

Consortium

-  Universität Stuttgart
-  Delap & Waller EcoCo Ltd., Dublin
-  S&B Industrial Minerals S.A., Athina
-  Solintel M&P S.L., Madrid
-  Universita Politecnica delle Marche, Ancona
-  R.E.D. SRL, Padova
-  TTI GmbH - TGU Smartmote, Stuttgart
-  Fraunhofer-Gesellschaft zur Förderung der Angewandten Forschung, Institut für Physikalische Messtechnik, Freiburg
-  InfraTec GmbH, Dresden
-  CEA INES, Grenoble
-  STAM SRL, Genova
-  Schwenk Putztechnik GmbH, Ulm
-  Consorzio TRE, Napoli
-  FCC Construcción SA, Barcelona
-  National Taiwan University of Science and Technology, Taipei



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CETIEB

**Cost-Effective Tools
for Better
Indoor Environment
in Retrofitted
Energy Efficient Buildings**

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Cost-Effective Tools for Better Indoor Environment in Retrofitted Energy Efficient Buildings

CETIEB develops cost effective, innovative solutions for better monitoring of indoor environment quality and investigates active and passive systems to improve. A special ambition is to ensure a wide application of the resulting systems.

Overview

Retrofitting the existing building stock to meet the EU targets for energy efficiency by 2020 and 2050 leads to more airtight buildings which will affect indoor air quality and the indoor environment. If effective ventilation, lighting and HVAC control systems are not integrated into the retrofit works the indoor environment could be made worse with significant impacts on health, productivity and energy use.

There is a need for a cost-effective sensor system for detecting and measuring the indoor environment which is integrated with energy efficient control systems. There are innovative passive materials and systems which can be developed to improve the indoor environment cost effectively.

CETIEB will develop these systems to allow efficient control of the indoor environment in retrofitted buildings.

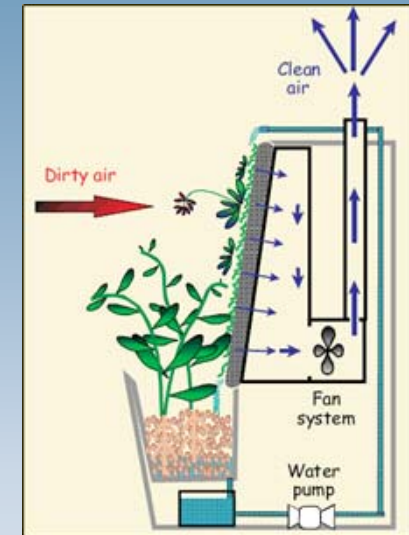
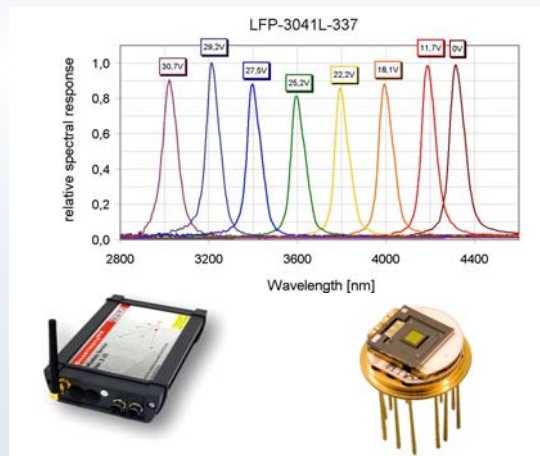


Objectives

- Development of monitoring systems (wireless and/or partly wired) to detect indoor environmental comfort and health parameters. A modular version will be developed to allow end users a quick check of the indoor air quality.
- Development of control systems for indoor environments to optimise the indoor environmental quality and energy efficiency by an innovative passive plaster finish using photo catalytic and phase change materials, by plant based biofilters, and by active air flow controlling components.
- Modelling of indoor environments for the assessment and validation of monitored data to optimise the control parameters and systems.

Expected Results

- Cost-effective and simple to use monitoring systems that sense a variety of indoor environmental factors which affect human health and well-being. A key challenge is the detection and monitoring of volatile organic compounds (VOC) for the assessment of health related parameters.
- Active control systems to enable controlled ventilation and provide the conditions for significantly improved indoor air quality and optimal air flow control in buildings.



- Innovative plant based biofilter which recycles indoor air and reduces the need for outside air which has to be heated, cooled and humidified.
- Innovative, cost-effective, nano-functional plaster finish material using titania (TiO₂) that will contribute to a cleaner and healthier environment by oxidizing and removing pollutants and pathogenic microorganisms from indoor air and building surfaces.
- Development of building simulation models with full integration of air pollutant sources and sinks. These models will allow the combined simulation of thermal and healthy comfort conditions.

Key Facts

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Start date:	1 st October 2011
Duration:	36 months
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Homepage:	www.cetieb.eu