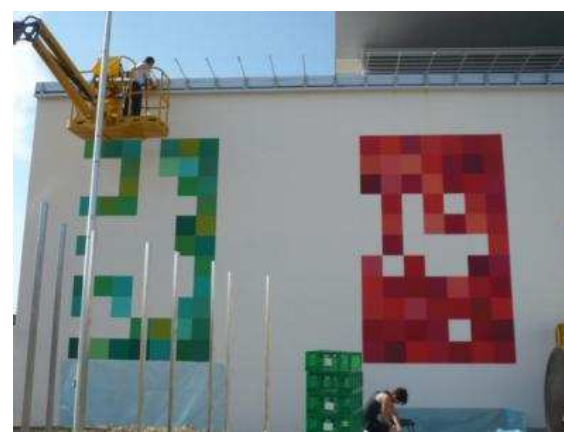
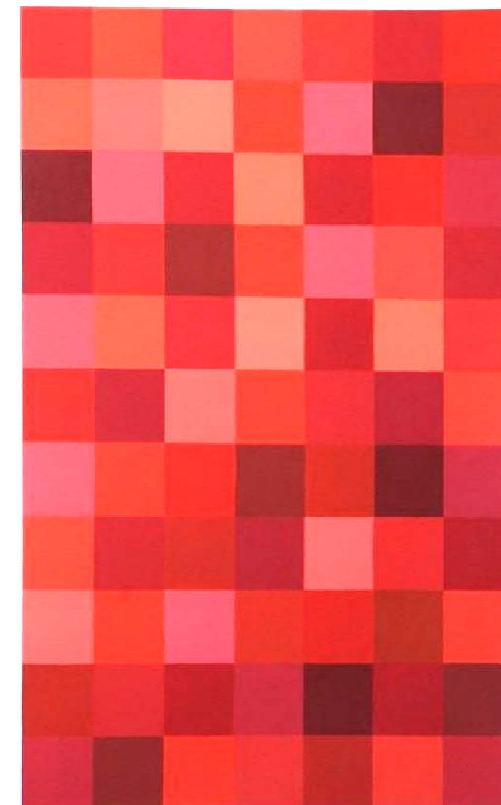
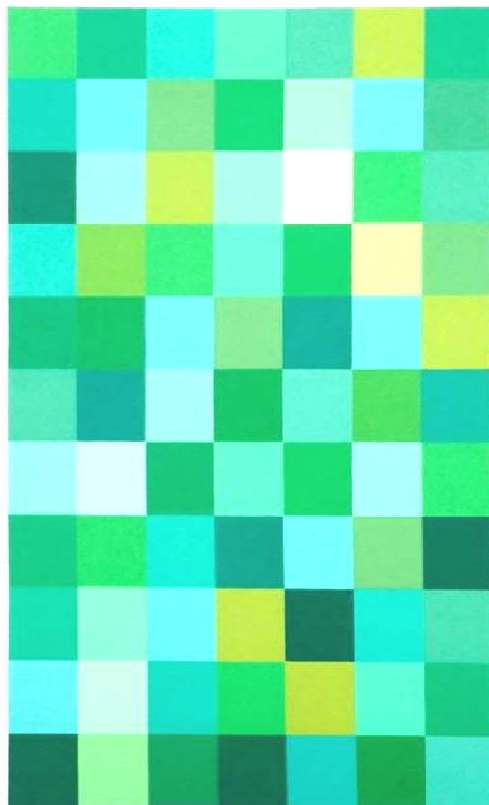


“ECO-COOP” CONSELICE



Coop Adriatica, as part of its commitment toward sustainability, developed the project of a eco-sustainable supermarket, synthesizing various environmental friendly policies and actions which it had already adopted in recent years, and introducing many elements of **innovation** and experimentation: **a prototype for sales facilities to be built.** The objective is to **provide jointly: energy and water saving, optimizing the life cycle of materials as well as the reduction of waste and environmental burdens**, encouraging nevertheless the best **well-being conditions for customers and workers.**

Anno: 2008-2011

Localizzazione: Comune di Conselice (RA)

Tipologia: edificio commerciale – medio/piccola struttura di vendita alimentare

Piano Particolareggiato – variante:

Ricerca e Progetto -Galassi, Mingozzi e Associati

Progetto:

ing. Angelo Mingozzi

Progettazione e direzione lavori:

Ricerca e Progetto -Galassi, Mingozzi e Associati

Progetto integrale e coordinamento:

ing. Angelo Mingozzi

Architettura e sistemazioni esterne:

ing. Angelo Mingozzi, Arch. Marco Bughi

Strutture in opera:

ing. Raffaele Galassi

Reti, impianti, controllo ambientale:

ing. Angelo Mingozzi, ing. Sergio Bottiglioni

Prevenzione incendi:

ing. Angelo Mingozzi

Coord. sicurezza prog. ed esecuzione:

ing. Giorgio Fiocchi

Direzione Lavori:

ing. Angelo Mingozzi (D.L. generale); ing. Raffaele Galassi (D.L. strutture) ing. Sergio Bottiglioni (D.L. impianti)

Collaboratori e Consulenti:

ing. Graziano Carta (reti tecnologiche, illuminotecnica), ing. Matteo Proni (gara appalto, D.L., contabilità), i

ng. Francesca Majonchi, ing. Matteo Medola (impianti, controllo ambientale),

ing. Antonino Guarnaccia (co-progettazione e D.L. impianti elettrici);

dott. Agr. Marcella Minelli (aspetti botanico-vegetazionali), arch. Paola Galletti (ricerca storica)

Progettazione e direzione lavori verde pubblico:

dott. Agr. Marcella Minelli

Committente:

Coop Adriatica s.c.a r.l.

Imprese:

Impresa generale: ITER s.c.a.r.l., Lugo (Ra)

Impianti: Frigomeccanica Group, Ravenna

impianto fotovoltaico: BUSI Impianti S.p.a., Bologna

Work programme

June 2008

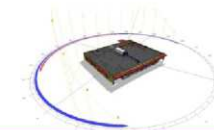
1. KNOWLEDGE SHARING AND STATE OF THE ART



2. DEFINITION OF "QUALITY INDICATORS" AND OF EVALUATION METHODS



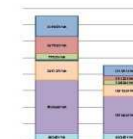
3. "REFERENCE AVERAGE SUPERMARKET": the existing store in Calderara



4. DEFINITION OF THE "FIRST REFERENCE SUSTAINABLE STORE"



5. COMPARISON BETWEEN THE "FIRST REFERENCE SUSTAINABLE STORE" AND THE "REFERENCE AVERAGE SUPERMARKET"



6. "ECO-COOP SUPERMARKET": the new store in Conselice



March 2012

7. GUIDELINES (TECHNICAL AND PERFORMANCE SPECIFICATIONS)





via Guglielma – ciclabile esistente

via Nuova Selice – SS 610

via Selice – via Puntiroli

P.V. Coop esistente

piazza Eleuterio Felice Foresti

via Buscaroli - tratto pedonale

piazzale pubblico polifunzionale

teatro

localizzazione nuovo P.V. Eco-Coop

via Battisti

viale Roma

Via Paolo Fabbri

stazione ferroviaria

via Galileo Galilei

via Selice - ciclabile prevista dal PSC

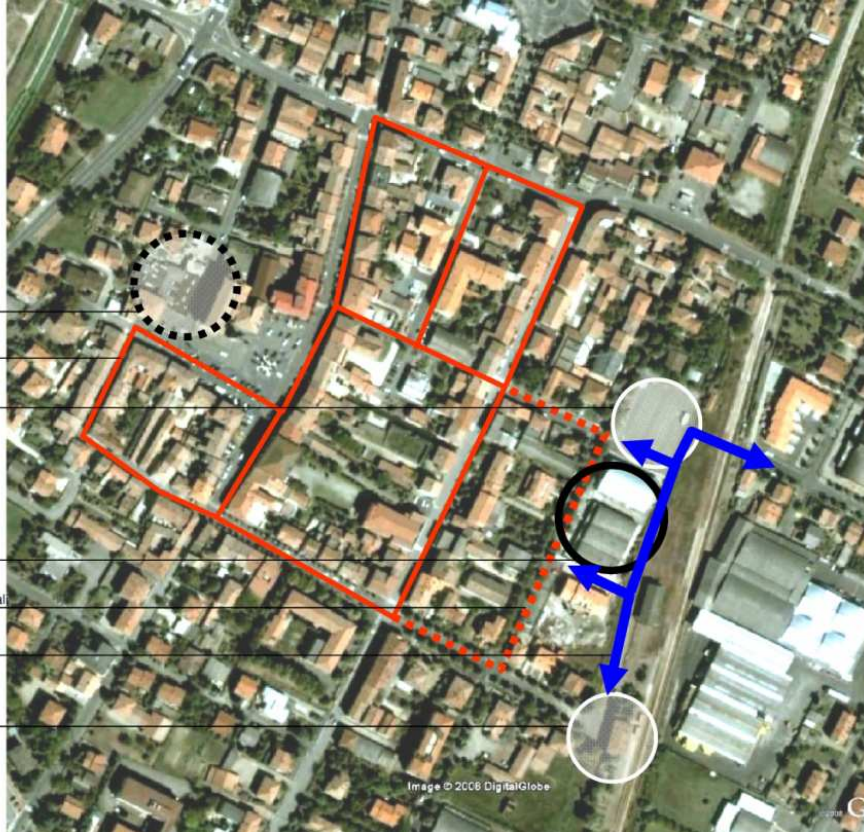
linea ferroviaria

dotazione ecologica territoriale





- _____ P.V. Coop esistente
- _____ principali assi commerciali (PSC)
- _____ piazzale pubblico polifunzionale
- _____ localizzazione nuovo P.V. Eco-Coop
- _____ collegamento principali assi commerciali
- _____ ipotesi sviluppo percorsi collegamento
- _____ stazione ferroviaria



- _____ via Cesare Battisti, con sede stradale variata
- _____ marciapiede
- _____ aiuola alberata
- _____ marciapiede
- _____ pista ciclabile esistente
- _____ sede stradale rialzata
- _____ parcheggio pubblico
- _____ isola ecologica
- _____ piazzetta
- _____ parcheggio biciclette
- _____ aiuola alberata
- _____ area pedonale coperta a uso pubblico
- _____ parcheggio biciclette
- _____ area carico/scarico merci
- _____ sbarra di chiusura parcheggi pertinenziali ad uso privato
- _____ parcheggi pertinenziali ad uso privato
- _____ "manufatto pertinenziale" per pergolato/colonnato
- _____ verde privato ad uso pubblico
- _____ parcheggi pubblici
- _____ parcheggi pertinenziali ad uso pubblico
- _____ marciapiede
- _____ parcheggi pubblici esistenti riposizionati

In September 2011, Coop Adriatica opened the environmentally friendly supermarket in Conselice, which is an actual example of integrated design practices, applied to sustainability and energy efficiency issues: starting from settlement scale, to technological and operational choices. The project, developed by "Ricerca e Progetto – Galassi, Mingozzi e Associati" in Bologna, started from an innovative approach to define targets for thermal comfort in different zones with different use patterns, according to adaptive model principles.

The building-plant system provides well-being conditions to customers and workers, through integrated solutions based on active, hybrid and passive controls, depending on varying climate conditions.

The base level of thermal comfort, as well as air changes, are supplied by a rooftop and forced-air system; that plant is locally integrated by a hydronic system, whose water is heated or cooled by a geothermal heat pump with vertical closed loop heat exchangers, in order to control climate of workspaces in sales area, food-processing areas, stock room and changing rooms. Furthermore, ventilation can be supplied by a natural and hybrid system including a chimney for stack ventilation and a geothermal air cooling loop. Artificial lighting is fully balanced with natural light.

An advanced Building Automation and Control System (BACS) is deeply integrated with the building-plant system.

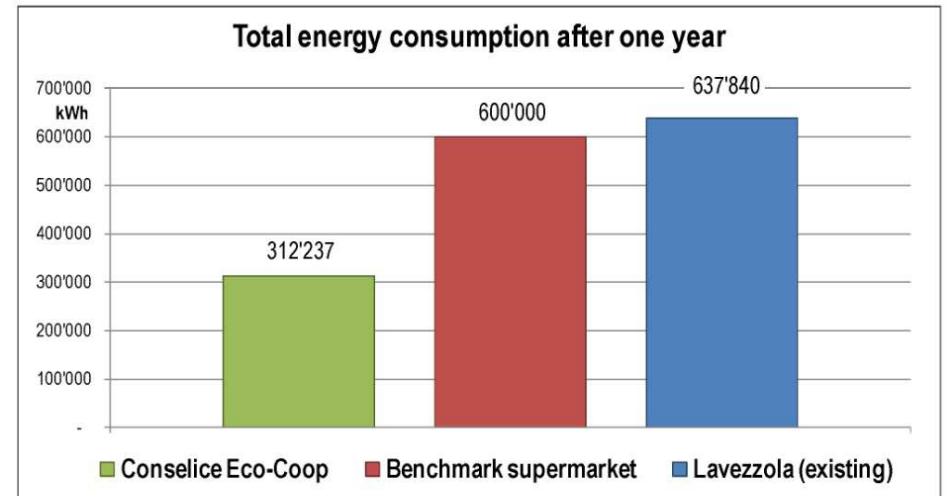
Since the day of opening, a specific set up activity is under execution to control energy consumptions, and check whether performances match expectations.



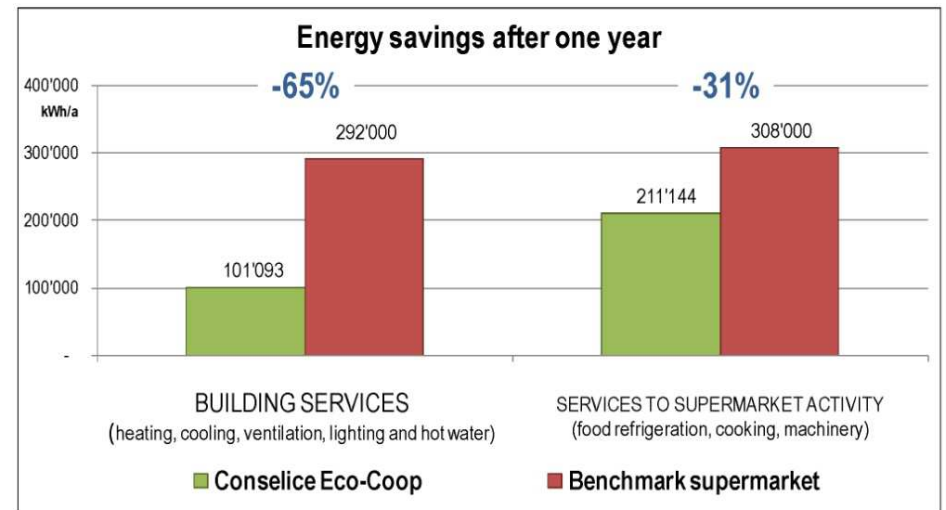
To evaluate the energy performances of the supermarket in Conselice, a *Benchmark supermarket* was defined before the construction.

The following graph compares effective energy consumption of three small format supermarkets, after one year of monitoring: Conselice, the Benchmark, and the real supermarket in Lavezzola (whose performance is quite similar to the benchmark).

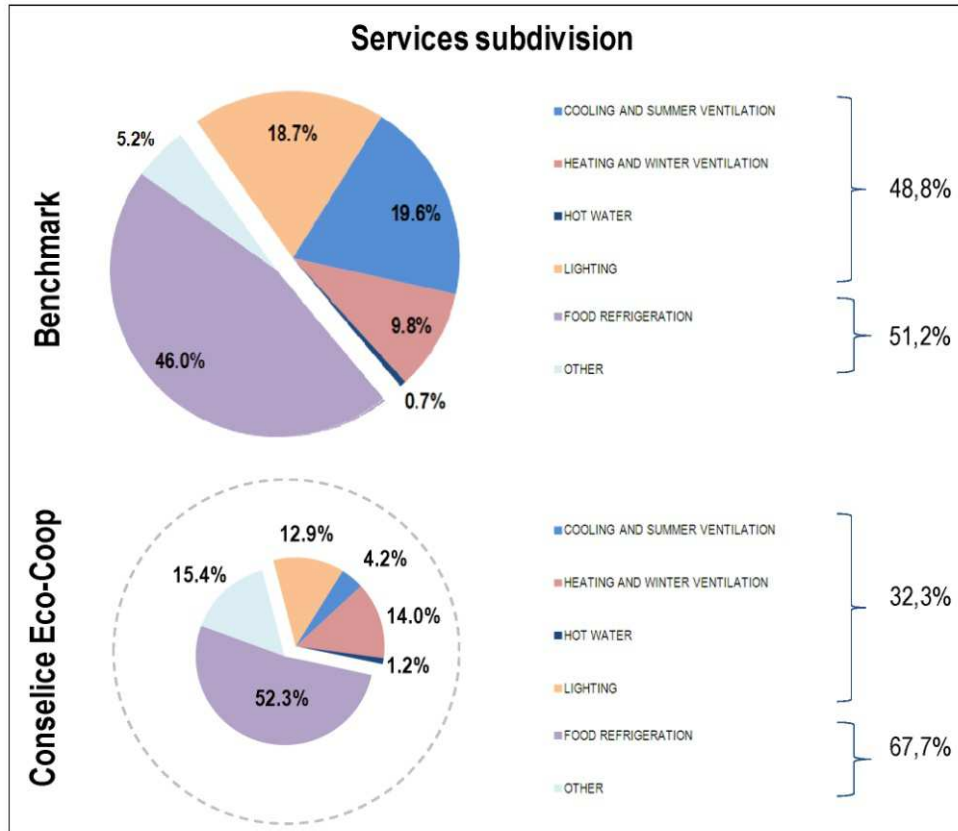
These figures do not include photovoltaic production.



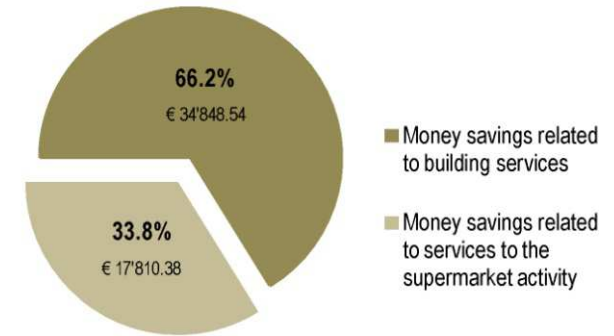
More specifically, it can be pointed out that the two-thirds of the energy savings are related to the *Building services* (air-conditioning, ventilation, internal and external lighting, hot water supply), whose consumptions have been reduced by 65%.



The following figures represent the of the different services for benchmark supermarket and for the supermarket in Conselice.



Economic savings attained by Conselice Eco-Coop, compared with Benchmark supermarket



"Favorable externalities": indirect advantages to community, thanks to less pollution

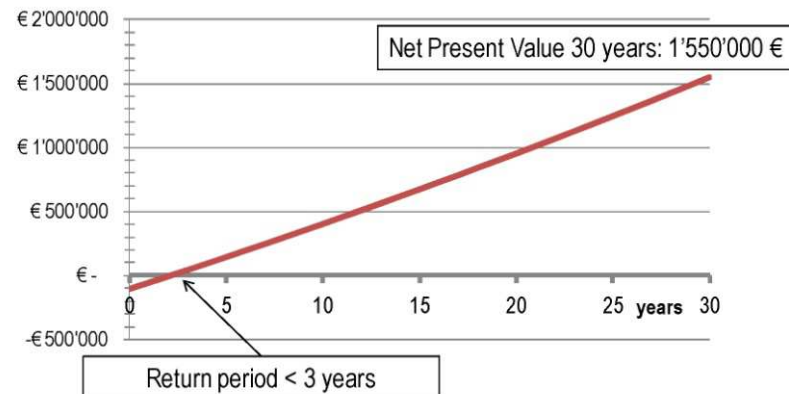
Annual costs saved to community	Total saved costs to community in 30 years
4'126 €	123'780 €

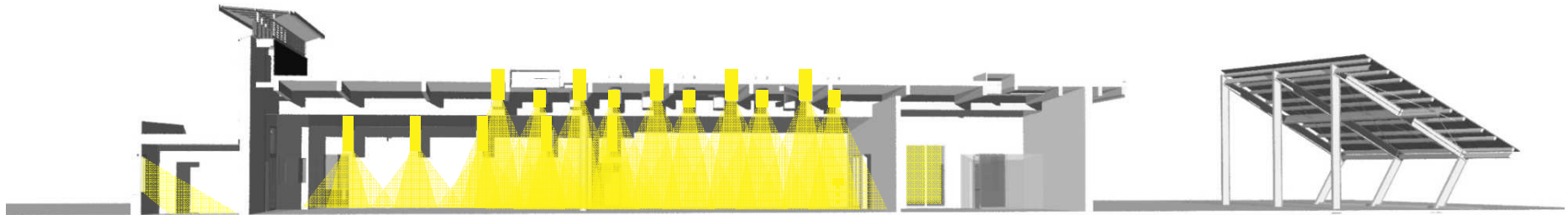


ExternE

Return period of extra-investment

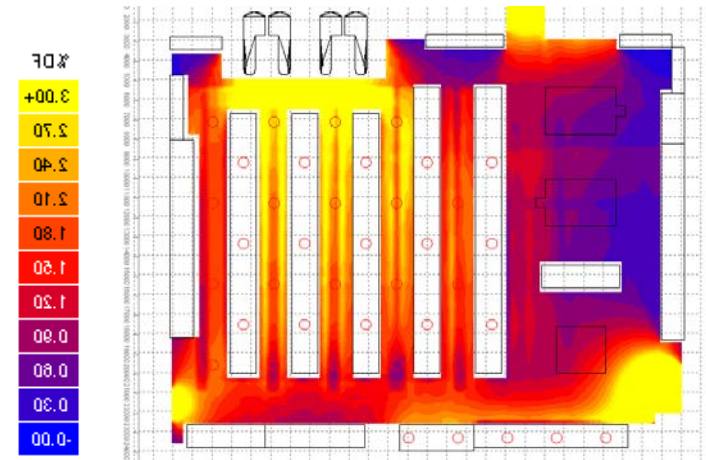
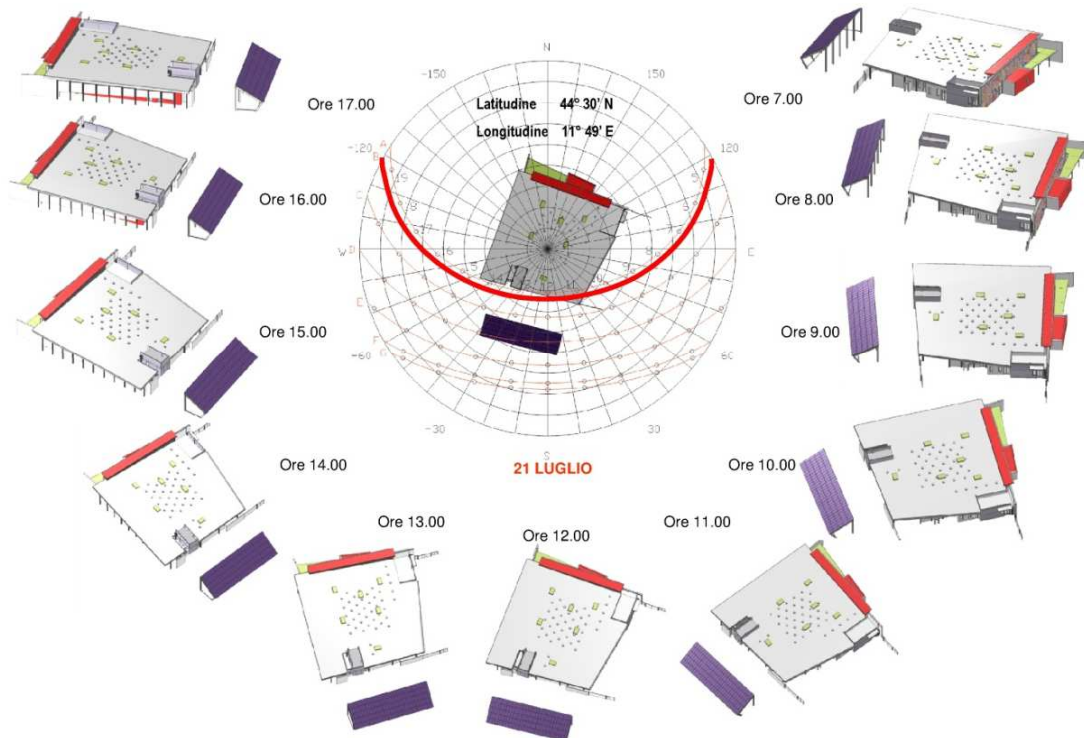
- extra-investment compared to "law-compliant supermarket": 110'000 €
- yearly money savings due to energy efficiency: 50'000 €
- energy cost inflation: 3,0%
- money discount rate: 2,2%



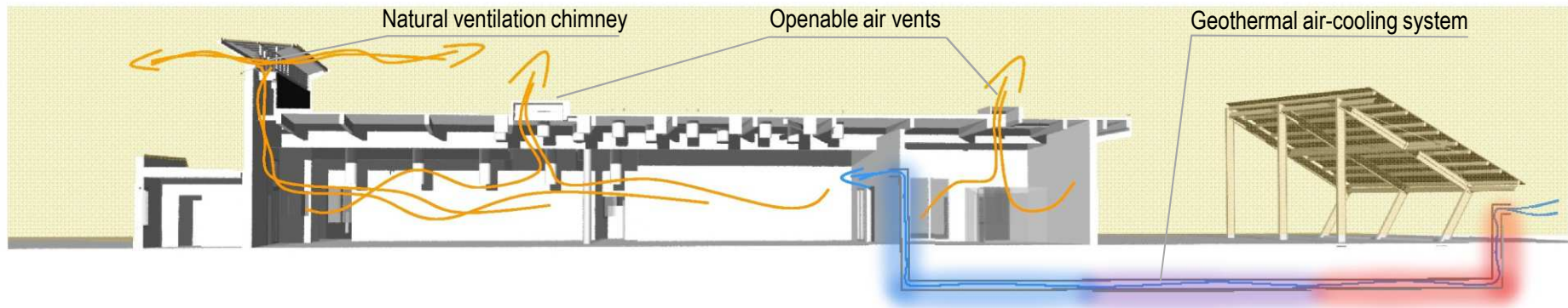


DAYLIGHTING CONTROL

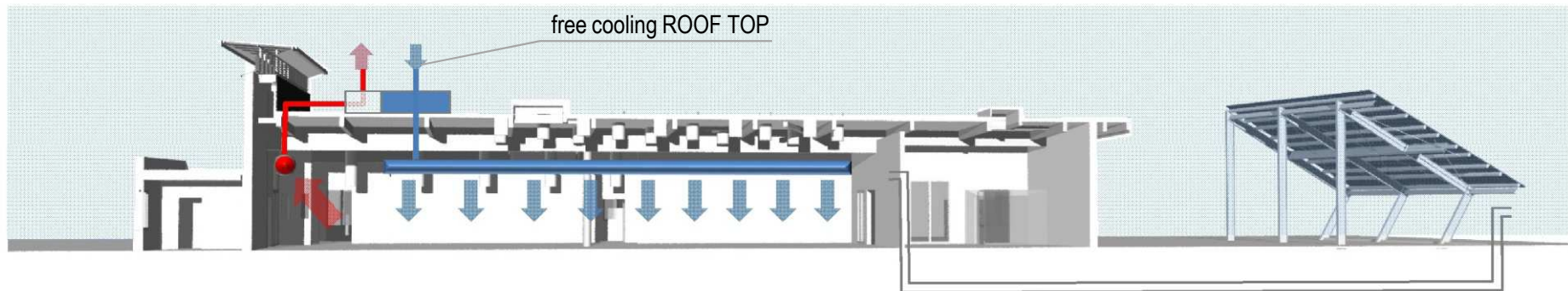
SUMMER SUN SHADING CONTROL (JULY 21st)



NATURAL VENTILATION SYSTEM

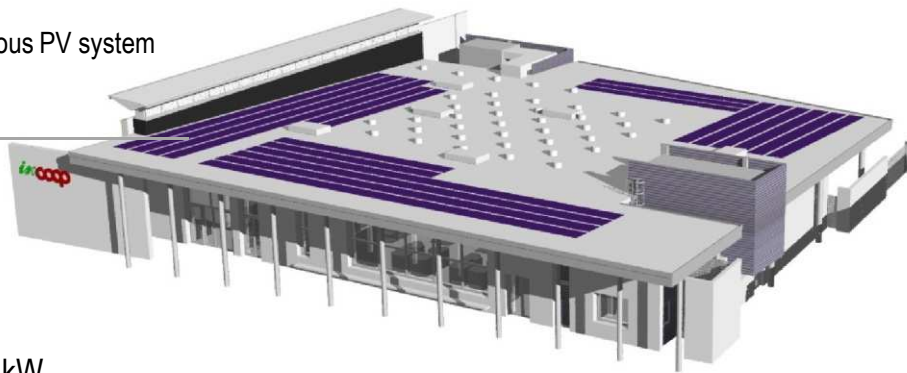


TOTAL FREE COOLING



PHOTOVOLTAIC PLANT

Provision for amorphous PV system
on the the cool roof
(Pmax) = 17 kW



polycrystalline PV system
(Pmax) = 29,6 kW



- total installed power: 29,6 kW
- provision for amorphous PV system : around 17 kW
- annual electricity production: around 35.000 kWh/a
(up to 50.000 kWh/a with amorphous PV)





