

Henkel

“Henkel is leading the formulation development and production of the conductive inks as well as adhesives enabling the NECOMADA tag manufacturing.

We are also implementing the developed NECOMADA tags for some of our own brands, enabling direct consumer interaction and engagement through the product packaging.

For us, this project is a great opportunity to unify our internal strengths in technology development and branding and at the same time team up externally with leading implementation partners across Europe.”

B/S/H/

“As an end-user within the NECOMADA project, BSH-E are defining key outputs of the project and are responsible for the validation of the developed technology.

We are well placed to support the implementation of printed and hybrid electronics, including supplying feedback to partners as to standards and durability.”

cpi

“The unique blend of CPI’s scientific knowledge, engineering know-how, combined with wide-ranging R2R asset base, presents a unique opportunity for the Necomada consortium.

Developments during the course of the project will be profound, developing solutions across a range of case study products, incorporating both printed and hybrid technologies, taking the much vaunted ‘Internet of Things’ (IoT) opportunities to the next level, providing an enduring pilot line service.”

Partners:



B/S/H/



DANISH TECHNOLOGICAL INSTITUTE



Finnish Institute of Occupational Health



## Supporting the Internet of Things (IoT)

Developing advanced functional materials to deliver customised conductive inks and flexible adhesives, compatible with volume manufacture of hybrid and large area electronics.

To find out more about the Necomada project or the pilot line, visit: [www.necomada.eu](http://www.necomada.eu) or email us at: [info@necomada.eu](mailto:info@necomada.eu)

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## About NECOMADA

Starting in January 2017, the three-year project targets the incorporation of advanced functional materials to deliver customised conductive inks and flexible adhesives compatible with high volume manufacturing platforms.

The development of these enabling materials will support high speed, roll-to-roll integration of hybrid and large area electronics via a pilot line, further enabling the uptake of 'IoT' applications in a number of mass-market applications, including packaging, healthcare and home appliances.

The materials are trialled by end users towards achieving a successful project.

### NECOMADA's pilot line vision will:

- Integrate, develop and optimise the materials set required to print advanced functional materials (flexible and hybrid electronics)
- Specifically develop a new set of multi-functional nano-enabled electrically conductive adhesives and printable conductor inks
- Develop integrated print and assembly capabilities
- Industrially validate robust and repeatable production methods
- Validate market performance
- Deliver a fully exploitable and reconfigurable open access materials development & integration platform (PILOT LINE)
- Co-develop sustainable life cycle strategies
- Create future EU supply chains and exploit new materials to meet the challenging technical and commercial requirements

## Project Achievement by Work Package

### WP 3 Particle Development and Stabilisation

- New silver nano- particles, which achieves state of the art silver flake conductivities, at < 10 wt. % silver loading
- Stable, printable dispersions of silver, copper and graphene nano- materials in benign solvents

### WP 4 Formulation and Testing Conductive Adhesives

- Rapid, low temperature cure
- Low conductive particle loading

### WP 5 Formulation and Testing Conductive Inks

- Aqueous, low cost ink system
- Highly conductive with <50% silver loading

### WP 6 Print Development Integration Trials (Adhesives)

- Equipment for developing processes in the benchtop/S2S scale VERMES/GeSIM and Muhlbauer TTS300

### WP 7 Print Development Integration Trials (Inks)

- Printing resolution limits established for both rotary screen printing and flexographic printing (including flexo plates provided by Contitech)
- Flatbed screen printing processes developed for Necomada project ink
- Current progress with Northfield R2R electrical measurement processes is encouraging

### WP 8 Electronic System Design

- PragmatIC FlexIC chip, significant reduction in size
- PragmatIC FlexIC CO<sub>2</sub> footprint significantly reduced

### WP 12 Exploitation Dissemination

- Draft business plan developed, post project
- Marketing activity, events and workshop ongoing



Mühlbauer TAL15000