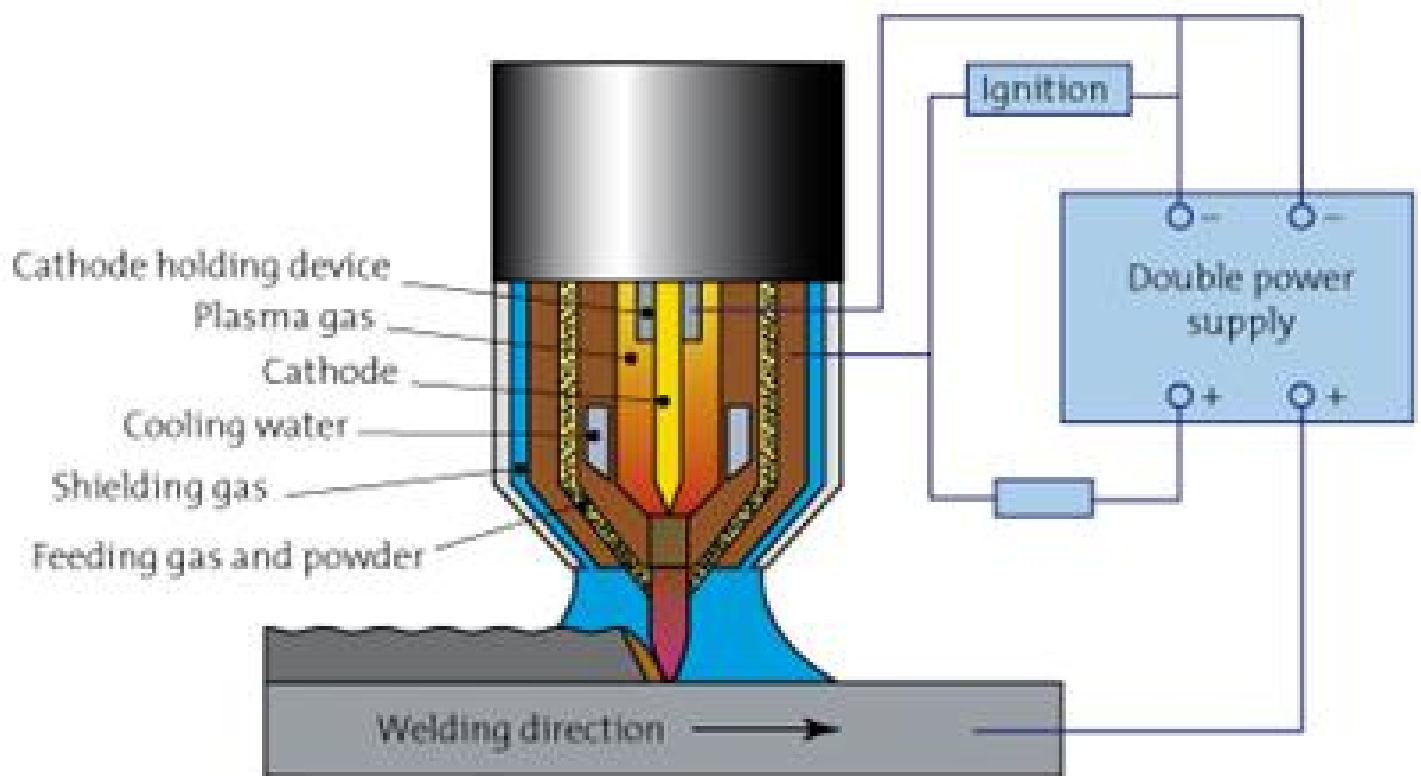


Plasma transferred arc (PTA) hardfacing is a versatile method of depositing high-quality metallurgically fused deposits on relatively low cost surfaces. Soft alloys, medium and high hardness materials, and carbide composites can be deposited on a variety of substrates to achieve diverse properties such as mechanical strength, wear and corrosion resistance, and creep. PTA hardfacing has several significant advantages over traditional welding processes such as oxyfuel (OFW) and gas tungsten arc (GTAW) welding.



### Welding Machine

Plasma Transferred Arc (PTA) process is ideal for coating and joining operations. In the process, the plasma is focused while forced through the heat resistant anode, causing a considerable increase of the arc density, energy and temperature. The welding filler alloy, in microatomised powder form, is conveyed into the plasma arc column where a shielding gas protects the weld pool from the atmosphere. We can offer you automated machines based on the latest technology, using special powders for engine valve applications.



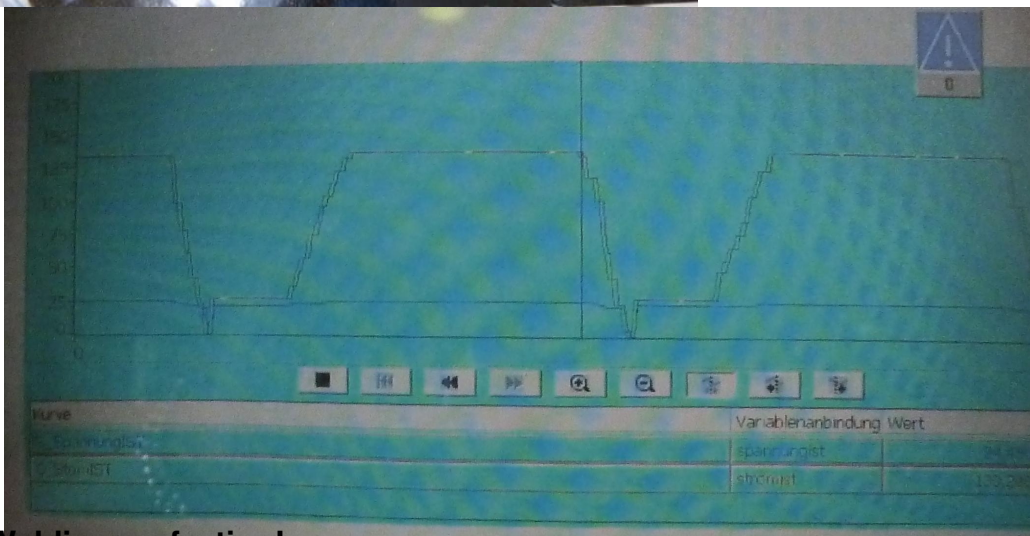
### Engine valves

The hardfacing of engine valve seats, which is a high volume process, was originally done using Oxyfuel welding (OFW) and gas tungsten arc welding (GTAW) processes. However since the 1980's hardfacing of engine valves has gone steadily toward PTA due to its consistently repeatable quality, productivity and enhanced deposit characteristics. Engine valve seats experience a variety of wear modes such as erosion, adhesion, galling, corrosion and fatigue. Demands like fuel efficiency, power-to-volume rating increase, and fuel quality impose further strains on the valves. Cobalt-based alloys have proven to be effective under such circumstances and a host of cobalt based alloys are now used in the automotive industry for wear resistance. Internal combustion engine valve manufacturers are big consumer's of cobalt alloys for hardfacing applications. Precise control of the hardfacing alloys that go into each valve is of paramount importance from a cost standpoint. The metering of the alloy must be controlled to a fraction of a gram, and PTA offers the advantage of precise feed stock delivery, consistent hard face quality, and low rejection rates. In addition to cobalt-based alloys, several nickel-based alloys that depend on borides and carbides for hardness are also used for hardfacing engine valves.



Manufactured with laser precision for high performance and long life. They can be used in a variety of applications, including engine valves, like the Navy program.





**Welding perfection!**