (Sherman), and though orders were maintained, it created a significant disruption to ILSCO. The company had to decide whether to maintain, or adjust the level of consolidation of its vendors, in order to balance profitability against mitigating the risk of supply disruption. But a third option then presented itself when the Greenville site was put up for sale. With an extremely attractive price, and the capabilities offered to service nearly *all* of ILSCO's extrusion needs, ILSCO could manage risk and improve its bottom line simultaneously.

The purchase included 165 acres (87 acres undeveloped) with the main manufacturing facility, consisting of four buildings with a combined square footage of 625,000, with an additional 56,000 sq ft corporate office building, 88,000 sq ft reinforced pad outdoor storage area, and 3,400 sq ft area for waste water and a sanitation treatment plant. Utilities at the facility are also substantial, with its own water supply from wells, as well as natural gas wells and two 5,000 kVA power stations, all located on the property.

Management and Capabilities

The success of restarting and operating a facility such as IEI's, especially considering the lean operating conditions, is strongly dependent on the skill and experience of its managers (Figure 2). In this regard, ILSCO has staffed the operation with leaders possessing an abundance of skill, experience, and creativity—all necessary traits when dealing with a plant with the size and diverse potential of Greenville's.

Directing IEI development at the corporate level is ILSCO's vp of Operations, Kevin Jenkins. Beginning as a floor supervisor in 1983 for Exide (a world leader in lead-acid storage battery manufacturing), Jenkins spent his next 20 years in a variety of roles and locations for Exide, including key positions in purchasing, mergers and acquisitions, and consolidations. John Thigpen brings 25 years of industrial management experience to the general manager role at IEI. A 15 year extrusion industry veteran, Thigpen has spent the last decade in senior executive roles, including director at Werner Extruded Products and president of Signature Aluminum. IEI's operations manager, Gary Jones, has been directly involved in the aluminum extrusion industry for 32 years, holding positions in Quality Engineering, Quality Assurance, Sales, Marketing, and Operations Management. Jones is co-author of several ET papers (earning "Best Paper" awards in 1984 and 2004). His commitment to the industry goes beyond his employment, as Jones serves on several Technical Committees at the Aluminum Extruders Council and The Aluminum Association. Howard Swartz, engineering manager, has 31 years of plant engineering and maintenance experience with 28 of those being directly involved in the aluminum extrusion industry. Swartz has expertise in information technologies and machine controls (including electrical, hydraulic, pneumatic, and combustion systems) and is an active member of Institute of Electrical & Electronic Engineers and the National Fire Protection Association.

Casting capabilities at the IEI Greenville site consist of two melting furnaces, one holding furnace, and four Wagstaff casting tables equipped with NuMax™ tooling in 6″, 7″, 8″, and 10″ diameters (Figure 3). There are two homogenizing furnaces and a multi-log billet saw. With a casting capacity of 110 million pounds, IEI can produce proprietary alloys, and billet ranging in length from 14″ to 36″. Currently, the casthouse is idle, with management determining the impact of a restart and whether it makes sense, financially or strategically, to produce its own billet.

Figure 2. IEI's management team (l-r): ILSCO vp of Operations, Kevin Jenkins; IEI engineering manager, Howard Swartz; IEI general manager, John Thigpen; and IEI operations manager, Gary Jones.

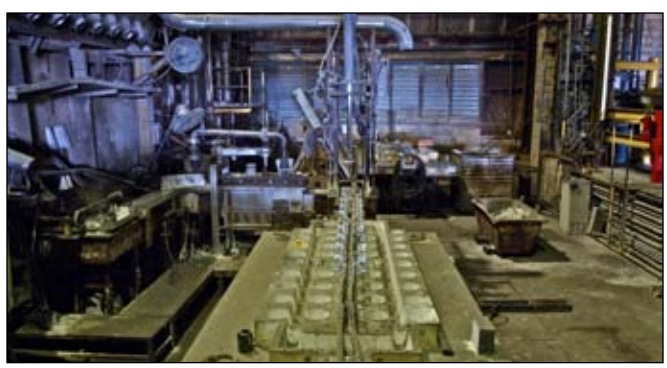
Figure 3. The casting pit with Wagstaff casting tables and NuMax tooling.

Extrusion capabilities include a total of four presses: a 1,350 ton 6″ Lombard (not currently in service), 2,000 ton 7″ Watson-Stillman, 2,300 ton 7″ Farrel, and a 3,300 ton 10″ Sutton (Figure 4). Three 60-ft aging ovens (two Belco, one Despatch) with programmable controls assure proper aging cycles. The facility also maintains an extensive tooling repair shop and fully equipped quality control facility—along with highly experienced technicians—for metallurgical and dimensional analyses. Fabrication is also extensive, including nine high-precision Kasto saws, capable of ±0.004″ tolerance (Figure 5), and four Rotofinish Spiratron deburring units.

The fit of the Greenville extrusion facility with its parent is excellent, with the capability of producing the most demanding shapes, abundant excess capacity (allowing a flexible press schedule), and very lean operations with dedicated and experienced workforce. The fact that

Figure 4. The 3,300 ton 10″ Sutton extrusion press.


Figure 5. One of IEI's nine Kasto precision saws, capable of producing very tight tolerance lengths.

Greenville has reliably supplied ILSCO with extrusions since 1967 adds a significant measure of comfort to the arrangement.

Filling Greenville's Footprint

The site's potential, though, extends beyond the typical extrusion-related facility. Of the 165 acres of land, and 650,000 sq ft of manufacturing space, ILSCO's needs are only a fraction. In the words of Jones, "It's like someone gives you a big house, and you think 'great, I have this big house now,' but you have to do something with it. These buildings have to be maintained, the parking lot has to be paved from time to time. It can get expensive, so we look for ways to utilize as much of the site as possible. Fortunately, with the low purchase price and ILSCO's support we have had the flexibility and breathing room to think creatively on how best to accomplish it."

By making use of this flexibility, IEI's management looked beyond picturing the Greenville site solely as an extrusion facility, and visualized the entire setting as a combination of extrusion plant and business park. Capitalizing on this concept, the management has spent significant time and effort rearranging the main facility to optimize extrusion workflow within a minimal footprint, while clearing out—and when needed, updating—the remaining areas to accommodate other manufacturers and long term lease tenants. Currently, IEI leases space to three tenants with diverse operations. Werner Co.'s world headquarters is one and occupies a 56,000 sq ft corporate office building, separate from the main facility. Even with these tenants, there remains another 150,000 sq ft (with an additional 30,000 sq ft of outdoor receiving space) for lease, and new tenants are currently being pursued by management. This makes clear the company's intent on actively managing the footprint of such a large facility—from attracting and making happy its tenants, to maintaining the parking lots and roofs.

Restarting the Plant – Focused and Lean Operations

Anyone who has been through a plant restart knows how challenging it can be, and how utterly dependent success is on how the plant was placed into idle condition. In many cases, particularly when a facility changes ownership, the personnel shutting down the equipment are not the same as those starting it back up, and in today's economic climate not much thought is given to *ever* starting it back up. With Greenville, this was fortunately not the case, as Signature's plant management anticipated that the facility would not stay idle forever, and proper steps were taken to minimize equipment degradation during the idle time. The payoff for this diligence is reflected in the extremely short time for attaining operational condition—from the time of signing the purchase agreement on June 30th, 2010 to the first extrusion run on October 4th, only three months had elapsed, and all three (active) presses were brought online within 60 days.

With an extrusion capacity of 50-60 million pounds per year, and a current production rate of approximately 10 million pounds, there is significant excess capacity to allow growth at the IEI Greenville plant. Resisting the urge to chase volume by aggressively filling excessive capacity, IEI management has chosen to grow at a steady pace by pursuing only those that fit the company's niche strengths—moderate diameters, 6xxx alloys, and parts that require tight tolerances. According to management, this allows a highly supportable range of products that can be produced under very lean conditions. If given the choice of volume over cost-efficiency, the company strongly supports the latter. With over 2,500 shapes in the IEI die set, only 550 are active, and die personnel are able to focus on getting these profiles running optimally with fewer (though highly capable) die shop personnel and resources. The company also maintains a very strong relationship with die makers in the Youngstown, OH, area, and are able to bring in dies that require little or no corrections—as a testament to this, over 98% of the dies that IEI receives run correct "out of the box." This allows very high success rates in meeting tolerances with minimal waste of time or money.

This does not mean that IEI is not interested in growing, rather that the focus is not so much on volume but important metrics like yield (IEI reports a significant increase from 69% to over 77%), scrap consumption and sourcing (increased internal scrap usage resulting in a 10-12% cost savings), market stability, and customer needs. Because of the need to balance output with efficiency, IEI is very deliberate in calculating where the "sweet spot" lies, volume-wise, in relation to the facility's capabilities. According to Thigpen, "We bought it right, built it right, and have the right management team; we have to have the right balance of throughput and labor, and are aggressively pursuing customers that fit, with an emphasis on service and quality. We want to remain focused, fast, and flexible."

Conclusion

For a company set on improving its operational efficiency through vertical integration, ILSCO has made a wise choice in investing in IEI and the Greenville facility. Having the capability of producing the bulk of its extrusion needs, as well as opportunities to profit from tenant leases, IEI represents a significant potential to the parent company. With an experienced staff of dedicated management and personnel, and a long history of producing high-quality, tight-tolerance extrusions, the plant offers significant cost advantages and secures a highly reliable supply for ILSCO's world-class electrical connector products.