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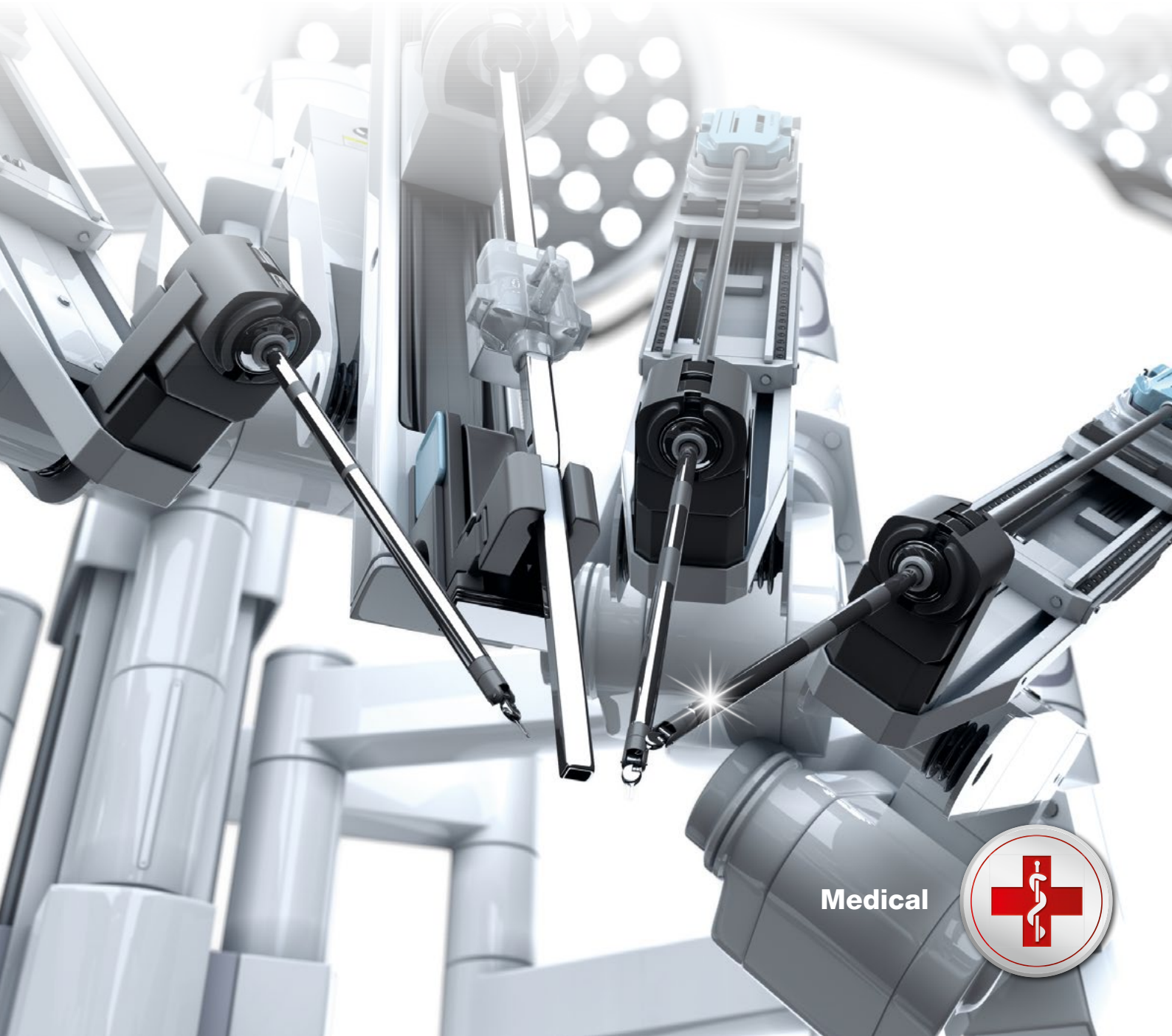
Improving surgeon's experience and patient's health

BALIMED coatings for robotic surgical and other minimally invasive surgical instrumentation



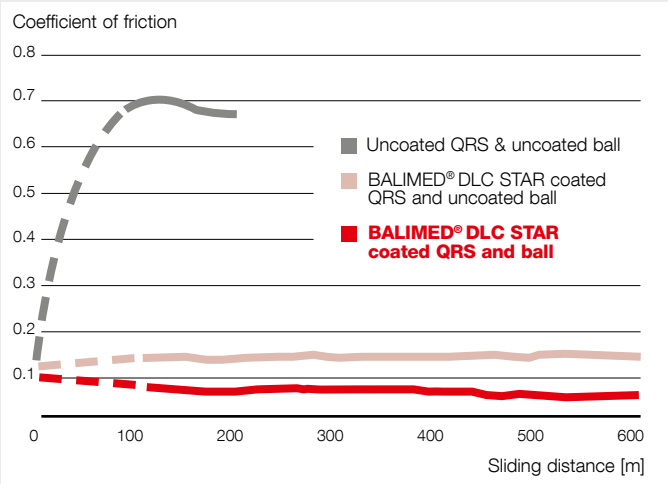
BALIMED coatings for improved wear resistance and low friction of surgical instrumentation

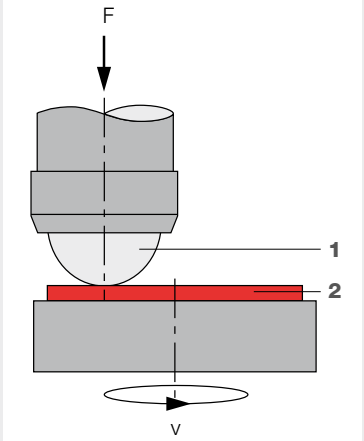
Oerlikon Balzers offer innovative medical coating solutions with the BALIMED® portfolio, to optimise product performance of instruments and components for robotic and other minimally invasive surgical (MIS) instrumentation through the use of highly wear-resistant and low friction PVD and PACVD coatings. The implementation of these coatings can help to drive the innovation in instrumentation that improves patient outcomes and reduces healthcare costs.

Your advantages with BALIMED coated minimally invasive surgical instruments

- Improves wear resistance and reduces friction on instrument components (eg. axle pins/shafts and pulleys for "jawed" instruments, such as graspers)
- Improved edge retention on shears and other sharp-edge instruments
- Eliminates the need for lubrication in some devices
- Eliminates "eschar" from bipolar and monopolar electro-surgical instruments
- Coatings can provide anti-glare and aesthetic benefits
- Improved performance characteristics can help OEM's achieve multi-use goals

Tribological performance of BALIMED DLC STAR in a pin-on-disc test



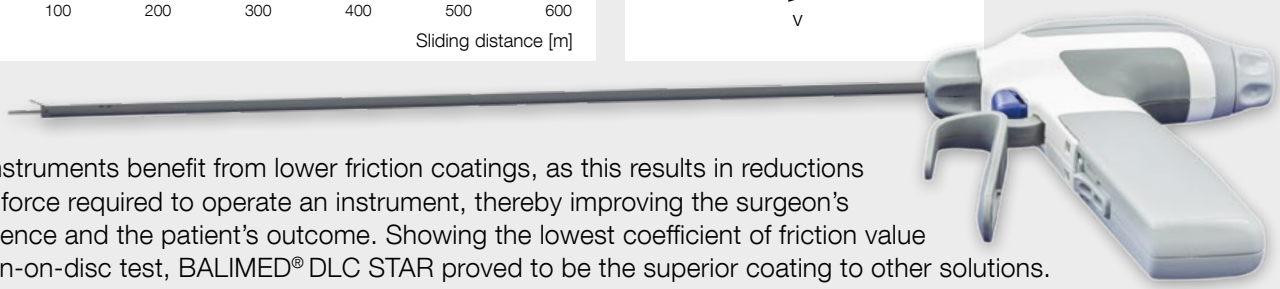


Experimental method:

1. Ball, non rotating, diameter 3 mm, AISI 52100 (DIN 1.3505), 60 HRc
2. Test specimen: QRS (Quality Reference Sample) DIN 1.2842 (90MnCrV8) with > 62 HRc

Test conditions:

F = 10 N
v = 0.3 m/s
r = 8 mm
Dry contact



MIS instruments benefit from lower friction coatings, as this results in reductions in the force required to operate an instrument, thereby improving the surgeon's experience and the patient's outcome. Showing the lowest coefficient of friction value in a pin-on-disc test, BALIMED® DLC STAR proved to be the superior coating to other solutions.

We recommend BALIMED coatings for reduced friction on surgical instruments

	BALIMED® DLC	BALIMED® DLC STAR	BALIMED® C	BALIMED® A	BALIMED® CNI	BALIMED® ARGENTA
Coating material	a-C:H	CrN + a-C:H	a-C:H:W	TiN	CrN	TiN:Ag
Coating hardness H_{IT} [GPa]	~ 15 – 25	~ 15 – 25	8 – 12 / 12 – 15	30 +/- 3	18 +/- 3	25 – 29
Typical coating thickness [µm]	1 – 3	2 – 5	1 – 4	1 – 4	1 – 20	1 – 5
Coefficient of friction (dry) vs. steel	0.1 – 0.2	0.1 – 0.2	0.1 – 0.2	~ 0.6	0.3	0.5

All given data are approximate values and they depend on application, environment and test condition.

We help you to improve your business. Get in touch with us!

Oerlikon Balzers Coating AG | Balzers Technology & Service Centre | Iramali 18 | 9496 Balzers | Liechtenstein
T +423 388 7500 | www.oerlikon.com/balzers

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