Centrifugal Disc High Energy Mass Finishing

Question: We have high quantities of various 316 stainless steel, smaller, machined medical bone implants. The parts require an 8 Ra finish prior to electro-polish. We are purchasing a mass finish machine to obtain this. Our choices appear to be vibratory or high-energy machines. What do you recommend?

With high quantities of parts that are, smaller, tougher, and requiring a low Ra finish our recommendation is a centrifugal-disc (CD) high-energy machine. The CD will run high quantities of smaller parts, give them a low Ra finish in a relative short time cycle (1-2 hrs), and automatically unload the parts and separate the parts from the media.

The CD utilizes the energy of a constant or variable speed (between 100-200 rpm) rotating disc at the bottom of a bowl container. The rotating disc accelerates the media out to a stationary sidewall. The media then de-accelerates as it moves up the wall and re-accelerates down to the center of the disc. This continued flow of media acceleration and de-acceleration produces energy 7-to-15 times that of vibratory machines. The media flow of the CD also produces better finishes than the hammering effect of a vibratory machine. The CD is one of the few high-energy processes that can be automated.

The advantages of the CD is it’s high energy, better finish capabilities, ease of automation, flow through water/compound system, and quick time cycles for cellular manufacturing.

The disadvantages of the CD is the ring and rotor lining wear life (approximately $1.00 per hour reline cost) and its inability of running high quantities of large-heavier parts without part damage.

The Centrifugal disc is produced in machine sizes that range from one-to-ten cu. ft.. The CD is the most versatile and production friendly high-energy system produced.
Examples of parts run in CD’s are Medical implants, Bone screws, aircraft fasteners, ball screws, “O” rings, seals, fuel injector parts, blanks for uncirculated and proof minted coins, machined parts, and jewelry.