Surface treatment that delivers what it promises. Larger parts and special parts receive their finishing in our fully automatic rack system.
Turned and punched contacts obtain their specific electrical and mechanical properties through application-specific surface treatment. Contact resistance, wear resistance and many other properties are achieved by means of a layering system applied to the base body. This of course also applies to metal housings, which often require resistance to environmental influences such as chemicals, seawater or aggressive air pollutants.

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FINISHING PROCEDURES FOR CONTACTS AND SYSTEMS

ODU is a leading provider of high-quality finishing systems, or “functional surfaces”. Through the integration of surface treatment technology at an early stage of all development and production processes, ODU connectors are guaranteed to have a finishing quality that is precisely tailored to each special requirement.

For more detailed information on ODU’s finishing technology, go to www.odu-oberflaechentechnik.com
DEMANDING REQUIREMENTS – OUTSTANDING FUNCTIONAL SURFACES

Harsh environmental conditions, a high degree of mechanical stress, a particular vibrational load: Connectors’ coating systems must be able to withstand diverse factors. Yet they must also ensure the required application-specific properties: from inrush current behavior, to tribology and solderability to optics. Our surface technology uses a wide variety of basic materials in 16 electrolytic processes and numerous chemical processes in 55 applications. This results in reproducible surfaces that can be made biocompatible, sterilizable, autoclavable, saltwater-resistant, high-gloss, light-absorbing matt, corrosion-resistant, solderable or simply pleasing to the eye.

Procedure is the key

Coating layers of 0.2 to 40 micrometers are applied in the flexible electroplating system, which has and maintains state-of-the-art technology. Multilayer systems for basic, hard-to-bond materials are standard at ODU.

Continuous monitoring of the baths and coating thickness measurements based on X-ray fluorescence consistently ensure the highest surface quality resulting from IT-supported processes.

Barrel, rack, vibrobot or conveyor systems are used for coating procedures. In selecting the right procedure, the functional requirements of the respective surface, the geometry, number of units and the further processing of the coated components, in particular, are all decisive factors.
Barrel/vibrobot procedure
for coatings with copper, nickel, electroless nickel (mid-phos./high phos.), gold, silver and white bronze.
- Barrel width across flats: 250 mm
- Max. weight: 20 kg
- Vibrobot: max. 280 mm, min. 160 mm
- Suitable for small parts starting at a diameter of 0.5 mm

Rack system
for coatings with matt/bright chrome, black chrome, structured nickel, electroless nickel (mid-phos./high phos.), silver, white ruthenium, black ruthenium, palladium, palladium-nickel and copper.
- Total length: 27 m
- Possibility of up to 7 goods carriers
- Max. 1,044 parts in 2 hours
- Suitable for parts with a diameter of 5 mm up to a total length of 1,000 mm

Conveyor belt system
for coatings with nickel, gold, brushed gold, immersion gold, tin and white ruthenium upon request.
- Conveyor belt material made of copper and copper alloys
- Maximum conveyor belt speed: 12 meters/minute
- Maximum conveyor belt height: 50 mm
- Maximum conveyor belt width: 1 mm
1. Chrome
2. Black chrome
3. Gold
4. Silver
5. White bronze
6. Electroless nickel
7. Structured nickel
8. Tin
9. Palladium
10. Palladium-Nickel
11. ONIP/ONIP-A
12. Ruthenium
EFFECTIVE CORROSION PROTECTION

One of the most frequent connector specifications is corrosion resistance in metal parts – particularly, of course, in contacts and housings. The most common reactions are oxidation, a purely chemical reaction of the metal surface with the oxygen in the air, and electrochemical corrosion, in which two electroconductive metal compounds react via electrolytes and trigger corrosion due to their different electrochemical potentials.

The occurrence and speed of corrosion depend on component part geometry, in addition to chemical and physical influences, and material composition, structure and combination. In rare cases, corrosion can even be considered advantageous, such as when oxidation leads to surface passivation, thereby preventing further corrosion. Familiar examples are copper patination or the natural passivation of aluminum. Generally, however, the complex phenomenon of corrosion must be avoided, or at least delayed, through suitable surface refinement. This can be achieved by applying galvanic surface treatments, thereby positively impacting contact resistance, tribology and contacts’ abrasion resistance at the same time. Choosing the right layer or combination of layers requires a great deal of experience and detailed knowledge of chemical and physical processes. This choice also involves taking into account the component’s technical specifications and economic viability, since an inadequate choice of materials can also lead to corrosion. ODU possesses the necessary experience and know-how to produce functional surfaces that are reproducible and stable over long time periods while also exceeding the customers’ requirements.

Quality control through salt-spray fog testing

ODU carries out its quality control of surfaces using standardized testing to assess the corrosion protection effect. The most commonly known test procedure is salt-spray fog testing. Various national and international norms, such as DIN EN ISO 9227, regulate the execution and evaluation of this test.

The test pieces are placed in a test chamber under standardized conditions and sprayed with a standardized saline solution. A thorough assessment is then carried out according to appearance, degree of corrosion, delamination, bubble formation and functionality. In order to correctly assess the results, a great deal of experience and knowledge of the process is required.