Knives of Flame

Oxy-Acetylene Machine Cutting and Flame Machining Lower the Cost of Fabrication.

By H. ULLMER*

LIKE CUTTING CHEESE—the oxy-acetylene cutting blowpipe demolishes a 52-ton cast iron rock crusher bowl.

Machines for guiding and moving the oxy-acetylene cutting blowpipe automatically are the most important of the recent developments in man's harnessing of flame for productive purposes. Like ribbons of fire, multiple flames of oxygen mixed with acetylene surround a jet of pure oxygen to cut steel, cast iron and other ferrous metals into intricate patterns —quickly and easily—with remarkable savings in costs over old methods.

New Methods of Production

Since 1905, oxy-acetylene cutting by hand has been widely used in demolition and maintenance work. During the last several years, the effectiveness of oxy-acetylene cutting as a means of production has been proved and tremendously multiplied by the development of machines for various repetitive cutting requirements. The operating fields of these machines range from the simple beveling of steel plates to the cutting of intricate patterns. Most of the machines can cut vertically and horizontally. Some can be adjusted to cut circles without the use of patterns. Others cut bevels, gouge grooves, and shape complicated designs.

Shape Thousands of Identical Parts

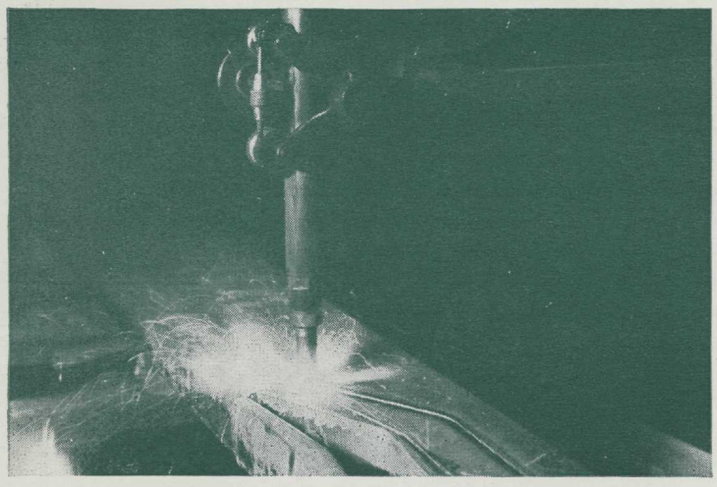
The economical continuous or intermittent production of identical regular or irregular shapes from rolled or forged steel is an outstanding accomplishment of present day oxy-acetylene cutting machines. With remarkable ease they follow templets of the desired form for the pieces to be cut. So accurate are the results that for many purposes the cut pieces can be used without machining or further finishing. Only by looking close at the smooth sides of the cut can an experienced eye tell the difference from a mechanical cut.

In a Wide Variety of Pieces

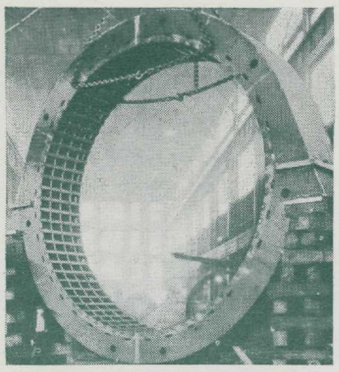
Some of the different pieces of equipment fabricated from oxy-acetylene shape-cut steel include: press frames of rolled steel requiring high strength and resistance to shock, gear blanks, cams in all types of intricate designs, forming dies which need little finishing before use, and flywheels often over a foot thick. In every case the shape-cut parts retain the great inherent strength and toughness of the rolled or forged steel from which they are made.

Costs Cut With Oxy-Acetylene Cutting

No great investment in machinery is needed for oxy-acetylene cutting.



ONE OR A MILLION—flame cut parts can be produced easily and cheaply by oxy-acetylene machine cutting. These dipper tooth blanks are alike as two peas in a pod. No expensive patterns or dies are required.



FLAME-CUT PARTS—are welded into assemblies like this yoke for a 25,000 KVA Water Wheel Generator.

Pattern cost is reduced to a minimum and the making and storage of expensive and intricate patterns is avoided. In most cases the machine cut shapes can be beveled easily by oxy-acetylene cutting and quickly made ready for assembly by welding, thus further reducing the cost of the finished equipment and making a more salable and a more serviceable product.

Machines Now Available

Machines of all sorts for various types of oxy-acetylene cutting and flame machining have been developed by The Linde Air Products Company, a Unit of Union Carbide and Carbon Corporation. Assistance and information as to how oxy-acetylene cutting can be economically fitted into your production operations can be obtained without obligation through Linde Sales Offices at Atlanta, Baltimore, Birmingham, Boston, Buffalo, Butte, Chicago, Cleveland, Dallas, Denver, Detroit, El Paso, Houston, Indianapolis, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Phoenix, Pittsburgh, Portland, Ore., St. Louis, Salt Lake City, San Francisco, Seattle, Spokane, and Tulsa. Everything for oxy-acetylene welding and cutting—including Linde Oxygen, Prest-O-Lite Acetylene, Union Carbide and Oxweld Apparatus and Supplies—is available from Linde through producing plants and warehouse stocks in all industrial centers.

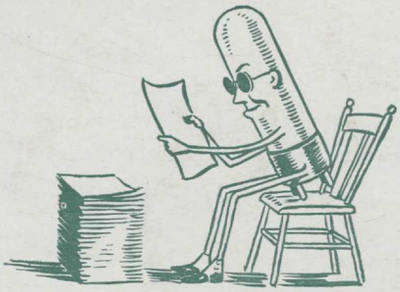
With Engineering Cooperation

Users of oxy-acetylene welding and cutting, and other products and processes developed by Units of Union Carbide and Carbon Corporation benefit from a most unique coordination of scientific research with manufacturing, sales and service facilities. These combined resources of a vast organization assure a full measure of satisfactory performance.

---

*Chief Engineer, Service Division, The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation.

G-E *Campus News*



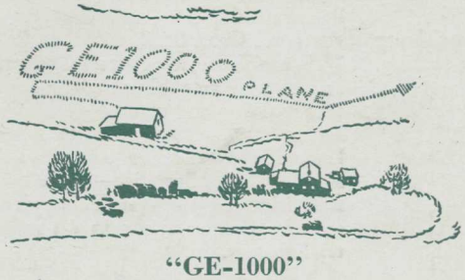
GLASSES FOR ELECTRIC EYES

Electric eyes are wearing colored glasses and doing a new job. As a result of strict NRA code requirements, the paper industry had to find a rigid means of classifying different qualities of paper. The Institute of Paper Chemistry found that as far as white book papers were concerned, the percentage of light they reflected was an indication of their quality.

The General Electric general engineering laboratory built the necessary device—an instrument which relies on the scrutiny of two phototubes in series to measure the coefficient of reflection. This is an exceedingly delicate task, as the matter of a small percentage of reflectivity determines the price and quality of a paper.

Here's where the glasses come in. To do certain jobs right, the electric eyes had to don different colored glass screens in the form of a filter and lens arrangement. It wasn't that they were getting old; they just needed a little assistance.

J. L. Michaelson, Northwest Missouri State Teachers College, '28, is G-E engineer in charge of building these instruments.



"GE-1000"

When, after a two-day search, a rescue plane finally located the lost transport plane which "mushed down" on a lonely Adirondack peak a couple of months ago, General Electric radio engineers rushed an emergency portable short-wave radio station into the mountain country to help in co-ordinating land and air rescue operations. The disabled ship was in the center of a wilderness, miles from the nearest means of communication. The radio expedition, however, managed to set up its equipment in a cabin at the end of a one-track automobile trail, only four miles from the scene of the mishap. There, designated as station "GE-1000" at the request of the airline operators, the equipment was used as an emergency unit in the airline's radio system. The General Electric engineers co-operated in communicating with the planes that guided the rescue parties toward the stranded fliers. They also helped send back news of the rescue, directly to owners of short-wave receiving sets, and through a rebroadcast by WGY, the General Electric station at Schenectady, to other listeners.

W. J. Purcell, chief engineer of WGY; W. R. David, U. of Kentucky, '19; E. H. Fritschel, Iowa State, '26; G. W. Fyler, Yale, '29; R. H. Williamson, Iowa State, '28; R. W. Orth, Minnesota, '30; G. M. Brown, Washington State, '29; and R. A. Lash, Ohio Northern, '29, comprised the General Electric radio expedition.

TURBINE BIOGRAPHY

A turbine can now write its own biography, with the aid of recording instruments recently developed in the General Electric general engineering laboratory.

These sensitive devices were developed for the supervision of large turbines from a point remote from the scene of operation. The instruments measure and record shaft eccentricity, bearing vibration, shell expansion, and interference of rubbing or rotating parts. They provide the operator with an indication and a permanent record, on paper, of mechanical performance throughout the starting period and subsequent running time.

C. D. Greentree, Alabama Poly, '28; A. V. Mershon, Pratt Institute, '13; and M. S. Mead, Case School of Applied Science, '23, of the General Electric general engineering laboratory, worked on the instruments.

96-130DH