

# Partner presentation

## Partner 6: VTT



UNIVERSITY OF  
BIRMINGHAM



PEP  
CENTRE TECHNIQUE  
DE LA PLASTURGIE

fo tec



KIT  
Karlsruhe Institute of Technology



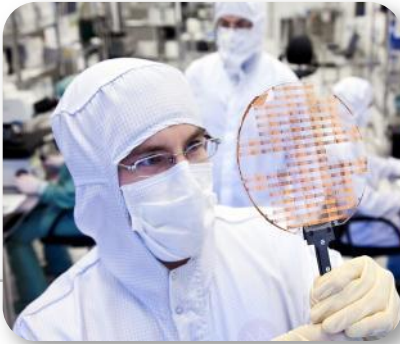
C-Tech  
INNOVATION

Knowledge  
Transfer  
Network  
Environmental  
Sustainability

- Partner profile – VTT
- Competences/Products – VTT
- VTT Contribution to 4M2020.
- VTT Expectations from 4M2020.

# Partner profile – VTT

Turnover 316 M€ (2012) • Personnel 3,206 (31.12.2012)



## Customer sectors

- Biotechnology, pharmaceutical and food industries
- Chemical industry and environment
- Electronics
- Energy
- Forest industry
- ICT
- Machine, vehicle and metal industries
- Real estate and construction
- Services and logistics



## Focus areas of research

- Applied materials
- Bio- and chemical processes
- Energy
- Information and communication technologies
- Industrial systems management
- Microtechnologies and electronics
- Services and the built environment
- Business research



## VTT's operations

- Research and Development
- Strategic Research
- Business Solutions
- Business Development
- Group Services
- VTT's companies
  - VTT Expert Services Ltd (incl. Labtium Ltd and Enas Ltd)
  - VTT Ventures Ltd
  - VTT International Ltd (incl. VTT Brasil LTDA)
  - VTT Memsfab Ltd

# Partner profile – VTT

## VTT Printed Functional Solutions Centre

The vision is to create easy to use and cost effective products based on sensing, light emitting surfaces, energy harvesting and storage foils, optical films and electrical circuits by using printing methods.



### Key customer sectors

- Medical and diagnostics
- Consumer electronics
- Construction and energy
- Materials and processes
- Consumer packaging

### Key customer offering

- Contract R&D
- Pilot production trials
- IPR licensing and sales
- Foresight and roadmaps



### Key research areas

- Organic devices
- Inorganic devices
- Printed optoelectronics
- Biobased power sources
- Biobased indicators
- Bio- and microsystems
- Integrated solutions
- Large-area manufacturing
- Pilot manufacturing



### Program evolution

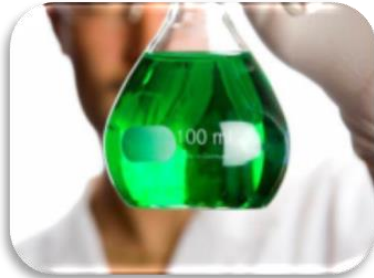
- Project mode late 90's
- R&D program 2006-
- Commercialization 2010-
- Pilot Factory 2012

### R2R infrastructure

- Laboratories
- R2R printing lines
- R2R evaporation unit
- R2R laser equipment
- R2R hybrid integration

# Competences/Products – VTT

Components and systems - R2R production - inks



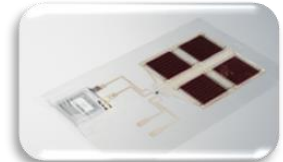
products



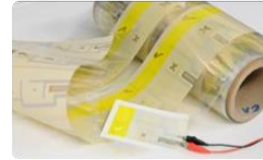
R2R processed OPV foil



Solar energy module



Autonomous Energy Source



R2R processed OLED foil



7-segment OLED display



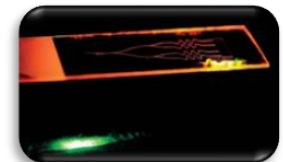
In-moulded OLED element



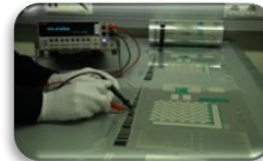
R2R hot embossing



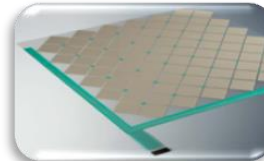
Microfluidic channels



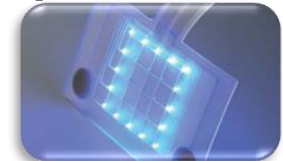
Opto-fluidic sensor with light source



R2R Printed sensors



Wide area sensor matrix



Touch control for signage



R2R printed memory



Printed memory (WORM)



Data-carrying card



## VTT's roll-to-roll pilot manufacturing environment

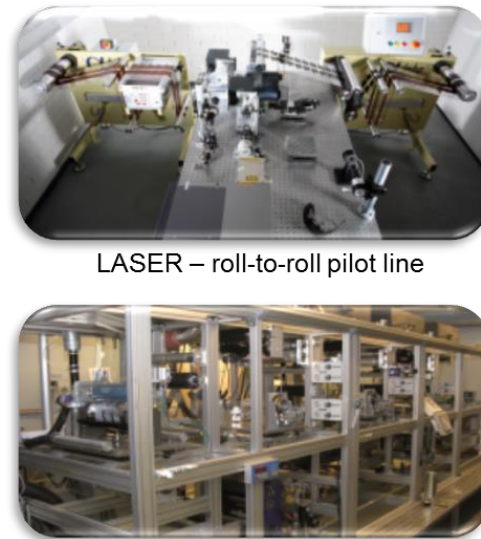
Printed  
Electronics  
AWARDS  
2012 & 2013



MAXI – In-air roll-to-roll pilot line



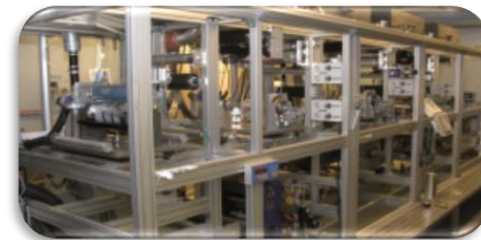
NICO – inert gas roll-to-roll pilot line



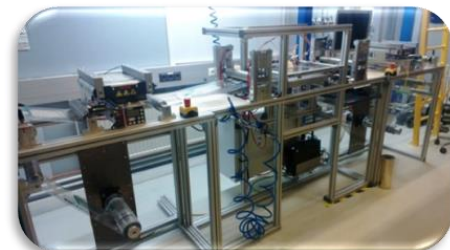
LASER – roll-to-roll pilot line



PICO – in-air roll-to-roll pilot line



ROKO – in-air roll-to-roll pilot line



TESLA – roll-to-roll electronics testing line



Roll-to-roll assembly and bonding line



Injection moulding with roll-to-roll foil supply

Example: OLED R2R printing process

# Competences/Products – VTT

TRL9

TRL8

TRL7

TRL6

TRL5

TRL4

TRL3

TRL2

TRL1

TECHNOLOGY

Industrialization

Standardization

Market trials

Design flow

Demonstrators

Processes

Materials

Science

Products

Voice of customer

Integration

Pilot  
Manufacturing

MARKETS

MANUFACTURING

MRL1

MRL2

MRL3

MRL4

MRL5

MRL6

MRL7

MRL8

MRL9

MRL10



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fo tec  
FOOTEC technology



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- WP4 Developing new sustainable alliances leader (M11 – M22 @ July2014 – June 2015)
  - VTT (4.5 PM), C-TECH (2 PM), UoB (2 PM) & PEP (2 PM)
  - Task 4.1 Identification of key topic areas and call of interest to form working groups (VTT)
  - Task 4.2 Workshop (UoB)
  - Task 4.3 Workshop report (UoB)
  - D4.1 Brokerage workshop (M18 by UoB)
  - D4.2 Workshop outcomes (M22 by UoB)
  - MS4 Project identification (M22 by UoB)
- + WP6 task 6.1 Identification of current bottlenecks in the deployment of existing technologies (M15 – M19)



# VTT Expectations from 4M2020

- Our technologies are mostly based on solution processed thin films (organic/inorganic) in different applications
- Interest is to find out and build new co-operation possibilities around other  $\mu$ -fabrication application areas
- To see what kind of innovation chains can be generated during 4M2020
  - VTT has participated several FP7 OLAE field network and CSA projects: PRODI (VTT coord.), PolyNET, OPERA (VTT coord.), FlexNET, COLAE (VTT coord.) => all have generated positive output...