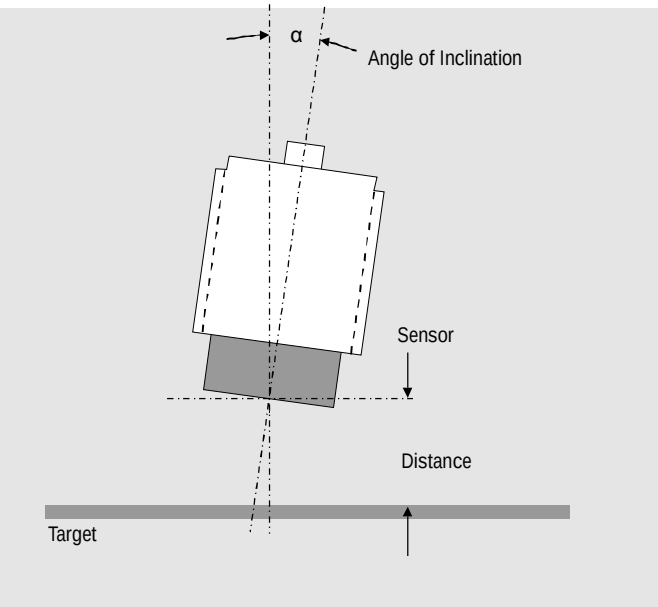
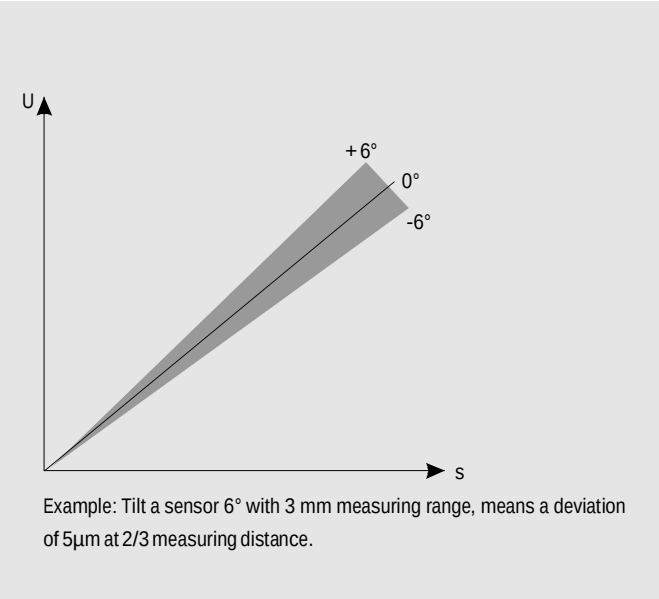
eddyNCDT - Tilt angle and measuring signal

The non-contacting displacement measuring system eddyNCDT is often used because of its excellent linearity and high resolution. This high resolution is achieved with right angle position, only. Sometimes an exact right angle mounting of the sensor to the target is difficult or impossible. In this case, the measured values deviate marginal from values, measured in right angle position. Hence it is important to know the influence to the measuring signal if the sensor is tilted. The following graphs show the influence to the measuring signal of a tilted sensor.

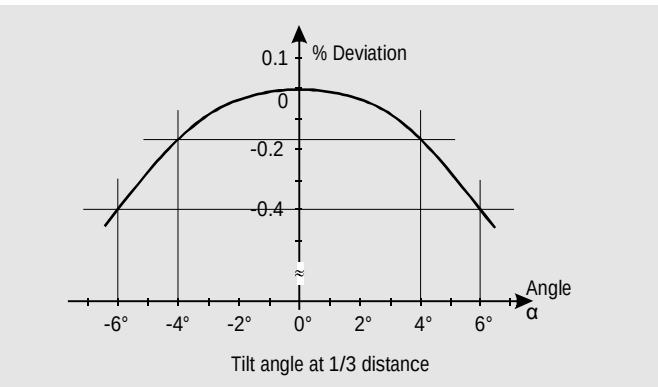




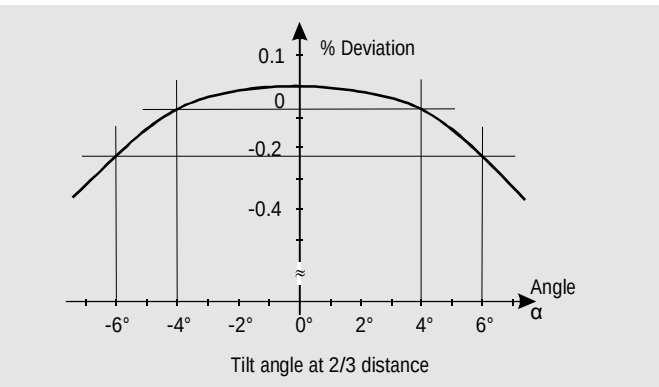
Example: Tilt a sensor 6° with 3 mm measuring range, means a deviation of 5µm at 2/3 measuring distance.

A permanent tilt angle can already be lodged at the controller with the 3-point linearization. This avoids an influence of this tilt angle to the signal.

Tilt angles, the controller not linearized for, cause deviations of the measured values in comparison to right angled measurements.



Tilt angle at 1/3 distance



Tilt angle at 2/3 distance

The extent of deviation is different from sensor to sensor. These diagrams were taken with a U6 sensor and aluminium target. The diagrams show, that an inclination of ±4 degrees can be accepted and neglected in most applications.

A tilt angle of more than 6 degree is rather possible with unshielded sensors than with shielded, but should be avoided. In principle, only a special linearized sensor provides a precise signal.

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