

Heraeus Contact Systems for Slip Ring Applications



Heraeus Material Technology produces sliding contact systems specially developed for application in slip rings.

The system comprises both the precious metal based brushes as well as the electroplated contact surface of the slip rings. Slip rings are required where electric signals or electric power have to be efficiently transferred across a rotating interface. Typical applications for slip ring assemblies are wind turbines, radar pedestals, industrial automation and machining, medical equipment and defense.

The efficiency of electric transmission and thus the performance of the slip ring assembly is strongly influenced by the form and material of the brushes as well as by the surface condition of the slip ring. Therefore, the correct choice of the optimal combination of brush contact and

the corresponding slip ring coating is of crucial importance for the functionality of the complete slip ring assembly. With more than 40 years experience in contact technology and our long tradition in precious metals we can support you in choosing a contact system best suited to your specific application.

Typical requirements to the contact systems

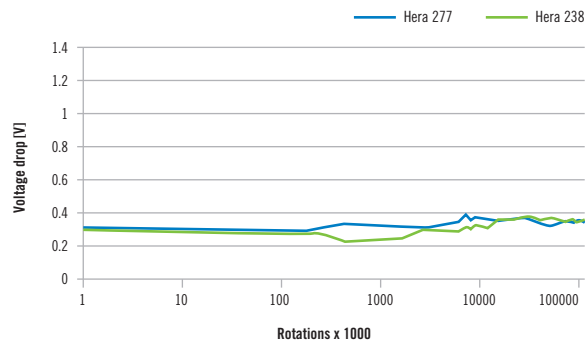
- Low and stable contact resistance with high reliability
- Long life time
- Good electrical conductivity
- High electrical load-carrying capacity
- Low electrical noise
- High corrosion resistance

The contact brushes are available in various forms and materials. In order to meet the above requirements both the brush materials and the surface coatings of the slip rings are based on precious metals like gold, silver or palladium. A selection of precious metal alloys available as brush material is shown in the table below.

Material designation	Main alloy components	Electrical conductivity [m / Ω mm ²]	Hardness* [HV]
Hera 238	AuAgCu	7.3	150–330
Hera 277	AuPdAg	3.4	120–300
Hera 625	AgPdCu	6.4	80–230
Hera 649	PdAgCu	3.9	170–380
Hera 3261	AgCu	42.6	80–180

*Depending on heat treatment condition.

Comparison Hera 238 and Hera 277 on Heracoat 2



Results of a life time test for Hera 277 brush on Heracoat®2 surface up to 100 Mio. rotations.

Available forms for brushes

- Monofilament brushes made of solid precious metal wires
- Monofilament brushes made of sheathed wires
- Electroplated brushes
- Multi-fiber brushes
- Brushes with selectively welded contacts
- Multi-wire wipers

W. C. Heraeus GmbH

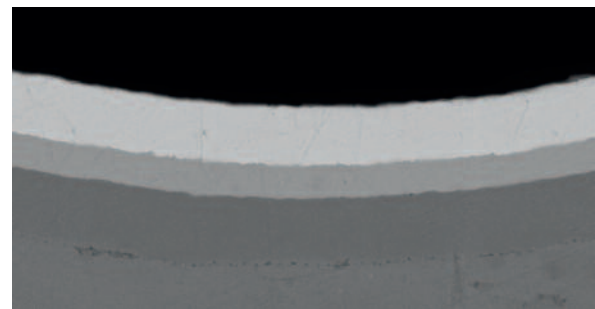
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Electroplated contact surfaces for slip rings

The slip ring coatings are available both on gold basis (Heracoat®) and on silver basis. The coatings can be applied selectively onto the contact surface of the slip rings thus providing significant savings in precious metals compared to overall coatings.

Heracoat® – The coating system for slip rings

Heracoat® is a multi-layer coating system consisting of different precious and non-precious metal layers. The top layer and thus the contact surface is made of hard gold providing for good electrical contact behavior combined with long life time. Heracoat® has been particularly developed for use in slip ring coatings and has been thoroughly tested in our laboratory against various brush contact materials. The Heracoat® coating system can be applied selectively to the outer contact surface providing significant potential for precious metal saving.



Metallographic cross section of a Heracoat®2 coating.

Heraeus Materials Technology offers you

- Sliding contact systems for slip ring applications individually tailored to your specific requirements
- Precious metal economy by innovative brush technologies and selective coating of the slip rings
- More than 40 years experience in contact technology
- State of the art testing laboratory for the investigation of contact properties and life time of sliding contacts