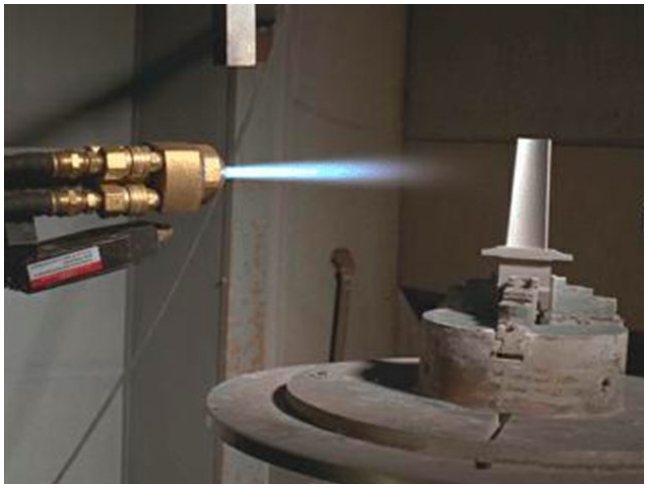
A015 - PROJECTION PAR PLASMA

APPLICATION NOTE A015-ST03

PLASMA SPRAYING

In for example the automotive and aerospace industries some mechanical parts are highly loaded with temperatures, corrosion and erosion. To protect them against these heavy influences, plasma spraying is the solution.

Plasma spraying is a flexible process and can be effective on ultra small to very big parts. Bronkhorst understands the market needs and can provide customized solutions to control the plasma spray process.



Application requirements

The plasma spraying process needs a high accuracy and stability of the plasma gas flow. Also the monitoring of the gas pressure is important for a good control of the plasma process. Bronkhorst can provide mass flow controllers and pressure controllers that are suitable for this. Bronkhorst also understands that a customized solution can be very functional for systems like plasma spraying.

Important topics

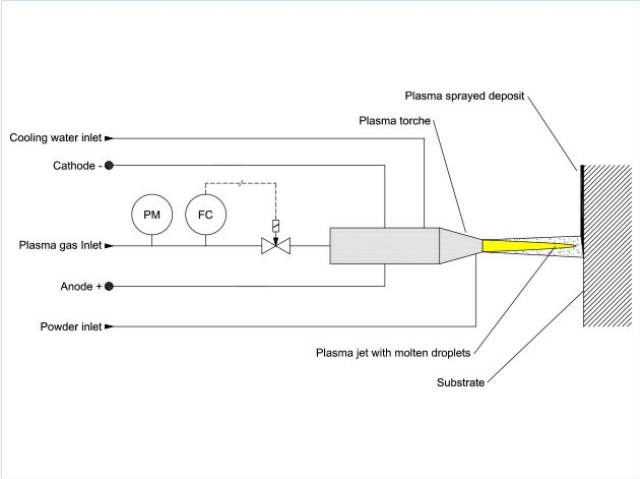
- High accuracy
- Stable control
- Digital communication
- Complete, compact sub-systems

Process solution

In a special torch, a plasma jet will be created for example by the plasma gas Argon. In the plasma jet the temperature will reach almost 10.000 degrees Celsius.

We can introduce a powder (sometimes liquid) into the plasma jet. Because of the high temperature the powder will melt, and propelled towards a substrate. There, the molten droplets flatten, rapidly solidify and form a deposit. The introduced powder can be made of various metals, depending on layer thickness, function of the deposit or physical properties. The range of layer thickness at plasma spraying is 20 micrometers to several millimetres, depending on the process and powder.

There are a large number of technological parameters that influence the interaction of the particles sprayed on the substrate. Parameters such as torch offset, flow rate and energy input are important. Because the plasma jet is created by a controlled flow rate of the plasma gas, flow controllers are crucial. Monitoring the pressure is important to control the system and detect an empty plasma gas cylinder. Often the system will be expanded with filters to be sure no other particulates will be involved in the plasma spraying process.



Flow scheme

Recommended Products



EL-FLOW SELECT F-201CV

Débit min. 0,16…8 mln/min
Débit max. 0,5…25 ln/min

Pression 64 bar

Conception compacte

Grande précision, excellente répétabilité



EL-PRESS P-602CV (P2-CONTROL)

Pression min. 5...100 mbar
Pression max. 3,2...64 bar

Pression absolue ou relative

Grande précision



MANI-FLOW

Compact assembly ensures space efficiency

Economical solution, low cost of ownership

Combination of functions on one manifold



MINI CORI-FLOW™ M14V14I

Débit min. 0,03…1 kg/h
Débit max. 0,3…30 kg/h

Pression 100 bar

Indépendant des propriétés du fluide

Grande précision

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