Best practice

Industry

Optical products, glass and glassware

Area of use

Laboratory

Customer

Principle product:

Binoculars, telescopes, telescopic sights

The customer is a world-leading **provider of optical products** for hunting, nature and bird watching as well as for travel and leisure.

Requirement

Hardness testing on anodised coatings and glass

Anodised coatings are oxidised protection layers on aluminium. In the first step, the aluminium component is degreased and pickled. Pickling removes the thin, natural layer of oxide and is followed by the actual anodising. Afterwards the freshly prepared porous layer gets coloured and subsequently sealed. Anodising is an electrolytic process carried out using direct current and acidic electrolytes. Finally, the layer is sealed once again to prevent corrosion-promoting substances being deposited, and to constrict and then close the pores.

Best practice

Anodic coatings demonstrate **extreme hardness** and are very resistant to abrasion. These dark coatings also demonstrate **very good corrosion characteristics.** They are often used as decorative coatings.

The biggest challenge with these applications is finding the **correct test method for anodic coatings** because, on the one hand, they are very thin and, on the other hand, they are very dark.

Furthermore, **tests on glass** are also required because glass is subject to goods inwards testing where quality tests are carried out. It must be determined, here, which test methods are most appropriate.

It should also be possible to automatically **generate** a **report** tailored to the customer's requirements.

Solution

DuraScan 20

Because the **anodic** coating is very thin, only a low test force can be used. Using the **Knoop HK0.01 method** we've succeeded in testing the coating directly. The Knoop impression doesn't penetrate the material so deeply and is suitable for thin coatings. The **Knoop method for glass hardness** testing is also suitable. The test method used is dependent on the glass.

With the **DuraScan 20** both **Knoop** as well as **Vickers** tests can be conducted. The **load range** goes from **10g** to **10kg**. Along with the Vickers and Knoop indenters, the **automatic turret** is equipped with three lenses that cover the entire load range. The **automatic brightness control** makes testing on dark surfaces possible.

In the final step, the **test report is tailored to the customer requirements.** A report can therefore be automatically produced at the end of the measurement.

Best practice

Why EMCO-TEST?

The **design** of the hardness tester aroused the customer's interest. They were quickly impressed by the **DuraScan 20**. The **motorised Z axis** was found to be a clear step forward, significantly reducing the workload.

"The **turret** is super. When testing anodic coatings it's often necessary to make multiple measurements to find the optimal test load. If I had to change between indenter and lens every time, I would lose a lot of time. As it is, everything is **completely automatic** and **really fast.** In addition, I have different optics in the turret. As a result, I save even more time. I also find the **price-performance relationship** great. Even after the purchase, we're constantly supplied with free updates."

Employee in Test and Measurement