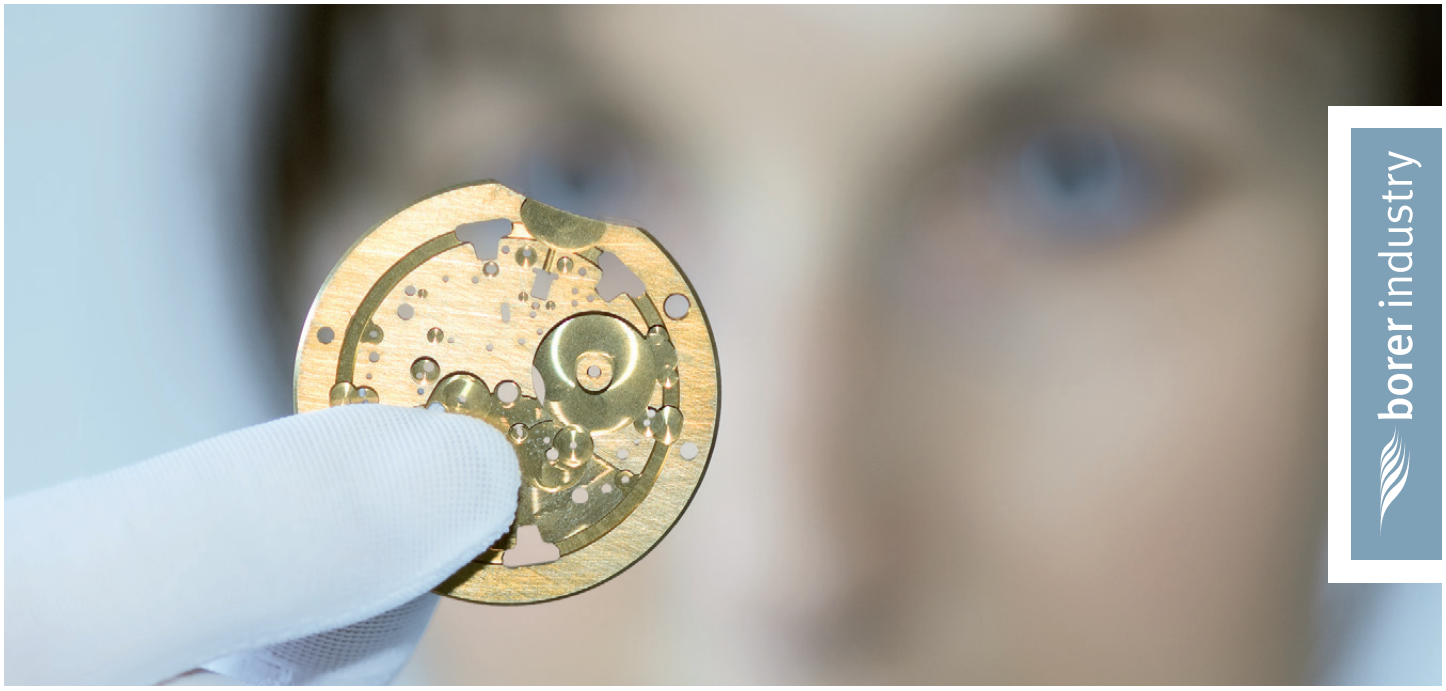


Aqueous cleaning of small parts begins with the adhesive

The change from solvent-based cleaning to aqueous cleaning processes begins with the right adhesive. The smallest components in the watch and precision industries can only be handled by bonding them to a support. Today, mainly solvent-containing adhesives are used for this purpose.

After processing, the parts have to be detached from the support. With solvent-containing adhesives, this inevitably means the use of appropriate solvents.

The procedure results in significant costs because of the ever-increasing taxes levied on VOCs (volatile organic compounds). Furthermore, solvents endanger health and pollute the environment (trichloroethylene or methylene chloride) and are highly inflammable (petroleum ether or acetone).

Aqueous - the new solution

Borer Chemie AG Zuchwil, a leading specialist for aqueous cleaning processes and products, and Stettler AG Lyss, Bonding and Saphir Technology have cooperated closely to find better solutions. Together with important users in industry, new VOC-free processes and products for the «Bond - Detach - Clean» application sector have been developed.

borer
advanced cleaning solutions

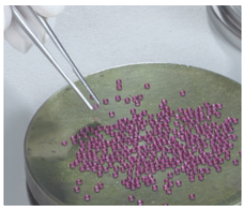
1. These VOC-free processes are being used with great success for the most varied types of small components:

– ruby bearings of watches
– sapphire glass
– precision optics
– decorative jewellery
– cog wheels of watches
– hands of watches
– working parts of watches
etc.

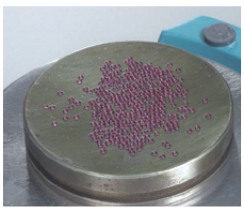
Practical example

Bonding, cleaning and polishing of ruby bearings of watches

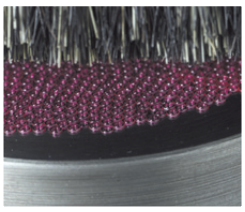
2. Applying the adhesive



3. Positioning of the parts is done in the same way as with conventional solvent-containing adhesives

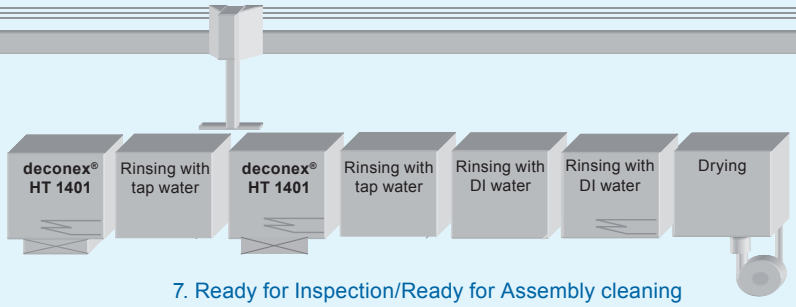


4. Heating the support on a heating plate at 150 to 160 °C. As soon as the hot-melt adhesive has liquefied, pressure is applied to the parts and the support is cooled to room temperature.



5. Polishing the ruby bearings

6. Detaching the parts in an aqueous solution of 10% deconex® OP 149 in water at 65 °C in an ultrasonic bath



7. Ready for Inspection/Ready for Assembly cleaning

8. Perfectly cleaned ruby bearings under the microscope: 10-fold magnification

Future outlook

In the foreseeable future, taxes on VOCs are expected to increase dramatically. This is the most effective measure to achieve rapid implementation of modern and environmentally friendly technology. In this respect, Switzerland plays a leading role internationally. Laws and regulations are in preparation in the EU. Many users in industry are therefore now ready to take a new look even at long-established manufacturing processes.

Practical implementation

At Borer Chemie AG's research and development centre in Zuchwil and at Stettler AG Lyss, the necessary infrastructure is available to precisely simulate any individual practical application. This allows processes to be fully investigated and tested. Future investments can be optimally planned and risky investments effectively eliminated.

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