

# Timber Measurement in Germany

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# Background

## Considering legal requirements

- In 1969 the EU directive (68/89) for the intra-European approximation of laws in terms of roundwood scaling and grading was transposed into a national law (Forst-HKL, Forst-HKS).
- For more than 40 years this law formed the main basis for scaling and grading of roundwood in Germany.
- 31.12.2008: Suspension of the EU directive (68/89)
  - basis for national regulations does not exist anymore
  - development of succeeding regulations under private law is necessary

# Background

Since 2008:

- representatives of forest ownership and wood industries develop new common standards for the trade of wood:

Rahmenvereinbarung für den Rohholzhandel in Deutschland

→ [www.rvr-deutschland.de](http://www.rvr-deutschland.de)

- determination of wood quality and volume are part of the new standard

→ implementation of one national, consistent standard as basis for a fair and transparent trade

# Background

Most important methods for measuring sales volume:

## **Sawlogs:**

- manual measurement of single logs at forest site
- electronic measurement of single logs in saw mills

## **Sawlogs, pulpwood and energywood:**

- sampling methods at forest site (only short logs)

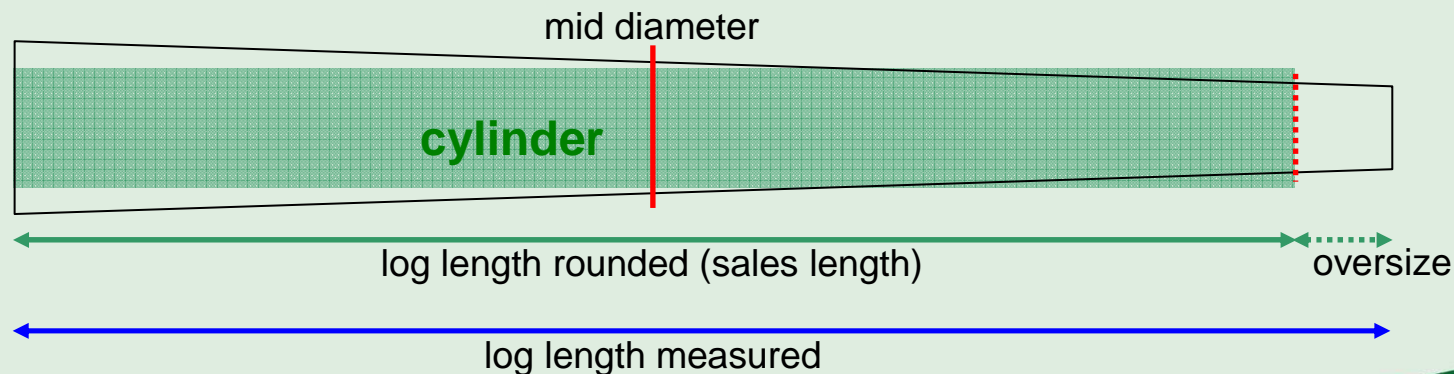
## **Pulpwood and energywood:**

- determining the volume of stacks and truck loads
- dry weight measurement of truck loads at mill site

# Sawlogs: Manual measurement

Basis: (former) national laws and guidelines

- determining mid diameter and length by using calliper and measuring tape
- two perpendicular mid diameters are measured and rounded down to full centimeters; log length is rounded down to agreed steps
- log volume under bark is calculated on the basis of a cylinder



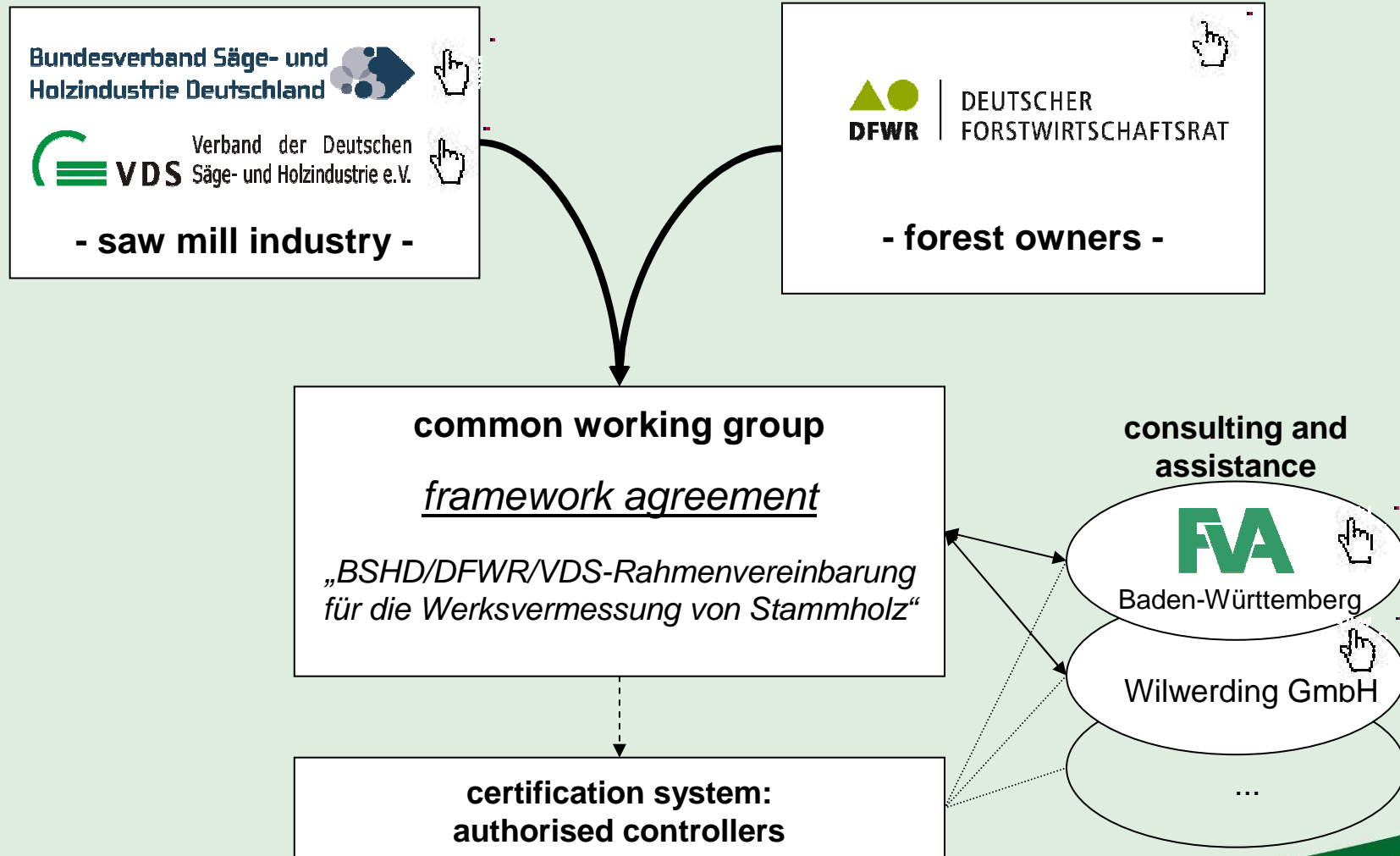
## Sawlogs: Electronic measurement (1)

Basis: (former) national laws and guidelines  
AND since 1994 a framework agreement  
under private law

- The framework was developed by representatives of forest owners and sawmill industries and is accepted as a standard by the whole branche [www.werksvermessung.org](http://www.werksvermessung.org) .
- In a common working group the framework is developed and revised continuously.
- The implementation of the framework at mill site is regularly checked by authorised controllers (certification system).



# Sawlogs: Electronic measurement (2)



## Sawlogs: Electronic measurement (3)

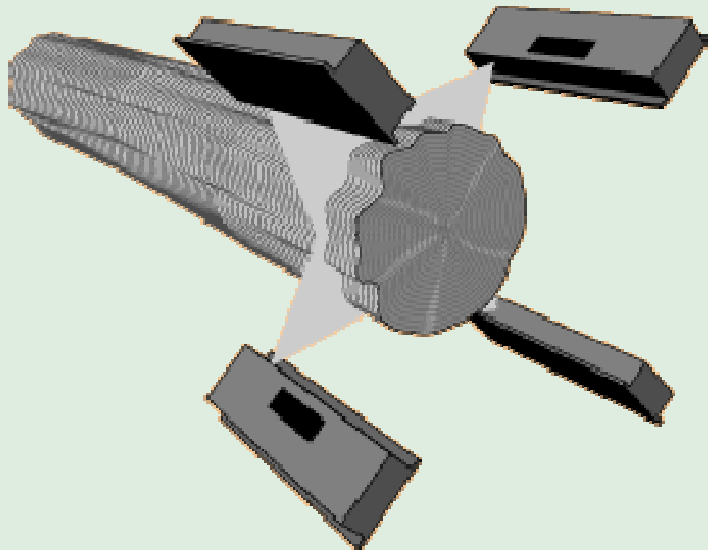
- The certification process covers
  - the inspection of organisational and technical requirements in the saw mill
  - as well as
  - comprehensive checks of the measuring system including control measurements
- Currently more than 100 measuring systems in more than 80 companies are certified according to the common framework in Germany, France and Belgium (only softwood industries).
- Certified systems: [www.werksvermessung.org](http://www.werksvermessung.org)

## Sawlogs: Electronic measurement (4)

- systems for electronic measurement are owned and operated by the sawmill companies
- sawmills are in charge to have a valid calibration (obligatory) and a certification (optional) for all systems used for sale purposes
- commitment between wood sellers and wood buyers to apply and accept the common framework agreement
- certification is carried out by independant controllers

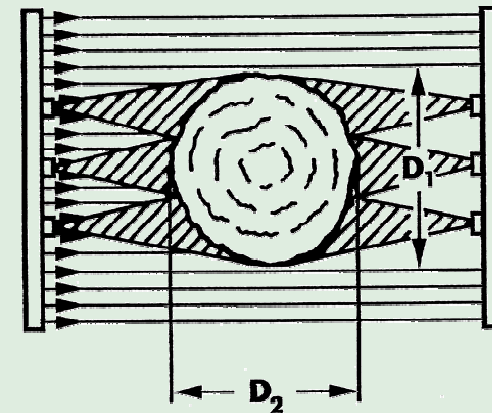
# Sawlogs: Electronic measurement (5)

## Technologies



3D-Measuring systems  
(Laser-triangulation)

in few cases still old measuring techniques are used



2D-Measuring systems  
(infrared, ultra-sound, laser)

## Sawlogs: Electronic measurement (6)

### Determining the sales volume

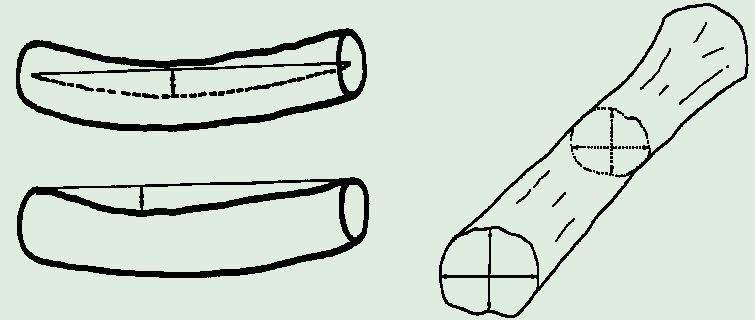
- two perpendicular diameters are measured in the middle of the log length (order length)
- simulation of a mechanical calliper
- diameters are measured in two fixed planes (e.g. horizontal and vertical)
- diameters are rounded down to full centimeters
- sales volume is calculated on the basis of a cylinder

For more details:

Sauter, U. H.; Staudenmaier, J.; Verhoff, S. (2010):  
Mehr Transparenz im Rundholzgeschäft.  
Holz-Zentralblatt (50), 17. 12.2010, p. 1269

## Sawlogs: Electronic measurement (7)

- Automatic determination of log quality
  - measurable quality parameters can be used for automatic grading:
    - curvature, taper (and ovality)
- Non-measurable quality parameters
  - parameters which can not yet be measured automatically
  - can be used for grading if there is a photo-optical documentation system (e.g. konts, rot, insects)



# Sawlogs, pulpwood and energy wood

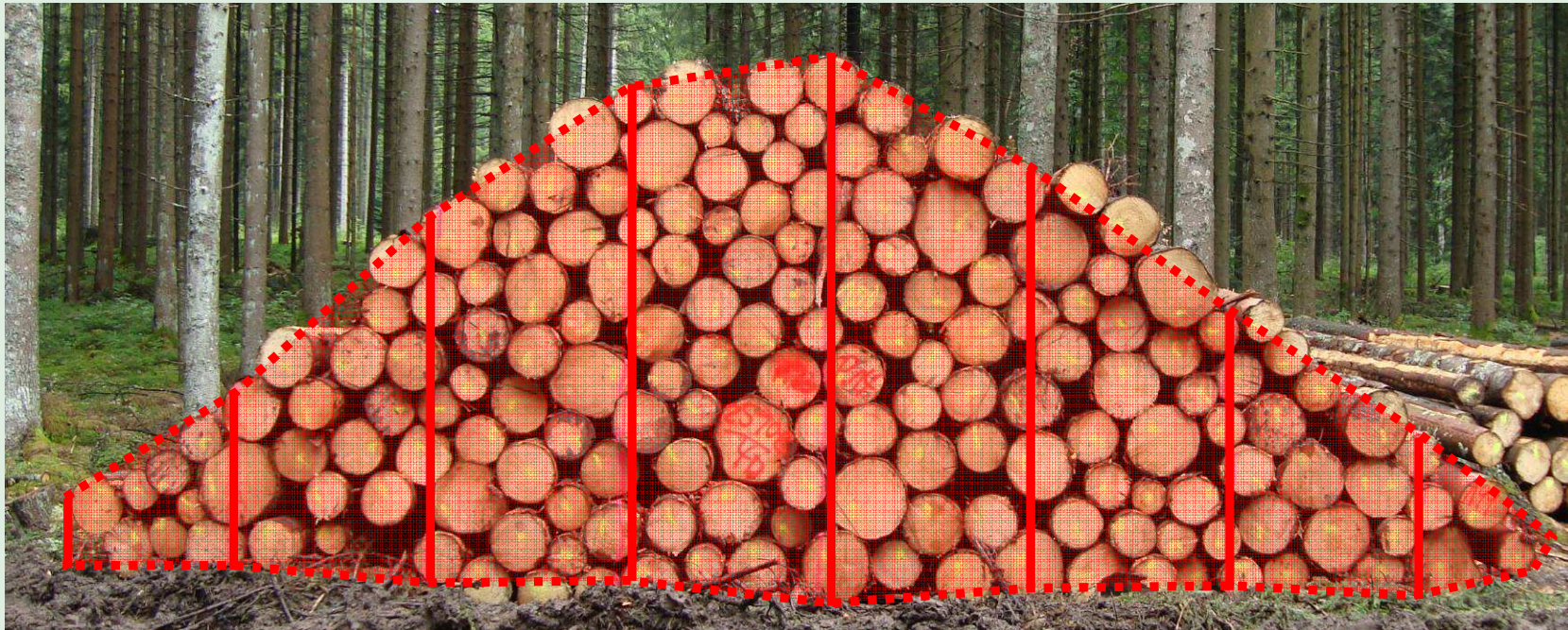
Sampling methods (only as control measurement allowed)

- mid diameter measurement by layers
- line sampling on stacks (diameter of front and back cross-sections)



# Pulpwood and energy wood

Determining the volume of stacks and truck loads



# Pulpwood and energy wood

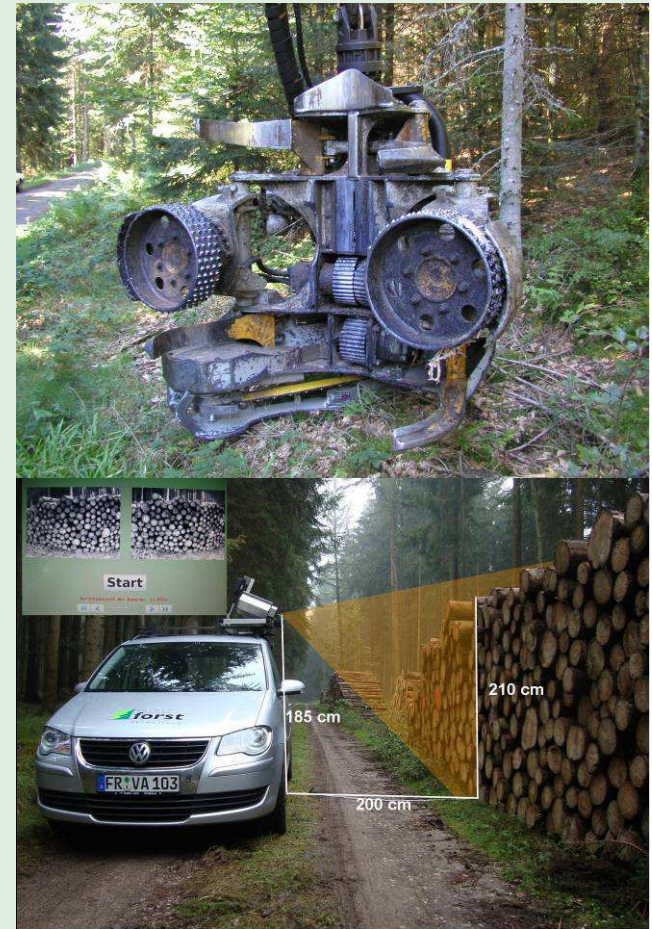
Dry weight measurement:

- Volume is determined on the basis of the dry weight of truck loads
  - taking representative samples to determine the water content of truck loads



## Other measurement methods (only as control measurement allowed)

- Measurement by harvesters
  - Automated measurement of stacks (photo-optical systems)
- systems can not be calibrated according to national requirements
- informations are used for controlling ans logistics



**Thank you!**

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