

## Ovality of Pistons

MTW-510-OVA-001

### Inspection of the Ovality of Pistons of Internal Combustion Engines.

Pistons of internal combustion engines are manufactured with either single, double or triple ovality. The QUINDOS option **Ovality of Pistons** is used to inspect and evaluate those ovalities with a precision 3D Coordinate Measuring Machine (CMM).

The ovality of a piston is described according to one of the following formulas:

**Single ovality** (Circle with double sine overlay)

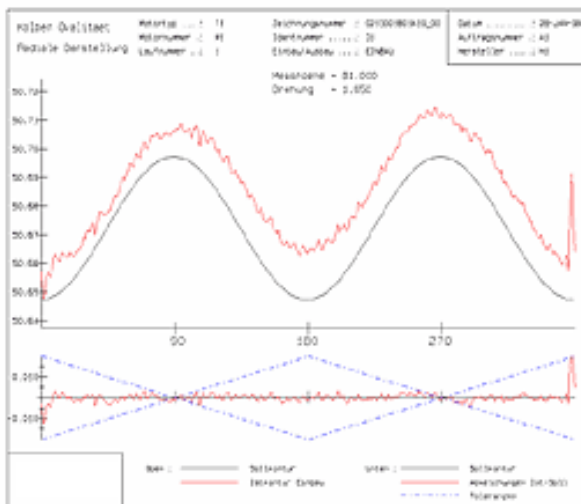
$$r(\Phi) = \text{Radius} - (\text{Ovality}/2) \times \sin(\Phi - \Phi_0)^2$$

**Double ovality** (Single ovality with a quadruple sine overlay )

$$r(\Phi) = \text{Radius} - (\text{Ovality}/2) \times \sin(\Phi - \Phi_0)^2 - \text{Overlay} \times \sin(2(\Phi - \Phi_1))^2$$

**Triple ovality** (Double ovality with a sixfold sine overlay)

$$r(\Phi) = \text{Radius} - (\text{Ovality}/2 + \text{Overlay}/2) \times \sin(\Phi - \Phi_0)^2 - (\text{Overlay}/2) \times \sin(3(\Phi - \Phi_1))^2$$



For the inspection of the ovality of a piston a 3D Coordinate Measuring Machine with continuous scanning capability is required.

The measurement is done without a rotary table, therefore pistons can be mounted on a pallet and measured with maximum throughput in one go.

**Leitz measuring technology for ovality of pistons: fast, precise and cost-efficient!**