




Requirements for the measuring-technology to the realization of modern data-extraction- concepts

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29th – 31th Januar 2007 No. 1 



Requirements

⇒ Which requirements do we put at modern
measuring-technology?

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Handling

Easy Handling means:

- **Simple connection to existing measuring systems**
- **Compatibility with preferably many measuring systems**
- **Easy installation**

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Reliability

Reliability means:

- **Low failure rate**
- **Integrity of measure data is unambiguously**
- **Controlled calibration guidelines**

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Accuracy

Higher accuracy is achieved through:

- **Linearisation**



- **Compensation of interferences**



- **Filtering**



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Maintenance

Easy maintenance means:

- **Easy access to the measuring system/sensors**
- **Exchangeable components**
- **Predefined maintenance intervals**
- **Remote diagnostic and remote download of data**

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Flexibility

Flexibility means:

- **Changing of parameters in system**
- **Changing of measuring behaviour in system**
- **Adding of new functions**

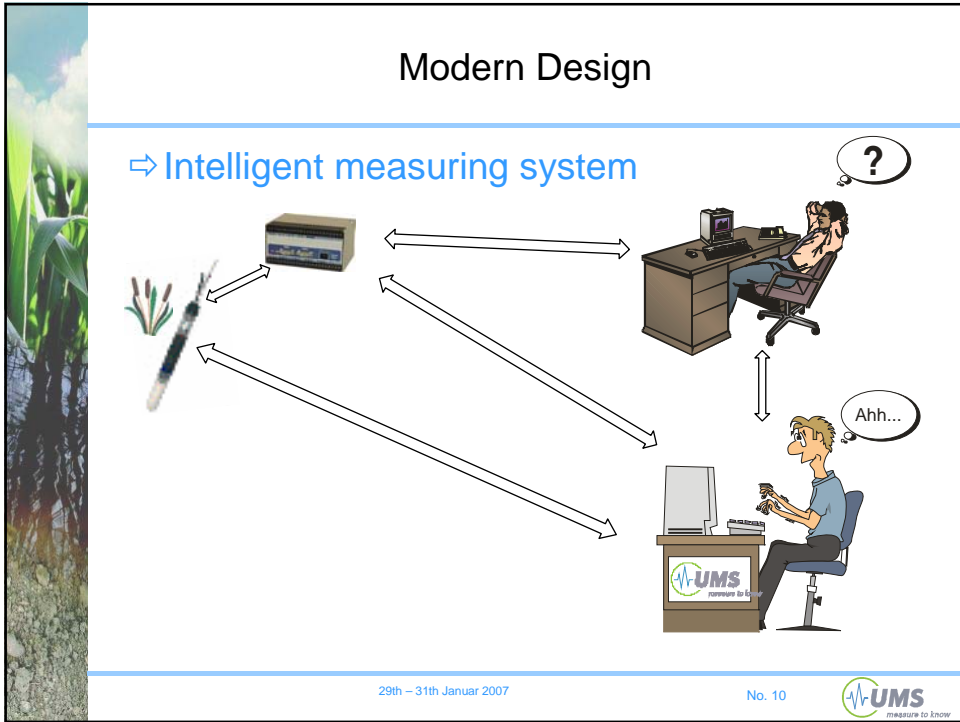
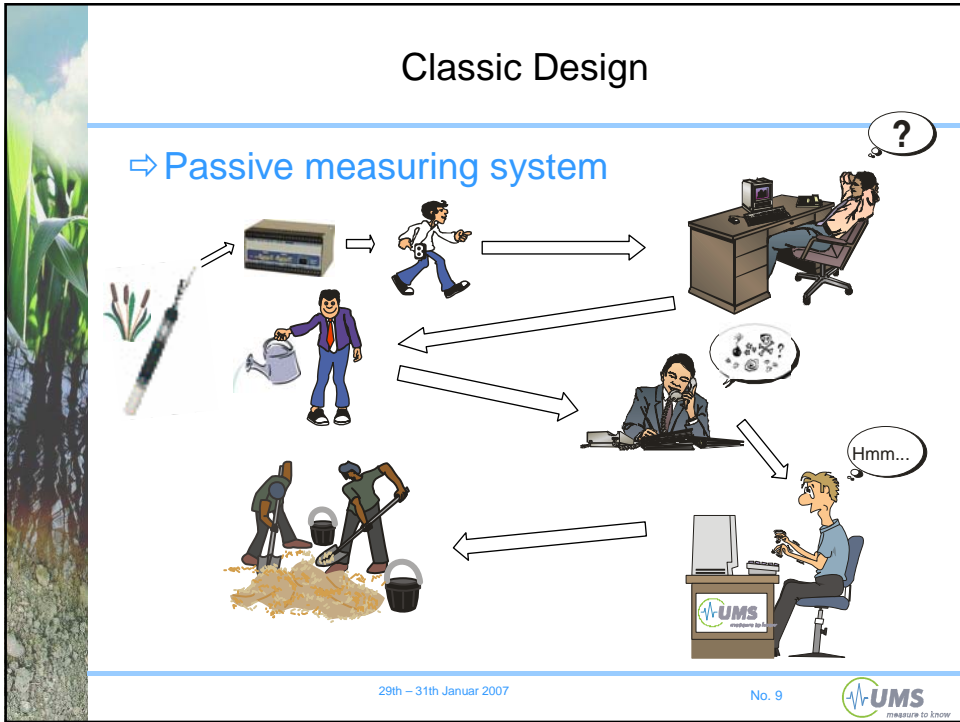


Requirements

⇒ High requirements on:

- **Easy Handling**
- **High Reliability**
- **High Accuracy**
- **Easy maintenance**
- **Flexibility of the system**

⇒ The solution: „intelligent“ sensors and measuring systems



Modern Design

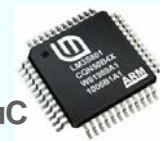
⇒ „Intelligent“ measuring systems:

- Sensors and actuators are driven by a μ Controller or programable datalogger
- Software can be reconfigured/changed by the user
- Redirect as many as possible functions to software!

Modern Sensors

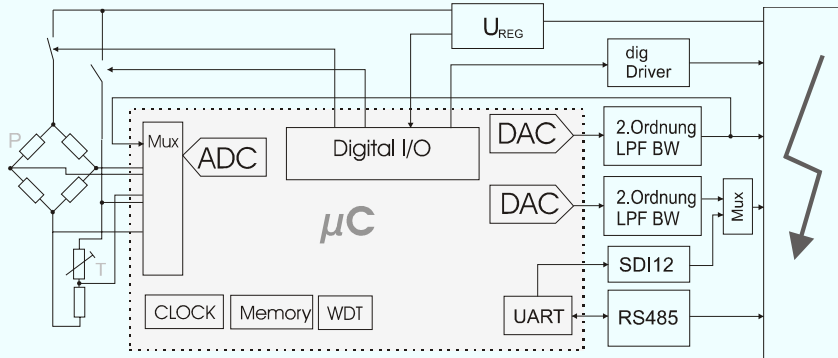
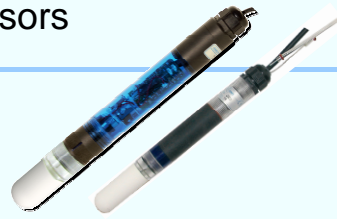
⇒ Intelligent Sensors:

- Sensor element is read out through μ C
- Measure values are internally:
 - Linearized
 - Filtered
 - Compensated and fitted
 - Converted to physical Units
- User or datalogger communicates with the μ C over serial bus, or analogue outputs



Modern Sensors

⇒ Sensor block diagram



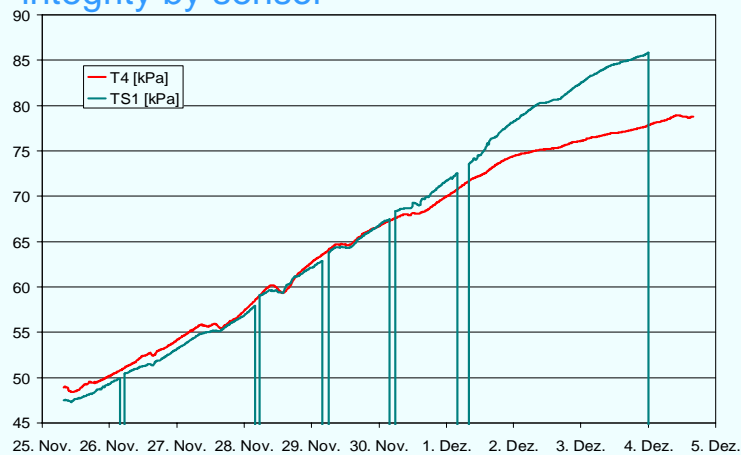
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Modern Sensors

⇒ Example: Marking of measuring signal integrity by sensor



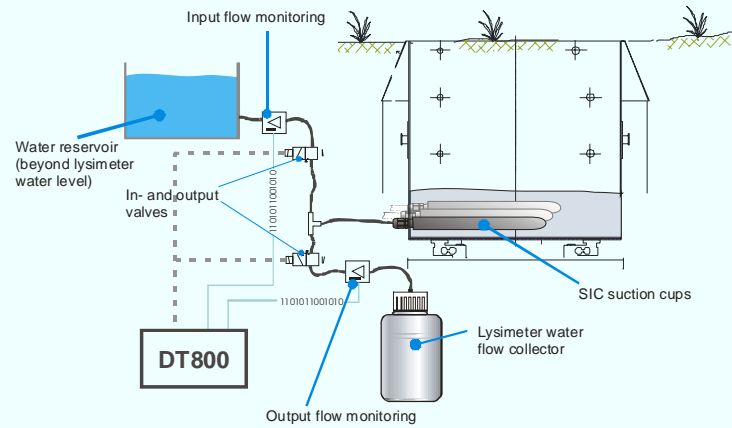
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Modern Measuring Systems

⇒ Lysimeter Naples



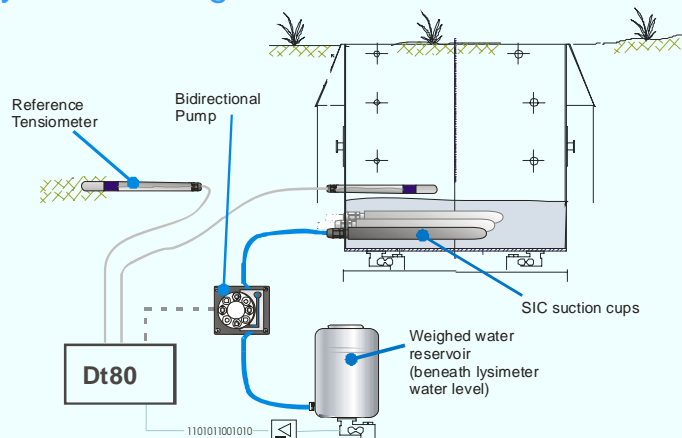
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Modern Measuring Systems

⇒ Lysimeter Wagna



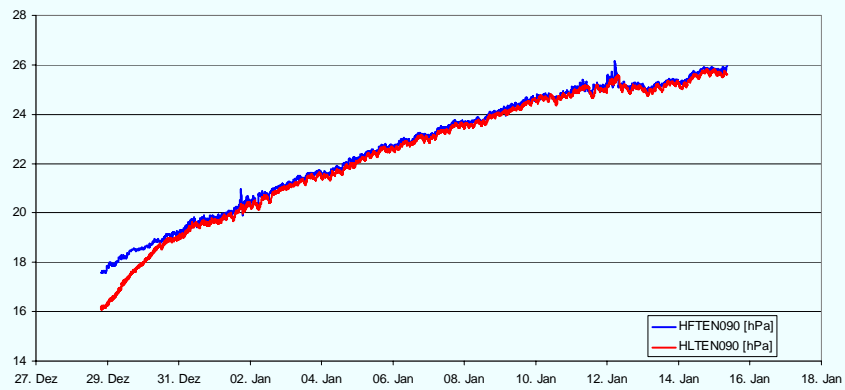
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Modern Measuring Systems

⇒ Controlled tension Wagna



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Requirements For The Measuring-Technology

⇒ Points of discussion

- Reliability
- Limits
- Future developments

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