

Polishing of cam shafts

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Camshafts are used to control (open and close) valves in internal combustion engines. This is done through the so-called cams. The shafts rotate at 5000 to 16,000 times per minute. Accordingly often the valves open or close. The cam slides on its counterpart, the rocker arm or tappet. An oil film prevents excessive friction. Today, the fuel consumption in internal combustion engines is a big issue. The friction in the engine or transmission has a great impact on this. The key figure for this is the coefficient of friction which is significantly influenced by the surface roughness. Therefore with car manufacturers the demands on the surface quality of their functional area are increasing.

Here is a typical component, but from racing:

- 1) Complete cam shaft (racing) processed in HV 20



Roughness before (upper part): Ra 0.09 μ m, Rz 0.7 μ m

Roughness after (lower part): Ra 0.04 μ m, RZ 0.04 μ m

This means that the roughness was halved, therefore the frictional loss was halved as well.

Processing time is around 1 hour. The customer was very pleased and ordered immediately several HV 20 tub vibrators.

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- 2) Segments of cam shafts for serial production. Here only the cams are processed and later mounted onto the shaft. (Unfortunately we can not show you an original picture due to non-disclosure agreement).

Here the requirement is to provide a fully automated process. The cycle time of the cam is about 30 seconds. I.e. every 30 seconds, a cam is ready to come out of our machine.

The processing was done in SF-machine. The goal was a smoothing of Ra 0.2 μ m to less than Ra 0.1 microns. The process time was 1.5 minutes, a customer was very satisfied.

We offered the customer a SF-5 machine with automatic loading and unloading.

