





Technical sheet #5






Technology solution package

	Energy efficiency		Comfort, health and well-being
	Smart grid readiness		Informed users
Building typology			
	 Residential		 Office

Short description

Solution package focused on energy efficiency, in order to reduce the building energy consumption and the related carbon footprint, by optimizing control of heating/DHW/cooling generation and the corresponding emission and distribution systems.

Solution package specific services

Domain		Standard configuration		Proposed configuration
	Heating	Central thermostat. Multi-stage speed pump and constant temperature control.		Individual room controllers and BACS communication. Variable speed pump and temperature control.
	Lighting	Manual on/off switch for indoor lighting.		Occupancy detection and control for indoor lighting.
SRI Score ¹				
	Energy efficiency	+20-30%		
	Comfort	+10-20%		

Main impacts and co-benefits

This category “energy efficiency” refers to the energy savings impacts of the smart-ready technologies on building energy performances. Literature data²:

- Heating system: upgrading from a central thermostat to an individual room control with communication allows to reduce energy waste up to 25% of the yearly heating energy.
- DHW system: for an energy-efficient residential building up to 50% of the energy demand can be attributed to DHW, therefore relevant energy savings can be achieved by optimizing its control.
- Lighting system: occupancy-based control systems compared to manual control have an energy saving potential up to 30% of the annual electric lighting energy use.

The European standard EN 15232:2012 introduced a classification of the building control systems and functionalities, providing the methods for an estimation of the impact that these systems have on building energy performance and use.

Well-designed BACS for heating and cooling can contribute to a reduction of the energy consumption, while increasing thermal comfort for the building occupants. The same is true for visual comfort resulting from a correctly implemented automatic control of shading system and indoor lighting.

¹ Calculated using SRI assessment package v4.4.

https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator_en

² Van Thillo, L., Verbeke, S., & Audenaert, A. (2022). The potential of building automation and control systems to lower the energy demand in residential buildings: A review of their performance and influencing parameters. *Renewable and Sustainable Energy Reviews*, 158, 112099.