

# Verification vs. calibration



**Dr. Peter Ulbig**

**Department Q.3: Legal Metrology and Technology Transfer**  
**Physikalisch-Technische Bundesanstalt, Germany**





**In Germany verification is carried out for:**

**23 areas of measurement (§ verification decree)**



**= 47 kinds of instruments**



**≈ 240 subkinds of instruments**

**➔ list will be checked, because economic relevance may have changed during the last 50 years**



**Which reasons justify the effort to take a measuring instrument into the system of legal control ?**



**Answer depends on history, traditions, situation in a country etc.**

**criteria for instruments to be covered by **calibration**:**

- if there is **no interest to manipulate** measured values
- if the instrument is **not used for official measurements**
- if the results are **not expected to be taken to court**

**criteria for instruments to be covered by **verification**:**

- if there is **substantial (e.g. economic) relevance**, resp. potential interest in manipulating measured values
- to establish a **fair trade**, when one of the trading partners is not able to judge the correctness of the measurement (= to protect a consumer) or is absent when the measurement is carried out
- for **official measurements** (e.g. speed meters, breath alcohol analyzers, sound level meters, ...), **which could have special relevance at court**



#### What influences our decisions ?

- 1. Resources for verification are decreasing**
- 2. More and more private bodies are to be integrated into legal metrology systems**
- 3. Quality measurement plays an increasing role**  
(e.g. ISO 9001, obligation on traceability of measuring instruments)

#### What influences our decisions ?

4. **Economic value of goods is changing**  
(e.g. increase in prices for energy or grain)
5. **New measuring quantities are getting important**  
(e.g. new law on use of thermal energy of exhaust gases of biogas power stations)
6. **Some measuring instruments can be controlled easily by the user** (e.g. measuring travelled distance of cars for rent by using navigation systems)