Materials

Raw Materials

Consult our engineering staff for application of alternate materials or a detailed review of your individual needs.

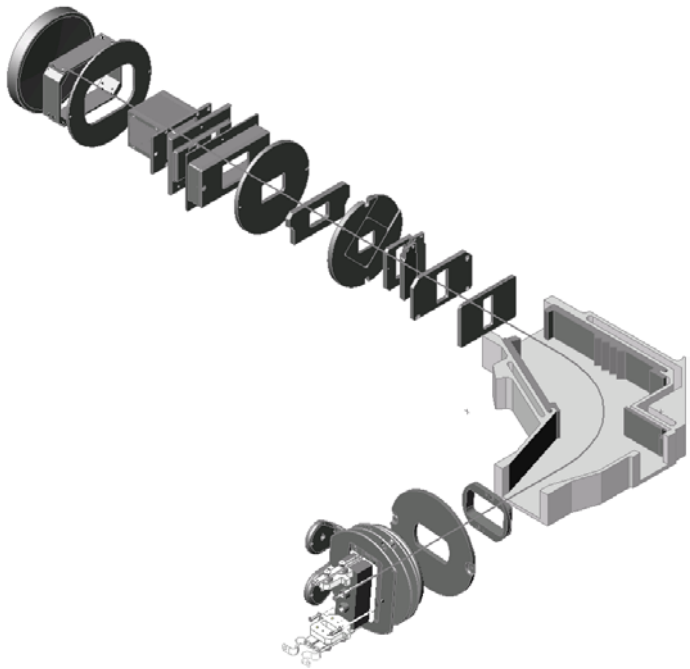
Materials and Techniques

Electro-Graph products are manufactured exclusively for use in the extreme environments of front-end semiconductor manufacturing systems. These environments frequently involve combinations of high temperature, voltage or current, and highly caustic chemistries. The severe nature of these applications frequently limit the types of material available for use and individual process needs often further reduce options to a single material choice. More specifically, ion implant and PVD process chamber environments dictate the use of high temperature metals such as tungsten, molybdenum, or tantalum (all refractory metals), graphites, alumina ceramics, and boron nitride. More common materials such as high quality, non-magnetic, stainless steel and aluminum are used in lower temperature and structural applications.

In the world of refractory metals and graphite, few raw material suppliers can meet the demanding specifications of the semiconductor equipment industry. It is from this limited base of qualified refractory metal powder and mill product suppliers and graphite processing companies that Electro-Graph procures all exotic raw materials. For some metals, raw powder may be produced by as few as two suppliers (worldwide!). These often severe limitations on raw material supply requires strategic planning of raw materials and commitment to the continued manufacture of such specialized components.

In many cases, Electro-Graph offers one-for-one replacement parts and modified (MOD) versions of the same part. In all one-for-one cases, Electro-Graph engineers analyze the application and raw material of OEM components to ensure process integrity and part performance. On occasion, such raw material analyses include analytical comparison of chemistry, density, grain structure, and anneal state. Where modifications exist, a second, or third, material option may be available to reduce cost of ownership. In some applications, apparently subtle changes to material chemistry or density can have large effects on part performance and cost.

The ion implant beamline shown at right contains tungsten, molybdenum, tantalum, graphite, stainless steel, aluminum, and silver.



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