

# **Automatic Visual Systems For Automotive Industry - Testing Of Bearings**

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Already high volume of produced cars worldwide is still increasing every year and therefore high speed testing of automotive parts is more and more important. In order to satisfy the demand, various types of automation are usually necessary. Mass visual testing by human operators is still more and more expensive, slow and not reliable enough. ATG developed its own automatic system iVT for visual testing of bearing rings with diameter range of  $\approx 30$  to 70 mm. Basic principle is fast, mostly pneumatic manipulation combined with row and 2D camera recording. Synergy of cameras, lenses, camera filters, lights and light diffusers is crucial part of the sensing system. The machine is able to take figures of outer surface, both foreheads and inner surface in one cycle time, which is less than 11 seconds. This cycle time also includes evaluation and manipulation. Prior the visual inspection the machine performs drying optimized to eliminate bubbles and liquid traces on the recorded surface. All the records are processed and evaluated using artificial intelligence. Registration level makes 0.1 mm, typical recognized imperfections are signature faults, corrosion, scratches, pressure defects, not-grinded places. Applied sensitivity is reduced for as-human evaluation. After automatic evaluation machine separates not acceptable parts. This way we can easily replace human operator and be cheaper, more sensitive if it is needed, offer better repeatability and traceability. You can see more in our presentation of case study from KOYO Bearings.