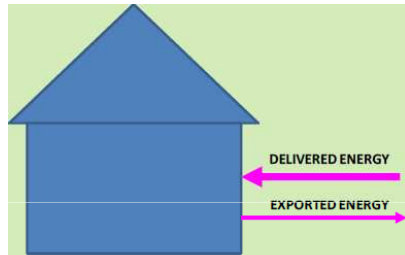


Sergio Diaz de Garayo – Jefe Proyectos EE

ÍNDICE

$n \text{ ZEB} \rightarrow E_p \approx 0$



$$E = \sum_i (E_{del,i} f_{del,i}) - \sum_i (E_{exp,i} f_{exp,i})$$

where

$E_{del,i}$ is the delivered energy for energy carrier i ;

$E_{exp,i}$ is the exported energy for energy carrier i ;

$f_{del,i}$ is the primary energy factor for the delivered energy carrier i ;

$f_{exp,i}$ is the primary energy factor for the exported energy carrier i , which may or may not be equal to the factor of the delivered energy, depending on national definition;

v.0.0

2013 – Lecciones aprendidas

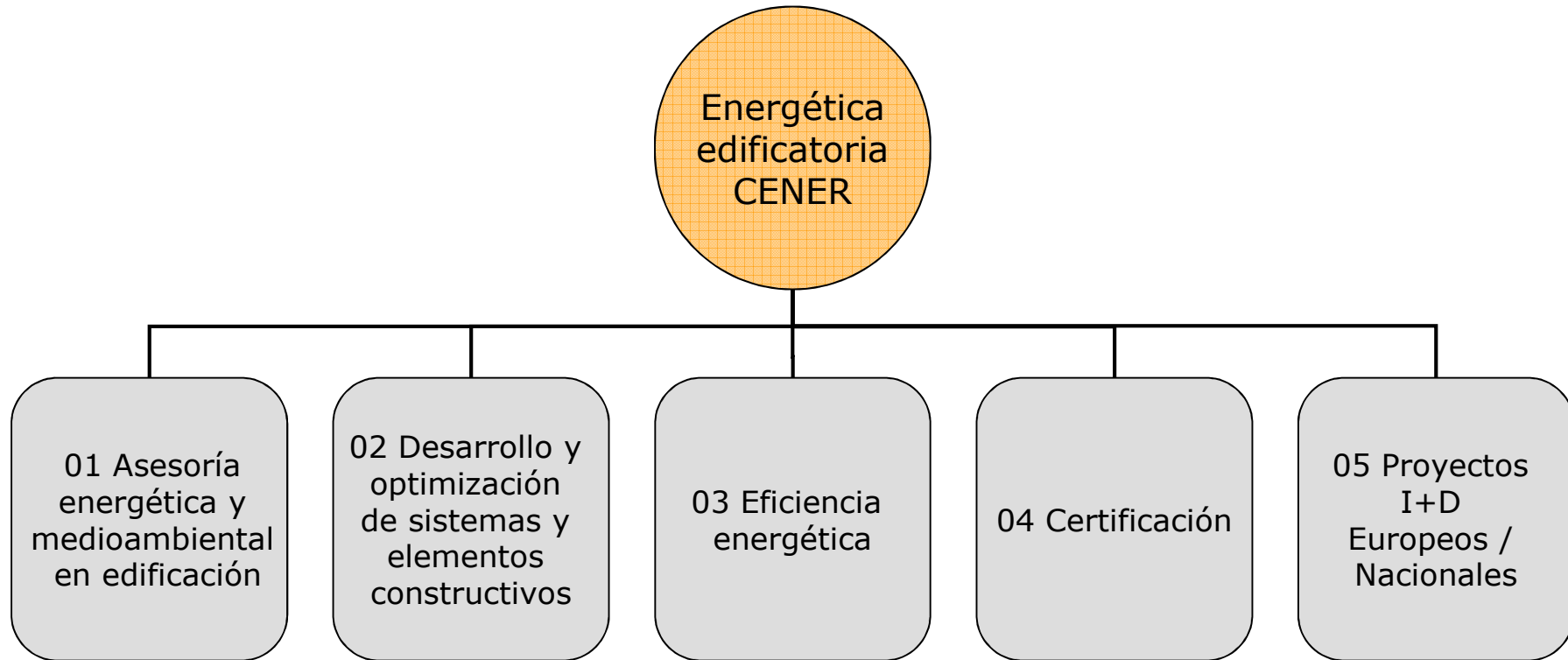
v.1.0

2020 – Cómo las aplicamos

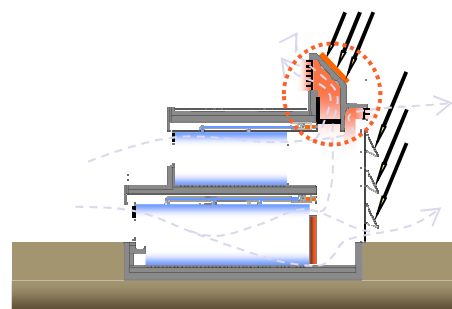
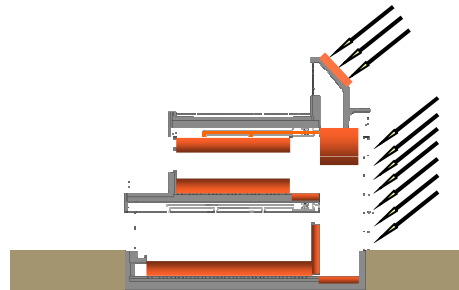
v.2.0

2050 – Lecciones por aprender

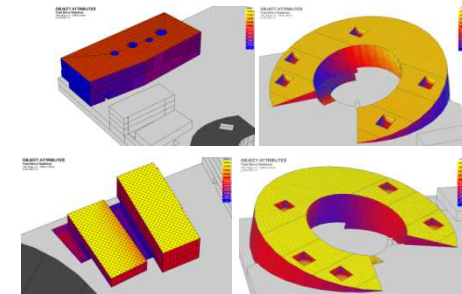
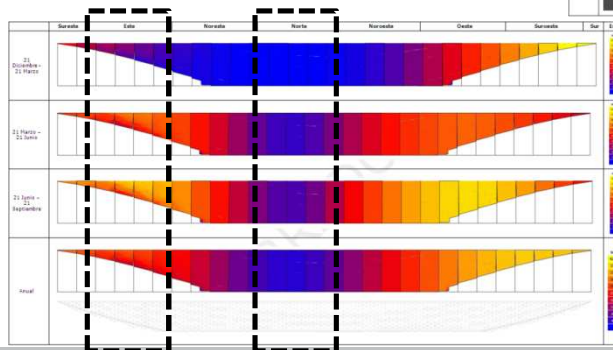
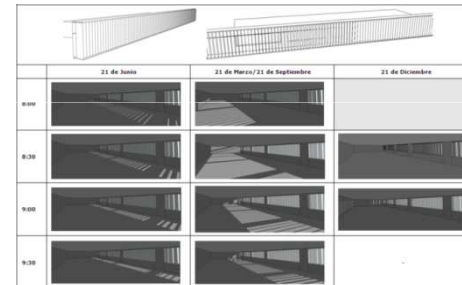
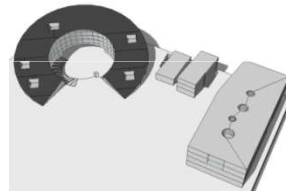
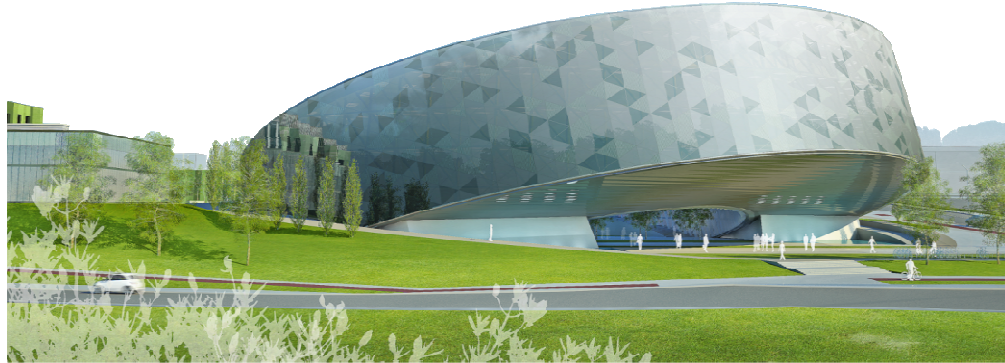
v.0.0 2013 –Lecciones aprendidas



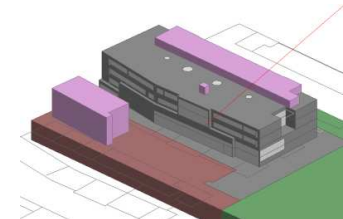
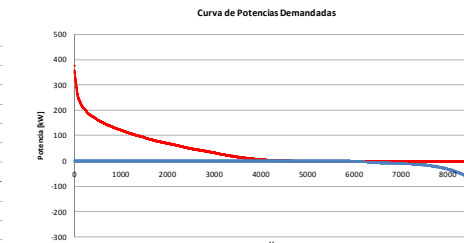
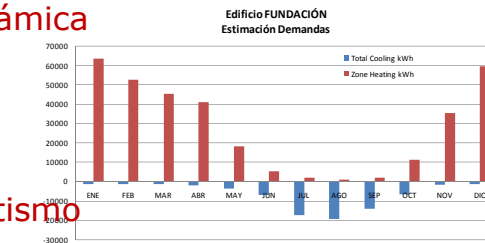
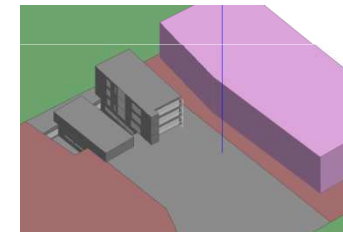
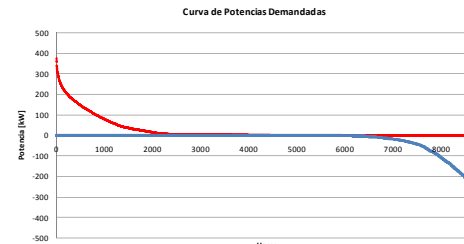
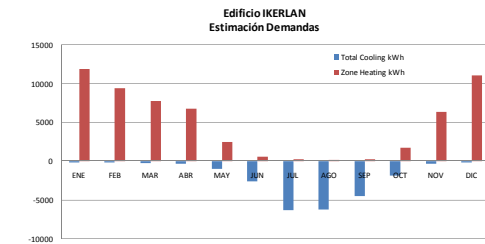
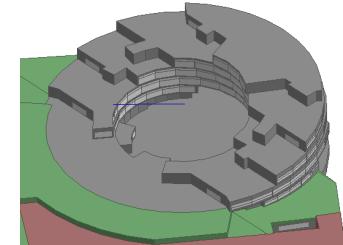
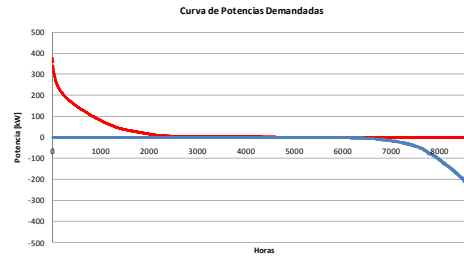
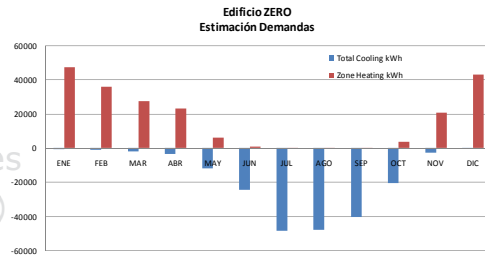
- Conceptos energéticos
- Sostenibilidad
 - agua
 - materiales
 - ACV
- Integración de renovables
 - solar fotovoltaica (PV)
 - solar térmica
 - geoterminia
 - eólica
 - biomasa
- Luz (natural/artificial)
 - Radiance
 - Ecotect
- Simulación/optimización termodinámica/fluidodinámica
 - TRNSYS
 - Design Builder
 - Fluent
- Recursos/clima/bioclimatismo



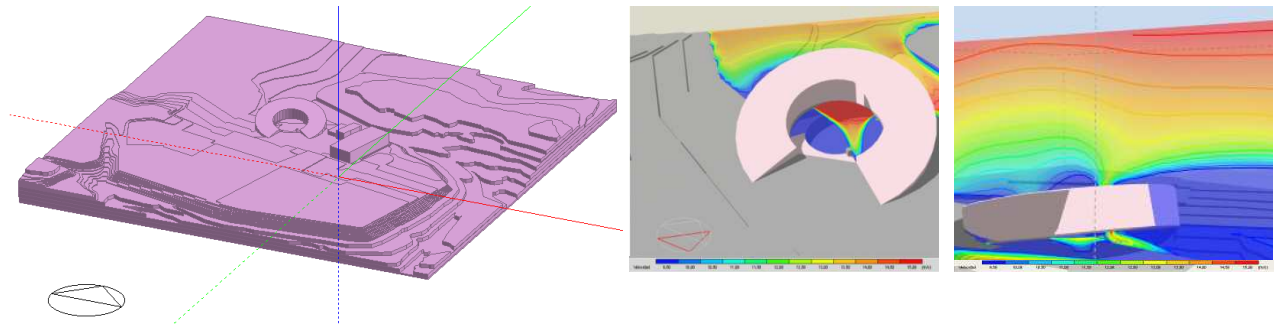
- Conceptos energéticos
- Sostenibilidad
 - agua
 - materiales
 - ACV
- Integración de renovables
 - solar fotovoltaica (PV)
 - solar térmica
 - geotermia
 - eólica
 - biomasa
- Luz (natural/artificial)
 - Radiance
 - Ecotect
- Simulación/optimización termodinámica/fluidodinámica
 - TRNSYS
 - Design Builder
 - Fluent
- Recursos/clima/bioclimatismo



- Conceptos energéticos
- Sostenibilidad
 - agua
 - materiales
 - ACV
- Integración de renovables
 - solar fotovoltaica (PV)
 - solar térmica
 - geotermia
 - eólica
 - biomasa
- Luz (natural/artificial)
 - Radiance
 - Ecotect
- Simulación/optimización termodinámica/fluidodinámica
 - TRNSYS
 - Design Builder
 - Fluent
- Recursos/clima/bioclimatismo



- Conceptos energéticos
- Sostenibilidad
 - agua
 - materiales
 - ACV
- Integración de renovables
 - solar fotovoltaica (PV)
 - solar térmica
 - geoterminia
 - eólica
 - biomasa
- Luz (natural/artificial)
 - Radiance
 - Ecotect
- Simulación/optimización termodinámica/fluidodinámica
 - TRNSYS
 - Design Builder
 - Fluent
- Recursos/clima/bioclimatismo



PRODUCCIÓN ENERGÉTICA

District Heating-Cooling

Térmica *carbon free*

Biomasa

Solar Térmica

Geoterminia

Electricidad

Solar fotovoltaica

- Conceptos energéticos
- Sostenibilidad
 - agua
 - materiales
 - ACV
- Integración de renovables
 - solar fotovoltaica (PV)
 - solar térmica
 - geotermia
 - eólica
 - biomasa
- Luz (natural/artificial)
 - Radiance
 - Ecotect
- Simulación/optimización termodinámica/fluidodinámica
 - TRNSYS
 - Design Builder
 - Fluent
- Recursos/clima/bioclimatismo

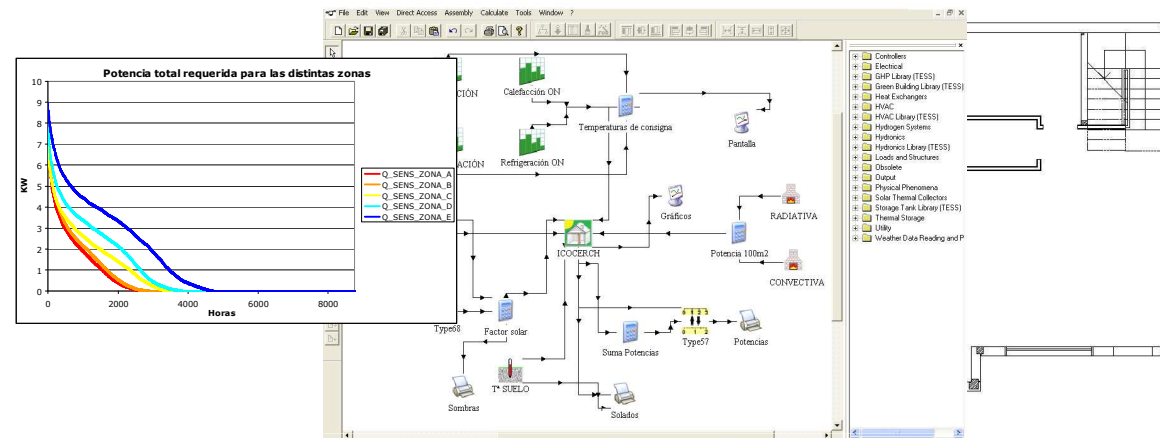


02 Desarrollo y optimización de sistemas y elementos constructivos

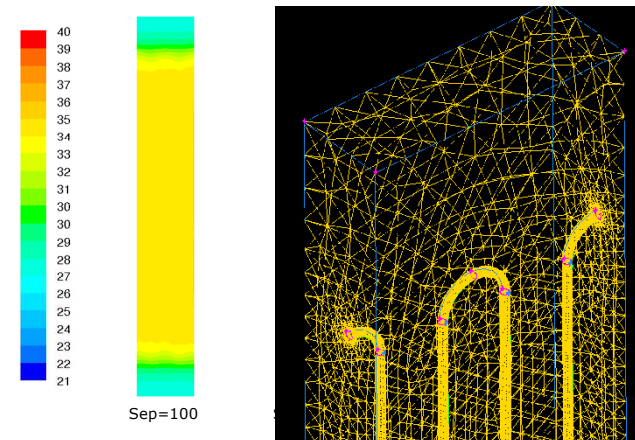
Fachada termoactiva ICOCERCH

- Eficiencia
- Impacto por zona climatológica
- Cumplimiento normativa térmica
- Diseño/optimización de soluciones constructivas
 - puentes térmicos
- Herramientas informáticas comerciales
- Simulaciones termodinámicas/fluidodinámicas
 - TRNSYS
 - Design Builder
 - Fluent

• Simulación en TRNSYS



• Optimización de la separación del SED pentín



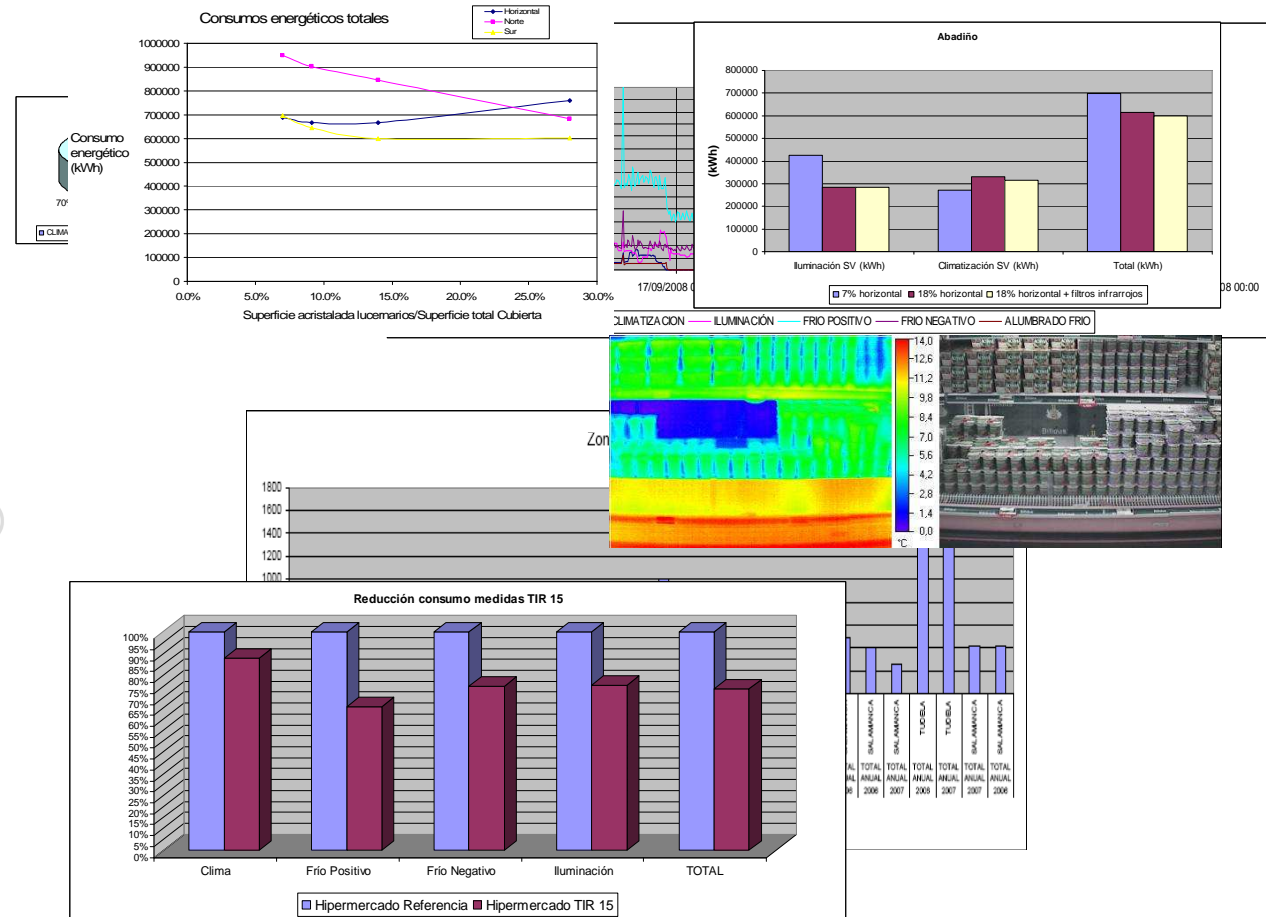
• Auditorías

• Monitorización

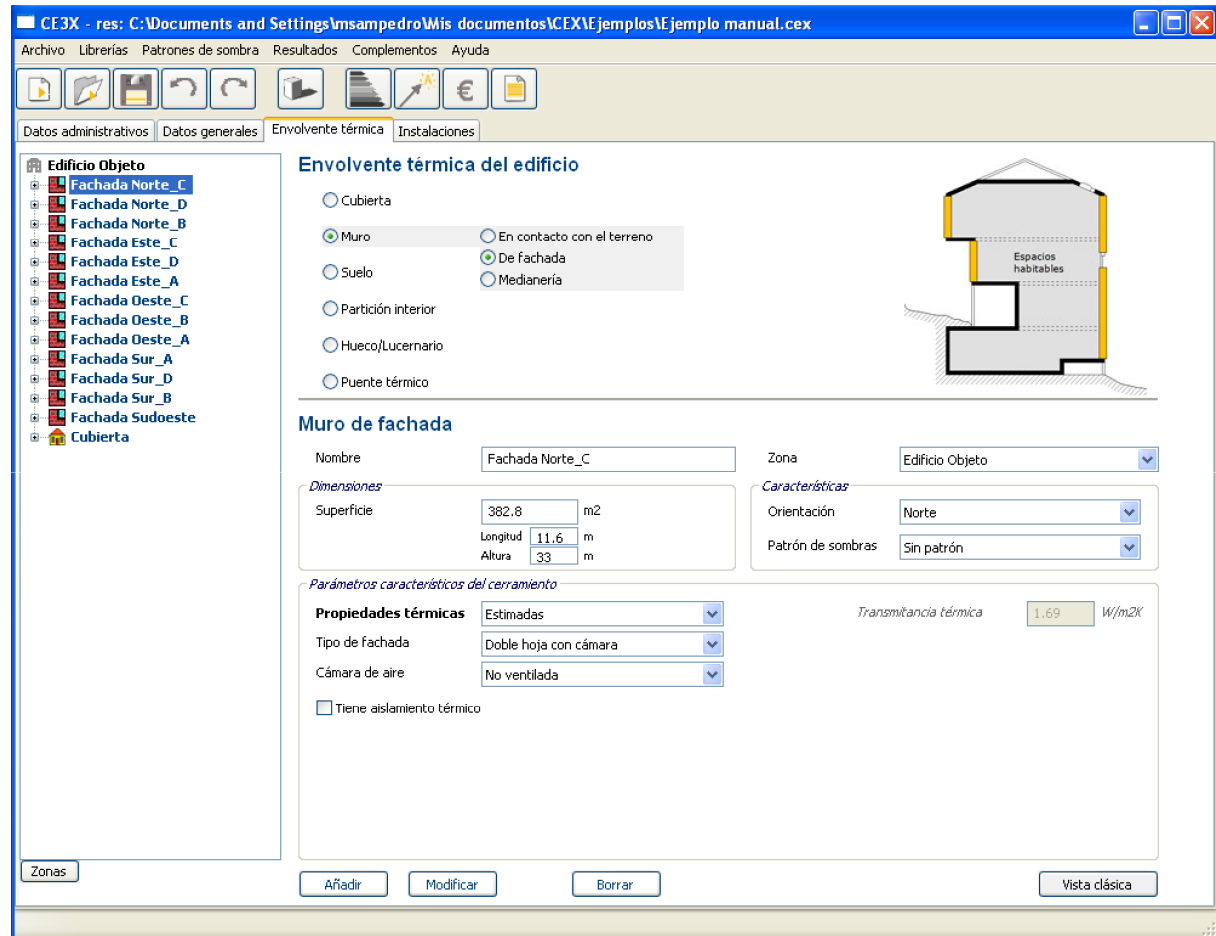
• M & V plan (EVO/ASHRAE 14)

• Equipos & instalaciones

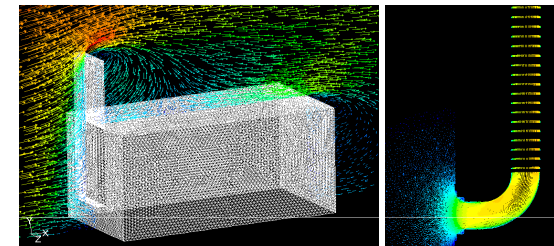
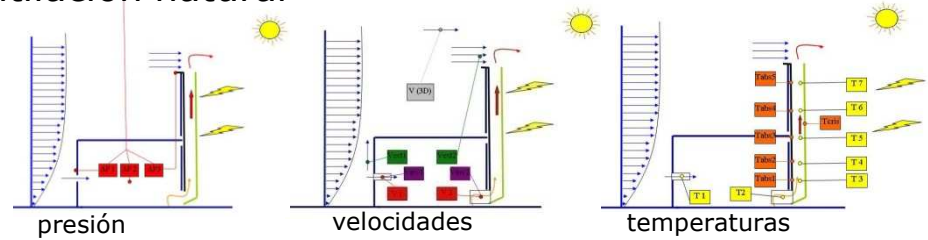
• Análisis energético de instalaciones para la optimización



- CTE (Lider/CalenerVyP/CalenerGT)
- CE³X
- LEED
- Sello CENER



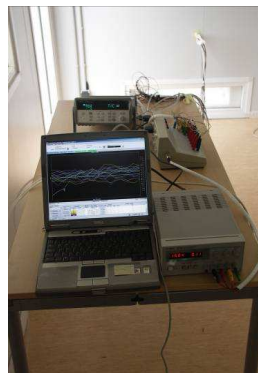
- Estudios de ventilación natural



- Europeo

- Desarrollo de simulaciones
- Prototipo & monitorización

- Nacional

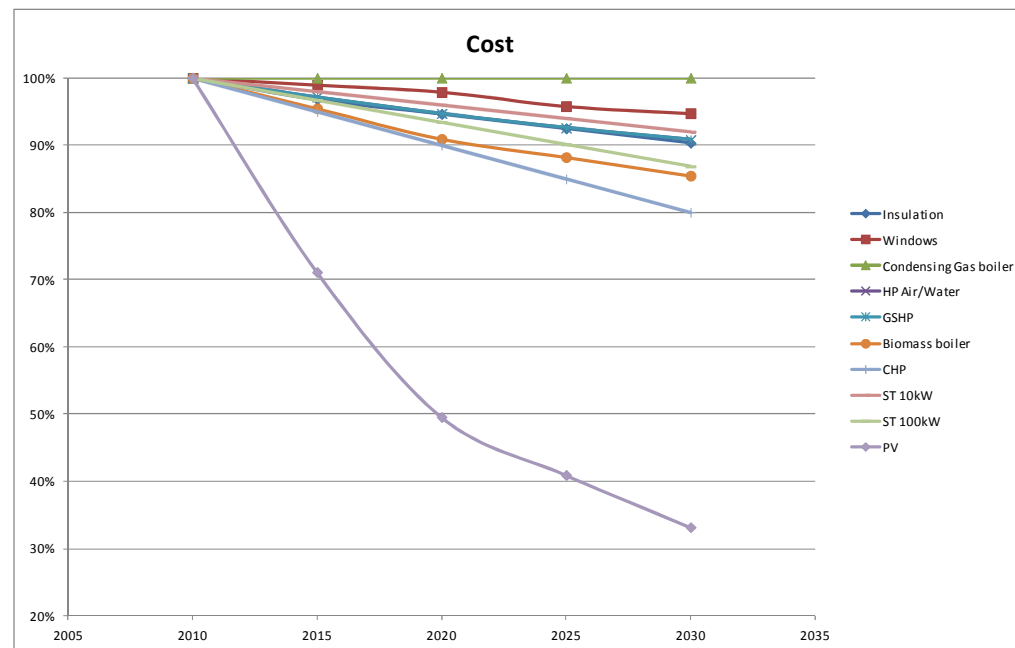


v.0.0 2013 –Lecciones aprendidas

- Energía Primaria vs Emisiones
- Testimonio vs Tendencia (las excepciones que hacen la norma)

Coste - Eficiencia

Objetivo de la innovación: Disminuir los costes tecnológicos para hacer del nZEB una tendencia real y atractiva

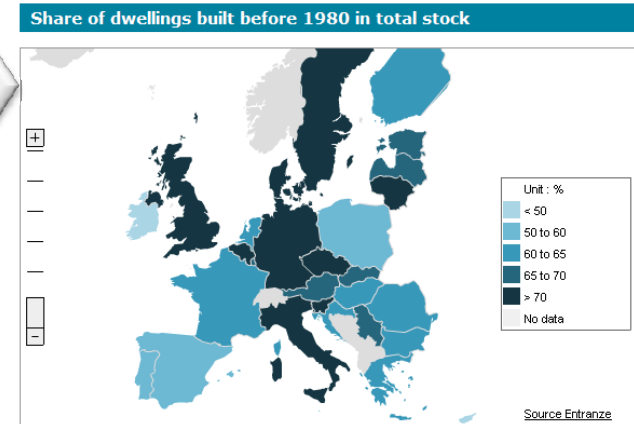


v.1.0 2020 –Cómo las aplicamos

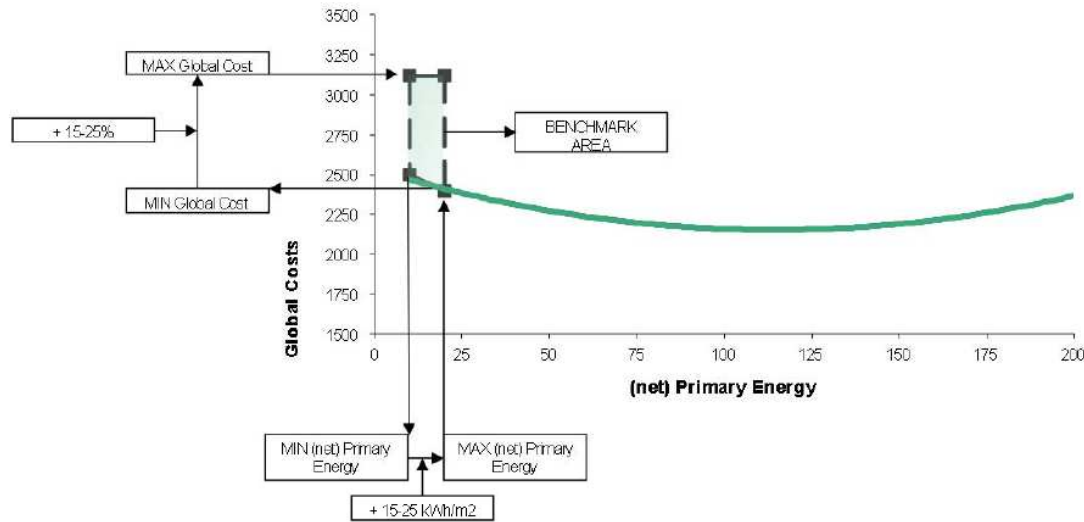
www.entranze.eu

The screenshot shows the ENTRANZE website homepage. At the top, there is a search bar, a row of European Union member state flags, and a map of Europe. Below this is the ENTRANZE logo and the tagline "Policies to ENforce the TRAnstition to Nearly Zero Energy buildings in the EU-27". A navigation menu includes Home, About, DataTool, nZEB Community, News, Publications, Contacts, and Links. The main content area is divided into several sections: "Presentation of the Project" with a detailed description of the project's goals and focus; "Data Tool" with a screenshot of the interactive tool and a link to an in-depth analysis; "nZEB Community - BUILD UP" with information about the European portal for energy efficiency; and "News" with a list of recent events and publications. A large white arrow points from the "Data Tool" section towards the map on the right.

Mecanismos reguladores y financieros

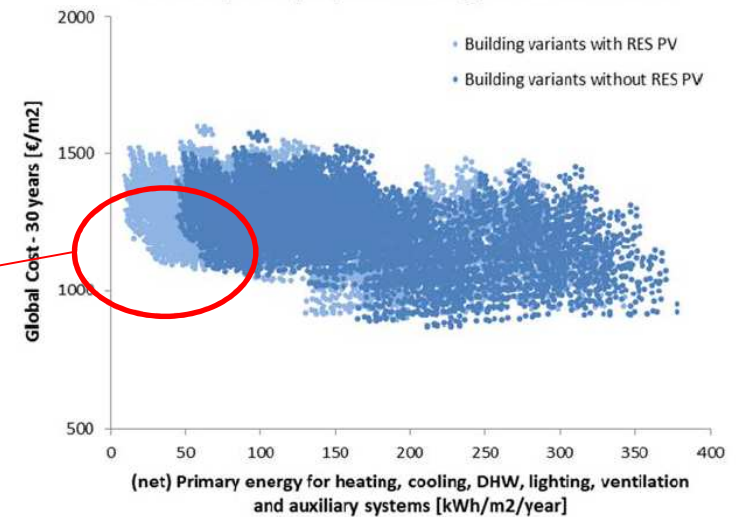


v.1.0 2020 –Cómo las aplicamos



n ZEB
**Cost-Effective
 Refurbishment**

Madrid - Office - Refurbishment - Starting Year: 2011
 Standard private perspective - Energy scenarios: reference



v.1.0 2020 –Cómo las aplicamos



www.activehouse.info



www.plataforma-pep.org

v.1.0 2020 –Cómo las aplicamos

activehouse.INFO
NETWORK AND KNOWLEDGE SHARING

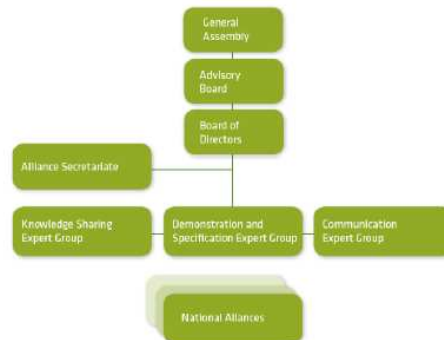
About Active House

Active House - a holistic approach

- Active House is a vision of buildings that create healthier and more comfortable lives for their occupants without negative impact on the climate – moving us towards a cleaner, healthier and safer world.

Who is behind

- Active House is a non-profit organization supported and managed by a group of Alliance Partners.



People spend 90% of their time indoors.

Buildings consume approximately 40% of all the energy we use.

The challenges we face are global, solutions are local.

Up to 30% of the building mass does not contribute to nor provide a healthy indoor climate.

v.2.0 2050 –Lecciones por aprender

- Abaratar costes
- Extender los límites del concepto nZEB
 - Otros consumos
 - Nivel barrio

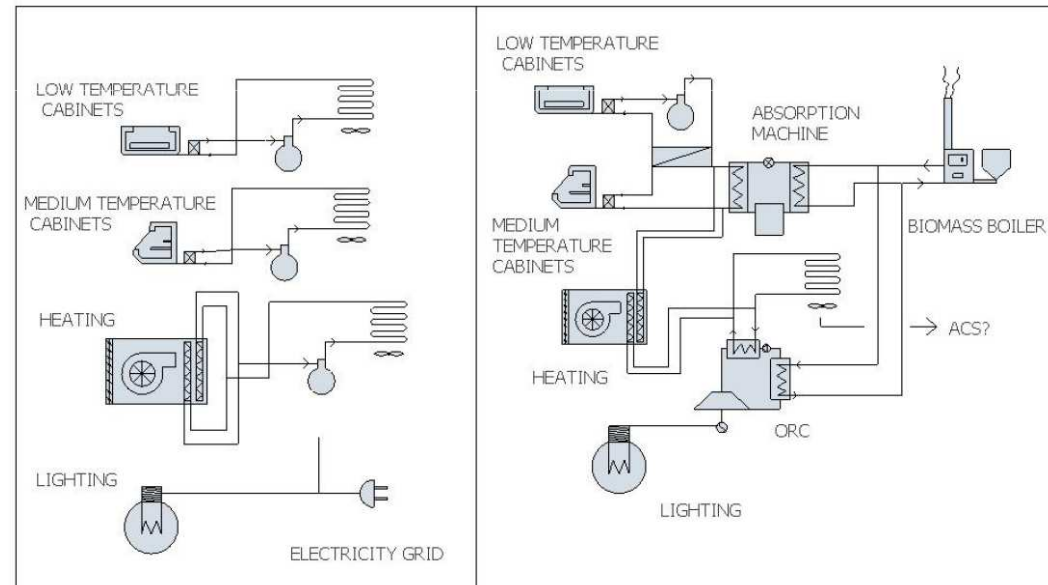
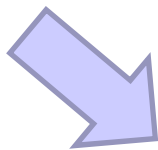
v.2.0 2050 – Lecciones por aprender



BEFORE

AFTER

Tienda
Cero
Emisiones



MUCHAS GRACIAS



CENER

CENTRO NACIONAL DE
ENERGÍAS RENOVABLES

www.cener.com

