



CETIEB

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



Jürgen Frick





Agenda Workshop

1. Welcome
2. Introduction to the project CETIEB (Jürgen Frick)
3. The Retrofitting Process and Air BioFilter (Jay Stuart)
 - Identification of quality parameters and addressing regulatory gaps
4. Wireless monitoring of indoor environment quality (Markus Krüger, Martin Ebermann, Luc Pockelé)
 - Sensing of Volatile Organic Compounds (VOC)
 - Sensing of thermal surfaces
 - Lighting concepts
5. Active control and modelling of indoor environments (Carminé Pascale, Thomas Schlosser)
 - Advanced control of HVAC systems
 - 3D modelling of indoor environments
6. Cost effective photo catalytic mortars to improve indoor environments (Antonia Ekonomakou, Johann Balau)



Preface EU Public Private Partnerships

Financial Crisis: EU-Recovery Plan starting in 2009: Energy Efficient Buildings PPP EeB FP7 research budget (2010-2013)

Budgets (M€)	NMP	ENERGY	INFSO	ENV	TOTAL FP7
2010	30	15	15	5	65
2011	40	20	20	5,5	85.5
Call: Technologies for ensuring, monitoring and/or controlling a high quality indoor environment particularly in relation to energy-efficient buildings					
TOTAL	250	125	110	25,5	510.5



Motivation CETIEB



In future:

- Increase of energy efficient buildings
- If retrofitted, change of indoor environment
 - Tight building envelope and insulation
 - Low air exchange or HVAC systems
 - Use of new materials with potential of emissions
- Influence on health and comfort
 - “Sick building syndrome”
- Need
 - for assessment of indoor environments
 - for improvement
 - for cost-effectiveness





CETIEB Objectives

- Development of tools to assess and improve indoor environments
 - **Monitoring** with advanced sensors
 - VOC, thermal surface, light spectra, CO₂, climate
 - **Active control**
 - intelligent control platforms and methodologies for HVAC, lighting, and plant based air quality control
 - **Passive systems** based on advanced materials
 - photo catalytic plasters, mortars, and paints
- Cost-effectiveness
 - Wireless monitoring based on low cost solutions (MEMS)
 - Adapted solutions for different markets based on the same system
 - End-users, experts, facility managers
 - Effective use of active materials
- Focus: Retrofitted energy efficient buildings



Consortium



	Universität Stuttgart (MPA (coord.), IGE, IFK)	RTD
	Delap & Waller EcoCo Ltd., Dublin	SME
	S&B Industrial Minerals S.A., Athens	Industry
	Solintel M&P S.L., Madrid	SME
	Università Politecnica delle Marche, Ancona	RTD
	R.E.D. SRL, Padova	SME
	TTI GmbH - TGU Smartmote, Stuttgart	SME
	Fraunhofer-Gesellschaft, IPM Freiburg	RTD
	InfraTec GmbH, Dresden	SME
	CEA INES, Grenoble	RTD
	STAM SRL, Genova	SME
	Schwenk Putztechnik GmbH, Ulm	Industry
	Consorzio TRE, Napoli	RTD
	FCCCO Construcccion SA, Madrid	Industry
	National Taiwan University of S&T, Taipei	RTD



Consortium



Universität Stuttgart
Germany



Baustoffe fürs Leben

MPA MPA STUTTGART
Otto-Graf-Institut
Materialprüfungsanstalt Universität Stuttgart



tecnologie
per il recupero
edilizio



Delap and Waller EcoCo
Integrated Sustainable Design Consultants

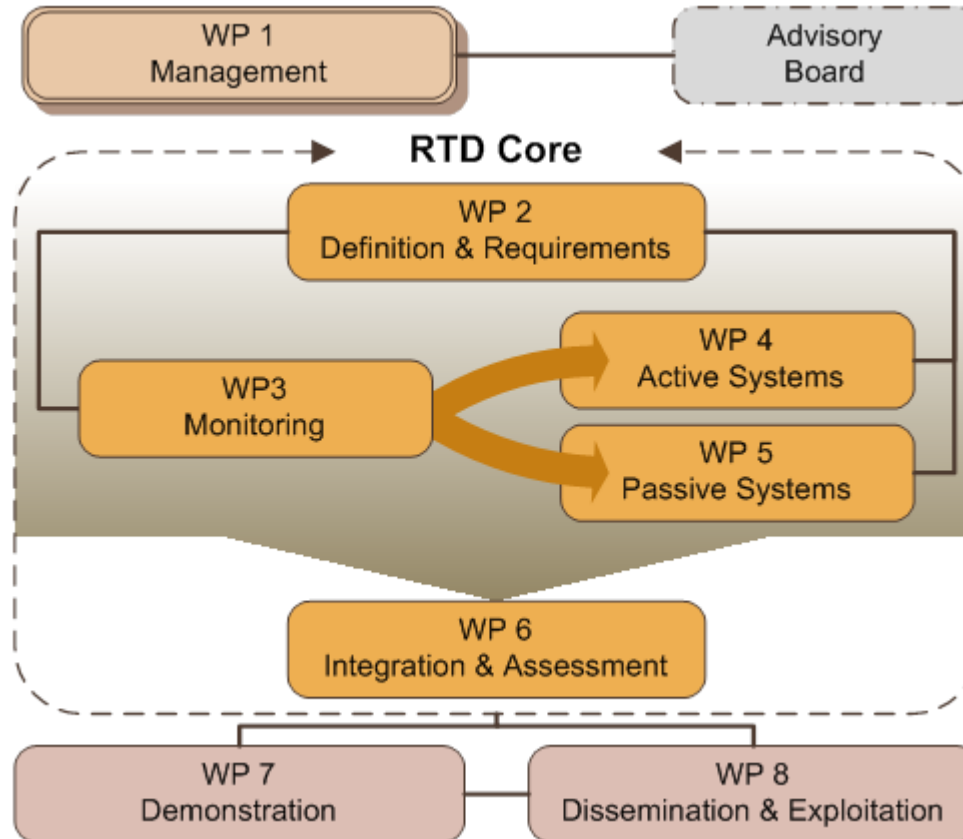


energie atomique • energies alternatives



NTUST

Project structure





Key facts

Project No.:	285623
Total budget:	3.6 million Euro (funding 2.5 million + 130,000 Taiwan)
Start date:	1 st October 2011
Duration:	36 months
Coordinator:	Dr. Jürgen Frick Materials Testing Institute University of Stuttgart
Homepage:	www.cetieb.eu

Acknowledgement

The CETIEB project is supported by the European Commission under the 7th Framework Programme, Grant Agreement No. 285623.