

Oxy-Acetylene Welding and Cutting

PRINCIPAL TABLE.

This subject, which is a very interesting one owing to its rapid rise and indispensable place in all industrial concerns to-day, covers a very wide field, but will be practically dealt with here briefly, under three headings, — Inauguration, Transportation and Operation.

Inauguration.

Ten years ago the Oxy-Acetylene Process was practically unknown on the Continent of America, although in France, where the process was first perfected, the importance of burning in combination Oxygen and Acetylene, which has a temperature of over 6,000 degrees F., compared with the temperature of 3,000 degrees F. in the best fuel furnaces, with 4,000 degrees of the Oxy-hydrogen flame, was known for some years previously where a French engineer produced a torch or blowpipe employing both acetylene and oxygen under high pressure, in the year 1901, and so overcame the first obstacle of the commercial use of Oxy-Acetylene.

Acetylene.

The method of generating acetylene gas from carbide with water as a reactionary agent, is so universal that it needs no explanation, and for the purposes of Oxy-Acetylene welding the gas supply is available in two different forms. Low pressure from an acetylene generator either of the stationary or portable type, working at a pressure up to 15 lbs. 6 lbs., however, is the pressure recommended as being the best, or, high pressure as supplied in cylinders at a pressure up to 250 pounds.

When acetylene gas is supplied at high pressure it has to be dissolved to prevent any chance of spontaneous explosion due to the high compression, the cylinders are therefore filled with some porous material and charged with a certain pre-determined amount of acetone which has the remarkable property of absorbing about twenty-five times its volume of acetylene per atmosphere of pressure. In this form compressed acetylene can be handled with perfect safety.

Both low pressure and high pressure systems have their own special fields of usefulness, and the adoption of either one should be decided by the user to meet his own special requirements.

Oxygen is generally extracted from the air by the Liquide Air Process, and since oxygen is an indecomposable gas, its use in a compressed state, when containing no injurious impurity, does not represent any risk of explosion.

Transportation.

The gases are made at some central works and delivered in approved steel cylinders, tanks, tubes or bottles, as they are variously named. These combined with the torch or blowpipe, and suitable rubber tubing for connecting through pressure regulating gauges, comprises the Oxy-Acetylene Welding and Cutting Equipment, which can be handled with every safety, and shipped by rail or steamer, or mounted on a hand truck, can be moved from one job to another without any special precautions, or carried on a fire wagon for salvage work, cutting steel doors, bars, etc. The portability alone assures its success, and is of very great value in steel foundries for cutting off gates and risers on heavy castings.

Operation.

The process is now used successfully for so many operations that to name them would require many pages; cast iron, steel, aluminum, brass, copper, lead and various alloys are welded without compression with a homogeneous union so perfect that when smoothed or machined the union is not discernible. For steel cutting the apparatus or process are similar, the welding flame of oxygen and acetylene being applied as a heating flame which brings the steel to a point of incandescence almost immediately; a jet of pure oxygen then being turned on which cuts or oxidizes the steel in a narrow, smooth surface krf.

In manufacture it is extensively employed for welding sheet metal; in place of riveting of tanks and containers which have to be absolutely leak proof, when finish,

strength and rigidity are required; for welding pipe lengths; for tube welding; for uniting parts difficult of forming or of casting; for welding steel tubes, steel furniture, steel cars, etc.

Repair Work.

In the repair field its value is unlimited for welding and reclaiming broken, worn out and defective castings of all metals, either light or heavy section; welding new teeth on broken gears; welding broken machine parts of all kinds; repairing boilers; cutting out rivets; cutting up oil boilers, rails, bridges, and all structural steel works, etc. After the equipment is once installed, the problem is not so much how to find work for it, but to keep work away from it, as it soon becomes known around the plant as a sort of "Cure-all," and is treated accordingly.

Pile Lines.

One very interesting field for oxy-acetylene welding and cutting is in the installation of all sizes of water and gas mains. Pipes can be welded at the joints, making them absolutely leak proof. Holes can be cut in piping when in position, and branches, tees, drips and Y's can be welded on iron or steel mains. Pipe, where worn thin through corrosion, can be reinforced by adding more metal of exactly the same constituents as the pipe itself.

Advantages of Welded Pipe Lines.

Avoiding practically all chances of leak it permits distribution of gas under high pressure, reducing considerably cost of installation; pressure regulators are used at certain spots to reduce the high pressure to the working pressure. This system can be compared to the system of high voltage transmission of electric power, and offers the same advantages.

Tenders for the Construction of an Incinerator.

City of Outremont, Quebec.

Sealed tenders clearly marked as to their contents will be received by E. T. Sampson, City Clerk, City of Outremont, Quebec, up to 8 o'clock P.M. on WEDNESDAY, the 18th day of JULY, 1917, for the construction of an Incinerator with a chimney and suitable building of a capacity of 15 tons of garbage for a continuous run of 10 hours.

Envelopes must be marked "Tenders for the construction of an Incinerator for the City of Outremont."

Specifications may be obtained from J. A. Duchastel, B. A. Sc., City Engineer, City Hall, Outremont, Quebec.

The lowest or any tender will not necessarily be accepted.

Outremont, Quebec.

June 18th, 1917.

J. A. DUCHASTEL,

City Engineer.