

edilportale[®]

TOUR 2016

Efficienza energetica e comfort abitativo
Tecnologie non invasive e sicurezza
Sostenibilità economica e ambientale

in collaborazione con



Firenze, 5 maggio 2016

“Efficienza energetica e comfort termoigrometrico degli occupanti”

Andrea Gasparella

It is a great pleasure and an honor for me to have been asked to welcome you to the National Bureau of Standards today to discuss a subject of mutual interest, namely, that of the effects of energy conservation in buildings on human comfort. With the increased emphasis on energy conservation practices in existing buildings as well as new building designs that emphasize energy conservation, you, our leading scientists, engineers, government officials, architects, physiologists, and manufacturers are faced with the challenge of protecting the comfort, health, and performance of building users. This symposium, therefore, is unusual because we will be trying to explore how much we really know about the effects of interior thermal environments on people.

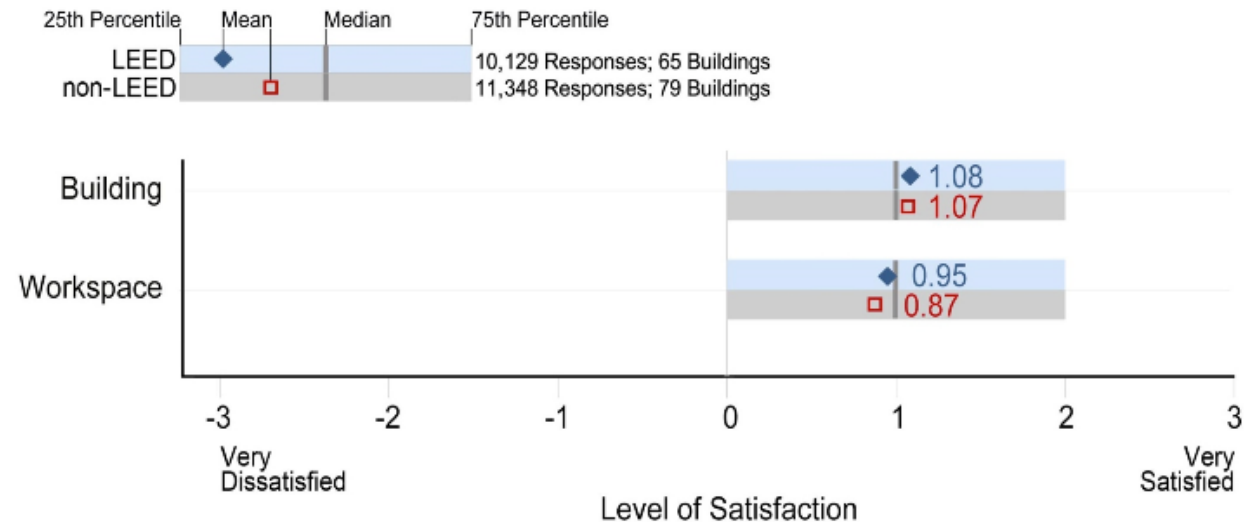
J. R. Wright
Institute for Applied Technology
National Bureau of Standards
Washington, D.C. 20234

Proceedings of a Symposium Held at the
National Bureau of Standards
Gaithersburg, Maryland
February 11, 1977

Contesto

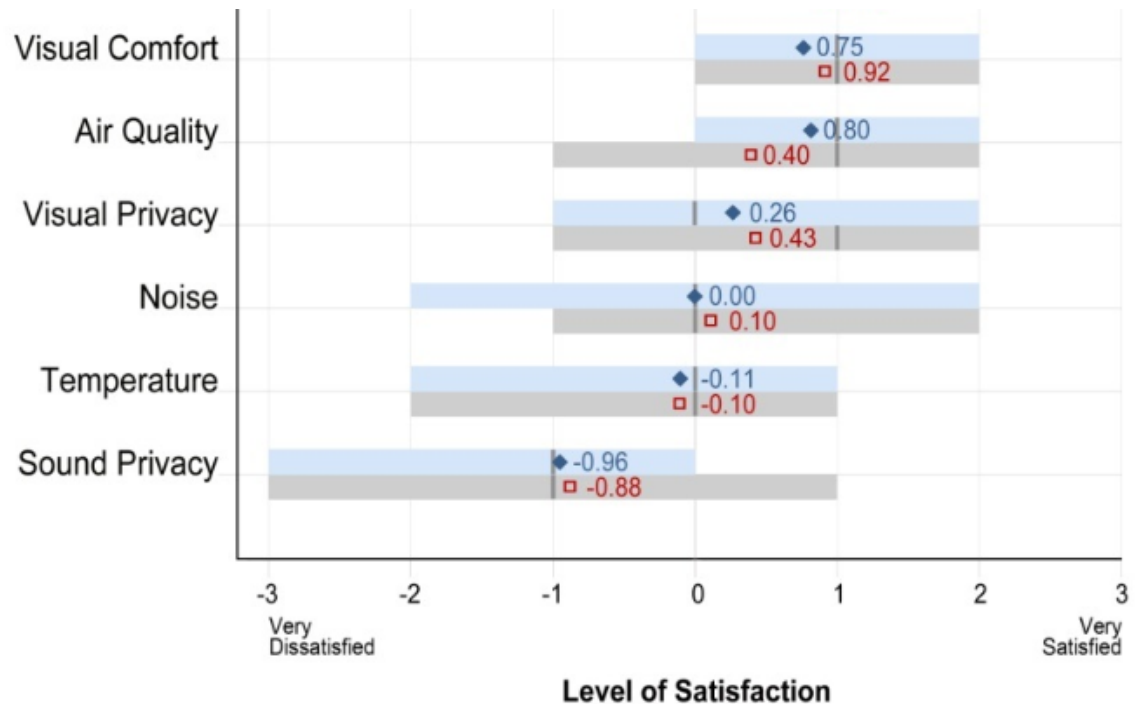
Dataset	LEED Buildings	Non-LEED Buildings	Total
Buildings	65	79	144
Occupant responses	10,129	11,348	21,477

Occupant satisfaction in LEED and non-LEED certified buildings – S. Schiavon, S. Altomonte

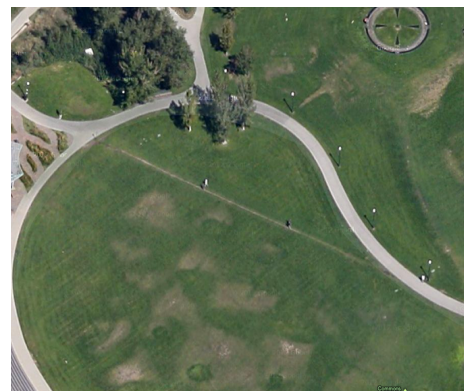


Contesto

S. Schiavon, S.
Altomonte, 2013,
*Occupant
satisfaction in
LEED and non-
LEED certified
buildings*



Contesto

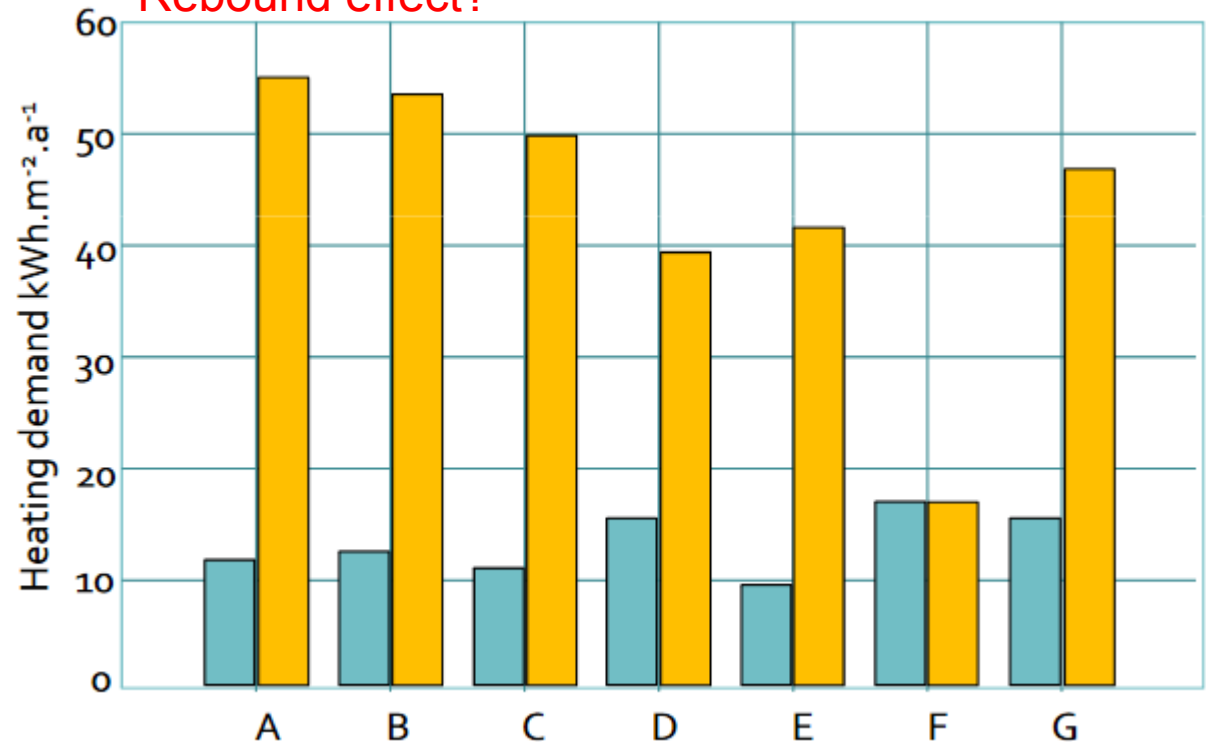


Contesto

P.P. Housez, U.
Pont, A.
Mahdavi, 2014,
*A comparison of
projected and
actual energy
performance of
buildings after
thermal retrofit
measures*

Fabbisogni termici per 7 edifici riqualificati - valori di progetto e prestazioni effettive:

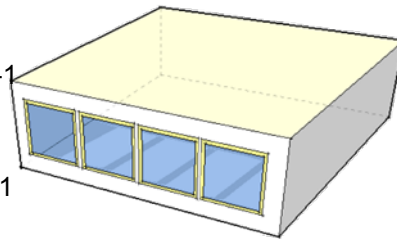
Rebound effect?



Edifici di Riferimento



Involucro:
Vetro singolo
 $U_{gl}=5.7 \text{ W m}^{-2} \text{ K}^{-1}$
Telaio in legno
 $U_{fr}=3.2 \text{ W m}^{-2} \text{ K}^{-1}$



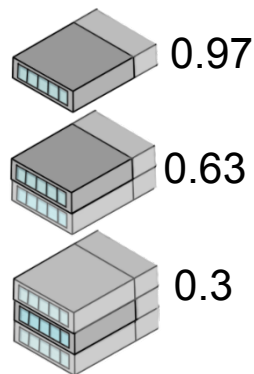
Generatore: Standard
Emissione: Radia
Controllo: On-O
Distribuzione: Isolamento moderato



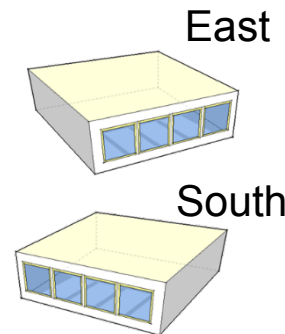
Involucro opaco

$R_1=0.97 \text{ m}^2\text{KW}^{-1}$
 $R_2=2.04 \text{ m}^2\text{KW}^{-1}$

Rapporto S/V



Orientazione



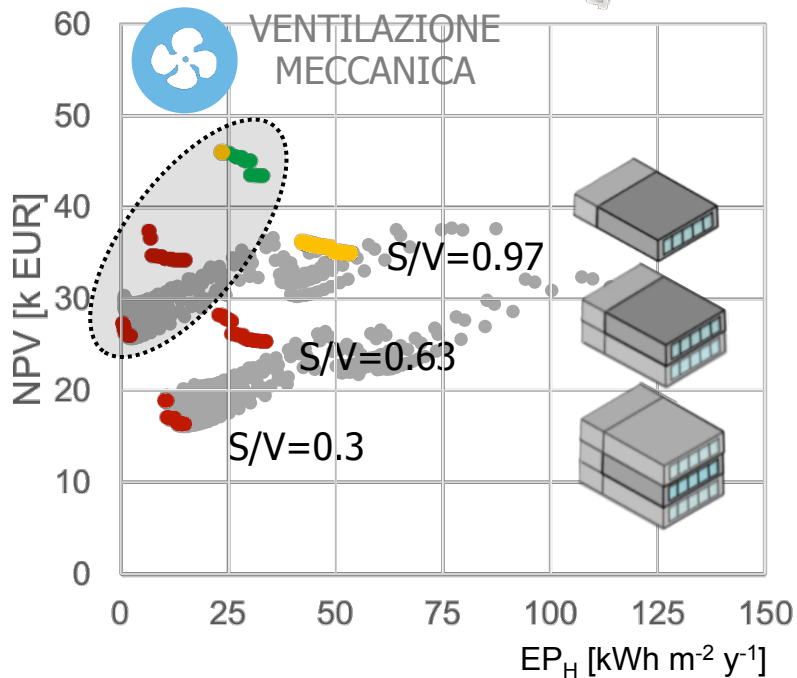
Clima



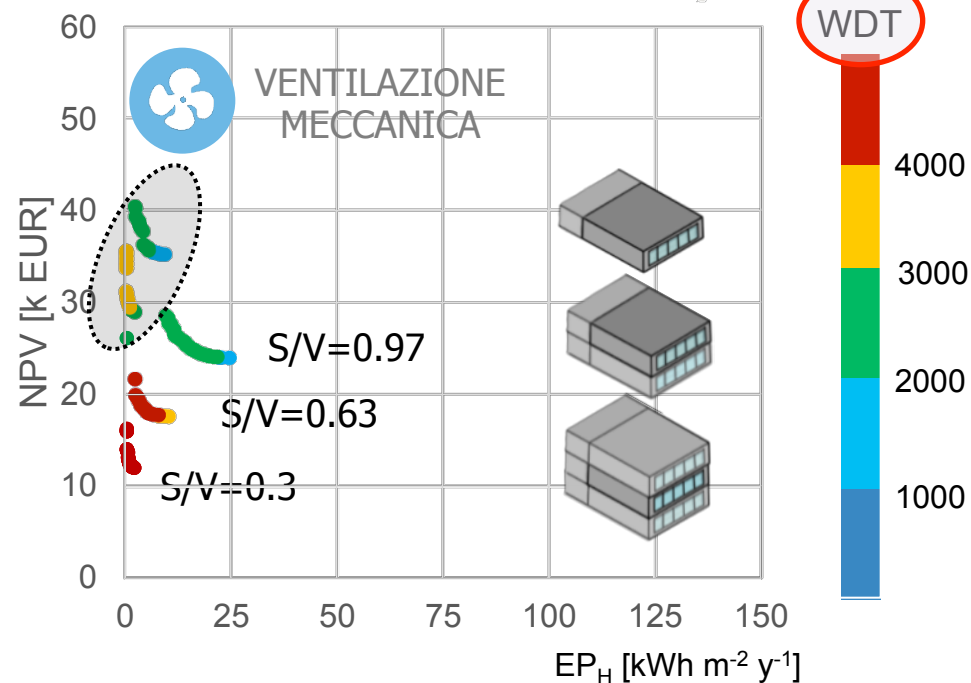
12 Edifici di riferimento in due località

Risultati per ottimizzazione EP_H e NPV

MILANO



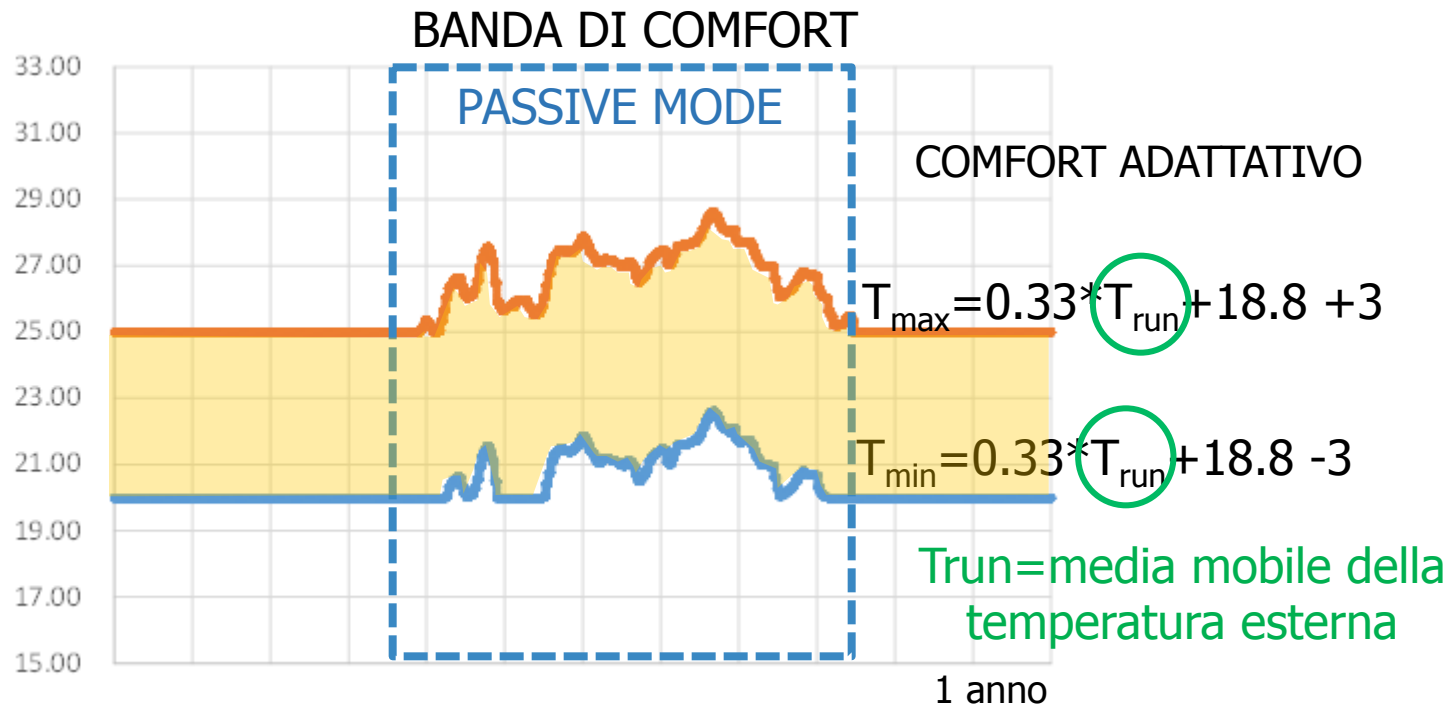
MESSINA



REF 1 - EST

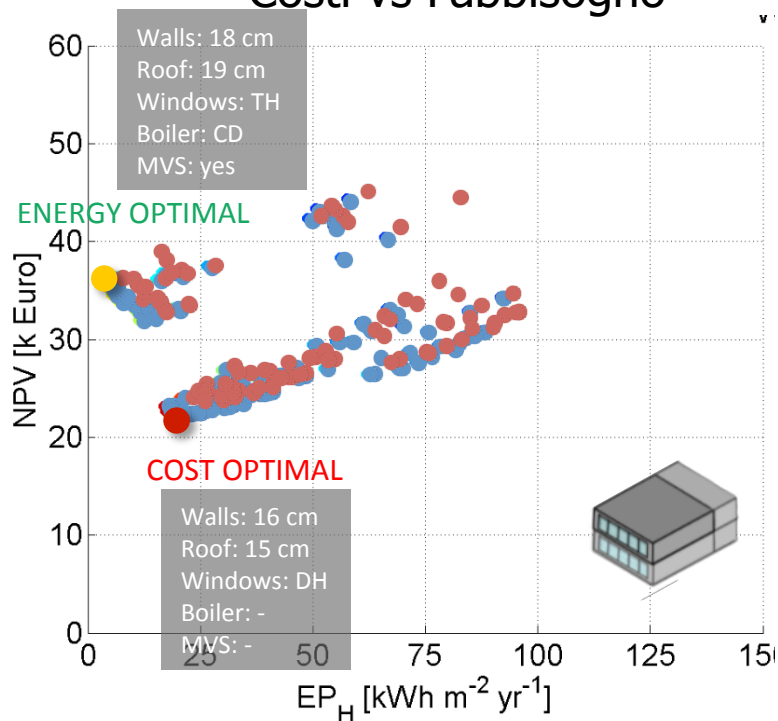
WDT (Weighted Discomfort Time) EN 15251:2007

Di quanto e per quanto tempo la Temperatura operativa é fuori dalla banda di comfort durante il periodo di occupazione



Risultati

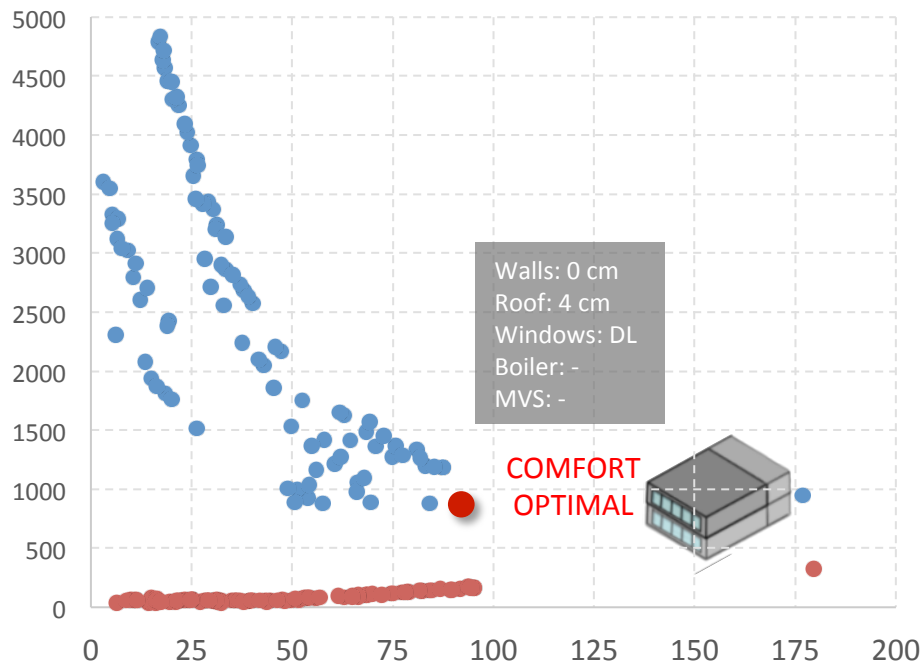
Costi vs Fabbisogno



MILANO



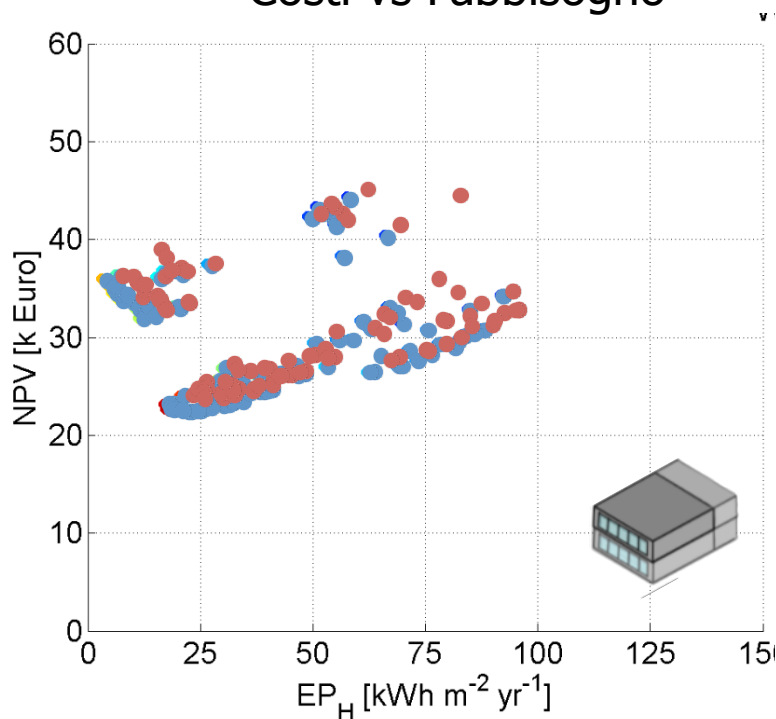
Comfort vs Fabbisogno



REF 1 – SUD – S/V = 0.63

Risultati

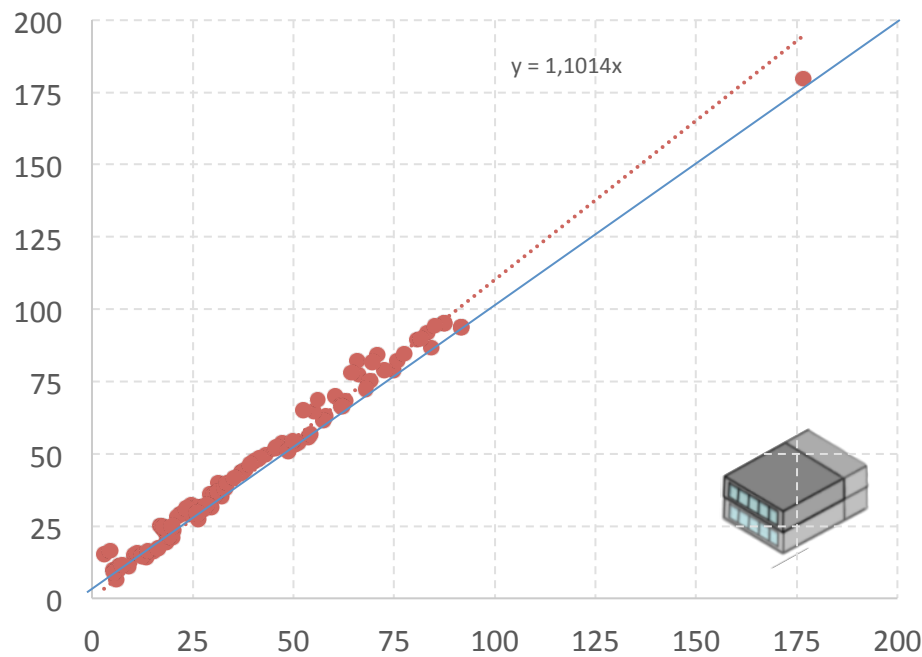
Costi vs Fabbisogno



MILANO



Fabbisogno vs Fabbisogno con gest.

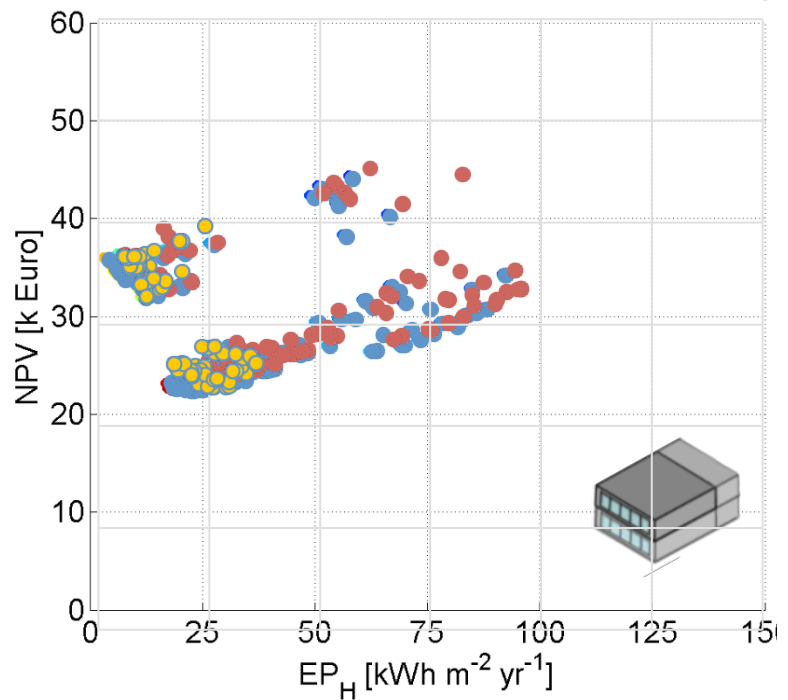


REF 1 – SUD – S/V = 0.63

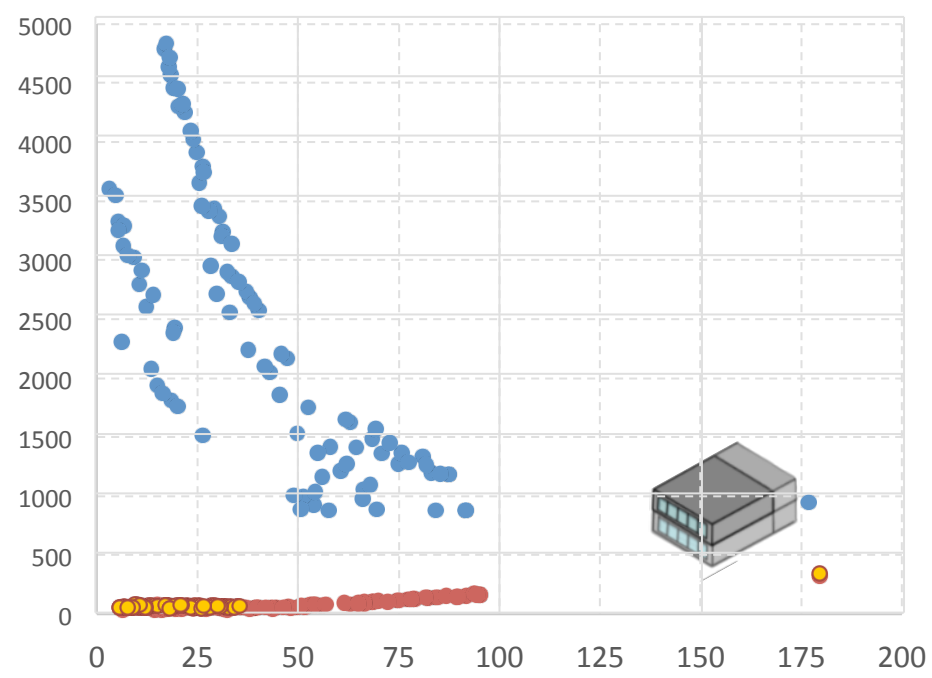
Risultati nuova ottimizzazione con gestione



Costi vs Fabbisogno



Comfort vs Fabbisogno



REF 1 – SUD – S/V = 0.63

„Smart“ design

Michigan
State
University

