



The European Construction Technology Platform



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Cities of the Future Conference

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ECTP: turning energy efficiency into a sustainable business

- **Est. in 2004, now 150+ members** from the construction sector and whole supply chain of the Built Environment (*nb: now over 40 ETPs running*)
- Main mission: to develop new R&D&I strategies to improve **competitiveness**, meet **societal needs** and take up **environmental challenges**
- 5 Experts Committees:

ENERGY EFFICIENT BUILDINGS
AN **ECTP** COMMITTEE

MATERIALS SUSTAINABILITY
AN **ECTP** COMMITTEE

INFRASTRUCTURE MOBILITY
AN **ECTP** COMMITTEE

HERITAGE REGENERATION
AN **ECTP** COMMITTEE

ACTIVE AGEING DESIGN
AN **ECTP** COMMITTEE



ECTP's guidelines for the (near) future

- A **fully digitized** construction sector: BIM; robotics; skills; health and safety;...
- **Construction sites with minimal environmental impact** (dust, noise, visual intrusion....) through mechanisation and automation of site processes.
- **Sustainable construction materials** in line with circular economy principles - deconstruction
- **A living cultural Heritage** to contribute to an attractive Europe
- **Building an Age-friendly Europe** to stimulate the long-term provision of suitable, accessible, enabling and affordable housing options to all Europeans
- **PEB: Positive Energy Blocks & Districts** all throughout Europe by 2020 (cf Smart Cities call)

ECTP: Energy Efficiency as first priority

- **Energy Efficient Buildings PPP (EeB PPP)**
 - Est. 2010, stable partnership EC – stakeholders
 - FP7 2010-2013: 500 M€
 - H2020 2014-2020: 600 M€ (...and more in other programmes)
- **Participation to other EU fora:**
 - SET Plan: Strategic Energy Technologies; with Member States
 - Smart Cities and Communities EIP (European Innovation Partnership)

EeB PPP: Key research areas

Technologies
for
acceleration
of building
stock
RENOVATION

**INTERACTIVE
SUSTAINABLE**
buildings
embedded at
district and
city scale

Ensuring
energy
performance
throughout
LIFE CYCLE



ECTP

**INNOVATIVE BUILT
ENVIRONMENT**

SUCCESS STORIES

TECHNOLOGY BUILDING BLOCKS

Highly promising results

BEEM UP

CommONEnergy

EnE-HVAC

H2SusBuild

HIPIN

iNSPiRe



BEEM-UP

339 dwellings are being refurbished with high-energy efficiency standards in France, the Netherlands and Sweden.

New application of a novel material
Ultra-high insulation capacity



Promising results

EASEE

FoAM-BUILD

H2SusBuild

HIPIN

iNSPiRe

EASEE

Full scale demo in a social housing building in center of Milan (Italy)

Adjustable formwork for the production of modular panels with variable dimensions



Towards PEBs: the example of HIKARI in LYON (France)

Photographic credit:

HIKARI designed by Kengo

Kuma and Associates

12 000 m² zero energy building in the Lyon-Confluence area in Lyon



regular
Field visits of the
Positive Energy Block
HIKARI
Lyon Confluence

Communication: the EeB PPP Project Review 2017 (6th ed)



EeB PPP
Project review
2017

May 2017

- Exhibiting progress and results of 110 co-funded projects within the EeB PPP under the 7th Framework Programme (FP7) for 2010-2013 and 45 co-funded projects under the Horizon 2020 programme for 2014-2016.
- Highlighting current results and achieved or potential impact of the EeB PPP Projects
- Illustrating the diverse innovation approaches and the importance of embracing all aspects of the building and construction sector.

Communication: highly promising technologies (brochures)



Nanotechnology coating for heat exchangers and software development

Significantly reduces energy consumption of HVAC Systems

This new nanotechnology will significantly reduce the energy consumption of heating, cooling and ventilation systems. While the majority of the energy consumed in Europe is spent on heating and cooling, large sums can be saved by enhancing the energy efficiency of HVAC systems. Of the total energy consumed in housing and commercial buildings, 35% comes directly from HVAC systems.

This novel innovation is based on the nanotechnology coating for heat exchangers. The suitable applications of this coating are condensers and evaporators in refrigerant systems. Nanotechnology coatings and surface treatments improve heat transfer of the refrigerants in heat exchangers by early bubble boiling and drop wise condensation. The nanotechnology coating enhances heat exchanger efficiency on both the air and liquid sides of heat exchangers and thus significantly improves the efficiency of the whole heat recovery process. The estimated improvement of the total efficiency is 25-35%.

The actual performance analysis and system optimization are possible to carry out with the supporting software. By using the advanced CFD and multi-physics solution, it is possible to model the physics of heat exchangers. For nanotechnology coatings application, a special tool was developed. This model makes it possible to analyze and model specific parts of HVAC components, including anti-freezing/anti-ice surfaces, condensation drainage systems, evaporation systems and heat transfer systems.

- Completion within 2 years
- Usable in new constructions
- Usable in renovation/retrofitting
- Compatible with existing solutions

The coatings also provide anti-freezing properties to limit over icing of heat exchangers. This property is profitable in heat pumps and refrigerant system applications where other heat transfer media is air. In these systems, there exists the risk of icing of the heat exchanger. The novel nanotechnology coatings extend defrosting intervals for heat exchangers that require periodically defrosting. It could be estimated that with the nanotechnology coating, it is possible to double the defrosting time.

eneHVAC
Energy efficient heat exchangers for HVAC applications
www.ene-hvac.eu

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EeB-CA² | HVAC & Lighting Solutions

*“highly promising” technology brochures (EeB-CA2 CSA)
released in Nov. 16*

ECTP / E2B PPP - Conclusion

A VISION turning into REALITY:

- NZE and PE buildings into districts
- EeB PPP projects covering research to implementation & large-scale pilots
- Construction sector turning into a **high tech and sustainable business**



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AN **ECTP** COMMITTEE

Contact us!

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What are we all trying to achieve ?

*« The highest quality of life,
for the largest number of people,
with the lowest environmental impact »*

...

