



# Introduction





→ Strain measurement during material tests e.g. with tensile test machines



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### **VE replaces previous techniques like**

Mechanical extensometer



• Laser scanning extensometer











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### **Measurement principle**



- A high resolution camera is used to acquire images of a tensile test specimen with applied line markers.
- High performance real time image analysis measures the line marker distance / during the tensile test.
- $\rightarrow$  Technical strain  $\varepsilon$  with

/ = Marker distance
/o=Reference distance





#### **Tensile test**





#### Longitudinal and transversal strain measurement.





Accurate measurement of stress-strain curves

- → Determination of material properties:
  - Young's modulus

### 2 different cameras : High resolution vs. High Speed

	High Accuracy Version	<b>Fast Version</b>
Accuracy	0.002% strain	0.02% strain
	1µm @ 100mmFow	10µm @ 100mmFow
Sampling rate	50 Hz	4000 Hz
Analogue Output	+/- 10V; 16 bit	+/- 10V; 16 bit
Strain Range	> 500%	> 500%
Camera res.	2.0 MPixel	VGA

Precision class 0.5 DIN EN 10002 T4





#### **Features**

- A modern, configurable and intuitive user interface using OpenGL
- The control of the Videoextensometer by the connected testing machine allows the fully automatic operation
- Template definition for different measurement tasks
- Integrated generation of image sequences
- The multithread-analysis-kernel supports multi-coreprocessors to achieve a low processor load
- System calibration gives measures in [mm]
- Many options for the data communication and data export

