PRESENTATION

Session:
Ginning News

Title:
Cotton Moisturization in Ginning for Staple Length Preservation

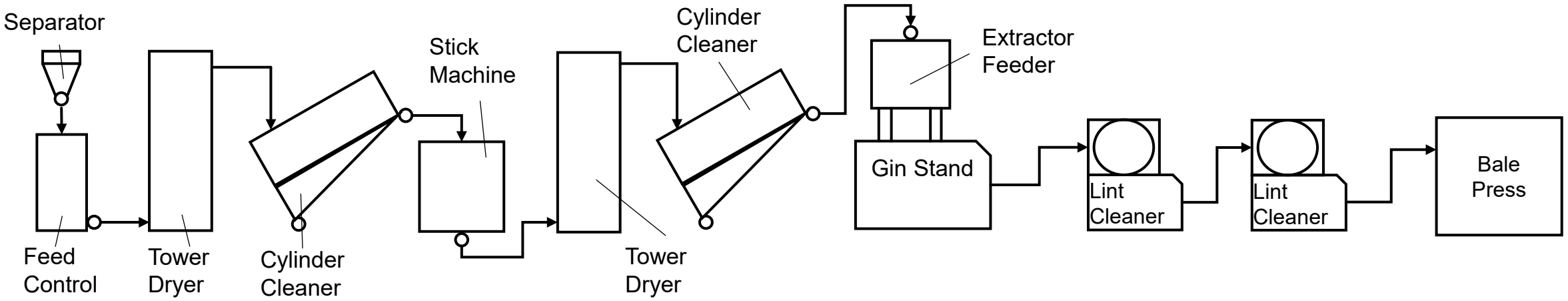
Speaker:
Justin Kühn , Institut für Textiltechnik (ITA), RWTH Aachen University (Germany)

Conference Organisation
Faserinstitut Bremen e.V., Bremen, Germany. E-Mail: conference@faserinstitut.de
Bremer Baumwollboerse, Bremen, Germany. E-Mail: info@baumwollboerse.de

Cotton Moisturization in Ginning for Staple Length Preservation

By Justin Kühn – Head of Staple Fibre Technologies

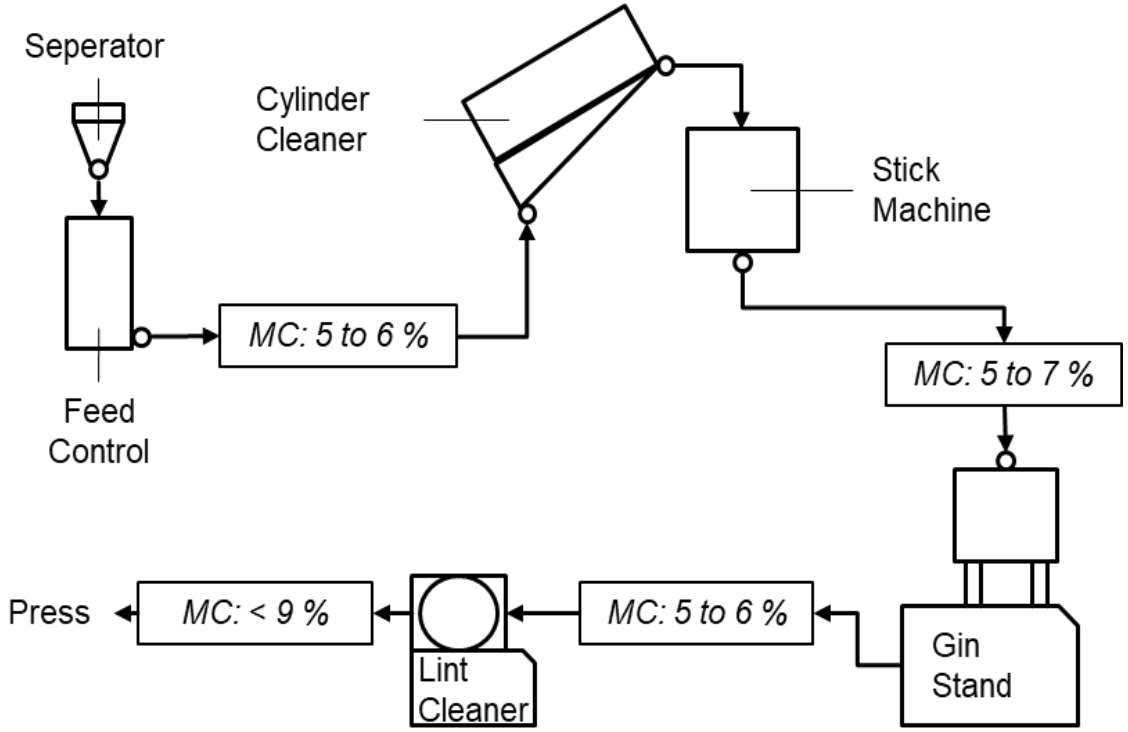
Ginning Facilities



Ginning Potentials

Moisture Management

- Different machines need different moisture contents (MC)
- Several different conditions in the facilities
- Differences in the varieties
- **Finding a solution to raise the moisture quickly**
- Solutions for measurement on-line
  - Infrared
  - Microwave
  - Capacitive



Possible Ginning Quality

	Hand ginned	Roller ginned
Average length [mm]	27,3	24,3
Trash count [cnt/g]	10	38
Neps [cnt/g]	137	330

- Maximum ginning quality not yet reached
- Hand ginning produces better qualities then roller ginning
- Possible to find a better trade off between length, trash content and speed

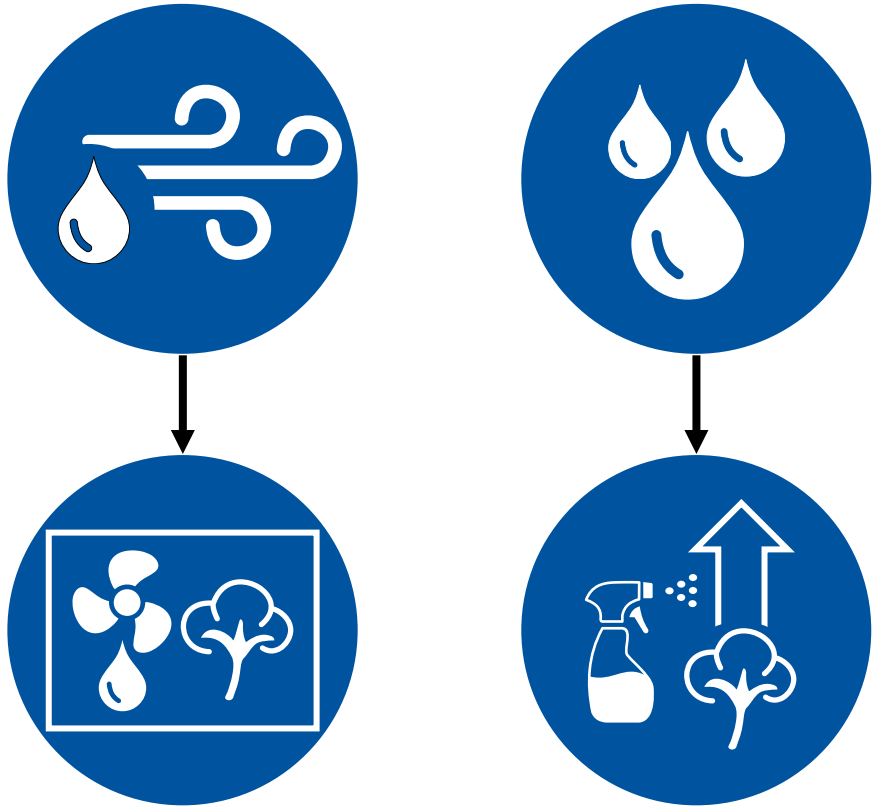
Findings – Moisture Management

Prototype development

- Development of two different processes
  - Based on existing techniques
  - Simple Prototyping

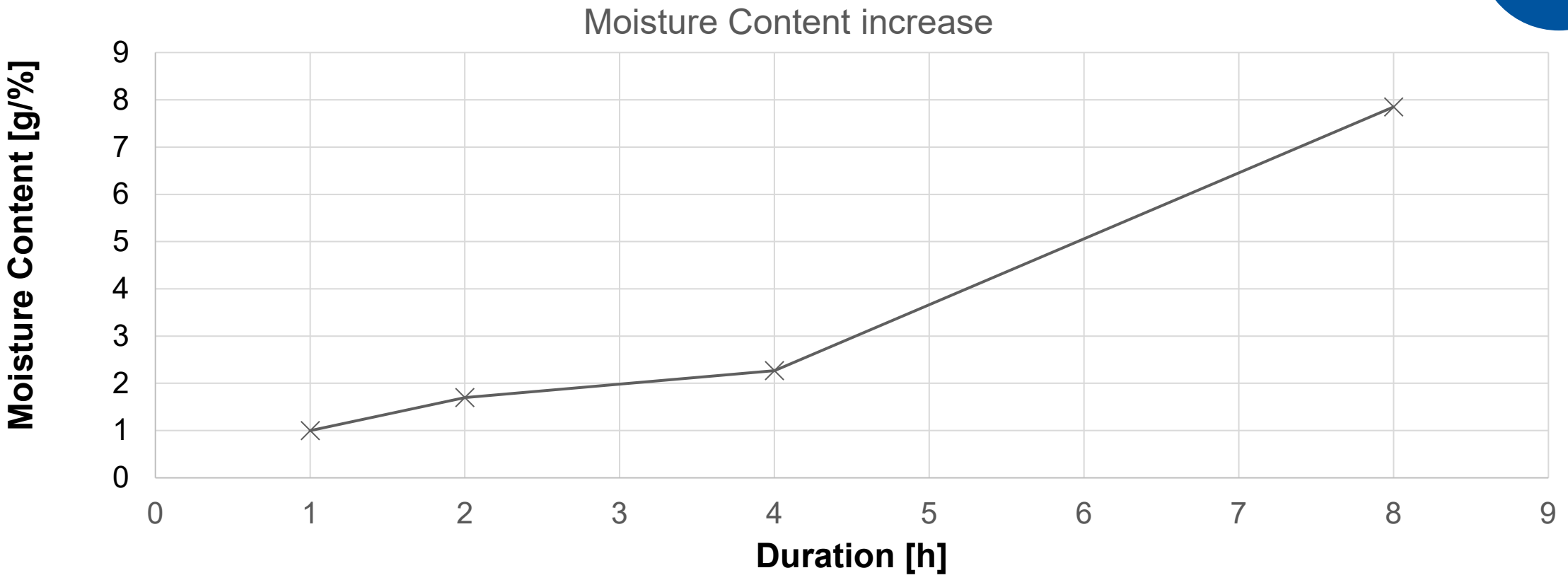
- Air Humidification:
  - Using a Air Humidification device in a covered box

- Water Spray
  - Fine water spray during cotton conveying



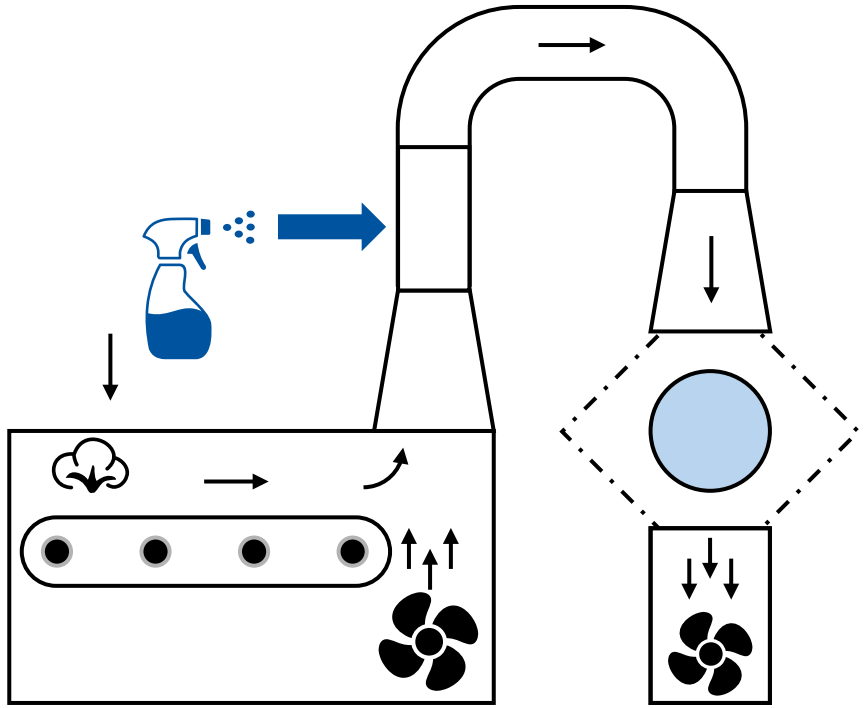
Findings – Moisture Management

Prototype testing – Air Humidification



Findings – Moisture Management

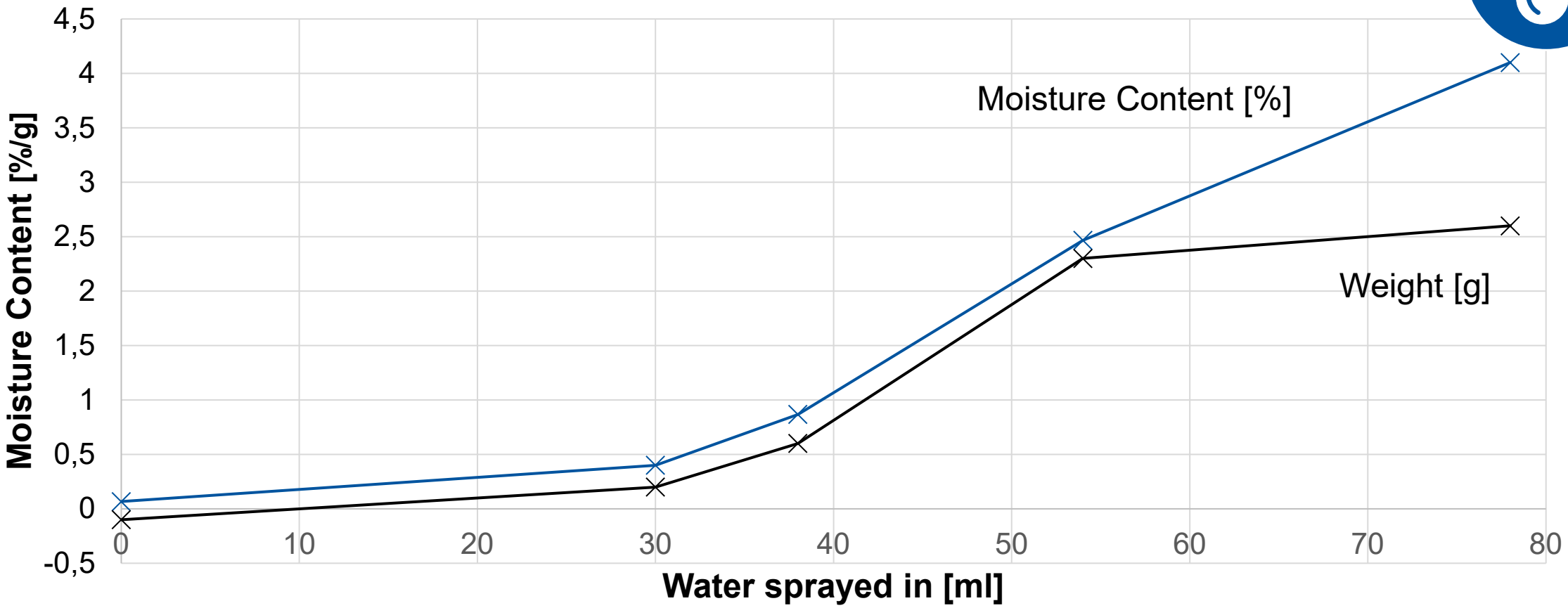
Prototype development – Water Spray



Fine opener

Findings – Moisture Management

Prototype development – Water Spray



Cotton ginning by hand

Wet cleaning

Wet ginning result

Findings – Moisture Management

Prototype evaluation

Moisturized Air

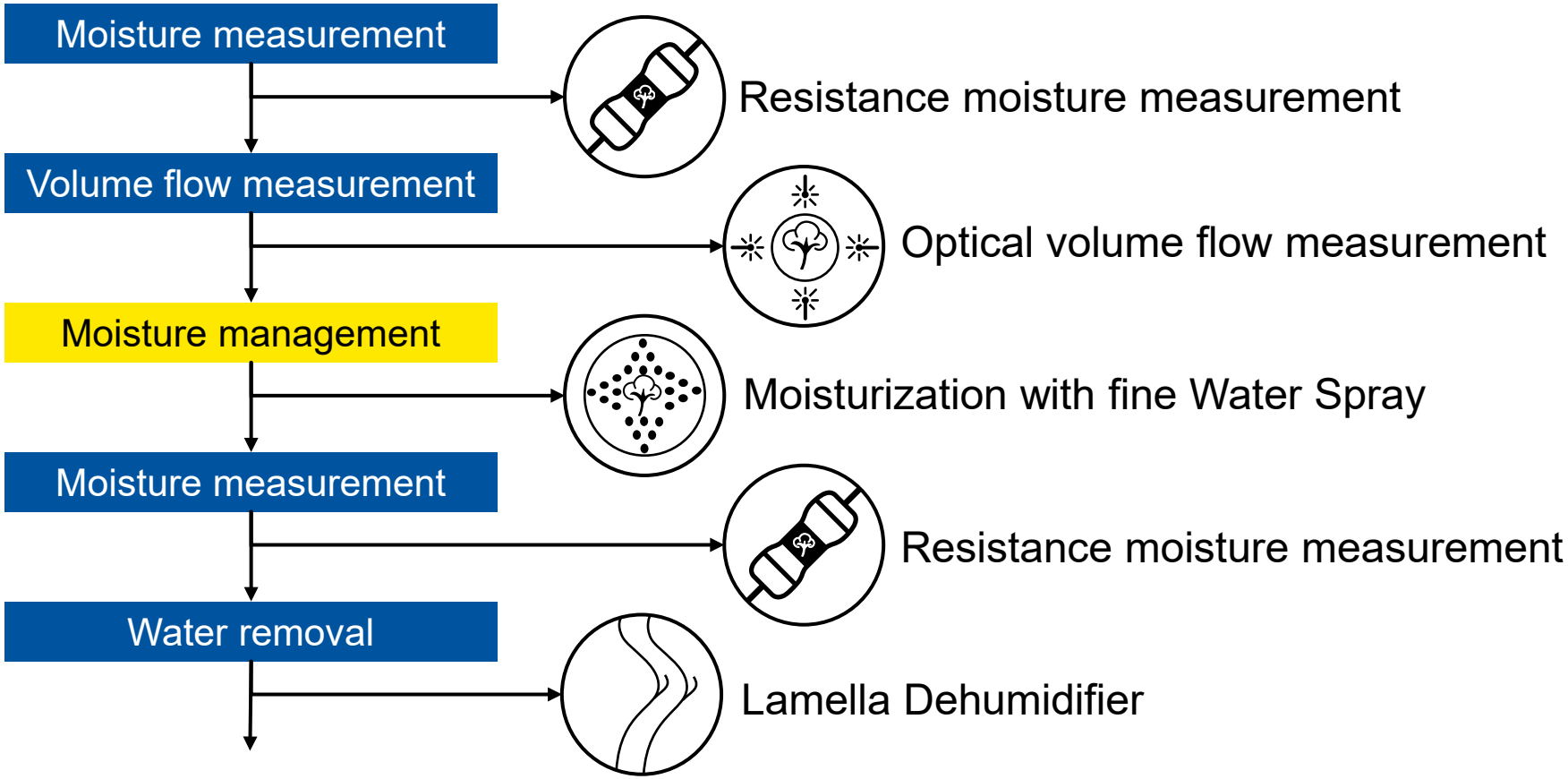
- Insufficient process duration
- Very good MC-increase
- Wettening unlikely
- MC-distribution very good
- No mechanical effectance
- Expensive installation and operation

Spray Water

- Good process integration (time wise)
- Good MC-increase
- Wettening possible
- MC-distribution good
- Low mechanical effectance
- Low installation and operation

Findings – Moisture Management

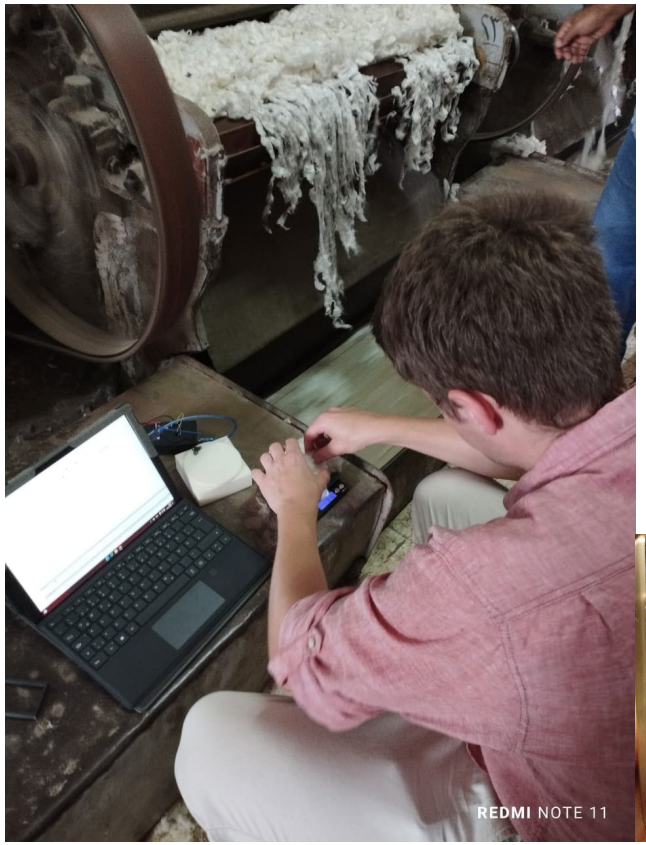
Prototypen integrieren



Findings – Moisture measurement

Current methods

New Approach



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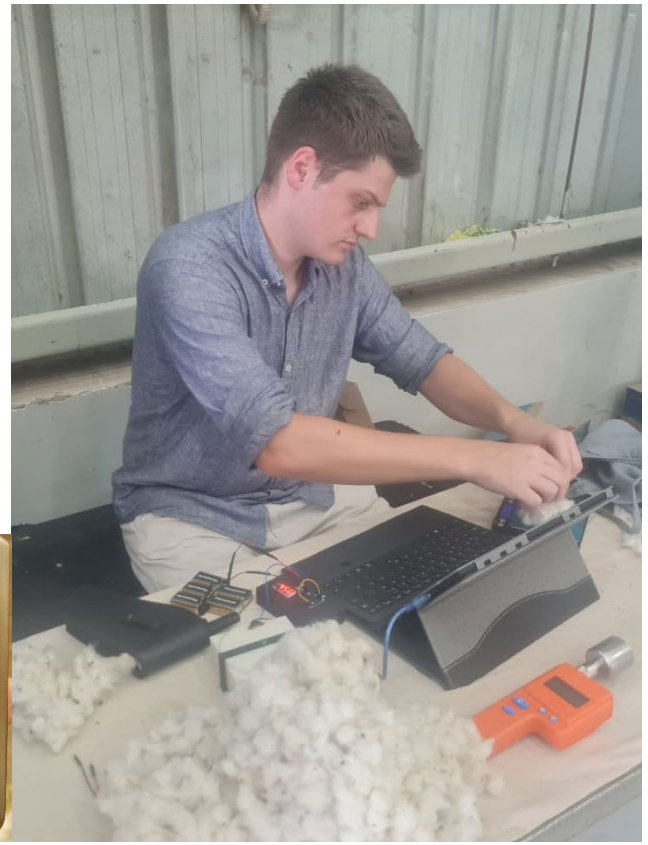
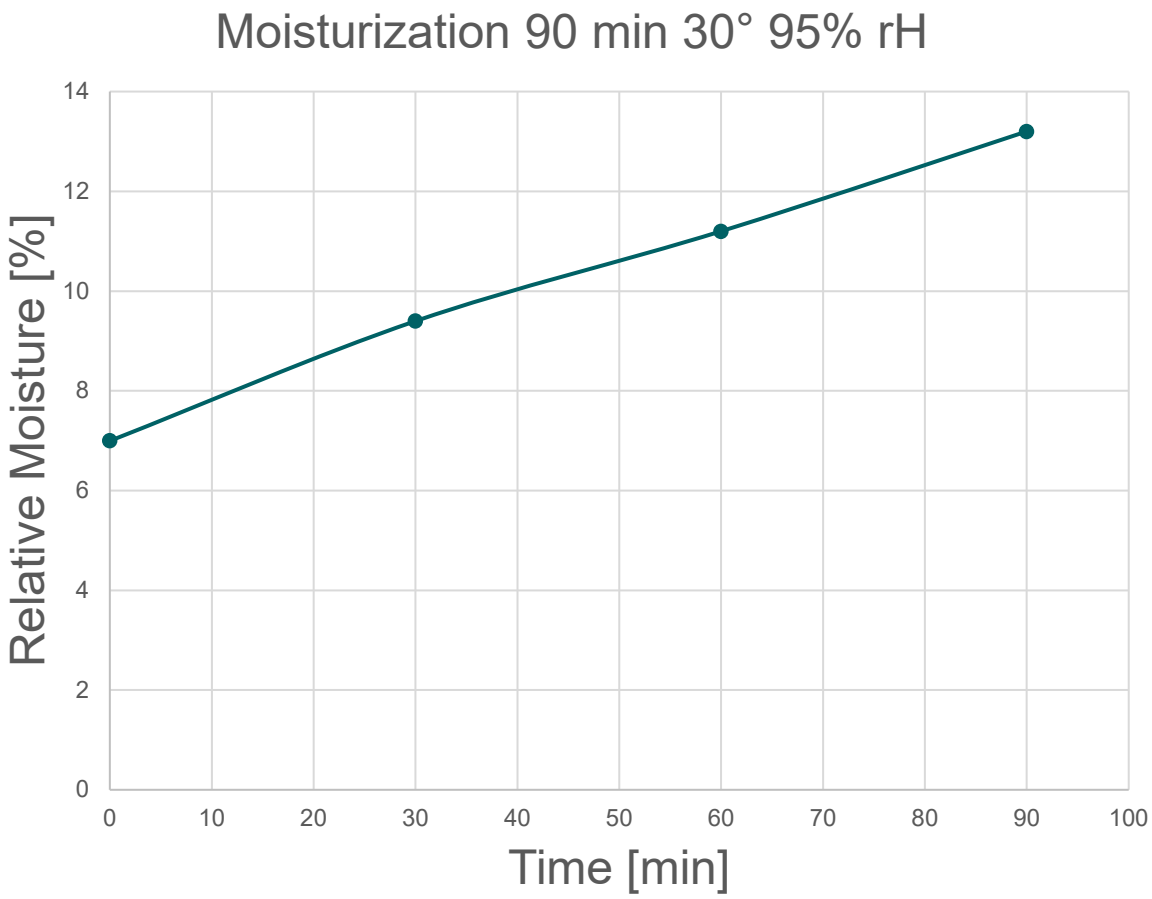
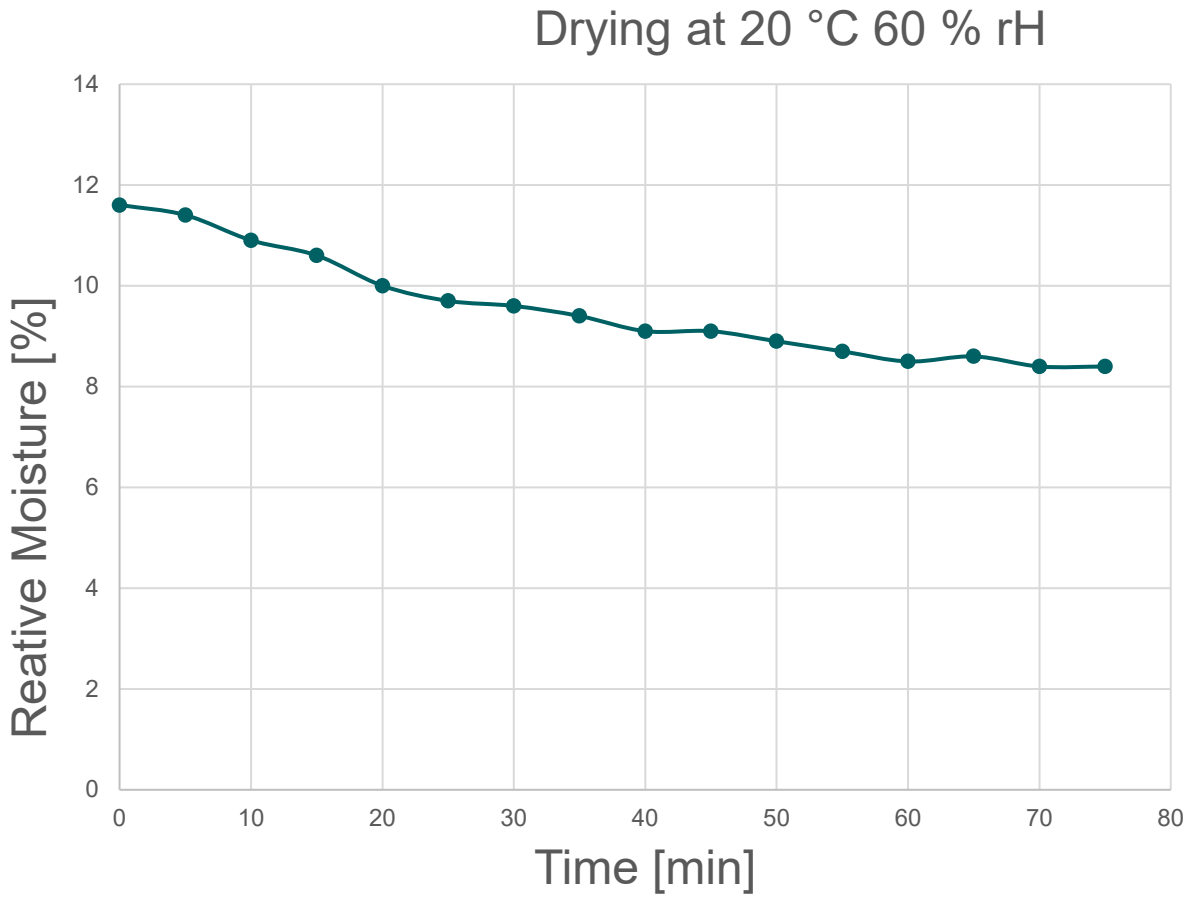


Findings – Moisture Measurement: Laboratory measurements





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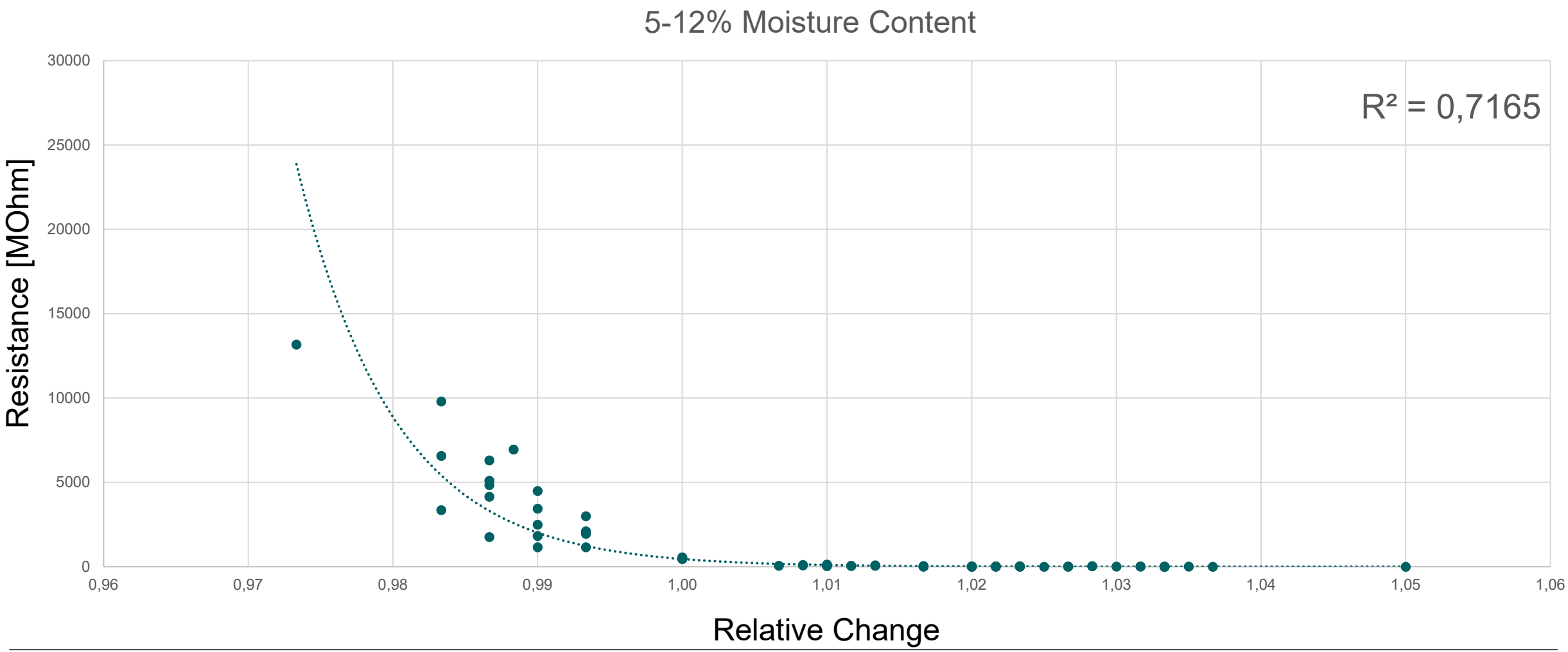

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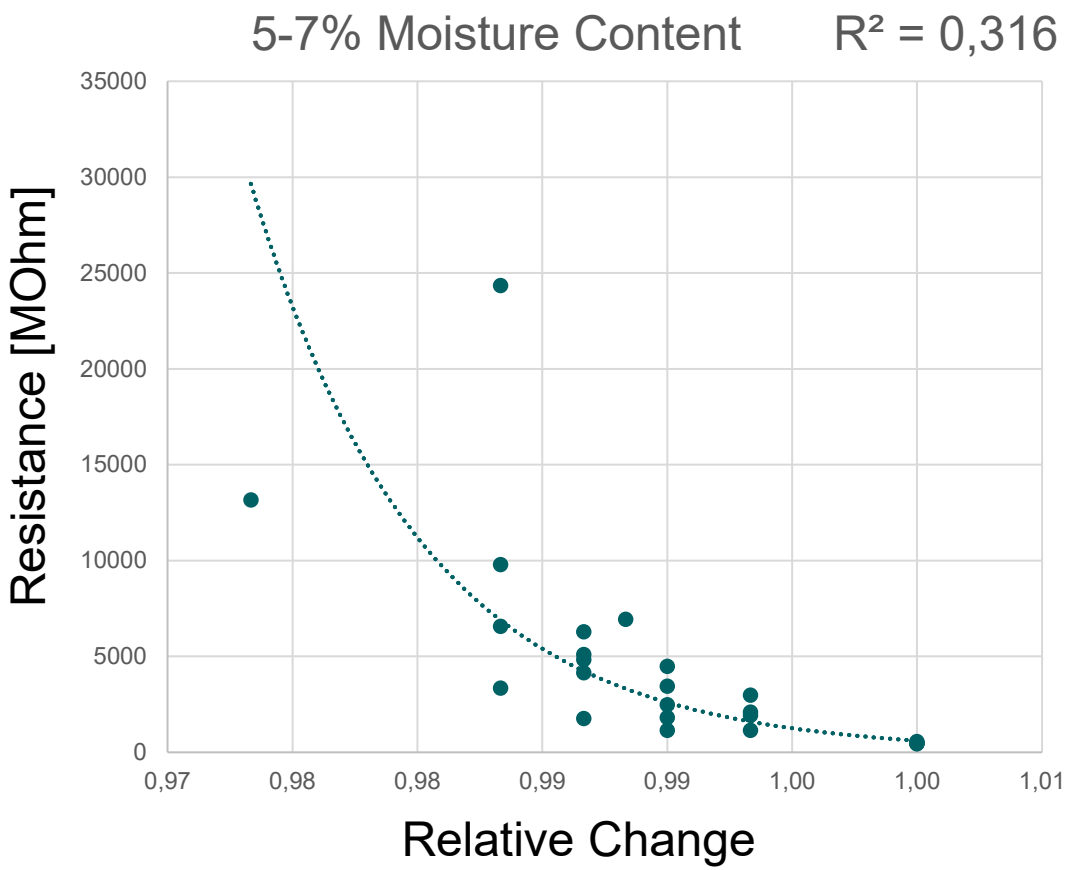

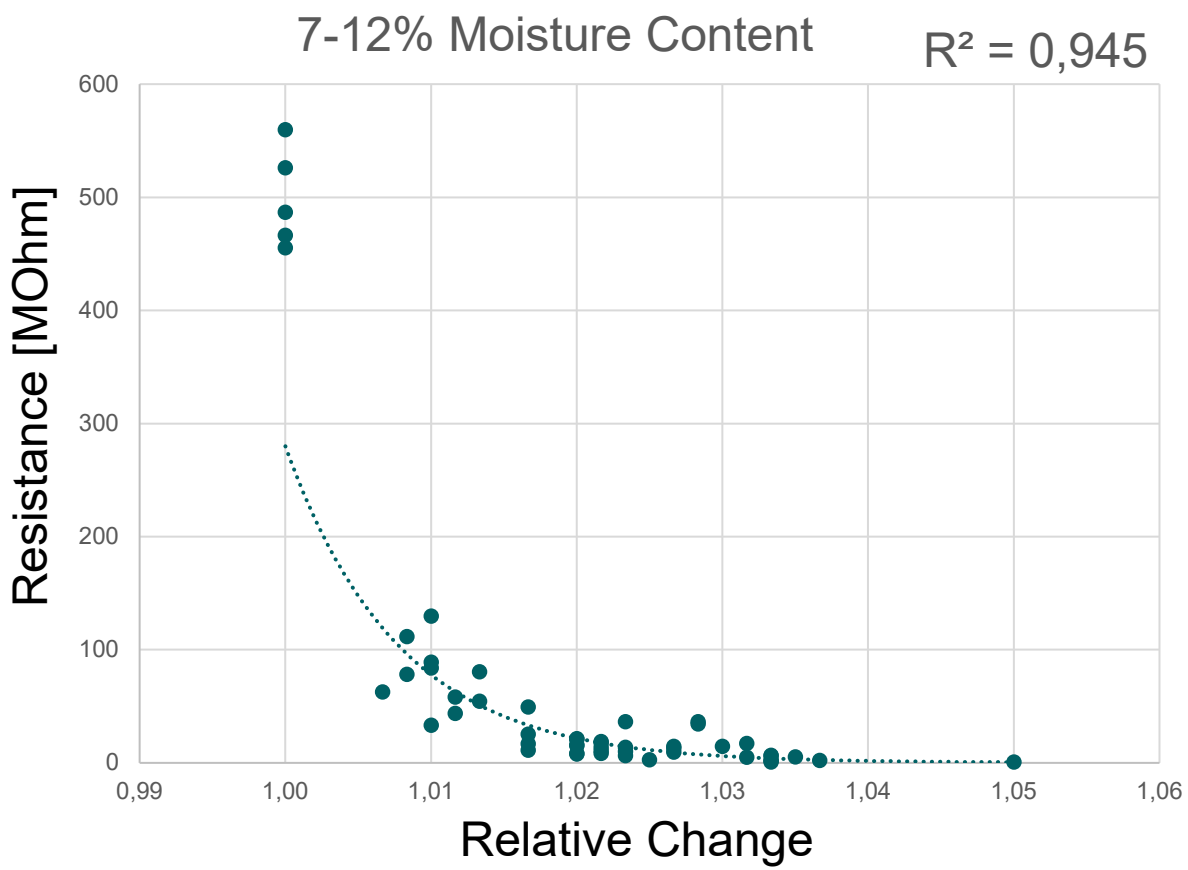

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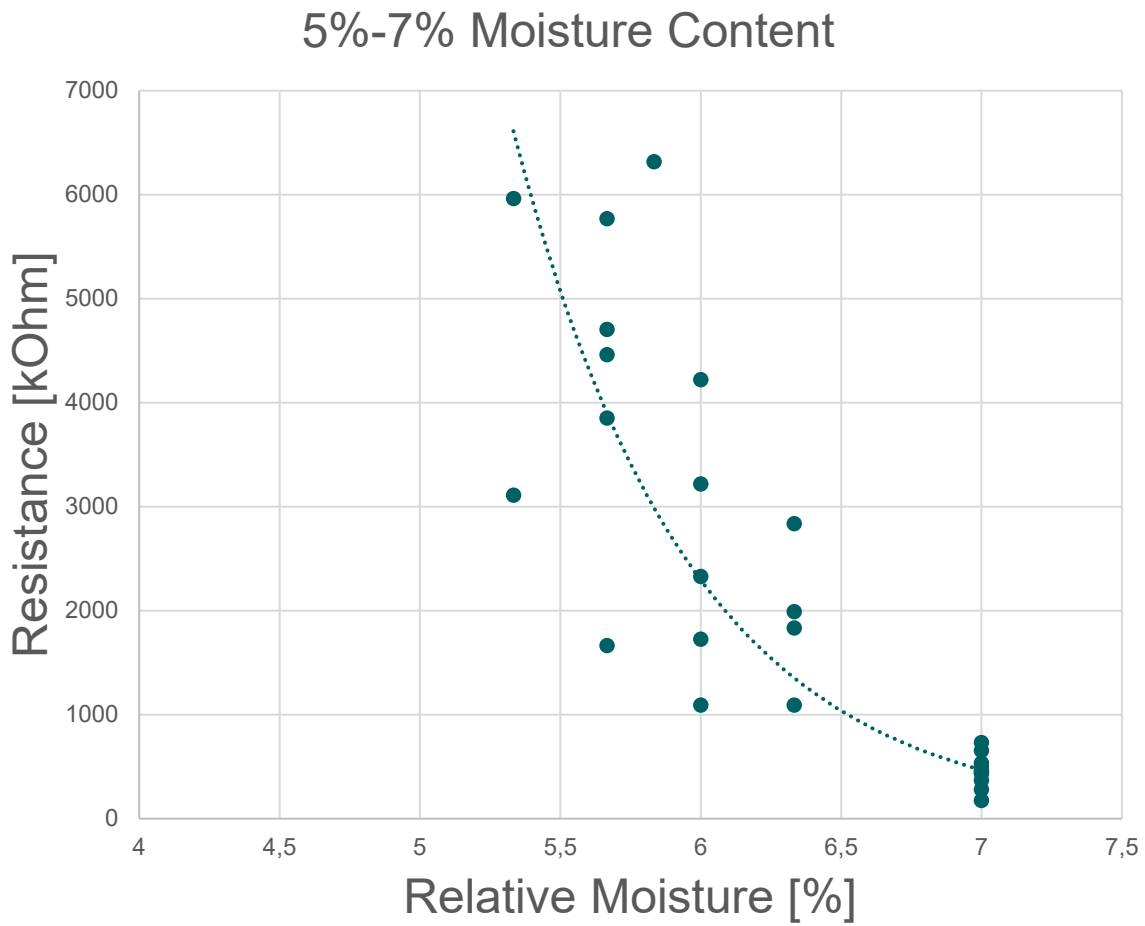

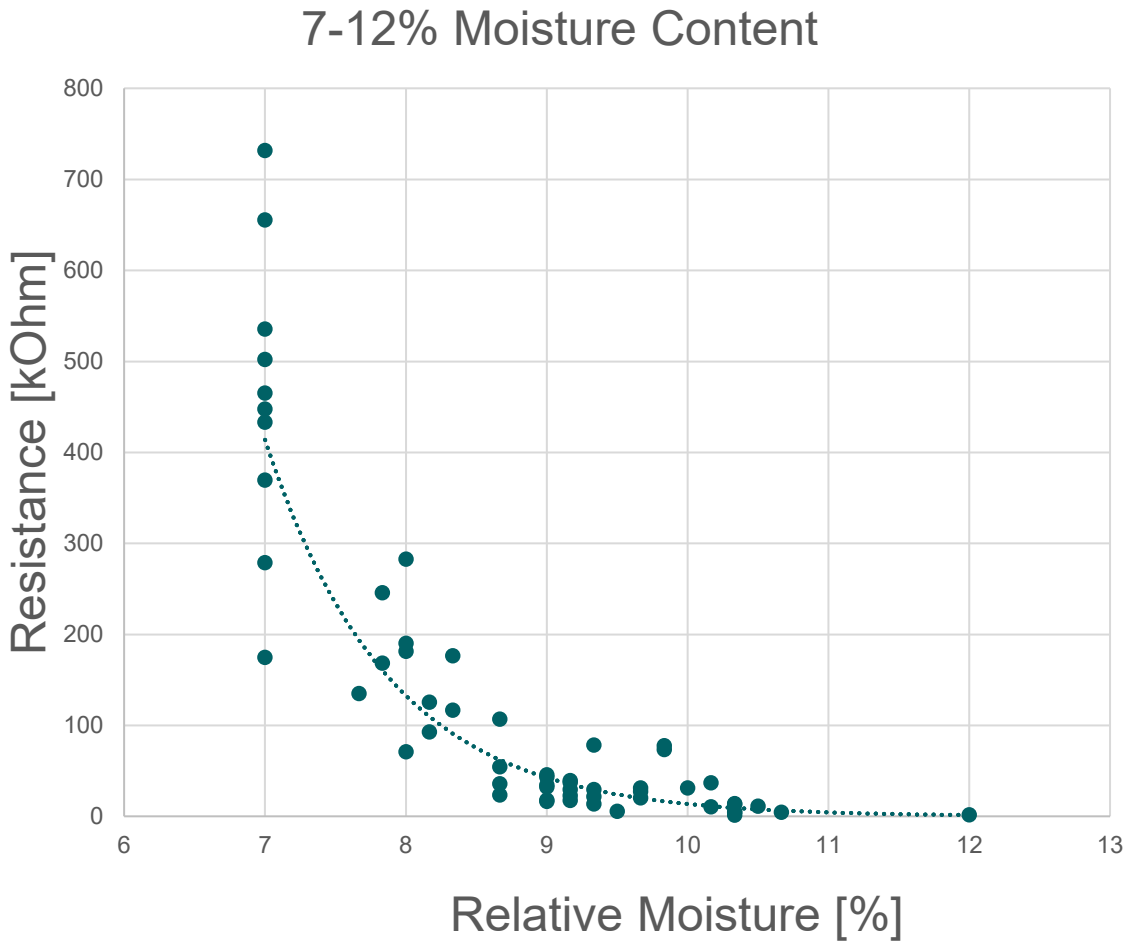

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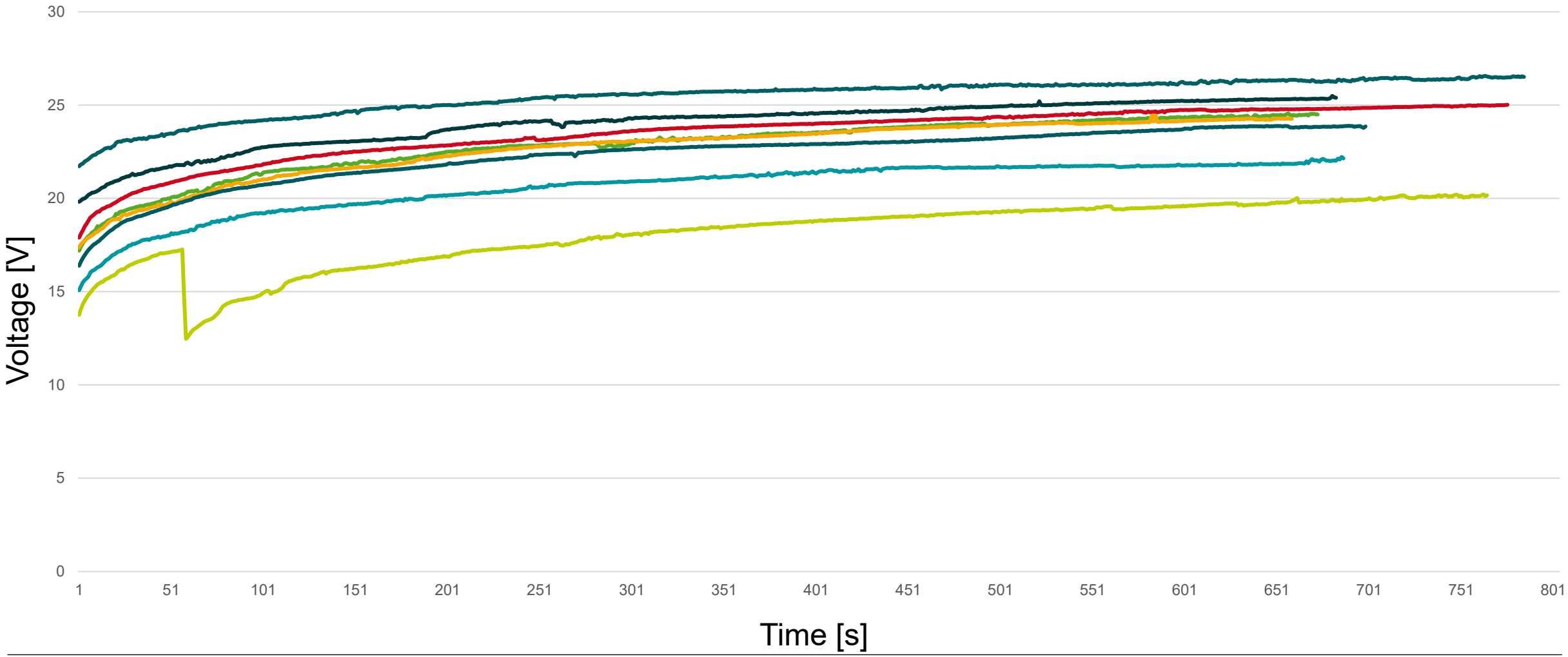

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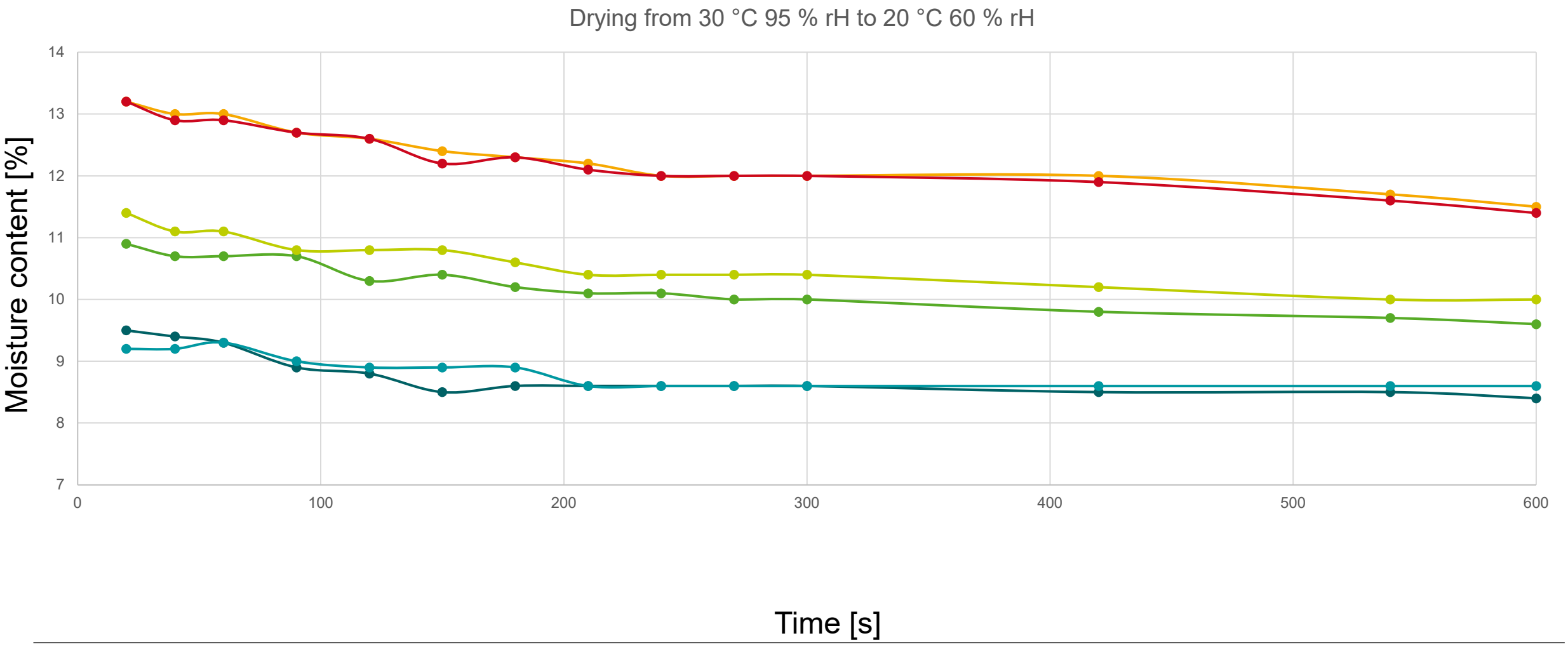

Findings – Conclision and Further recommendations

- Ginning is in the State of Industry 2.0
- Simple and cheap solutions for current obstacles make the systems more likely to be used
- Easy and trustworthy operation of Moisture Measurement and Moisture Management could increase cotton quality
- Training on the field for harvesting and cotton operators
- Governmental control of contamination regulations

Justin Kühn, M. Eng.

Institut für Textiltechnik (ITA) der RWTH Aachen University
Otto-Blumenthal-Straße 1, 52074 Aachen

Phone (direct): +49 241 80-23256
Phone: +49 241 80-23401
Fax: +49 241 80-22422
E-Mail: Justin.kuehn@ita.rwth-aachen.de
www: www.ita.rwth-aachen.de

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