



Absorption technology

Task 38
Solar Cooling
Air Conditioning



1/ Presentation of EDF
Optimal Solutions (9h30)



EDF launched EDF Optimal Solutions

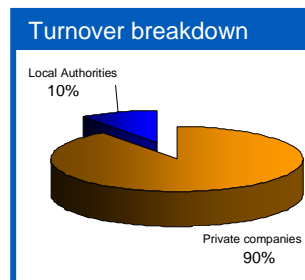
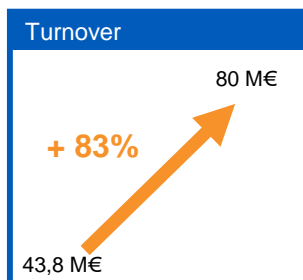
Our ambition : to be a major player on the energy efficiency market



- ◆ Our objectives : reduce energy consumptions and CO₂ emissions of private companies and local authorities.
- ◆ A 100% subsidiary developed by internal growth
- ◆ More than 2000 customers since the activity launch.
- ◆ A global approach supported by :
 - Experts for energy uses and works follow-up
 - A network of high skilled partners



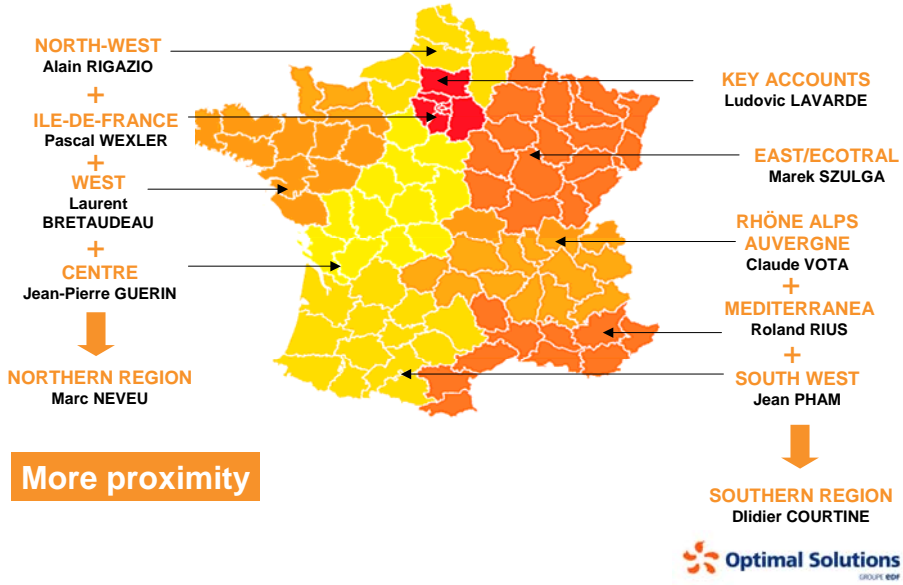
A dynamic subsidiary



- ◆ **2000** contracts in 2011
- ◆ **160** employees at mid-2011 and new recruitment planed
- ◆ Increased internal competencies through creation of a Technical Division



A national and regional organisation



Optimal Solutions

GROUPE EDF

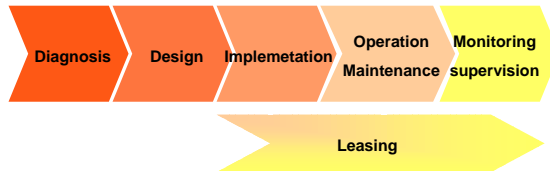
From concept...

...To action

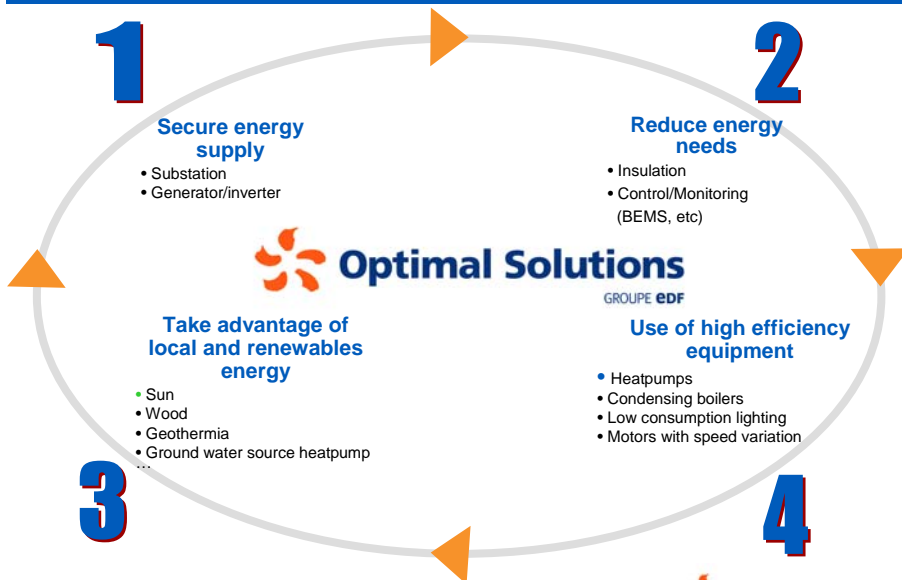
Be next to customers at key events

- ◆ Equipment replacement
- ◆ Extension of site
- ◆ Building or retrofit of a building

Being an integrator, we can offer services from diagnosis to financing



Our scope of actions



Our services sectors

- ▶ Food industry
- ▶ Green houses
- ▶ Retail
- ▶ Logistics
- ▶ Data centers
- ▶ Tertiary buildings (new and retrofit)
- ▶ Leisure centers
- ▶ Restauration



Our Offer & Action:

- + Economy
- + Renewable Energy
- CO2

...in Air-Conditioning

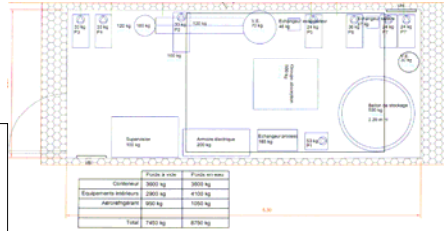
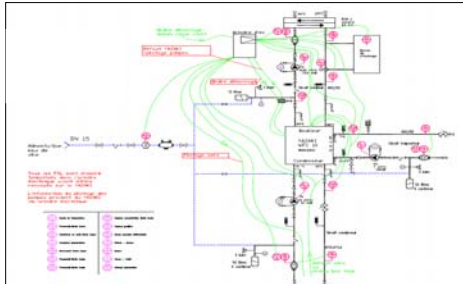
Our Offer

Water Fired Chiller (WFC)

Produit Type	Capacité Frigo.
WFC-SC05	17.5 kW
WFC-SC10	35 kW
WFC-SC20	70 kW
WFC-SC30	105 kW



Package System (WFC)

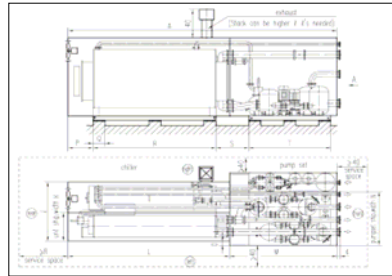
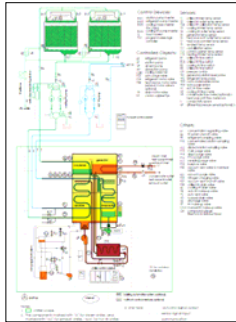


Package System

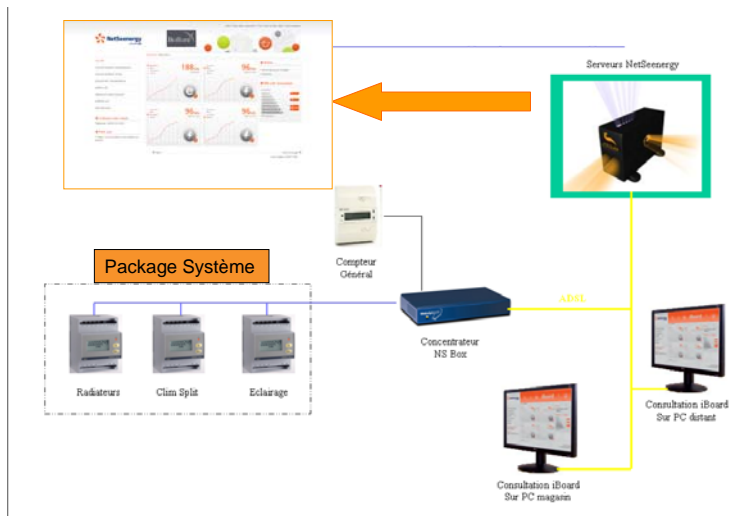
Modèle	Capacité Frigorifique		Capacité Thermique(Ech. Primaire)	
PS-SH10 (COM)	35	kW	50	kW
PS-SH20 (COM)	70	kW	100	kW
PS-SH30 (COM)	105	kW	150	kW
PS-SH40 (COM)	140	kW	200	kW
PS-SH60 (COM)	210	kW	300	kW
PS-SH90 (COM)	315	kW	450	kW

Large Capacity BROAD

Produit Type **Capacité Frigo.**
 BS(Vapeur) de 588 à 11630 kW
 BH(Eau Chaude) de 588 à 11630 kW
 BE(Fumées) de 588 à 11630 kW



Remote Control System



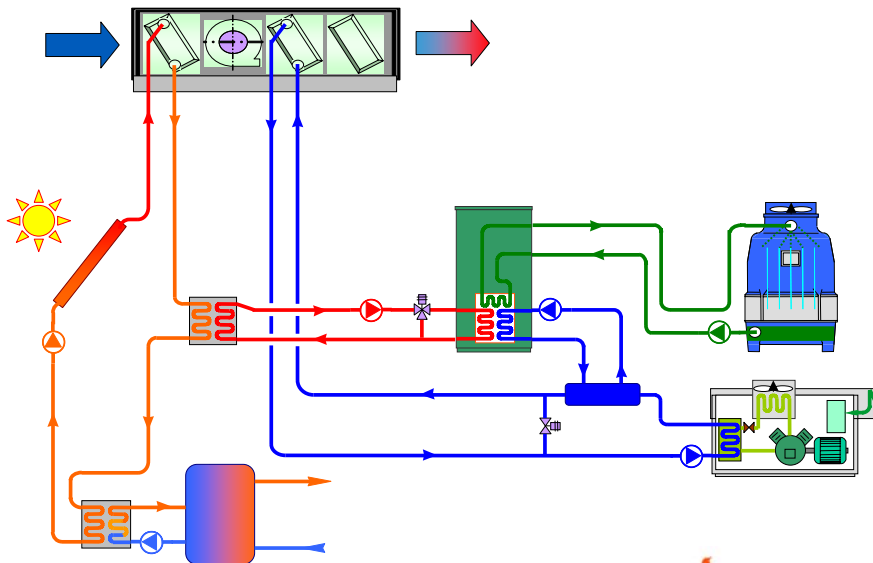
APPLICATIONS

Absorption Application by Energy Sources

- ◆ Solar Cooling
- ◆ Biomass Cooling
- ◆ Cogeneration Cooling
 - *Biogas*
 - *Gas Engine*
 - *Gas Turbine*
 - *Incineration Saving*
 - *Heating District*
- ◆ Gas Cooling
- ◆ Steam Cooling

Solar Thermal Cooling-Heating

Air-Conditioning Solar Cooling-Heating



Batiment BBC Sonnenkraft 2010

Chauffage PAC+Solaire / Rafraichissement Solaire



Carte d'identité du bat. :

- **Promoteur** : Pierre & Patrimoine
- **Architecte** : Rey – Lucquet
- **Surface terrain** : 10 000 m²
- **Surface totale bâtiment** : 1 200 m²
- **Délai d'exécution du chantier** : 8 mois
- **Capacité accueil personnel** : 100 personnes
- **Capacité accueil formation** : 50 personnes
- **Coût total, y compris foncier** : 2 750 k€ HT
- **Surcoût bâtiment / tertiaire classique** : 6,5% (isolation, matériaux spec., chf et clim solaire)
- **Retour sur investissement surcoût** : 9,6 ans (hors aide ou subvention)

Structure porteuse : Bois

Isolation : - murs : 29 cm de ouate de cellulose injectée
 - toiture : 26 cm de polystyrène
 - fenêtres et baies vitrées : triple vitrage

Chauffage : Solaire 110 m² + PAC Air-Eau 40kW

Ventilation : Centrale de traitement d'air double flux avec roue de récupération (80%)

Rafraichissement : climatisation solaire 100% !

Emetteur : Plancher Chauffant/rafraichissant + Ventilo Convecteur

Récupération d'eau de pluie : cuve de 12000 litres enterrée

Eclairage : basse consommation - selon présence et luminosité

	BBC kWhEP/m ² /an	RT2005 (référence) kWhEP/m ² /an	Ecart en %
Chauffage	10.18	49.56	85.37
Rafraichissement	50.04 (simulation gaz)	0	0
ECS	Négligé (bureaux)	Négligé (bureaux)	Négligé (bureaux)
Eclairage	26.61	41.45	35.79
Auxiliaires	6.66	2.96	-125.19
Ventilation	14.85	21.91	32.23
Total avec production de froid (pour info)	108.34	135.88	20.27
Total avec production de froid solaire	58.3	135.88	57.09