ROYSON ENGINEERING COMPANY

The Importance of Edge and Surface Condition Quality

Deburring and surface conditioning has often been treated as the "poor relation" or "step-child" of manufacturing engineering. Many parts and components have been shown to have sub-optimal performance because of a lack of edge- and surface-quality-conscious design. Edge and surface finish can be an important factor in driving ultimate part performance and functionality. In what has become a standard reference on the subject, ("Deburring and Edge Finishing Handbook") author LaRoux Gillespie enumerated 25 different potential problem areas that might result from insufficient care being given to edge and surface finishing process selection. They are:

- cut hands in assembly or disassembly;
- interference fits (from burrs) in assemblies;
- jammed mechanisms (from burrs);
- scratched or scored mating surfaces (which allow seals to leak);
- friction increases or changes (disallowed in some assemblies);
- increased wear on moving or stressed parts;
- electrical short circuits (from loose burrs);
- cut wires from sharp edges and sharp burrs;
- unacceptable high-voltage breakdown of dielectric;
- irregular electrical and magnetic fields (from burrs);
- detuning of microwave systems (from burrs);
- metal contamination in unique aerospace assemblies;
- clogged filters and ports (from loose burr accumulation);
- cut rubber seals and O-rings;
- excessive stress concentrations;
- plating buildup at edges;
- paint buildup at edges (from electrostatic spray over burrs);
- paint thin out over sharp edges (from liquid paints);
- edge craters, fractures, or crumbling (from initially irregular edges);
- turbulence and non-laminar flow;
- reduced sheet metal formability;
- inaccurate dimensional measurements;
- microwave heating at edges;
- reduced fatigue limits;
- reduced volumetric efficiency of air compressors;
- reduced cleaning ability in clean room applications;
- reduced photo resist adherence at edges;
- and to the list, we would add less aesthetic appeal.