CD Welding Overview
Capacitor Discharge Welding (CD Welding) is an economical alternative to traditional welding processes. Its high production speeds, coupled with very low distortion welds, make CD Welding the perfect choice for welding high carbon material and dissimilar metals. In addition, the CD Welding process allows you to weld near-net shapes with no post-process machining necessary. Utilizing this process now allows powdered metal designers to create component designs not previously thought possible and often dismissed. Best of all, this allows you a lower operation cost and higher quality part for your overall project.

How it Works
A projection, specifically designed for the CD Welding process, is put under high force and subjected to a high current pulse (up to 1 million amps). This projection, critical to the parts weldability, heats to a plastic state and material from both work pieces mix; resulting in a diffusion/forge-type bond of fine grain. Parent material strengths are typically achieved without the segregation and re-cry stallization problems associated with fusion-type welding processes.
Process Description

- Pulse duration is ~ 10 to 20 msec
- Heating occurs from 2 to 6 msec
- Parts forge together in 5 to 12 msec
- Typical Upset is 0.3 to 0.6 mm

Process Advantages

- Welds without distortion, discoloration or annealing.
- Mechanical tolerances are maintained.
- Parts are assembly ready without cleanup or finish machining.
- Short welding time localizes heat, minimizing adverse effects to material properties and part geometry.
- Excellent bonds with many similar, dissimilar materials.
- Process is repeatable and selective since weld parameters are monitored, controlled and recorded for each part.
- High production speeds.
- Low operating costs. Low power requirement.
- Space efficient and environmentally clean; no smoke or fumes.
- No cover gases or special weld environment required.
- Insensitive to oil or other part surface anomalies.