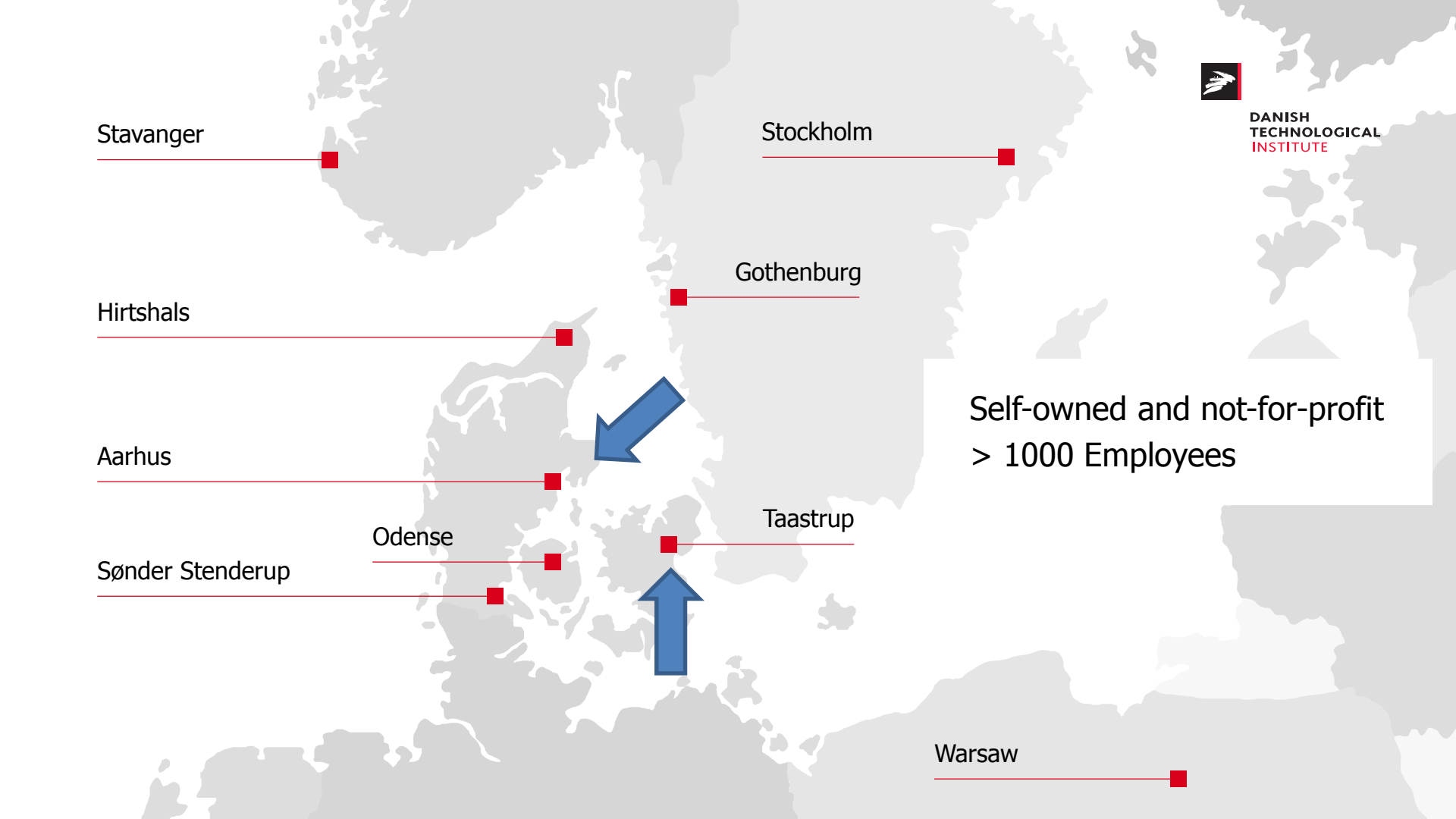
DANISH
TECHNOLOGICAL
INSTITUTE

Welcome to the Danish Technological Institute

Jan Nielsen, Team Manager, jnn@dti.dk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Stockholm
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DANISH
TECHNOLOGICAL
INSTITUTE
Self-owned and not-for-profit
> 1000 Employees

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Danish Technological Institute

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- Teknologisk Innovation A/S
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Fundamental metrology @ DTI

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FLOW Anders Koustrup Niemann	TEM Dennis Dam Sørensen	MET Jan Nielsen	M&Q Niels Thestrup Jensen
Water- & Energy flow MI	Temperature MI	R&D	Geometry MI
Air velocity MI	Electricity /time /frequency	Consultancy	
	Mass & Pressure	Training	
	Humidity, moisture & CO_2		
	Force		

Metrology is a very broad field and may be divided into three basic activities:

- Definition of internationally accepted units of measurement.
- Realisation of these units of measurement in practice.
- Application of chains of traceability linking measurements made in practice to reference standards. (Calibration)

Why Moisture-Metrology

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- Material and method dependant quantity
- Over 1300 method- and material specific documentary standards is used by industry

Questions:

- How do we best determine the true value of the water content of a sample?
- If we do not know the true value, how do we calibrate or validate our measurement equipment?
- What is the uncertainty?

DTI and moisture metrology

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DTI Participates in the European projects

- METefnet – Metrology for Moisture in Materials 2013 – 2016
  - Development of reference for unambiguous determination of water in material (more about this later)

METefnet
Metrology for Moisture in Materials

- HIT – Metrology for Humidity at High Temperatures and Transient Conditions 2015 – 2018
  - Development of method for in-line water activity measurement in industrial applications

HIT

Scope of the conference: Triple M

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- To inform about state-of-the-art of moisture measurement (metrology)
- To provide a forum for networking and knowledge exchange

Acknowledgement to:

inSPIRe FOOD

Research based innovation in the food industry

Strategic platform with 5 universities, 5 GTS and +40 Companies

http://www.inspirefood.dk/

EMRP
European Metrology Research Programme
Programme of EURAMET

The EMRP is jointly funded by the EMRP participating countries within EURAMET and the European Union

Danish Agency for Science Technology and Innovation
Ministry of Science Technology and Innovation

Programme

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9.30	Welcome and scope of the conference *Jan Nielsen, Danish Technological Institute (DK)*
9.45	The challenges and on-going European Research *Dr. Martti Heinonen, VTT (FI)*
10.15	Chemical water detection – Karl Fischer coulometric titration *Dr. Ivo Leito, University of Tartu (EE)*
10.45	Break
11.15	Energy aspects and practical challenges *Director Ebbe Nørgaard, Drying Mate (DK)*
11.45	Online measurements in wood chips based on microwave technology *Senior Consultant Jan Hinnerskov Jensen, Danish Technological Institute (DK)*
12.15	Lunch
13.15	Traceable Moisture Measurements by means of residual water detection *Dr. Peter Østergaard, Danish Technological Institute (DK)*
13.45	The need for accurate moisture measurement in drying processes *Ph.d. student Anders Haubjerg, University of Southern Denmark (DK)*
14.15	Break
14.45	Representative Sampling - 30 min crash course *Dr. Peter Paasch Mortensen, Arla Foods amba, Global Categories and Operation - Supply Chain Development (DK)*
15.15	In-line measurement with NIR – advantages and limitations *Senior Scientist Håkan Wedelsbäck, FOSS Analytical (DK)*
15.45	Sum up *Jan Nielsen, Danish Technological Institute (DK)*