**Advantages of Arc Spray**

The main advantages of arc spraying relate to its ease of use and high coating rates: 

* Arc spraying has the highest deposition rate of the thermal spraying processes, with rates of 15kg/hr or higher.
* The process offers lower cost coatings when compared with plasma and HVOF spraying. This is because of lower energy cost, high deposition rates and efficiencies and lower material costs associated with a wire consumable.
* Power input is very low at only 5-10 kW compared with greater than 50kW for plasma and HVOF spraying systems.
* Little operator training needed.
* Low heating of the substrate makes arc spraying useful in metallizing thermally sensitive substrates such as capacitors and similar electronic components.
* It is possible to spray two dissimilar wires and produce an intimately mixed coating. Examples include composites of copper and steel on brake discs and clutch pads, and composites of steel and bronze on bearing surfaces and machine tool slideways.
* Higher bond strengths than achievable with flame spraying, even for thicker coatings. Bond strengths are similar over a wide range of spray angles.
* Lower porosity levels than can be achieved by flame spraying.
* Arc spraying does not require use of combustion gases or produce a high-energy plasma, and consequently poses fewer Health & Safety risks than other thermal spray processes.

**Advantages Of HVOF (High Velocity Oxy Fuel)**

Advantages of HVOF spraying over other thermal spray processes primarily relate to improved coating quality, such as:

* Higher density (lower porosity) due to greater particle impact velocities
* Better wear resistance due to harder, tougher coatings
* Higher hardness due to less degradation of carbide phases
* Improved corrosion protection due to less through porosity
* Higher strength bond to the underlying substrate and improved cohesive strength within the coating
* Lower oxide content due to less in-flight exposure time
* Retention of powder chemistry due to reduced time at temperature
* Thicker coating due to less residual stresses
* Smoother as-sprayed surface due to higher impact velocities and smaller powder sizes

**Advantages of Laser welding**

* Low heat input
* Easy to weld in deep and narrow space
* Join dissimilar material
* No preheating and post heating needed
* Wide range of material and treated surfaces.