Solid shaft test bench

Testing of transversal damages in the wheel shaft

The intention of the test is to find transversal damages in the wheel shaft. The particularly endangered ranges are the cross section variation considered, in particular from the wheel seats and the brake disk seats to the shaft.

The solid axle inspection equipment is - together with our competence partners BIP Industrietechnik and Fraunhofer IZFP Dresden - successfully manufactured and delivered turn-key ready under the know-how leadership of arxes-tolina.

Innovative characteristics
- Using of US-emitter technology of group
- View of test picture on-line possible
- almost maintenance-free plant

Economic aspects
- Operation of the entire plant by 1 operator
- Small operating cost
- In-out time approx. 5 min
- Fulfilment of the German Bahn AG - test provisions
- Reproductibility of the results

Fig 1: Solid shaft test stand

Fig 2: Inspection principle - inspection of a an entire axle in one rotation. Inspection cycle 3-5 minutes.

Optional (Vakuum sandblasting)
- Pre-located cleaning of rust/color
- Test is possible without additional effort
- No pollution at the machine and in the work area by the vacuum jet cleaning

Fig 3: Opt. Vakuum sandblasting

Basic structure
The testing facility consists of the main building groups
- Adjustable rolling stand with the necessary intake and discharge barricade as well as catch and ejection devices for the wheel set which can be tested
- Portal with setting mechanisms for the probes inclusive probe holder, whereby a turn of the probe is possible around 180°
- No couple medium circulation, only supply and delivery in the waste water
- Operating station with control computer, programmable controller (SPC) in the background
Execution of the examination

A available wheel set to test is rolled into the rolling stand, after the starting signal of the operator. Before the testing are the necessary data (especially the design) and the desired check extent by the operator to be entered. By a starting signal the wheel set is lowered into test position and shifted into the necessary test revolution, e.g. 4 revolutions per minute. The number of revolutions is selectable.

At the same time the needed ultrasonic probes are supplied by way of electromechanical setting mechanisms in the test positions necessary for the wheel set design coupled at the wave surface and water as couple medium is delivered. The position depends on the situation of the range which can be tested and the position depending upon check extent several times one changes. To change the position the setting mechanism is displaceable arranged in axle direction at the portal. By an incremental position indicator the accurate positioning of the setting mechanisms for the respective test task is made.

After the wetting over a revolution of the axle the test is started after passing the zero point giver. The test data collection runs in each probe position during a whole revolution. The client supplies the accurate defaults. In the event of an error the operator can regard the A- and C-pictures of the US channels concerned. In addition he can use on the one hand the noted data or on the other hand test again and watches the monitor to detect damages. For a possibly wished hand testing the wheel set can be turned on any position. After the operator confirmed test execution, all data are stored in the data base and desired protocols are printed.