

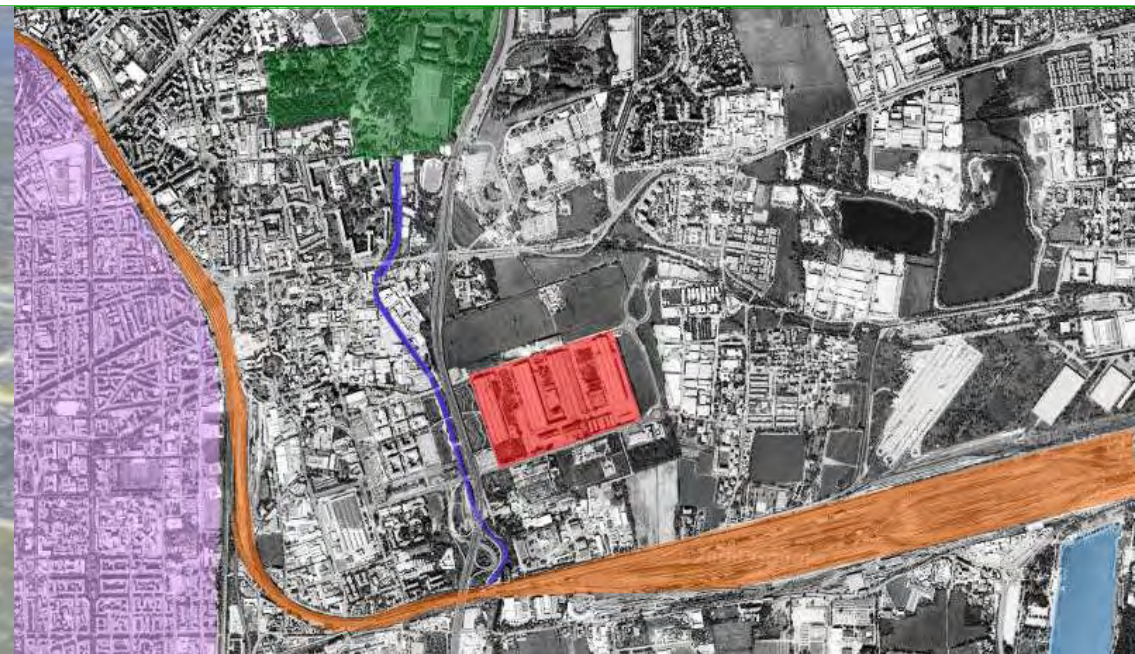
ECOWEEK
2011 ... habits change ... climate change



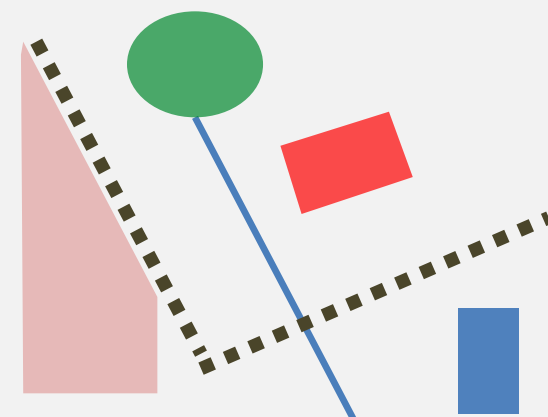
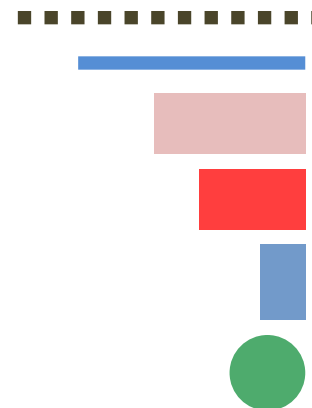
W18: WORKSHOP THEME: D

Ing. Alessandro Zichi & Arch. Amit Anafi | CIS-E | Scuola Master F.lli Pesenti | Politecnico di Milano

Evi Antoniou, Cristina Carrus, Francesco Cosentino, Fulya Ermis, Valia Foufa, Paola Secchi, Anastasia Theodorou, Veronica Vasilescu



- Linea Ferroviaria
- Linea Ferroviaria
- Città Costruita
- Area d'intervento
- Acqua
- Parco Urbano



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Ex factory Innocenti, 1950-60.



Interior view of the shed Innocenti, steel elements production, '50.

circostanti. La zona viene annessa al Comune di Milano nel 1923, e mantiene la sua vocazione ad area prevalentemente rurale fino agli anni '30.

Stabilimenti Innocenti: - Edificati nella zona di Milano Lambrate durante gli anni '30, come seconda sede della società di produzione di elementi in acciaio chiamata "Fratelli Innocenti".

- Dopo aver conosciuto un periodo di grande produzione sia durante la II Guerra Mondiale, che nel dopoguerra, negli anni 1971-72, il declino economico della società porta alla cessione a

Lambrate: originariamente costituiva il centro di comunicazione tra differenti borghi insediatisi intorno all'anno 1000 nella vicinanze del fiume Lambro, ed era caratterizzata da un crocevia di strade dirette da Milano ai centri minori e ai centri rurali

acquirenti degli stabilimenti, uno dei quali ospita il montaggio della Maserati.

- Dal 1998 hanno inizio opere per la riqualificazione della zona e degli stabilimenti, due dei quali nel 2008 vengono smantellati.

Resta tuttora attivo quello della INNSE.



Interior of the shed, Lambretta production, 1960.



Press for the production of metal plate, 1960.

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We want to **preserve**, and reuse the existing steel structure, a beautiful and rare example of this type of architecture.



3d model of the existing structure.



Roof structure.



Steel structure of the column.



Oxidation of a column - Foundations
Existing situation of the building.
Materials: **steel, glass, bricks, concrete.**

The steels are in good conditions in most of the elements, in rare cases it will be necessary the replacement of the elements, where the *oxidation* has reached higher levels.

The foundations are in good conditions.



After the world war II bombing



Bridge crane structure

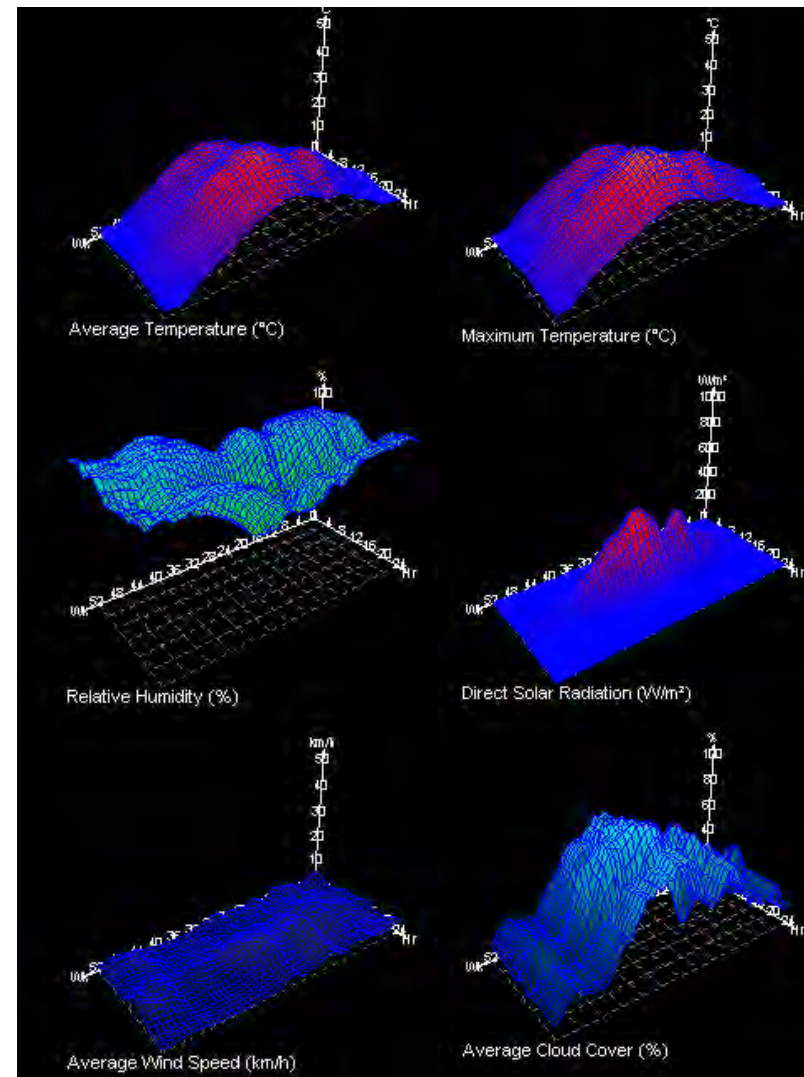
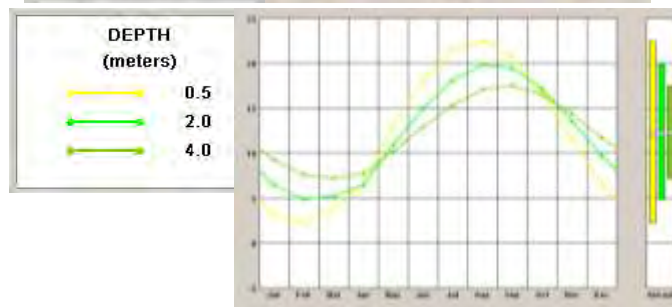
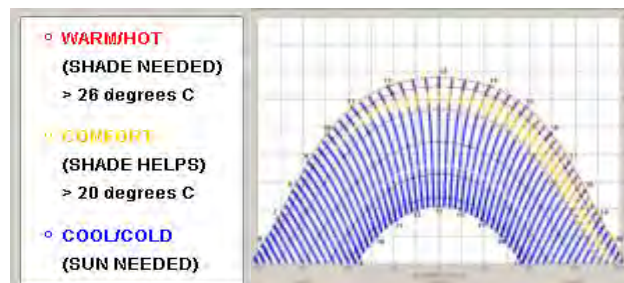
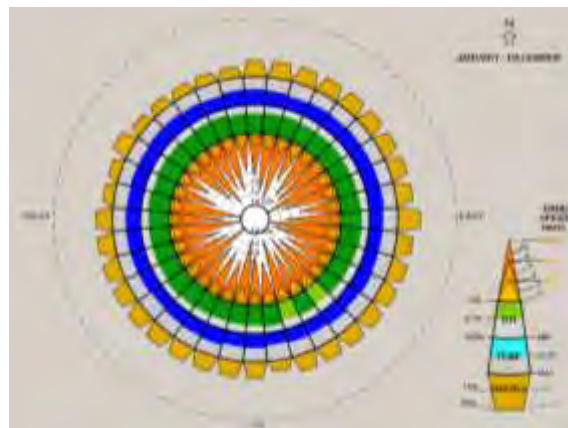
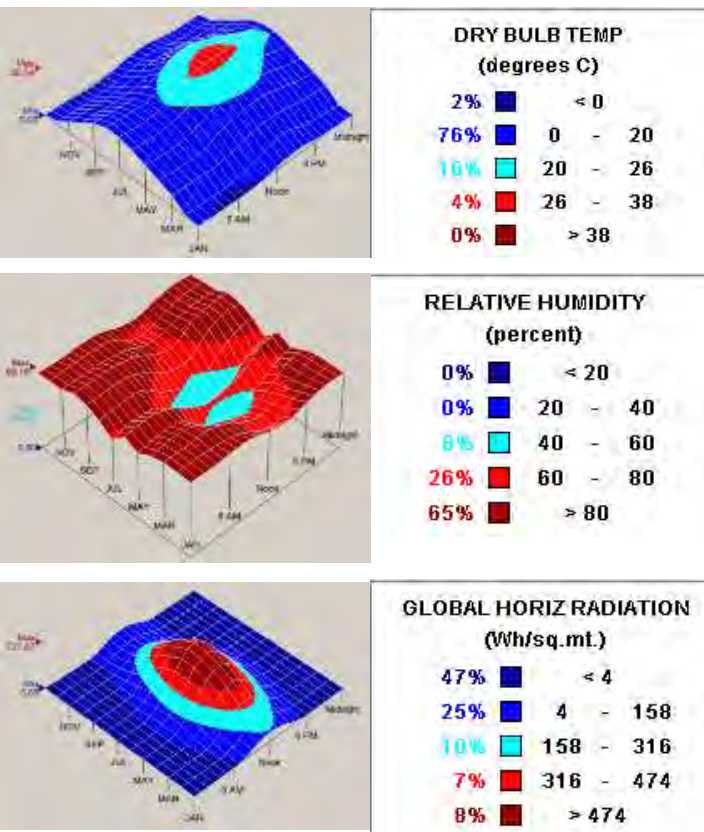
The CONTENXT



The BUILDING "Crystal Palace"

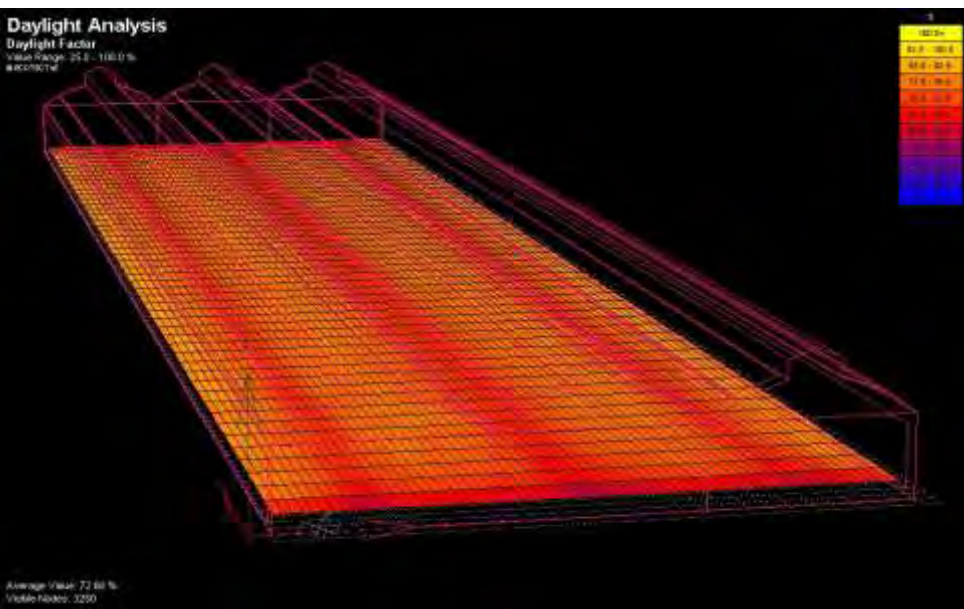
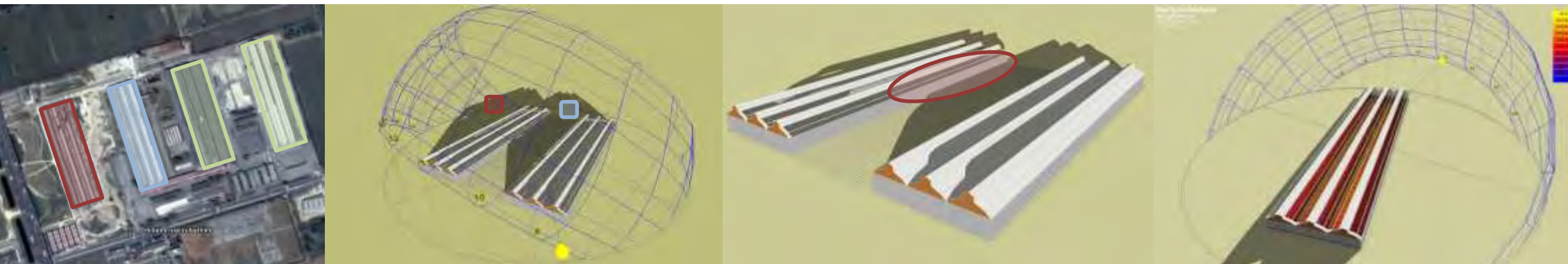


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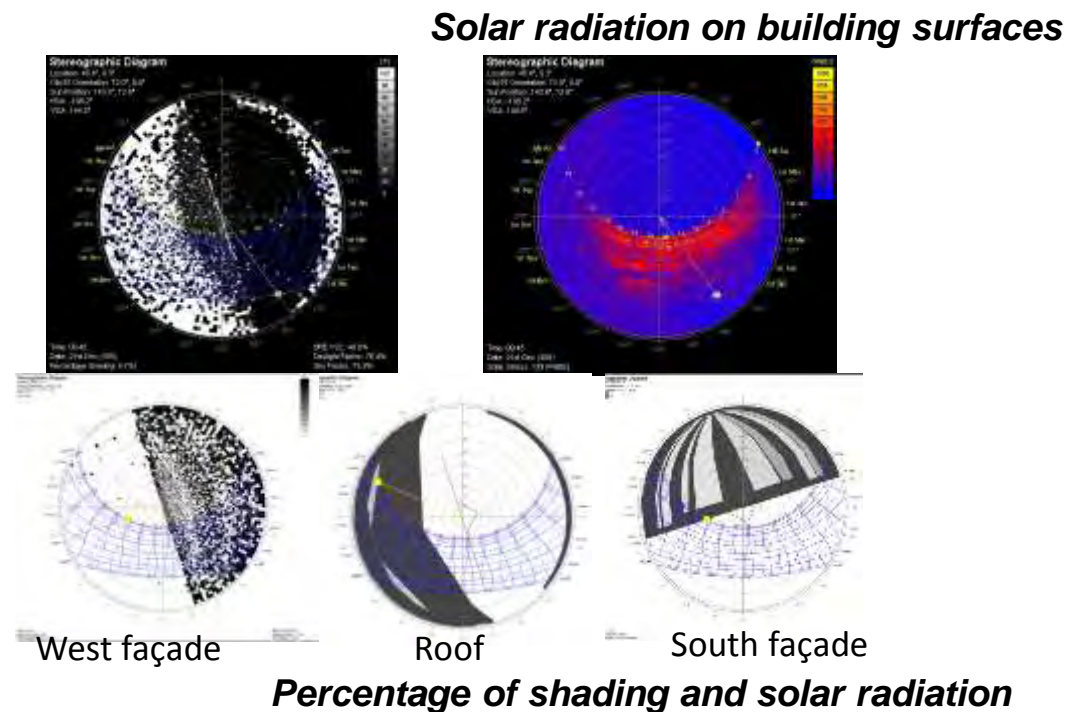


Critical points:

- high relative humidity for most days of the year (>80%)
- low average wind speed throughout the year



Glazing surfaces on the roof and E/W facades





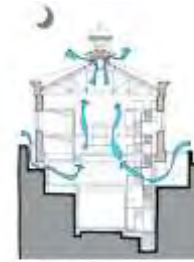
Productive part: PV roof



Use of vertical Green "wall up"

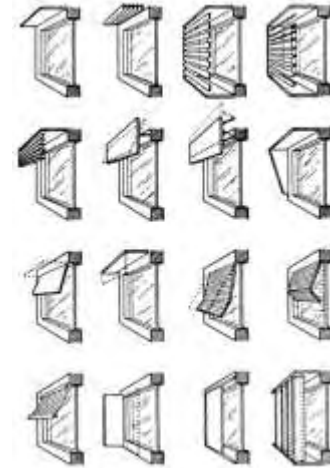


Transparent surfaces on the roof: solar gains

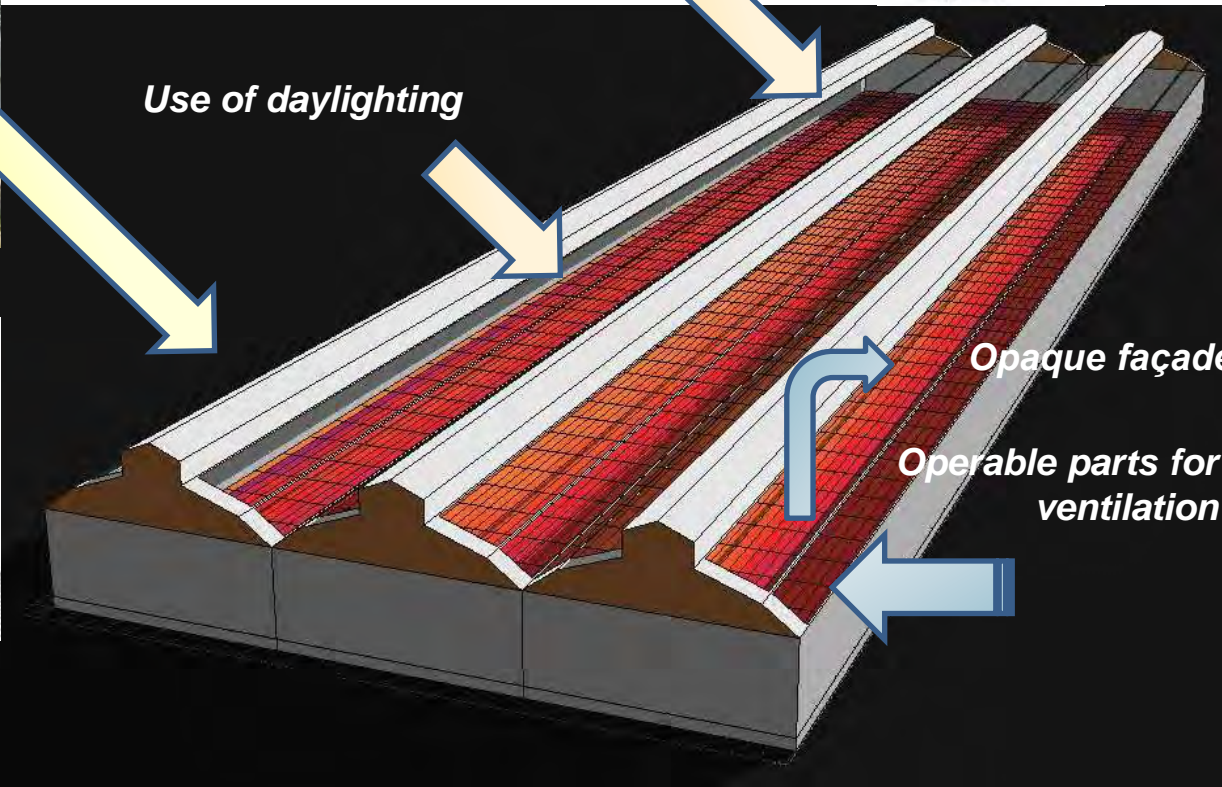


summer night cooling strategy using convective night ventilation

Passive cooling system



Assessment of sun protection system



Use of daylighting

Opaque façade

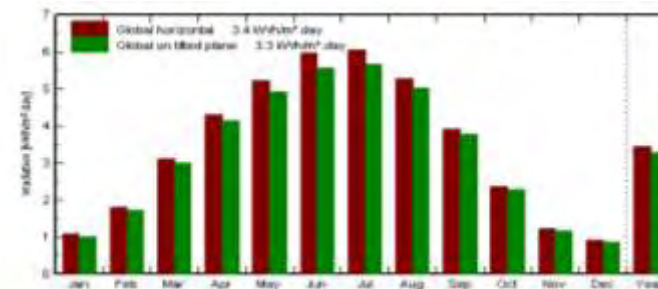
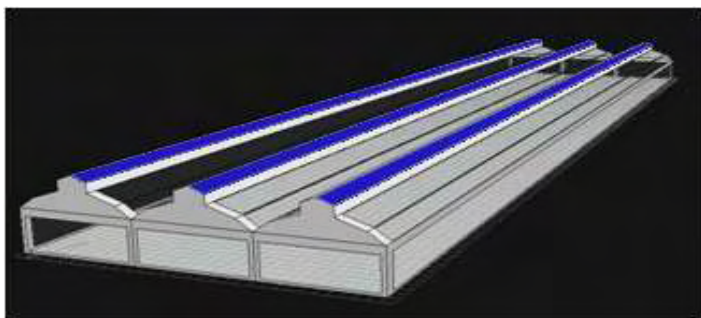
Operable parts for ventilation



Raico GROUP

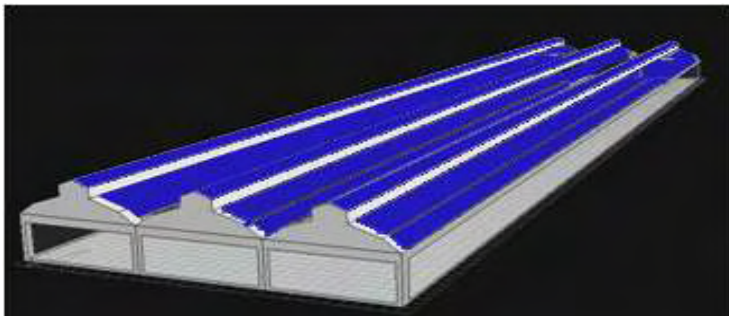


Lighting systems



Option 1
Energy production Photovoltaic System:

	Udm	Option A	Option B
Photovoltaic Technology:	-	Polycristalline	Thin film
Module Typology Semitransparent	%	50	50
Area	m ²	6120	6120
Nominal Power	kWp	518	329
Annual Yield	MWh/yr	490	318
Specific production	kWh/kWp/yr	946	965
Preformance ratio PR	%	79.1	80.7
Normalized production	kWh/kWp/day	2.59	2.64
Array losses	kWh/kWp/day	0.64	0.53
System Losses	kWh/kWp/day	0.05	0.10



	Udm	Option A	Option B
Photovoltaic Technology:	-	Polycrystalline	Thin film
Module Typology Semitransparent	%	50	50
Area	m ²	22320	22320
Nominal Power	kWp	1890	1201
Annual Yield	MWh/yr	1774	1157
Specific production	kWh/kWp/yr	939	963
Performance ratio PR	%	78.5	80.6
Normalized production	kWh/kWp/day	2.57	2.64
Array losses	kWh/kWp/day	0.64	0.53
System Losses	kWh/kWp/day	0.07	0.11

Option 2
Energy production Photovoltaic System:

1. Sustainability
2. Building inside a building
3. Urban scene
4. Cardo-decumano
5. Pedagogic park (agriculture/ farming....)

6. Market – biological/ ecological/ sustainable – \emptyset km
7. Micro climate / micro cosmos
8. Flexibility
9. Crystal palace



1. Diagram of sustainability



2. The Allan Lambert Galleria, Toronto



3. Copenhagen Naerum allotments Compose a public park C.Th.Sorenson, 1950s



4. Cardo and decumano in Torino



5. Pedagogic park



6. Market \emptyset Km



6. Market of Santa Caterina (Barcellona)



7. Atocha Station (Salta)



8. Inside modul

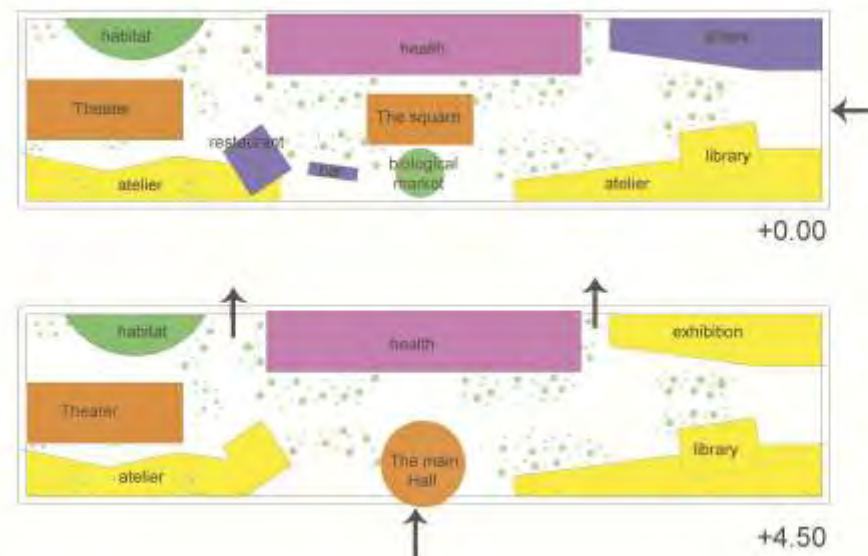


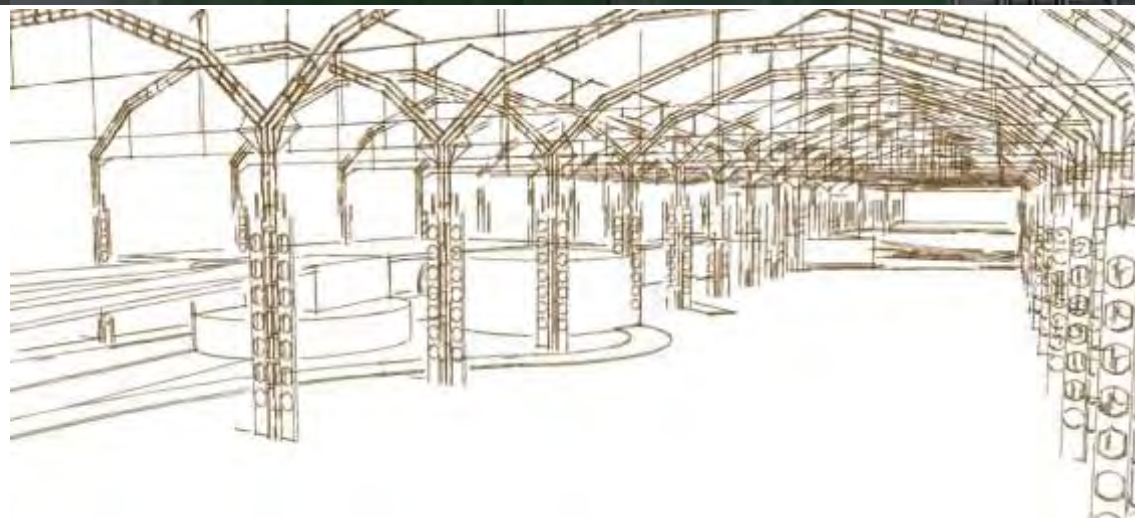
9. Crystal palace



Architectural concept

- _ we respect the existing structure of the building without touching it with new functions
- _ we let the nature enter the building
- _ we create a fluid 'green' path through functions





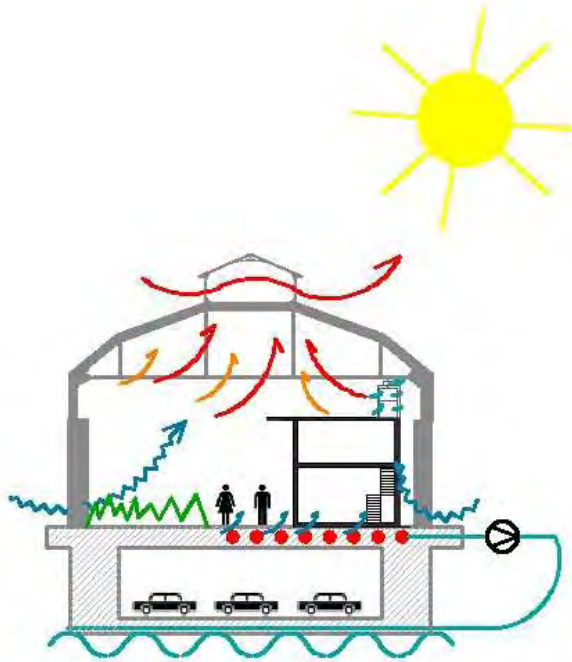
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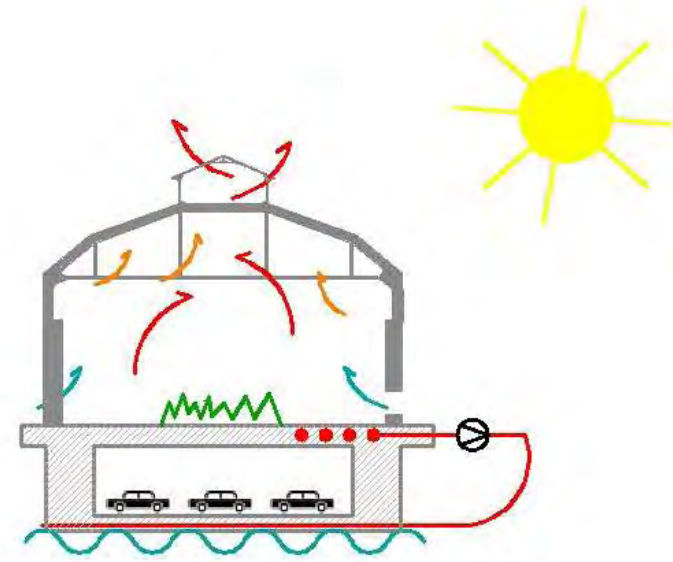
10_ 3D Model



Summer

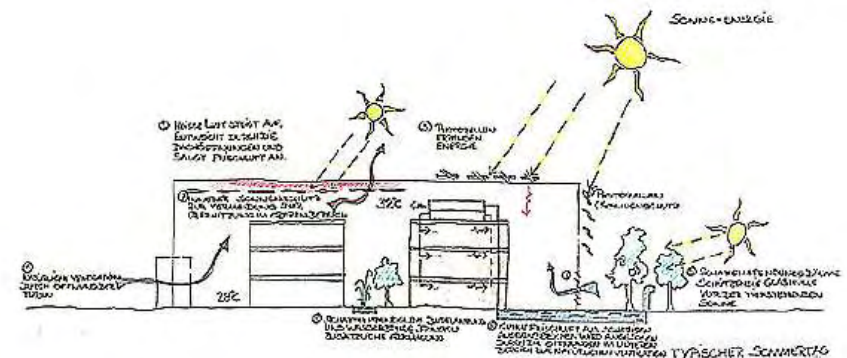
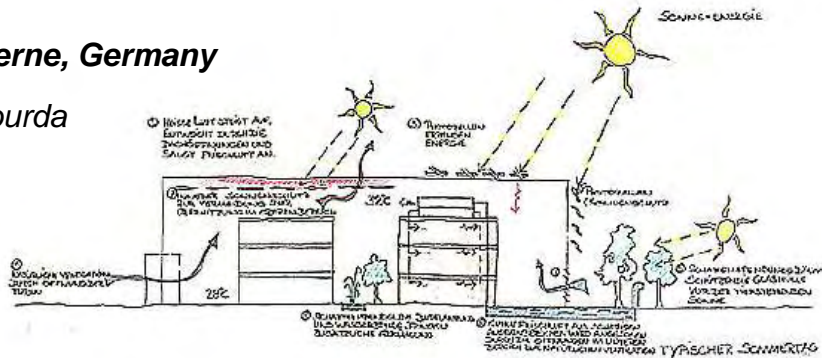


Winter



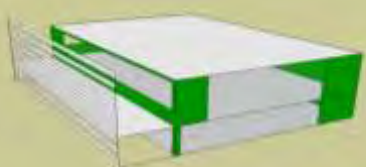
Mont-cenis Akademie, Herne, Germany

Arch. Françoise-Helene Jourda

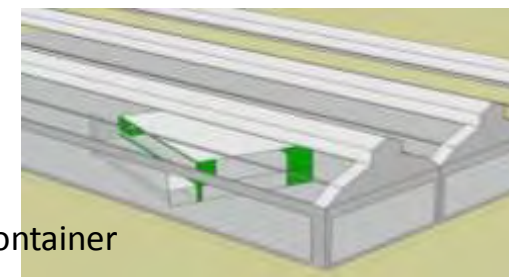


Heating energy demand Contents _ Library

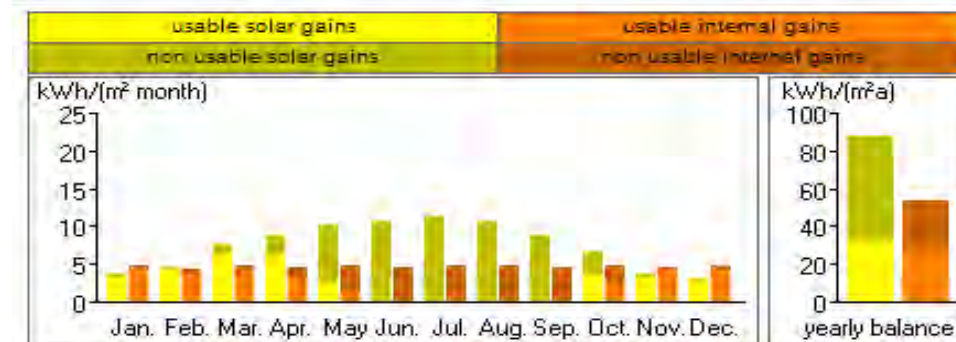
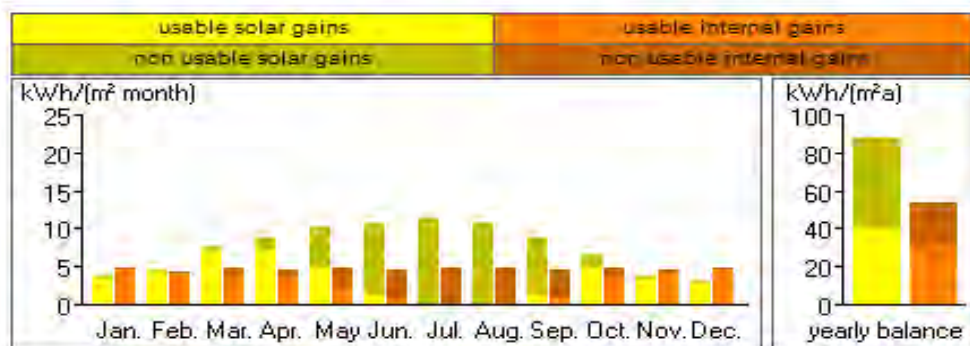
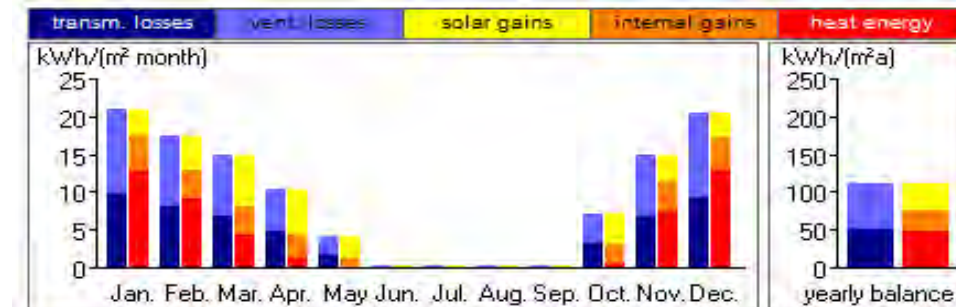
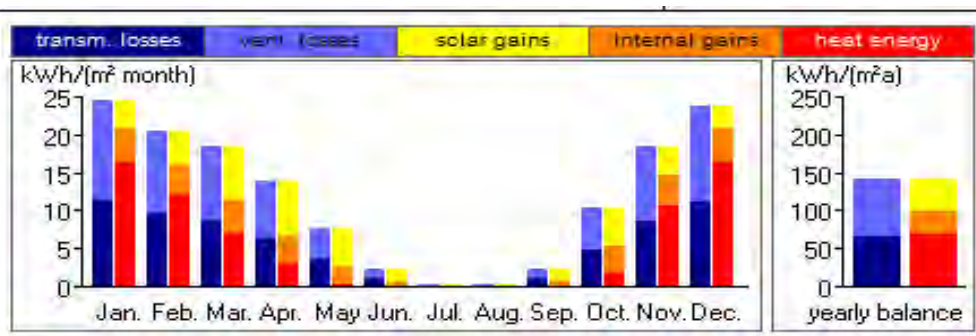
Losses with Container are 20% lower



Heating without Container



Heating with Container



Componibilità _ Flessibilità



Leggerezza (Prefabbricazione) _ Facilità di montaggio



- Profili di chiusura dei pannelli di tamponamento
- Chiusura di tamponamento orizzontale
- Struttura Portante
- Serramento in alluminio a taglio termico
- Chiusura di tamponamento verticale
- Sistema di oscuramento in legno
- Profili di chiusura dei serramenti

Flessibilità _ Versatilità





LEED 2009 Italia Nuove Costruzioni e Ristrutturazioni

Preliminary analysis			
Analized	Possible not analyzed		
25	0	Sostenibilità del Sito	Punteggio massimo: 26
8	0	Gestione delle Acque	Punteggio massimo: 10
16	4	Energia e Atmosfera	Punteggio massimo: 35
0	6	Materiali e Risorse	Punteggio massimo: 14
0	11	Qualità ambientale Interna	Punteggio massimo: 15
0	0	Innovazione nella Progettazione	Punteggio massimo: 6
0	0	Priorità Regionale	Punteggio massimo: 4
49	22	Totale	Punteggio massimo: 110

LEVEL OF CERTIFICATION OF THE PROJECT (ONLY FOR ASPECT ANALIZED):

BASE (49)

LEVEL OF CERTIFICATION OF THE PROJECT TO BE OBTAINED

GOLD (71)