

## **Application Engineering Assistance**

Selecting a proper coating material can be a complex process. It involves considering such variables as coating function, total operational environment including operating temperature and service environment, and the physical and chemical properties of both the coating and the substrate. In addition, the mechanical and corrosion-resistance properties of thermal-sprayed materials differ from the solid or metal parts composed of the same chemistry.

As a result, choosing a thermal spray material for an application is more complicated than for selecting a wrought or cast material for the same application.

Fortunately, Plasma-Tec has developed a "Recommended Line of Questioning" to aid in proper coating selection. Once all the pertinent factors are taken into consideration, selecting the coating that best meets your needs becomes straightforward.

**The more detailed your answers, the more accurate a recommendation Plasma-Tec can make.**

1) What would you like the coating to do? Improve wear, add dimension, protect from corrosion, etc.?

2) What coating process or method have you used in the past? What were the results? (Example: chrome plated parts - they are performing great, but plating is getting expensive).

3) What is the size and geometry of the part? OD, ID, or flat?

4) What is the part made out of?

5) How much does the part cost?

6) What is the cost of the other processes used (welding, sleeving, plating, teflon coatings)?

7) TIR required?

8) Dimensional tolerances to be held?

9) Surface finish required? (Example: customer indicates 2 RMS finish required, coating recommendation is automatically HVOF or plasma).

10) Particular hardness range for the coating?

11) Are the parts/coatings subjected to chemicals or temperatures?

12) If so, what is the chemistry, the pH levels, the temperatures involved and the heat cycles?

13) Are the parts/coatings subjected to wear and erosion? If so, what is the make-up of the solid particle, the size, shape, hardness and angle of impact?

14) Are the parts/coatings subjected to liquid media? If so, what is the velocity, angle of impingement of the liquid media and is cavitation taking place?

15) Are the parts (and will the coating) be subjected to friction? If so, what are the lubrication features involved, what are the pressures at the interfaces and what is the movement between interfaces?

16) Are the parts (and will the coating) be subjected to stress? If so, is there point loading, metal fatigue, shear stress on a cross section, is there brinnelling taking place and is there impact involved?

17) Are the parts/coatings subjected to electrical currents? If so, what are the stray currents and what are the galvanic currents involved?

**Please fill out this form and fax it to us at: 616.455.4760**

**If you have questions or run into problems filling out this form, please feel free to call us at: 616.455.2593.**