Lead Evaluation According to VDA2007 "Dominant Waviness"

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Description:

In the guideline VDA2007, the German Association of the Automotive Industry (VDA) has defined an algorithmic evaluation procedure for periodic surface structures that can be used for an evaluation of periodic macro-lead. The VDA2007 describes the dominant waviness as a periodic dominant surface structure, which influences for example the function of static and dynamic sealing surfaces.

Basically, the calculation method examines 2D surface profiles by means of frequency analysis for the presence of periodic structural components. If a dominant periodic structure is present, its frequency is determined and the surface profile is filtered with a zero band pass filter. This leads to the dominant ripple profile (WD profile) from which the three parameters WDc, WDt and WDSm are derived.

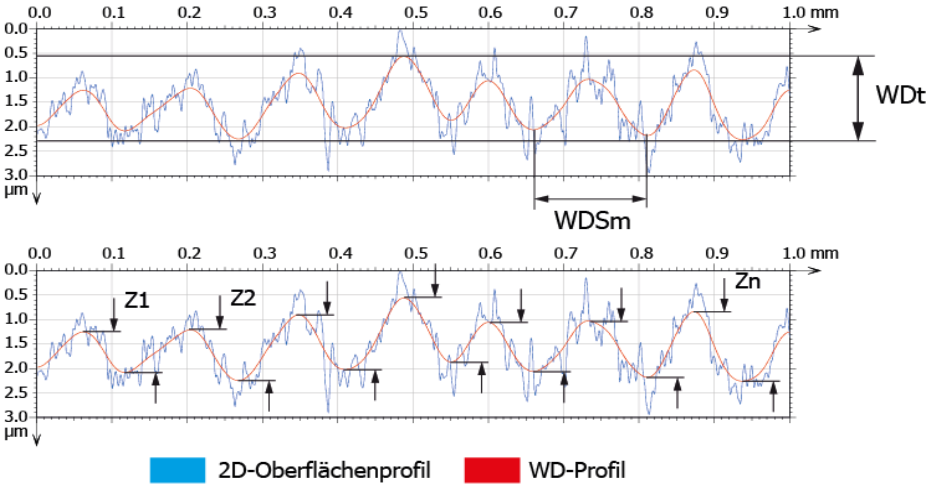
An advantage of the method is that no limit wavelengths need to be defined for the waviness and that it has an internal threshold. The characteristics of the dominant waviness are only output if this threshold is exceeded and a distinct periodicity of the surface is present. In this case a macro-lead is often present. Period length and depth of the structures can then be determined using the characteristic values of the parameters. The disadvantage here is that a possibly existing lead angle of a macro-lead cannot be determined.

Characteristic Values:

WDt:	Vertical difference between the highest and lowest point of the WD profile
WDSm:	Average period length of the dominant waviness determined from the amplitude spectrum
WDc	Average of the heights of the profile elements Zn

Field of Application:

- Estimation of period length and depth of an existing periodic surface structure (macro-lead)



Presentation of a 2D surface profile with associated WD profile of the "dominant waviness", as well as parameters according to VDA2007