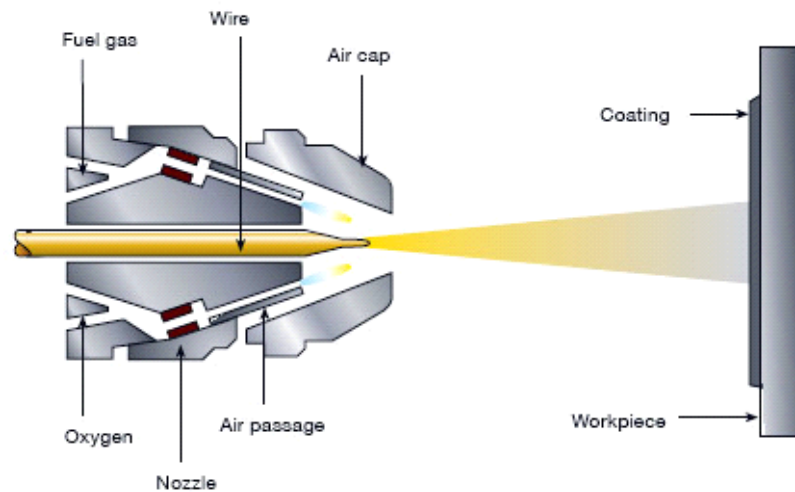


Thermal Spray Application

General Workup for ARC and GAS Application

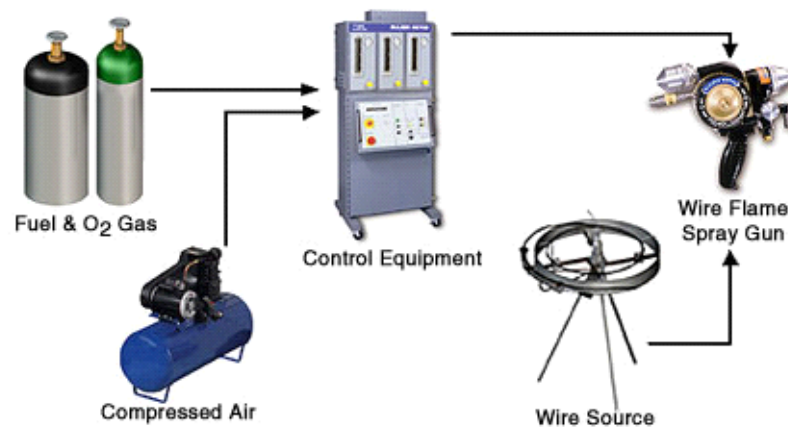
Process Description

The Combustion Wire Spray process employs a set of drive rolls powered by an air turbine or an electric motor to draw a metal alloy wire through the combustion spray gun. At the gun nozzle, fuel gas of acetylene, propane, hydrogen or MAPP is mixed with oxygen in precise volumetric proportions using a siphon plug and ignited to create a flame, which is then shaped at the gun's air cap by compressed air. The metal wire is fed concentrically into the flame, melted and atomized by the compressed air, and the molten droplets are propelled towards a prepared surface where they solidify and bond to the substrate to form a coating.



Schematic cross-section of a typical combustion wire spray gun

Combustion wire spray is a common choice for machine element repair and corrosion coatings. Either hard (higher melt temperature) or soft (lower melt temperature) wires can be used.



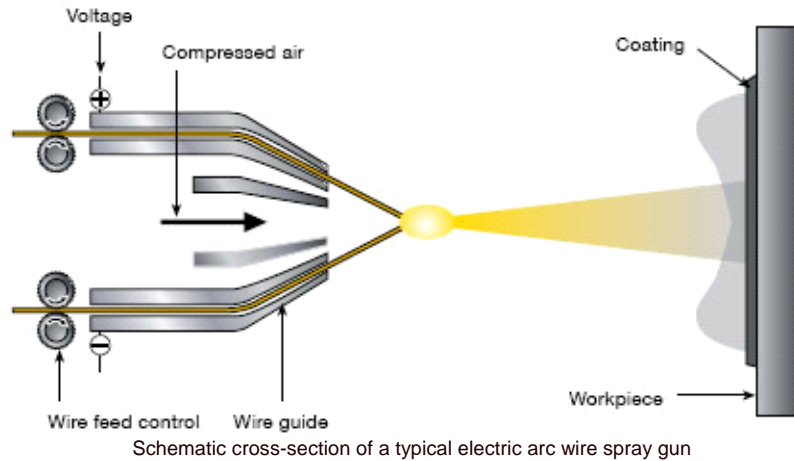
Key components of combustion wire spray system

Features of the Combustion Wire Spray Process:

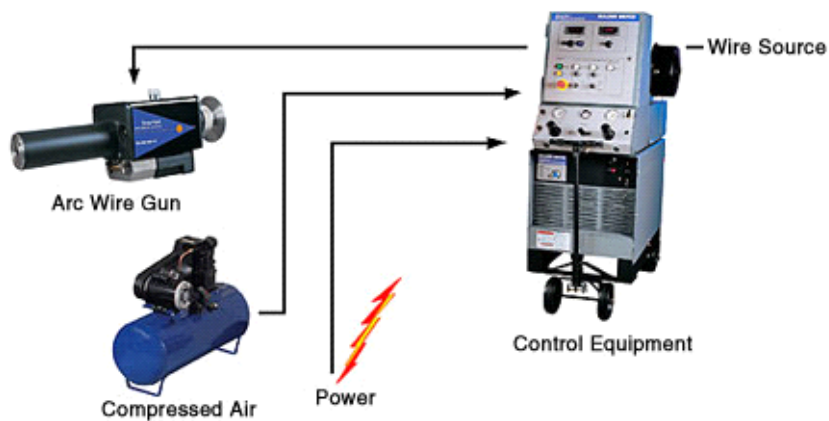
- Applies a range of metallic alloys and pure metals for restoration, corrosion coatings and other purposes
- Configurations from economical manual systems to fully automated production systems are available
- Can be portable for on-site coatings
- High spray rates with low gas consumption
- Coatings can be machined to final dimensions and finish
- Masking of areas that should not be coated is possible
- Coating of internal geometries is possible
- Very simple to operate and maintain

Process Description

The Electric Arc Wire Spray process uses two metallic wires, usually of the same composition, as the coating feedstock. The two wires are electrically charged with opposing polarity and are fed into the arc gun at matched, controlled speeds. When the wires are brought together at the contact point, the opposing charges on the wires create enough heat to continuously melt the tips of the wires. Compressed air is used to atomize the now molten material and accelerate it onto the workpiece surface to form the coating.



In electric arc wire spray, the weight of coating that can be deposited per unit of time is a function of the electrical power (amperage) of the system and the density and melting point of the wire. Depending on the columnar strength of the wire, 'push', 'pull' or 'push/pull' mechanisms can be used to feed the wire at a constant rate.



Key components of electric arc wire spray system

Features of the Electric Arc Wire Spray Process:

- Applies a range of metallic alloys and pure metals for restoration, corrosion coatings and other purposes in solid wire or cored (filled) wire forms
- Systems are compact and self-contained
- Excellent portability for on-site coatings
- Does not require any process water or gases except compressed air
- High spray rates

- Produces coatings that are easily machined
- Masking of areas that should not be coated is possible
- Coating of internal geometries is possible
- Very simple to operate and maintain