

Un nuovo approccio impiantistico
'Intelligent Building'

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'Green Building'... it means many things to many different people

Cosa significa "Intelligent building" dal punto di vista impiantistico

Il processo edilizio si compone di diverse professionalità che intervengono in tempi e modi differenti, ma con un obiettivo comune per il raggiungimento del:

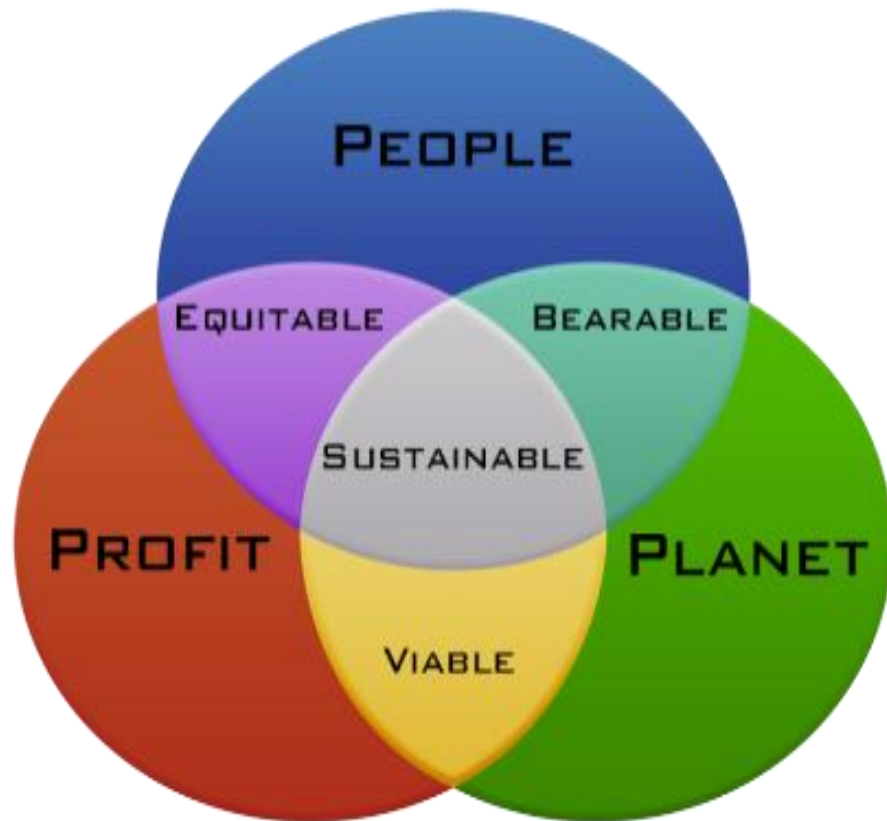
Triple bottom line: People, Profit & Planet

progettazione integrata

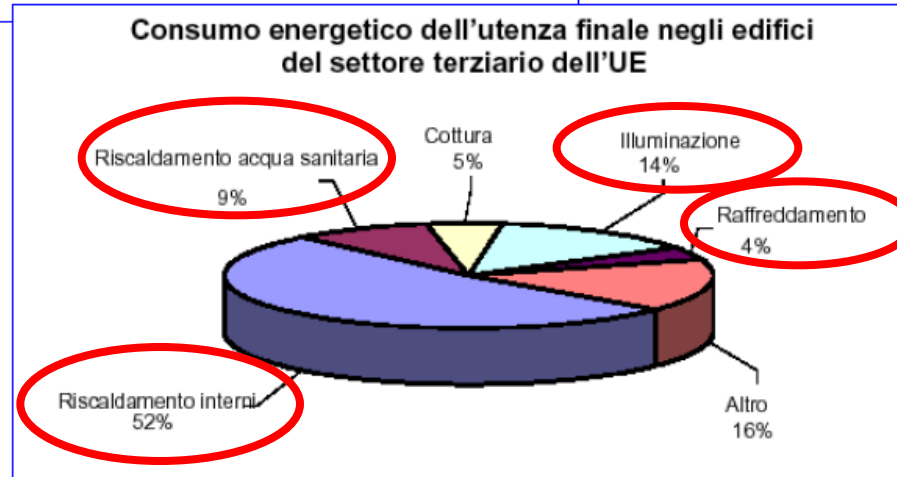
realizzazione

gestione e manutenzione

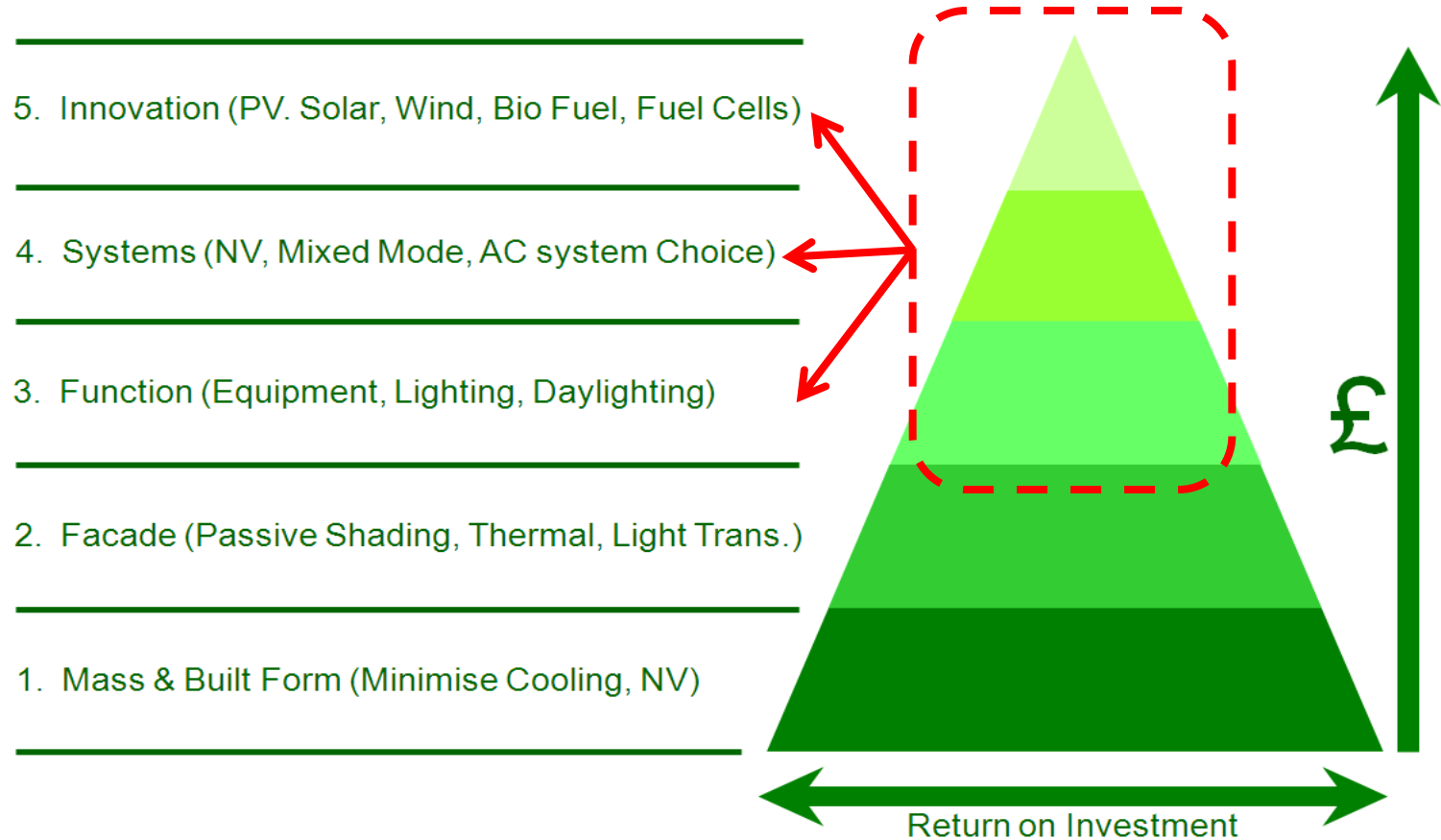
dismissione dell'edificio



Where the energy goes – where to target the savings



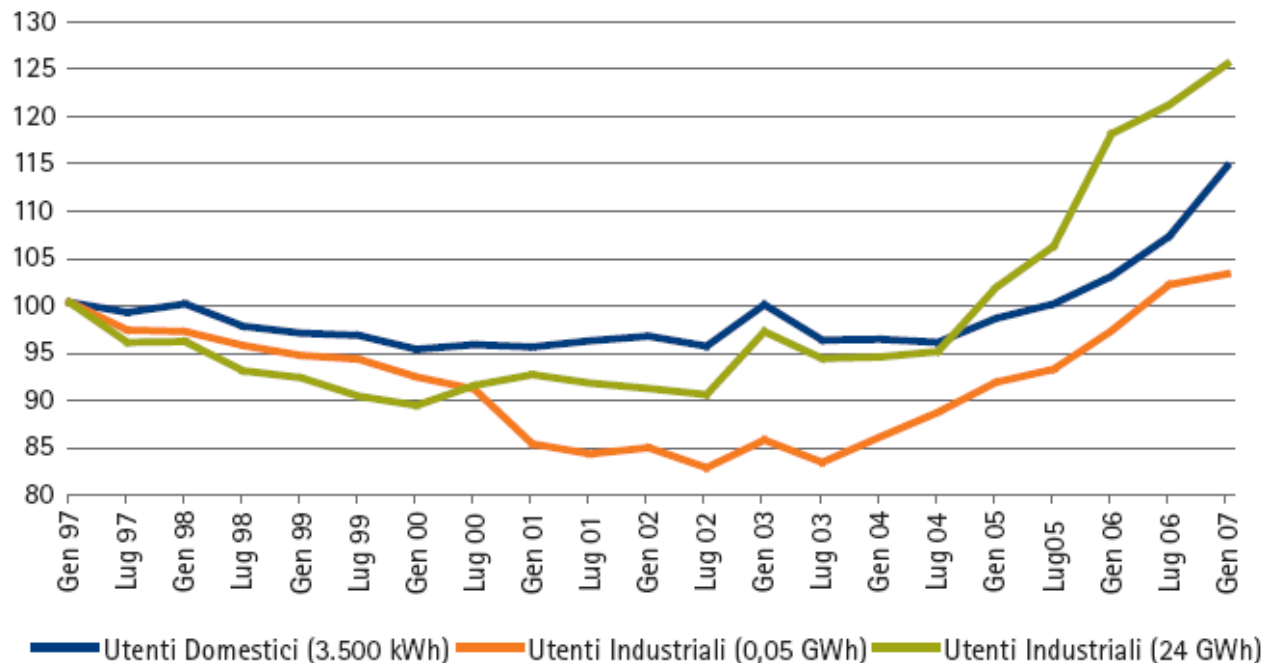
Our Low Energy Design Hierarchy



Our Low Energy Design Hierarchy

Andamento dei prezzi finali dell'energia elettrica in Europa

Indici dei prezzi medi ponderati^(A) europei per tre tipologie di consumo (gennaio 1997 = 100)



(A) Prezzi medi al netto delle imposte ponderati sui consumi nazionali domestici/industriali dell'anno 2000 con riferimento a 16 paesi: i 15 paesi dell'Unione europea al 1° gennaio 2004 e la Norvegia.

Fonte: Elaborazione AEEG su dati Eurostat.

Situazione Italiana

13 milioni di edifici in Italia (censimento 2001)

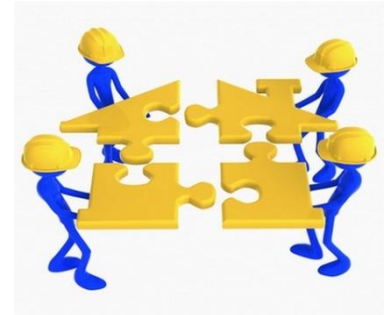
Più del 40% dell'energia nazionale è utilizzata dagli edifici

Circa il 2 % degli edifici esistenti è ristrutturato in un anno.

Dove intervenire e quale soluzioni ?

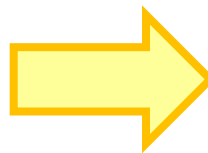
Soluzione tecnica e/o sociale, economica, culturale??

.... la combinazione di più fattori !!



Where to target the savings

- illuminazione.
- riscaldamento.
- raffrescamento.
- produzione di acqua calda sanitaria.
- ventilazione e distribuzione fluidi.



Legislazione

e

**Regolamentazione europea e
nazionale**



EuP (Energy-using Products).

Apparecchiature più efficienti

- Boiler (elettrici, gas e combinati)
- Scaldabagni (elettrici, gas e combinati)
- Illuminazione stradale
- Illuminazione per uffici
- Condizionatori e ventilatori residenziali
- Motori elettrici
- Pompe per acqua
- Circolatori per riscaldamento domestico

Table 1

The first twelve measures (more are planned) = savings equivalent to almost 14% of the electricity consumption of the EU in 2007

Ecodesign Measure	Adoption	Estimated savings
Standby	December 2008	35 TWh
Simple set top boxes	February 2009	9 TWh
Street & Office Lighting	March 2009	38 TWh
Domestic Lighting	March 2009	39 TWh
External power supplies	April 2009	9 TWh
Electric motors	July 2009	135 TWh
Circulators	July 2009	23TWh
Domestic refrigeration	July 2009	8 TWh
Televisions	July 2009	43 TWh
Domestic dishwashers	November 2010	2 TWh
Domestic washing machines	November 2010	1.5 TWh
Fans	March 2011	34 TWh
Total		376 TWh

For up-to-date information on all Ecodesign measures, please refer to our website:
<http://ec.europa.eu/enterprise/ecodesign>

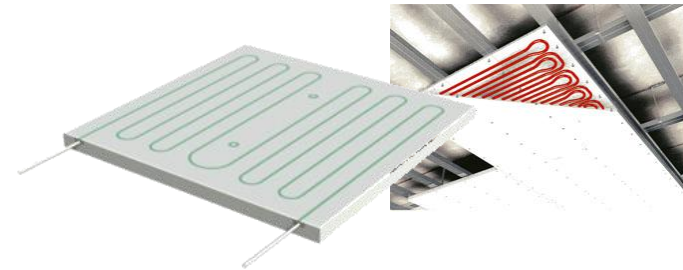
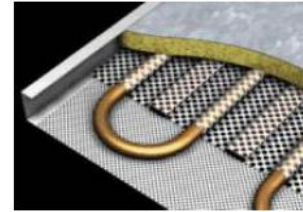
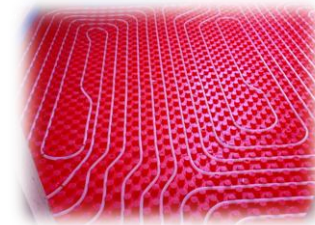
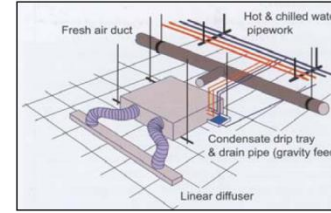
System efficiency comparison

Tecnologie impiantistiche più efficienti

Impianti di riscaldamento e raffrescamento a bassa temperatura per produzione acqua calda e refrigerata

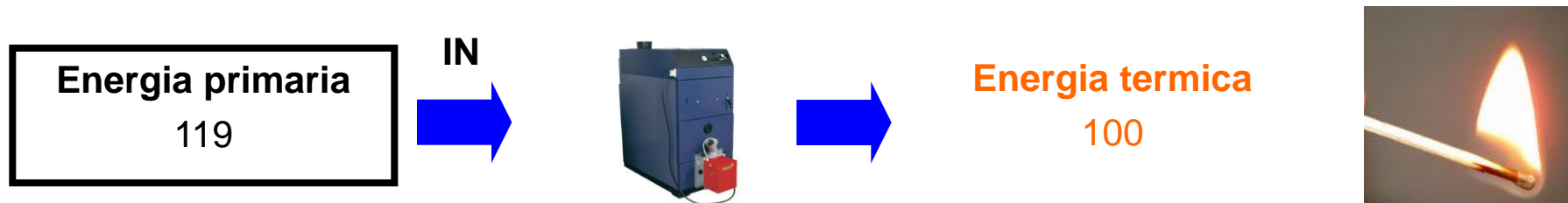
- ❑ Impianti di riscaldamento a 45°C
- ❑ Impianti di climatizzazione a 14-16°C

Compatibili con l'uso di pompe di calore aria-acqua o acqua-acqua

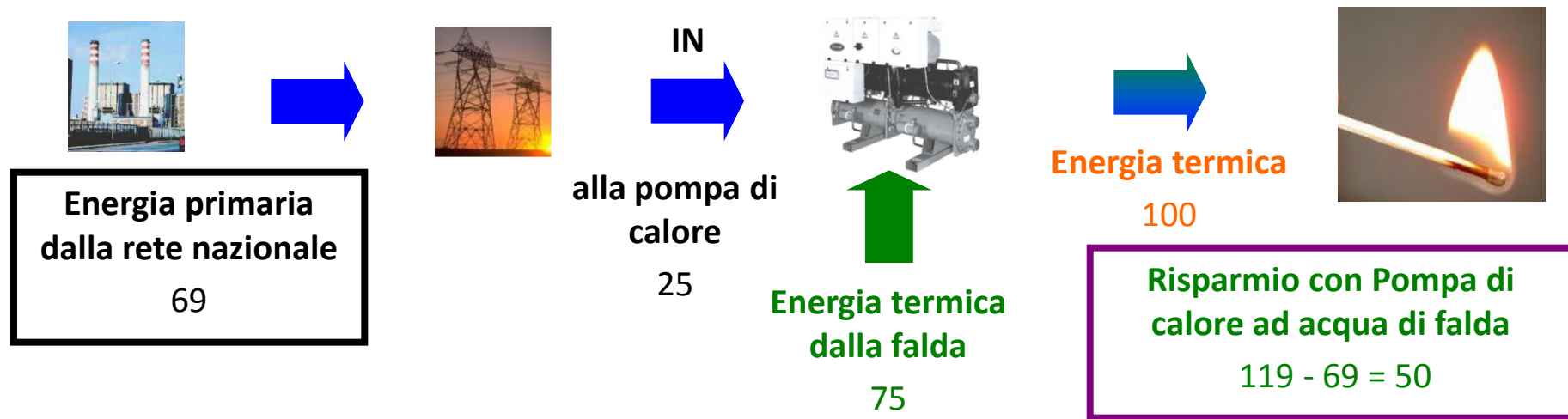


System efficiency comparison

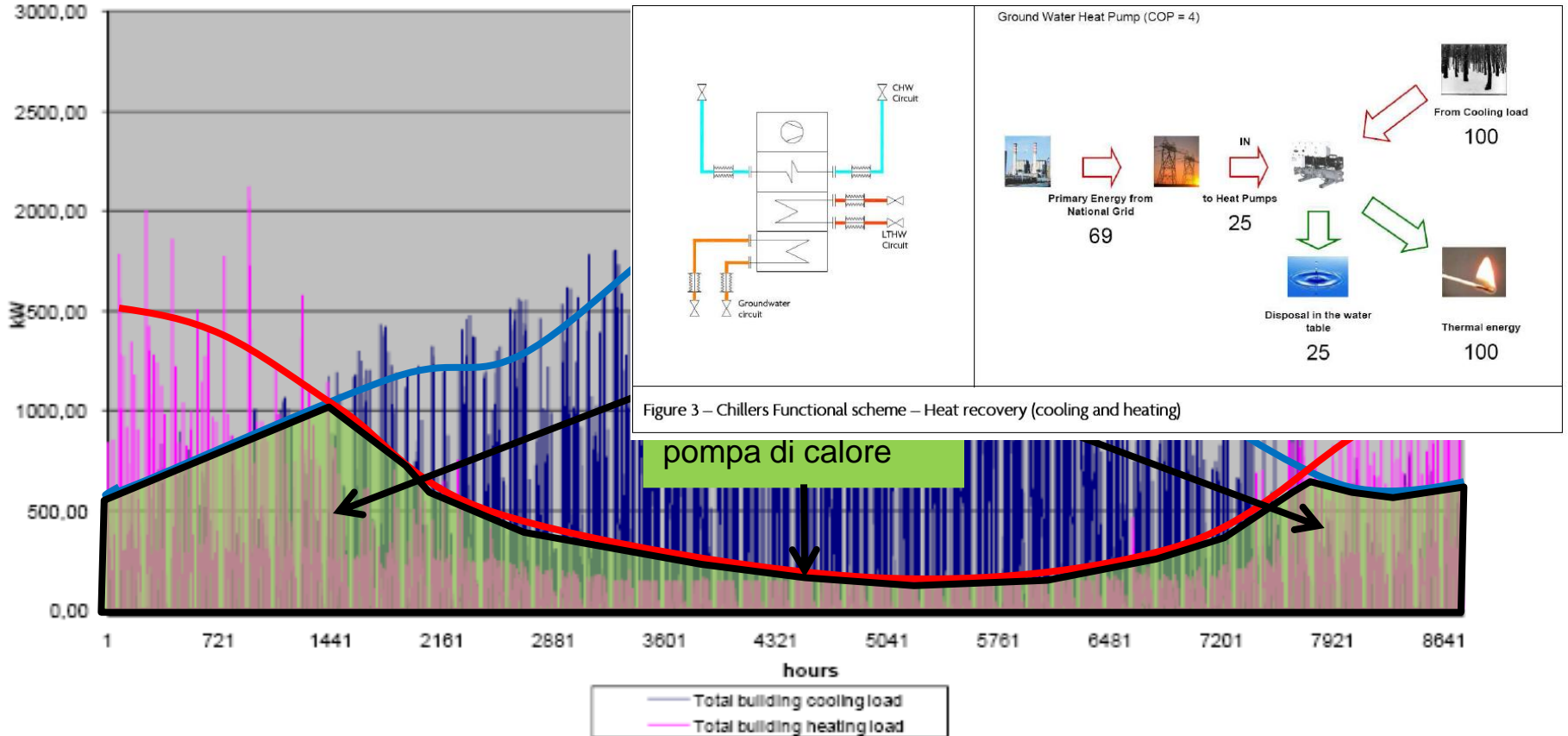
Caso base - Sistema tradizionale con caldaia



Pompa di calore ad acqua di falda o acqua di mare (COP = 4)

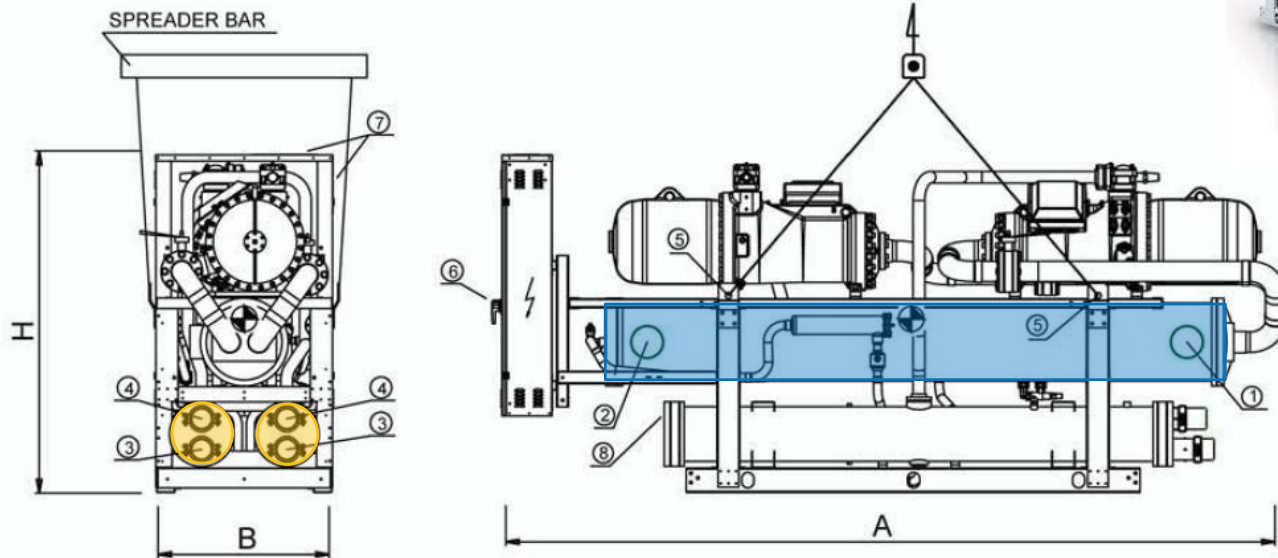


System efficiency comparison

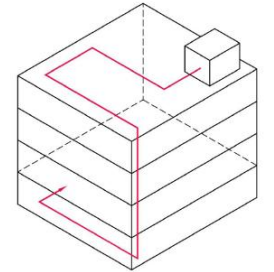
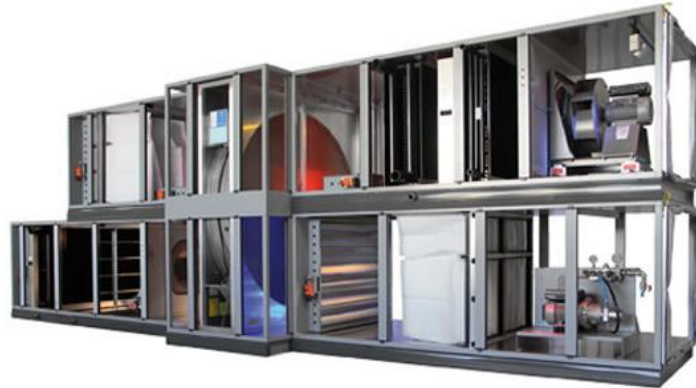
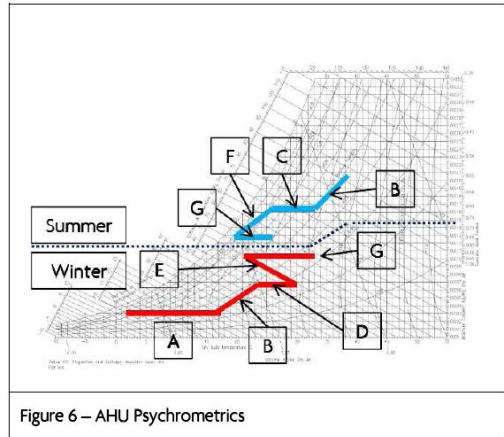
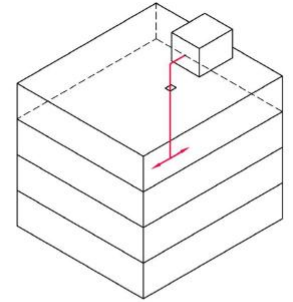
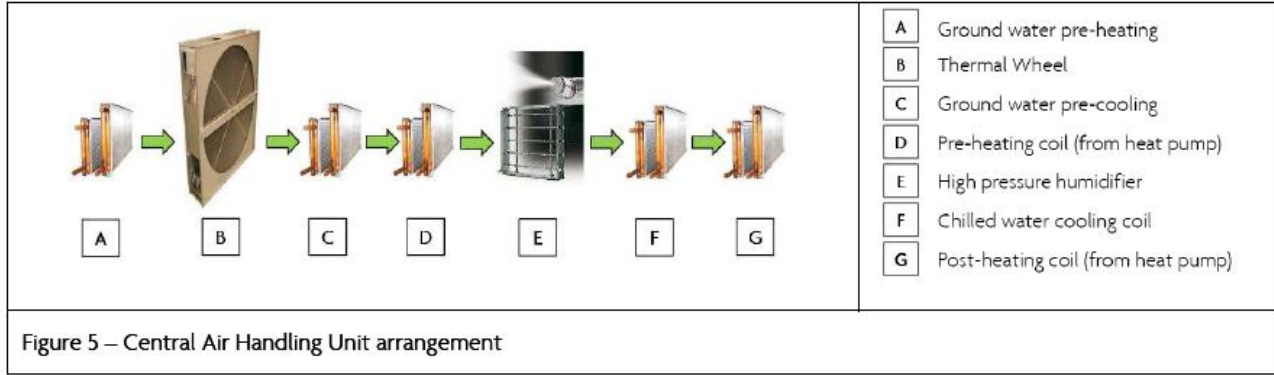


System efficiency comparison

- Acqua refrigerata 7°C
- Acqua calda riscaldamento 45°C
- Condensazione 24°C con acqua di falda a 16°C

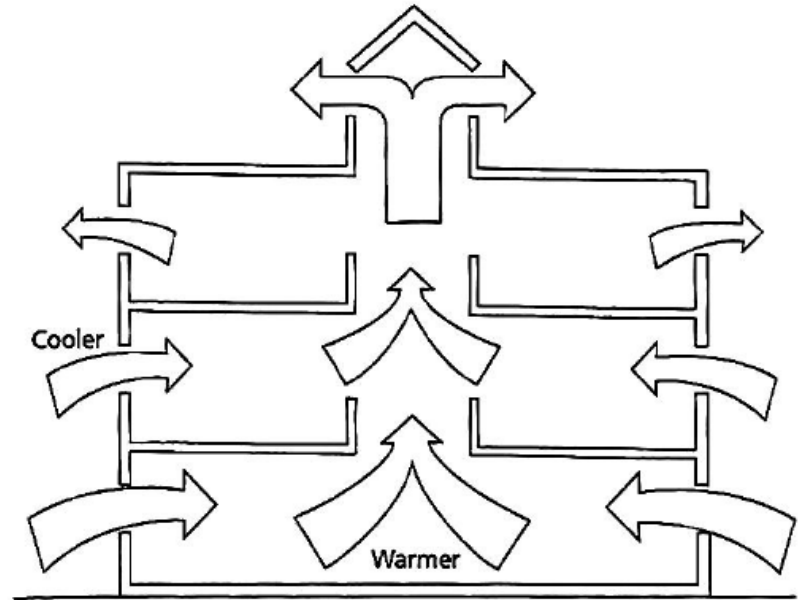


System efficiency comparison

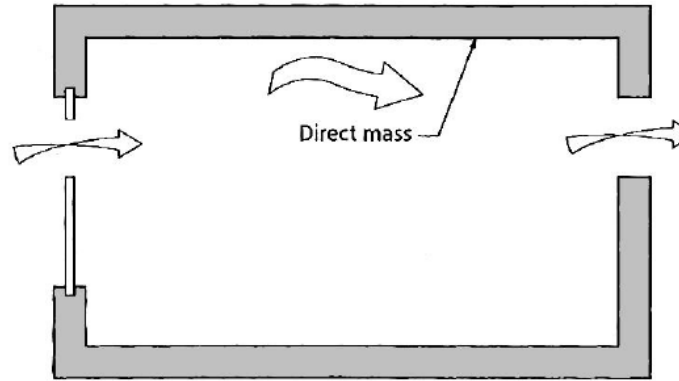


- HVAC system runs in winter (Heating)
- HVAC system runs in summer (Cooling)
- In between – mid seasons, switch off HVAC and open windows
- Concurrent mixed mode (Deep plan space can run cooling)

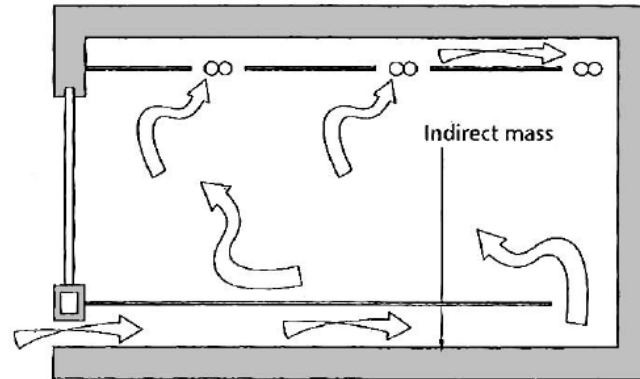
Typical Natural Ventilation



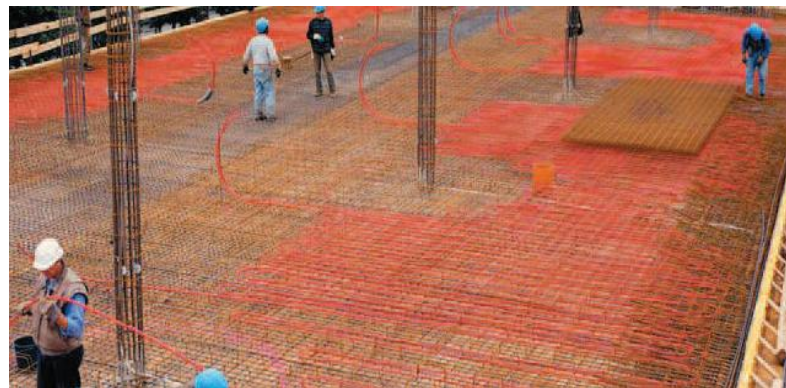
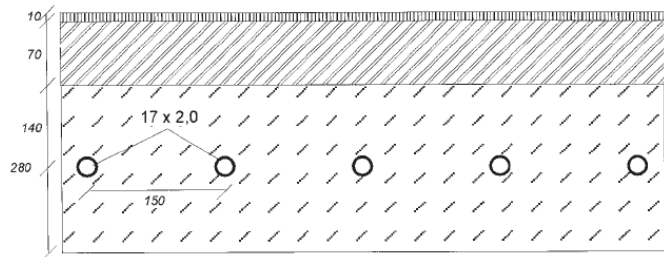
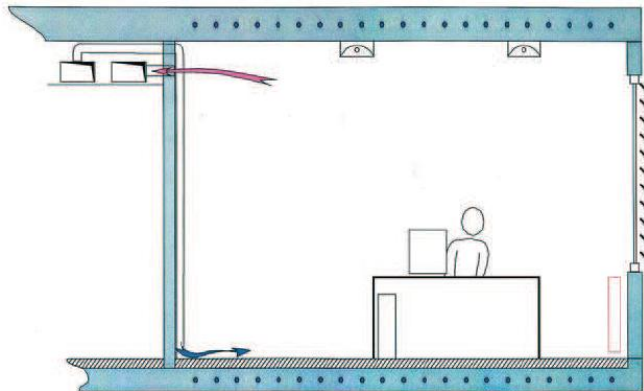
System efficiency comparison



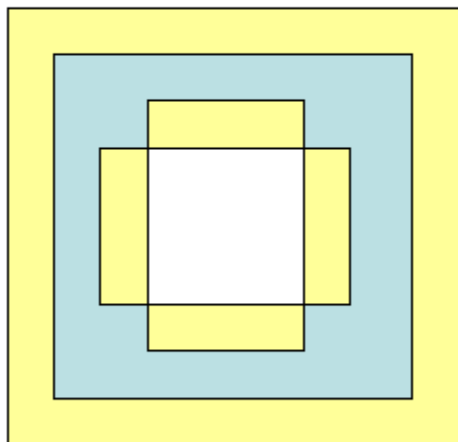
(a)



System efficiency comparison

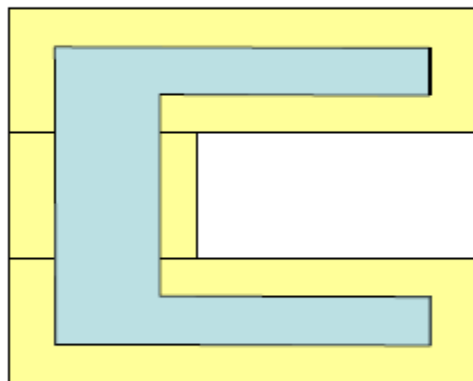


Daylight Penetration



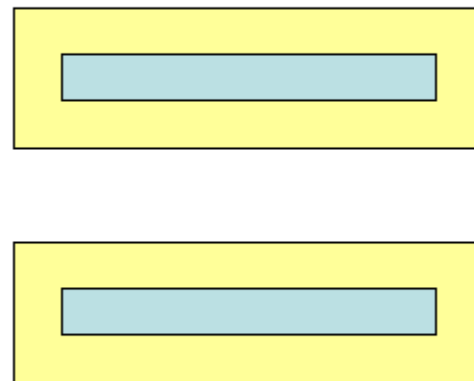
Internal atrium

40%



Linked wings

60%



Bars

73%

Importance of light control in non-residential environment

Sensori di presenze – gestione on-off temporizzato



- 55 %

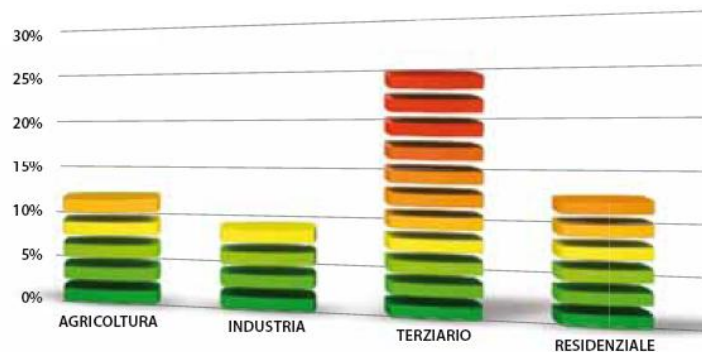
Sistema integrato per management edificio.

Sensori di presenze + dimmer apparecchiature



- 75 %

I consumi energetici relativi all'illuminazione



Office Building Design Considerations



P.V.



SOLAR



WIND



GSHP



BIO MASS

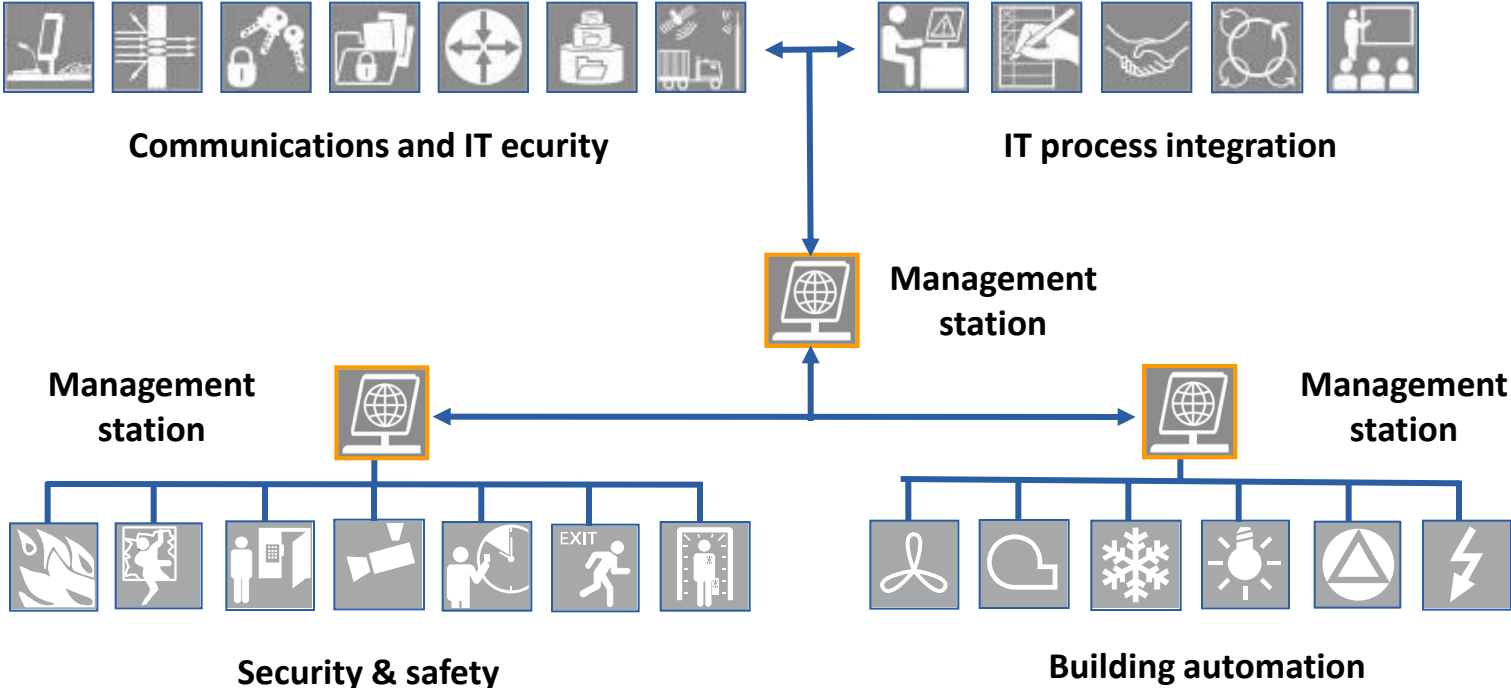


CHP



TRI-GEN

Why are controls so important ?



Why are controls so important ?

Gestione illuminazione e tapparelle

Tutti i comandi (luce e tapparelle) sono direttamente commessi al BUS ed interfacciati con i rispettivi attuatori installati nel quadro elettrico di appartamento, dal quale si diramano le linee di alimentazione di luci e tapparelle.

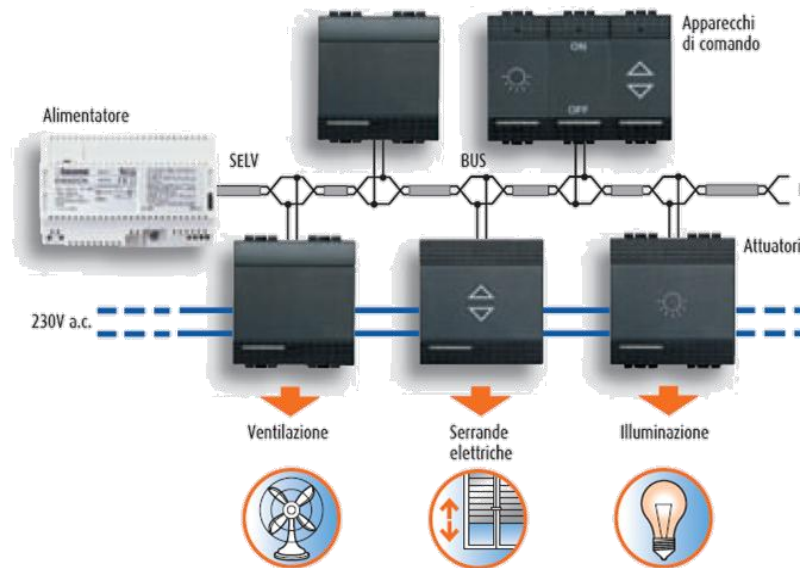
In sostanza si possono realizzare i seguenti comandi:

On/Off illuminazione (locale)

On/Off centralizzato illuminazione

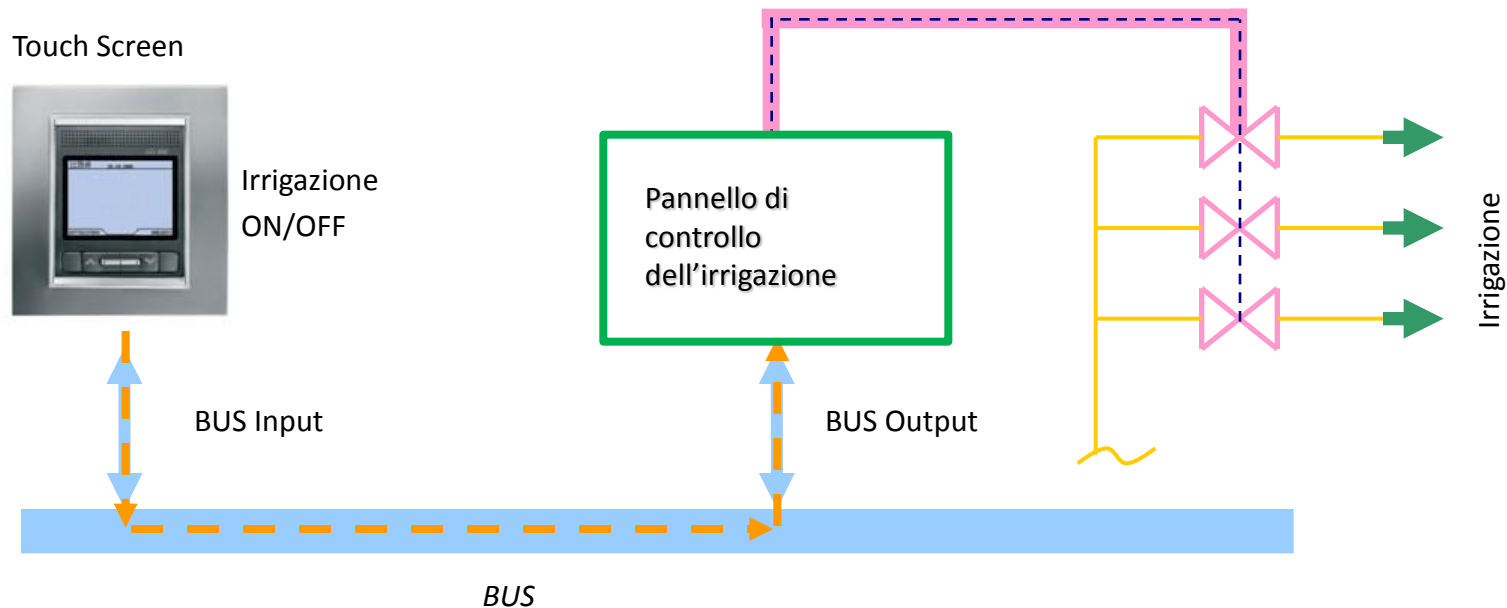
Open/Closed tapparelle (locale)

Open/Closed centralizzato tapparelle



Why are controls so important ?

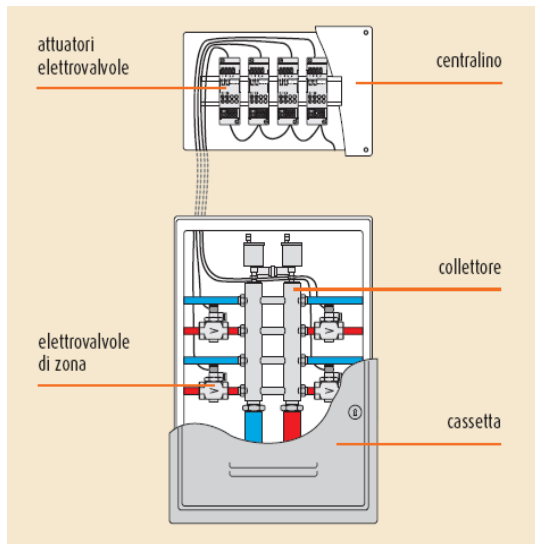
Gestione dell'irrigazione



Sistema di avviamento e spegnimento dell'irrigazione

Controllo e gestione tramite il touch screen locale

Office Building Design Considerations



Cablaggio e connessione al sistema domotico tramite bus, elettrovalvole e attuatori all'interno del collettore principale

Zona regolata a 18°C

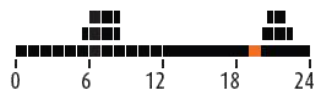
Zona regolata a 22°C



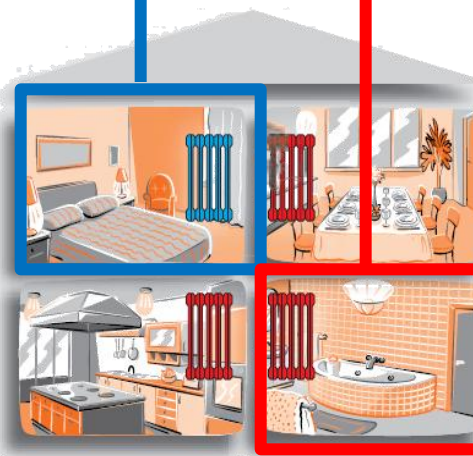
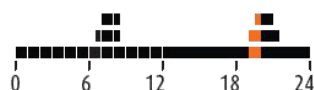
... alla sera

20:00

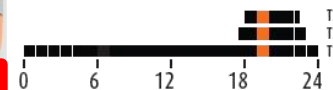
18°C in camera da letto



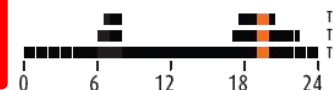
21°C in cucina



22°C in soggiorno



22°C in bagno



Why are controls so important ?

“A well designed, properly installed, thoroughly commissioned, carefully operated and well maintained **Building Management System** will facilitate energy efficiency.”

