

Engineered Coatings for Wear and Corrosion Protection of Machine Components and Tools

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Surface Technology for Engineered Surfaces

Modern engineering surfaces depend on the integrity and performance on many levels. Friction, wear and corrosive mechanisms lead to early failure and performance gaps, resulting in high cost for running, maintenance and repair. In order to find the most suitable solution for a given situation, it is imperative to identify the problem to be solved and the active physical and chemical mechanisms. Hereby, it is most effective to divide bulk and surface requirements of a tool or component and implement the surface functionality already in the design phase. A simple process for an effective surface engineering is being presented.

Friction, Wear and Corrosion

In many cases, the surfaces are faced with a complex mix of different types of wear, frictional and corrosive processes, limiting performance and productive life. It is mostly sufficient to identify the dominating processes and find suitable countermeasures. The various wear mechanisms, friction effects and some important corrosive and their characteristics are being explained.

Coatings and Materials

Once the focus is set on the surface behavior, which has to be improved, the suitable surface treatment has to be chosen. Some typical materials and processes are being explained

- Galvanic coatings
- Electroless and dispersion coatings
- PVD and PACVD coatings
- Hybrid Solutions

Some applications from the area of forming tools and machine components will be presented.

Finally, some basic principles for the designs of parts to be coated and requirements are being presented.