



PIACER - SAL 1

Teams



Attività svolta dal CIRI FRAME

08/10/2024

Francesco Melino





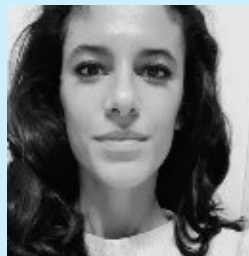
Francesco
Melino



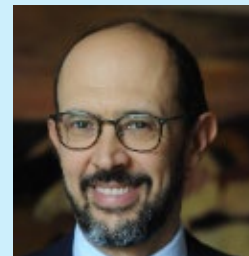
Andrea
De Pascale



Lisa
Branchini



Alessandra
Ancona



Michele
Bianchi



Antonio
Peretto

***SMEA – Sistemi e
Macchine per
l'Energia e
l'Ambiente***



Alberto
Borghetti



Fabio
Napolitano

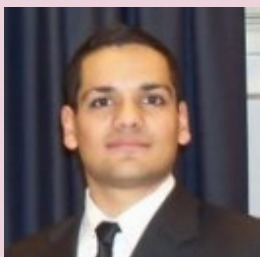


Fabio
Tossani



Carlo Alberto
Nucci

***LISEP – Power System
Laboratory***



Mattia
Ricco



Gabriele
Grandi



Antonio
Morandi

***EEA – Elettrotecnica
per l'Energia e
l'Ambiente***

acquisiti:

- 1 assegno di ricerca (**Luca Cerami**)
- 1 contratto a progetto per il Project Management.

da acquisire:

- 5 borse di ricerca semestrali

WP1 - Coordinamento e Gestione

- **LEAP**, CIDEA, CIRI FRAME, MECHLAV, ENEA CROSS-TEC

WP2 – Specifiche piattaforma e tool

- **CIRI FRAME**, LEAP, CIDEA, MECHLAV, ENEA CROSS-TEC

WP3 - Sviluppo tool

- **CIDEA**, CIRI FRAME, LEAP, MECHLAV, ENEA CROSS-TEC

WP4 - Demo ed exploitation

- **MECHLAV**, CIDEA, CIRI FRAME, LEAP, ENEA CROSS-TEC

WP5 – Diffusione

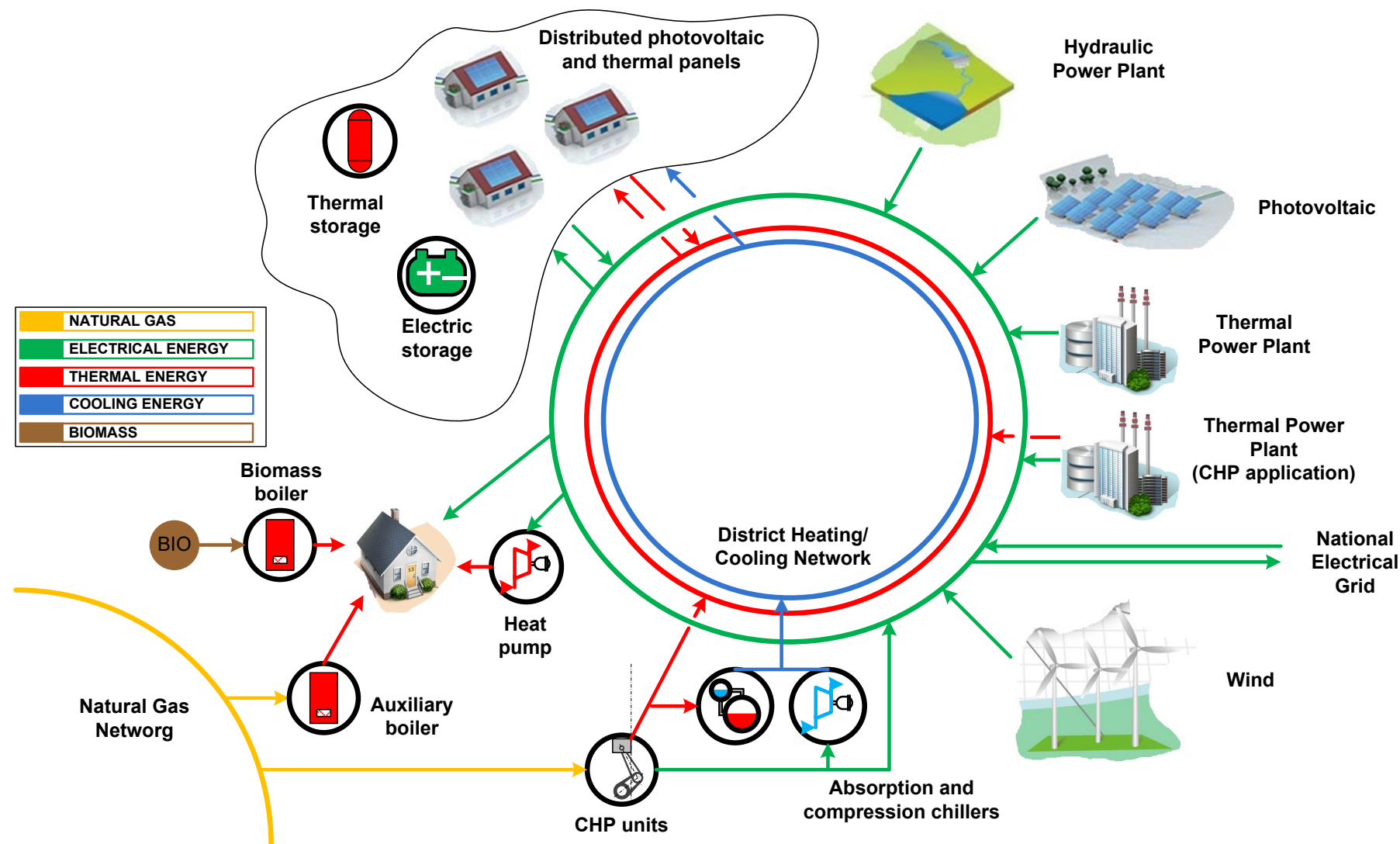
- **LEAP**, CIDEA, CIRI FRAME, MECHLAV, ENEA CROSS-TEC

Il WP2 è focalizzato sulla *definizione delle specifiche della piattaforma e dei singoli tool che ne fanno parte* che saranno implementati nel WP3.

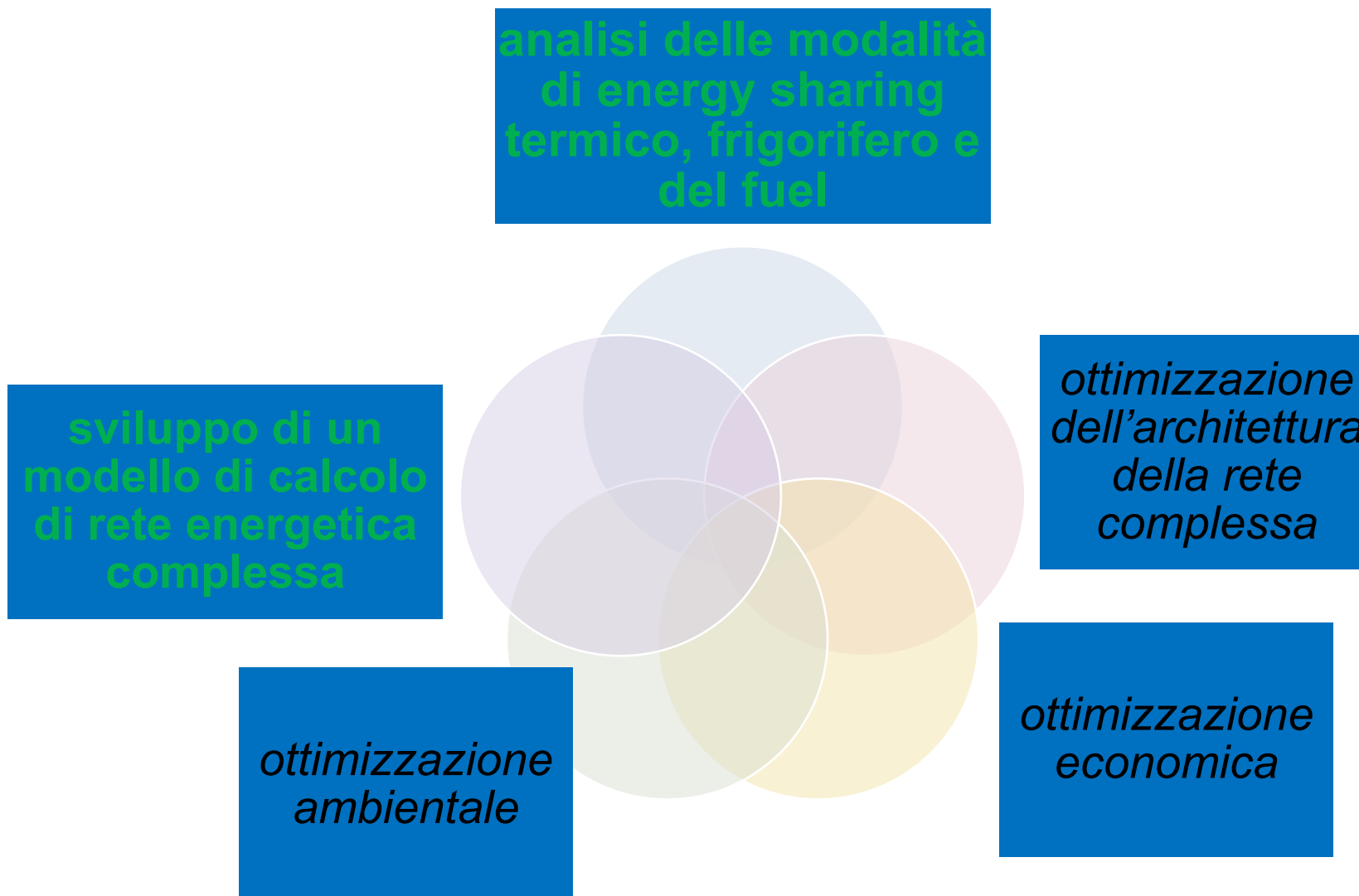
Il WP è suddiviso in 4 attività:

- 2.1 Analisi dello Stato dell'Arte di soluzioni per la pianificazione/gestione delle CER,
- 2.2 Specifiche e requisiti piattaforma;
- 2.3 specifiche e requisiti dei tools;
- 2.4 specifiche di interoperabilità

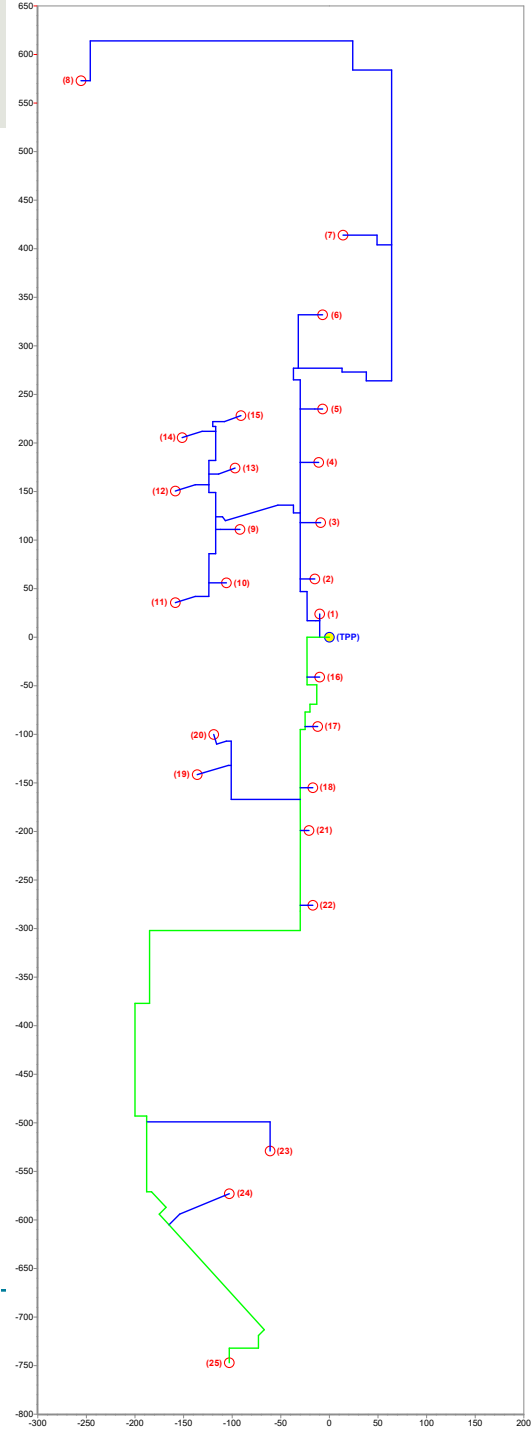
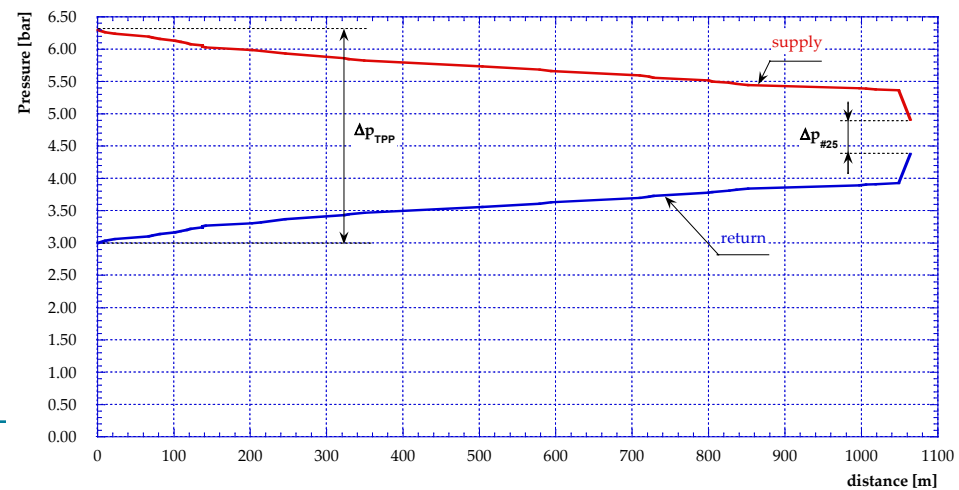
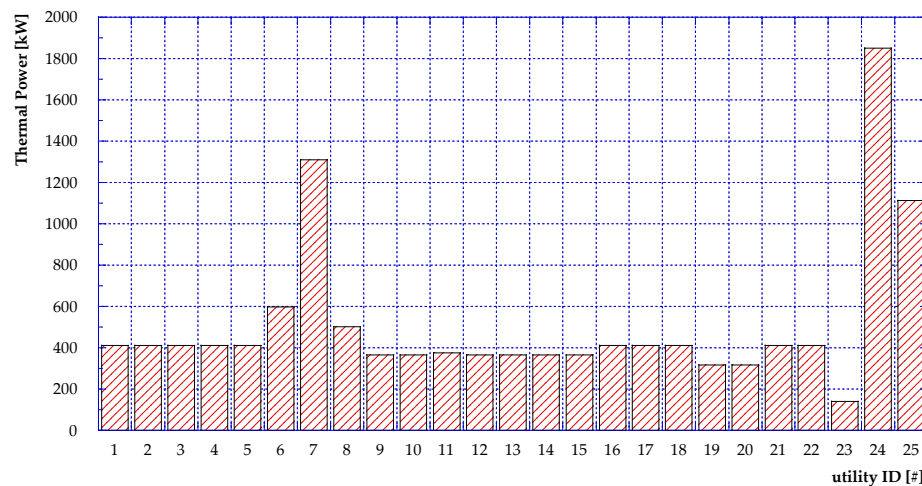
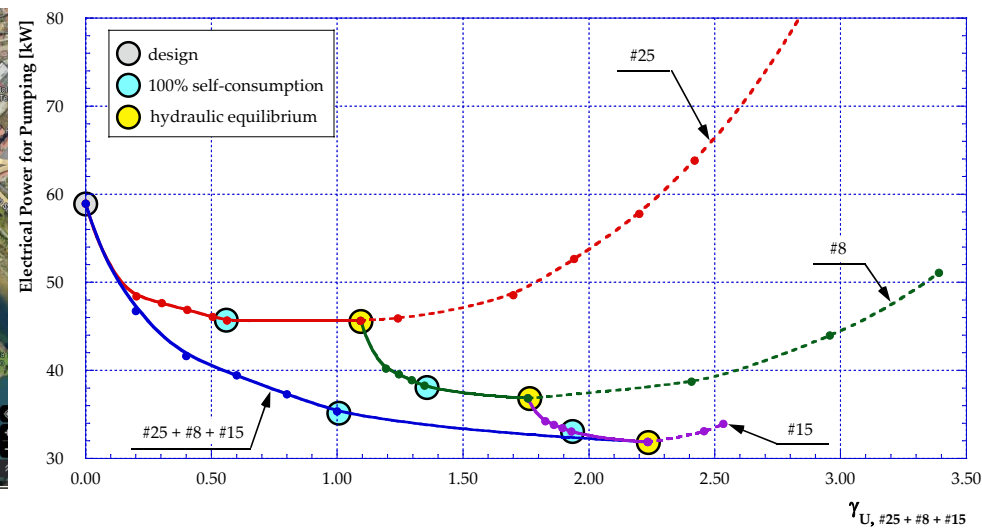
CIRI-FRAME si occuperà di sviluppare un modello di calcolo finalizzato a valutare la convenienza tecnica, economica e ambientale relativa all'integrazione di una Comunità Energetica Rinnovabile, normalmente caratterizzata esclusivamente da flussi elettrici, con ulteriori flussi di energia termica, frigorifera e del combustibile al fine di valutare il **coupling di reti energetiche diverse**.



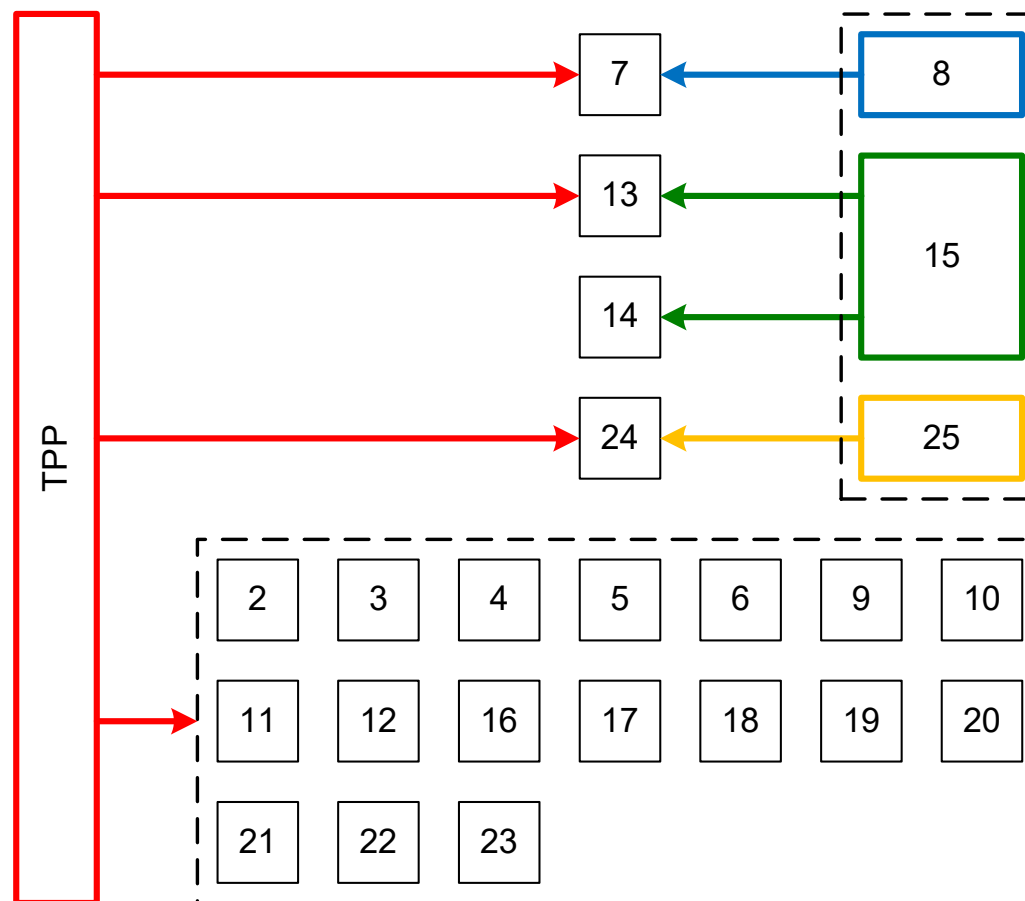
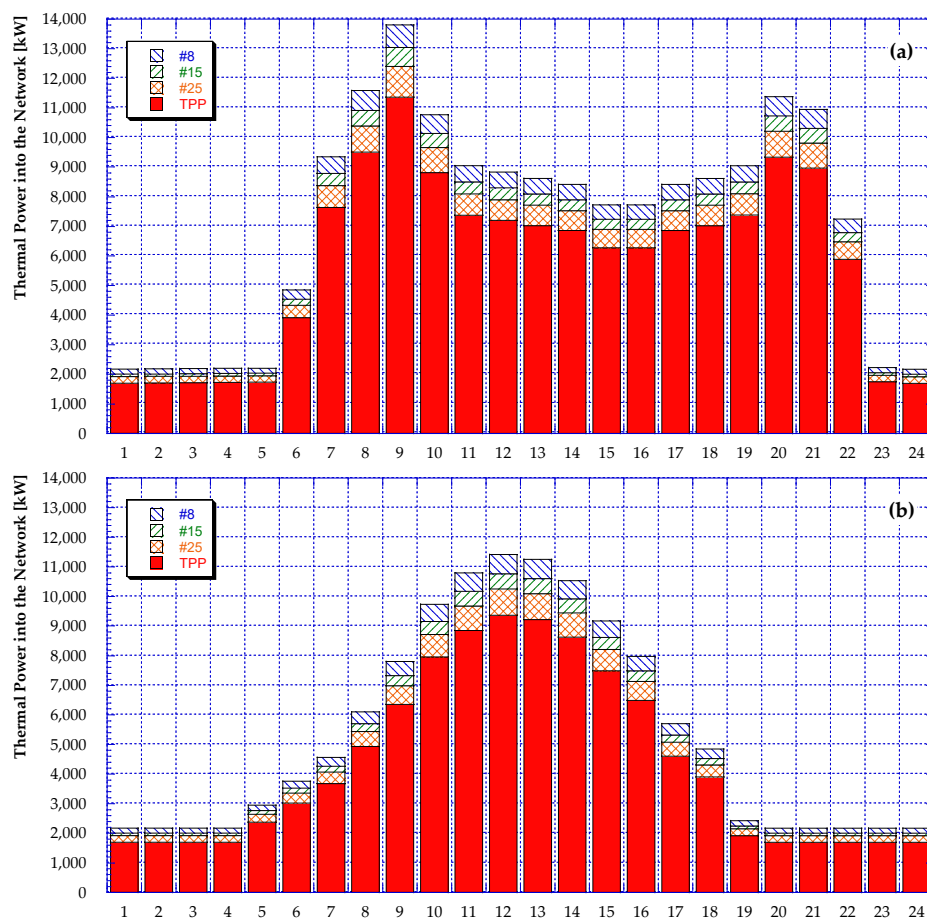
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Analisi delle modalità di Energy Sharing Termico, Frigorifero e del Fuel

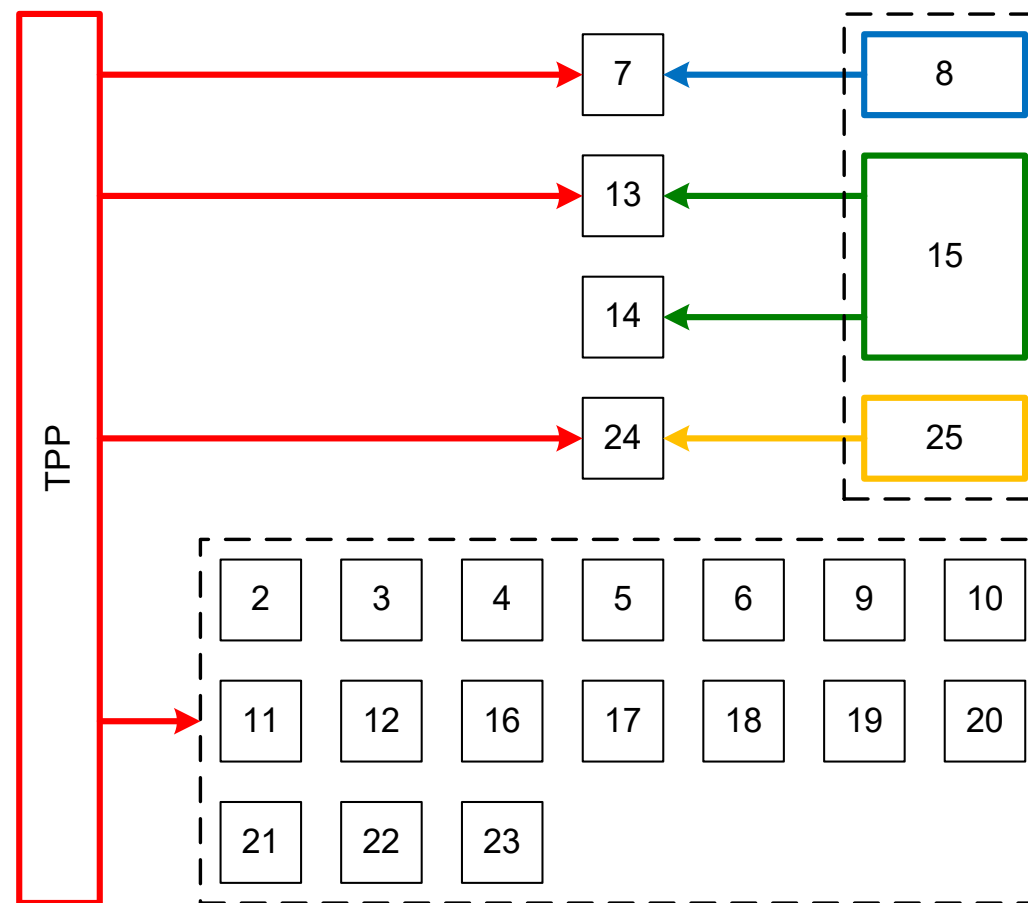
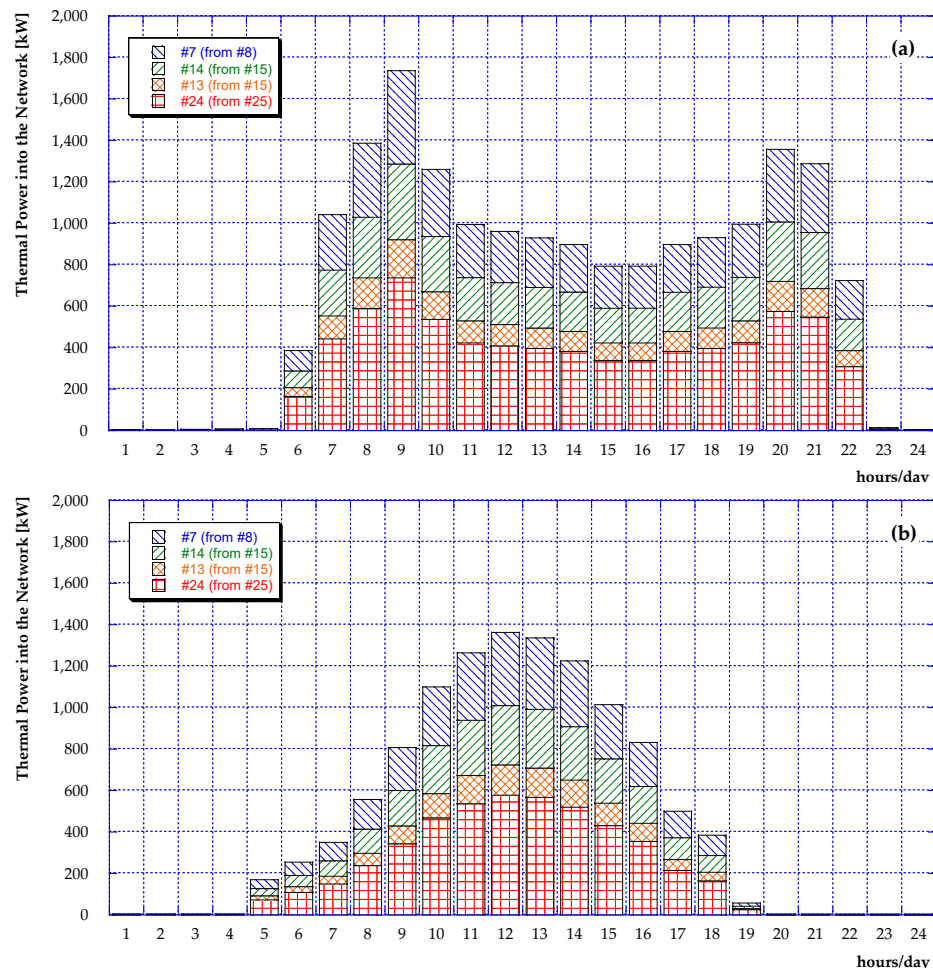


Analisi delle modalità di Energy Sharing Termico, Frigorifero e del Fuel



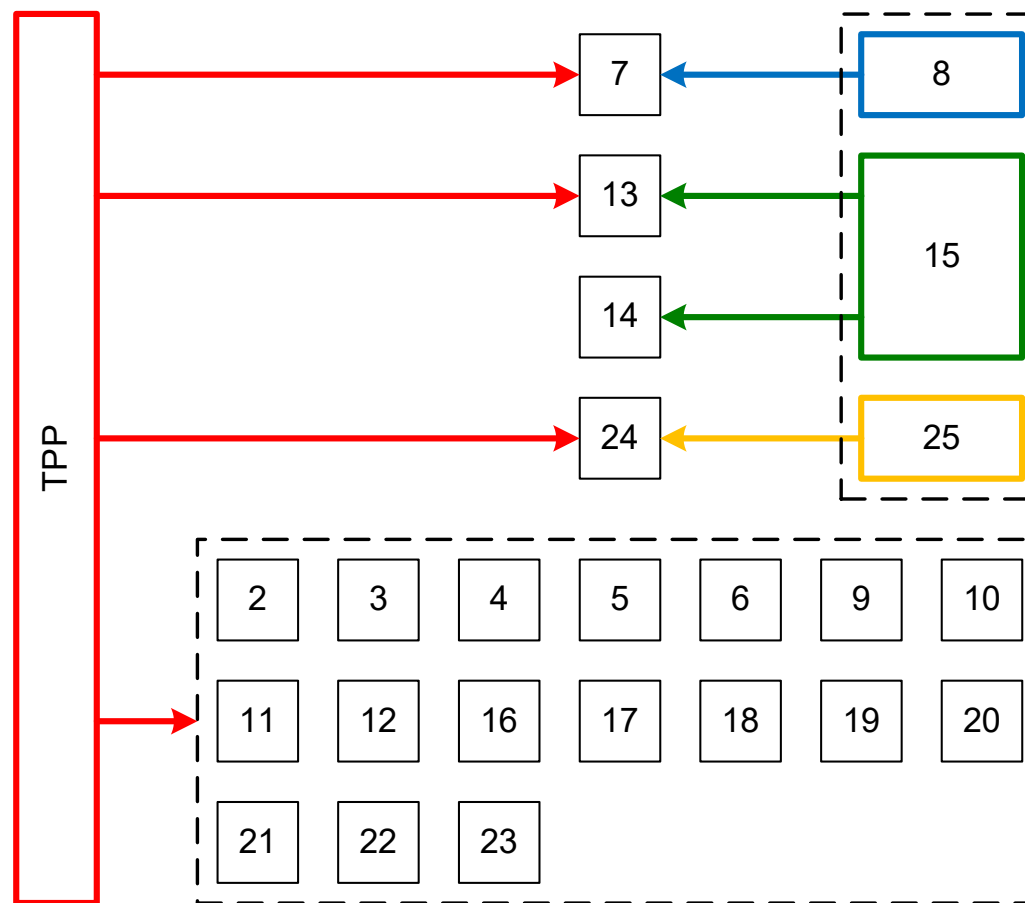
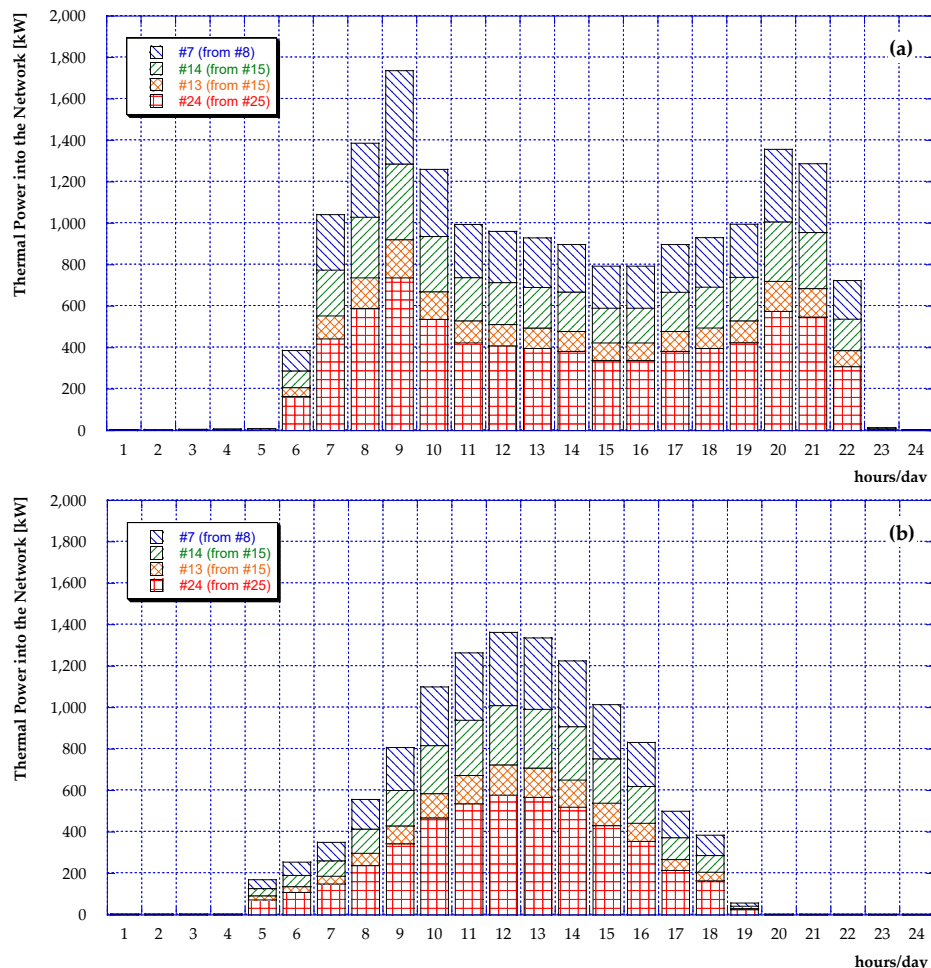
Introduced thermal power into the network by TPP and smart users for (a) typical winter day and (b) middle season and/or summer day

Analisi delle modalità di Energy Sharing Termico, Frigorifero e del Fuel



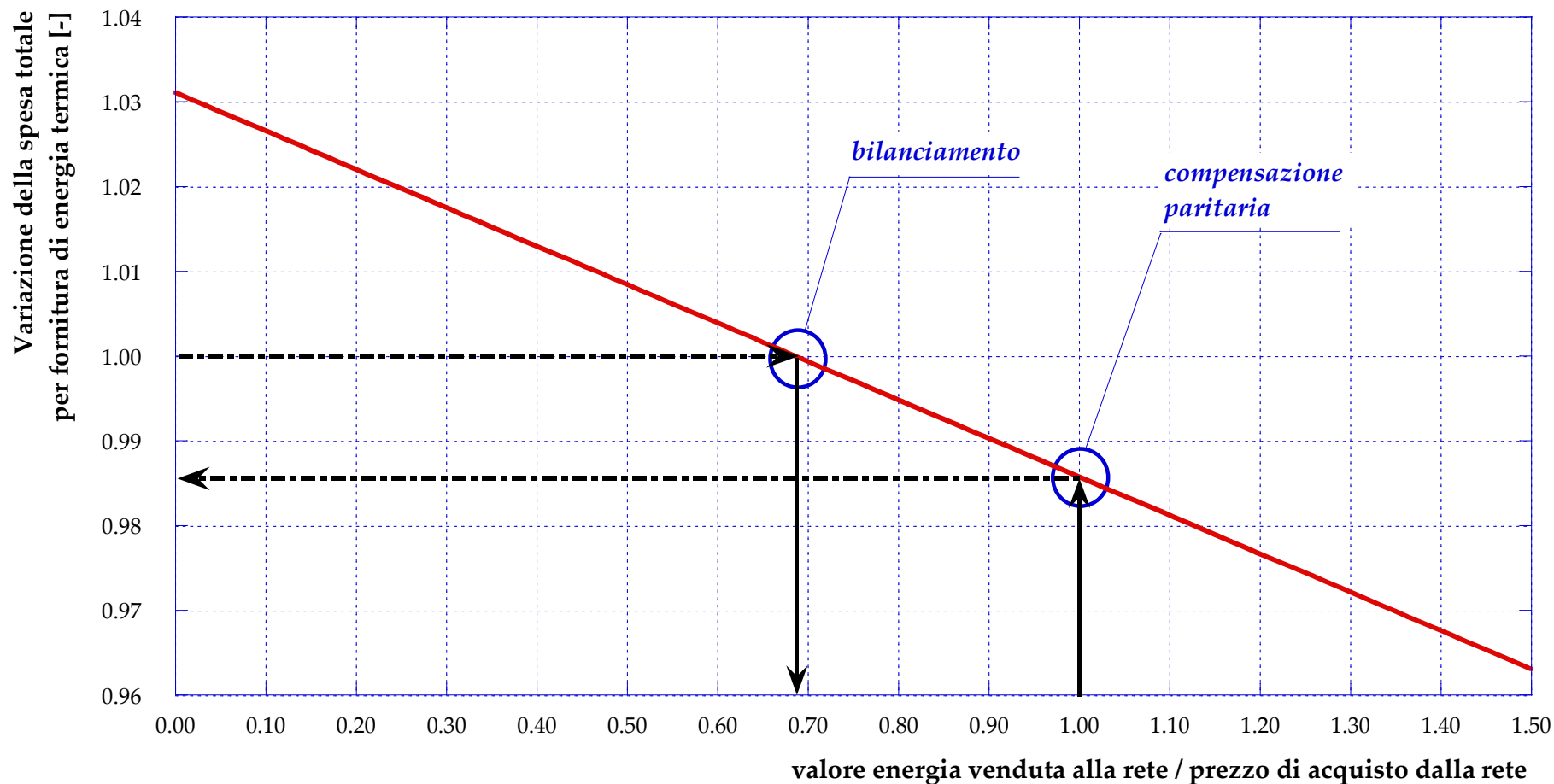
Shared thermal power: served users and sharing smart users for (a) typical winter day and (b) middle season and/or summer day

Analisi delle modalità di Energy Sharing Termico, Frigorifero e del Fuel



Shared thermal power: served users and sharing smart users for (a) typical winter day and (b) middle season and/or summer day

Analisi delle modalità di Energy Sharing Termico, Frigorifero e del Fuel



sviluppo di un modello di calcolo di rete energetica complessa

ECOS 6.4 – Energy Communities Optimizer Software

ID#

time step (ora)

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

T

Tariffe Energia

0

TOTAL EVA
OK!

-6,478 €

EC [%]
38%

RSEch_tot [€]
RSEel_tot [€]
RSEfr_tot [€]
RSEfuel_tot [€]

0
-6,436
0
-42

APch [%]
APel [%]
APfr [%]
APfuel [%]

100%
0%
100%
0%

QRch [%]
QRel [%]
QRfr [%]
QRfuel [%]

100%
0%
0%
0%

EthR-UT [kWh]
EelR-UT [kWh]
EfrR-UT [kWh]
EfuelR-UT [kWh]

8,974
31,446
97,783
1,219

EthR-tot [kWh]
EelR-tot [kWh]
EfrR-tot [kWh]
EfuelR-tot [kWh]

8,974
55,891
97,783
1,219

EthP-tot [kWh]
EelP-tot [kWh]
EfrP-tot [kWh]
EfuelP-tot [kWh]

10,369
0
0
0

EthP-acc [kWh]
EelP-acc [kWh]
EfrP-acc [kWh]
EfuelP-acc [kWh]

5,284
5,343
1,336
58

EthFTN [kWh]
EelFTN [kWh]
EfrFTN [kWh]
EfuelFTN [kWh]

0
55,891
0
1,219

EthTTN [kWh]
EelTTN [kWh]
EfrTTN [kWh]
EfuelTTN [kWh]

0
0
0
0

1

includi utenza

-259 €

EC [%]
38%

Check Mix
Produttivo
OK!

PV
CG
ORC

escluso
escluso
escluso

ST
PAC
R-TH

includi (on)
escluso
ESCLUDI IMMISSIONE
NO SCAMBIO SUL POSTO

FR-ASS
FR-CMP

escluso
includi (on)

RSEch_tot [€]
RSEel_tot [€]
RSEfr_tot [€]
RSEfuel_tot [€]

0
-257
0
-2

APch [%]
APel [%]
APfr [%]
APfuel [%]

100%
0%
100%
0%

QRch [%]
QRel [%]
QRfr [%]
QRfuel [%]

100%
0%
0%
0%

EthR-UT [kWh]
EelR-UT [kWh]
EfrR-UT [kWh]
EfuelR-UT [kWh]

359
1,258
3,911
49

EthR-tot [kWh]
EelR-tot [kWh]
EfrR-tot [kWh]
EfuelR-tot [kWh]

359
2,236
3,911
49

EthP-tot [kWh]
EelP-tot [kWh]
EfrP-tot [kWh]
EfuelP-tot [kWh]

415
0
3,911
0

2

includi utenza

-259 €

EC [%]
38%

Check Mix
Produttivo
OK!

PV
CG
ORC

escluso
escluso
escluso

ST
PAC
R-TH

includi (on)
escluso
ESCLUDI IMMISSIONE
NO SCAMBIO SUL POSTO

FR-ASS
FR-CMP

escluso
includi (on)

RSEch_tot [€]
RSEel_tot [€]
RSEfr_tot [€]
RSEfuel_tot [€]

0
-257
0
-2

APch [%]
APel [%]
APfr [%]
APfuel [%]

100%
0%
100%
0%

QRch [%]
QRel [%]
QRfr [%]
QRfuel [%]

100%
0%
0%
0%

EthR-UT [kWh]
EelR-UT [kWh]
EfrR-UT [kWh]
EfuelR-UT [kWh]

359
1,258
3,911
49

EthR-tot [kWh]
EelR-tot [kWh]
EfrR-tot [kWh]
EfuelR-tot [kWh]

359
2,236
3,911
49

EthP-tot [kWh]
EelP-tot [kWh]
EfrP-tot [kWh]
EfuelP-tot [kWh]

415
0
3,911
0

3

includi utenza

-259 €

EC [%]
38%

Check Mix
Produttivo
OK!

PV
CG
ORC

escluso
escluso
escluso

ST
PAC
R-TH

includi (on)
escluso
ESCLUDI IMMISSIONE
NO SCAMBIO SUL POSTO

FR-ASS
FR-CMP

escluso
includi (on)

RSEch_tot [€]
RSEel_tot [€]
RSEfr_tot [€]
RSEfuel_tot [€]

0
-257
0
-2

APch [%]
APel [%]
APfr [%]
APfuel [%]

100%
0%
100%
0%

QRch [%]
QRel [%]
QRfr [%]
QRfuel [%]

100%
0%
0%
0%

EthR-UT [kWh]
EelR-UT [kWh]
EfrR-UT [kWh]
EfuelR-UT [kWh]

359
1,258
3,911
49

EthR-tot [kWh]
EelR-tot [kWh]
EfrR-tot [kWh]
EfuelR-tot [kWh]

359
2,236
3,911
49

EthP-tot [kWh]
EelP-tot [kWh]
EfrP-tot [kWh]
EfuelP-tot [kWh]

415
0
3,911
0

4

includi utenza

-259 €

EC [%]
38%

Check Mix
Produttivo
OK!

PV
CG
ORC

escluso
escluso
escluso

ST
PAC
R-TH

includi (on)
escluso
ESCLUDI IMMISSIONE
NO SCAMBIO SUL POSTO

FR-ASS
FR-CMP

escluso
includi (on)

RSEch_tot [€]
RSEel_tot [€]
RSEfr_tot [€]
RSEfuel_tot [€]

0
-257
0
-2

APch [%]
APel [%]
APfr [%]
APfuel [%]

100%
0%
100%
0%

QRch [%]
QRel [%]
QRfr [%]
QRfuel [%]

100%
0%
0%
0%

EthR-UT [kWh]
EelR-UT [kWh]
EfrR-UT [kWh]
EfuelR-UT [kWh]

359
1,258
3,911
49

EthR-tot [kWh]
EelR-tot [kWh]
EfrR-tot [kWh]
EfuelR-tot [kWh]

359
2,236
3,911
49

EthP-tot [kWh]
EelP-tot [kWh]
EfrP-tot [kWh]
EfuelP-tot [kWh]

415
0
3,911
0

5

includi utenza

-259 €

EC [%]
38%

Check Mix
Produttivo
OK!

PV
CG
ORC

escluso
escluso
escluso

ST
PAC
R-TH

includi (on)
escluso
ESCLUDI IMMISSIONE
NO SCAMBIO SUL POSTO

FR-ASS
FR-CMP

escluso
includi (on)

RSEch_tot [€]
RSEel_tot [€]
RSEfr_tot [€]
RSEfuel_tot [€]

0
-257
0
-2

APch [%]
APel [%]
APfr [%]
APfuel [%]

100%
0%
100%
0%

QRch [%]
QRel [%]
QRfr [%]
QRfuel [%]

100%
0%
0%
0%

EthR-UT [kWh]
EelR-UT [kWh]
EfrR-UT [kWh]
EfuelR-UT [kWh]

359
1,258
3,911
49

EthR-tot [kWh]
EelR-tot [kWh]
EfrR-tot [kWh]
EfuelR-tot [kWh]

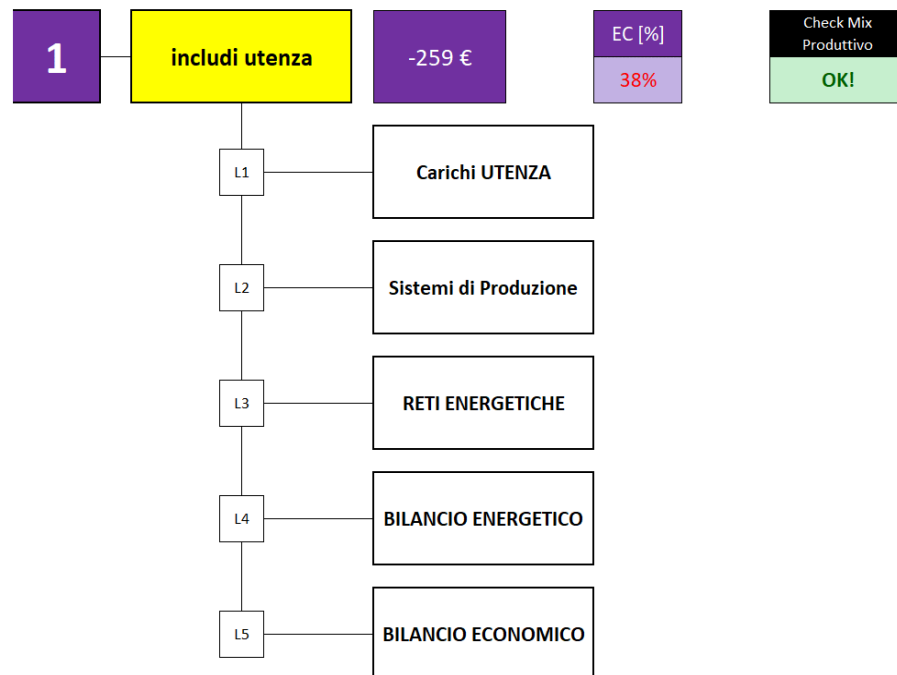
359
2,236
3,911
49

EthP-tot [kWh]
EelP-tot [kWh]
EfrP-tot [kWh]
EfuelP-tot [kWh]

415
0
3,911
0

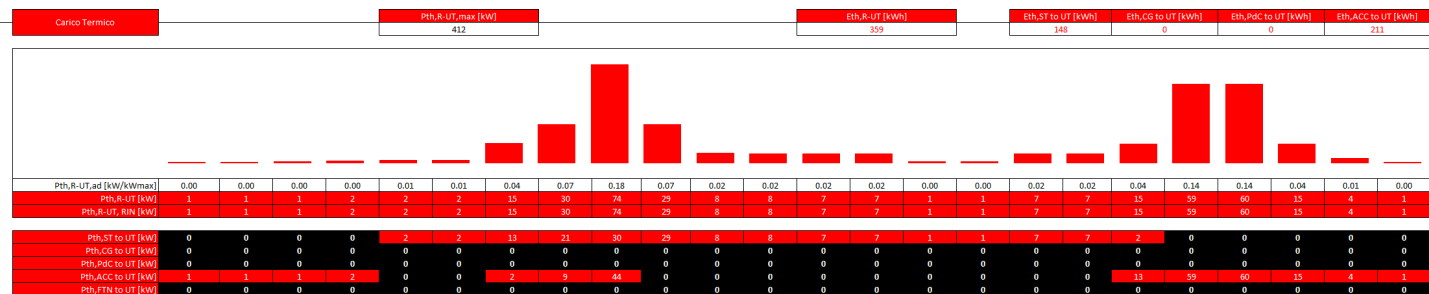
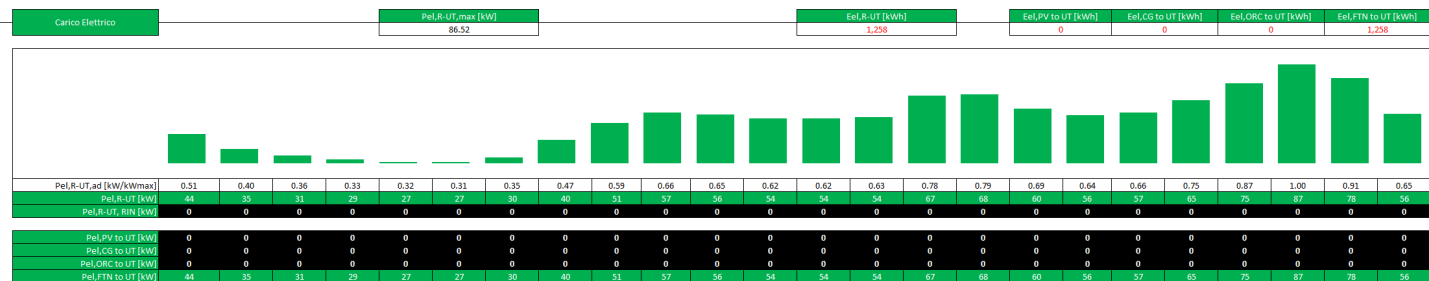
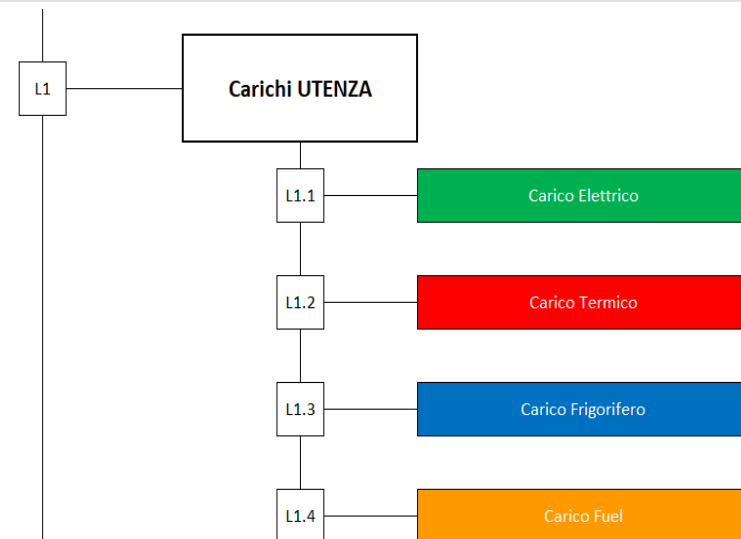
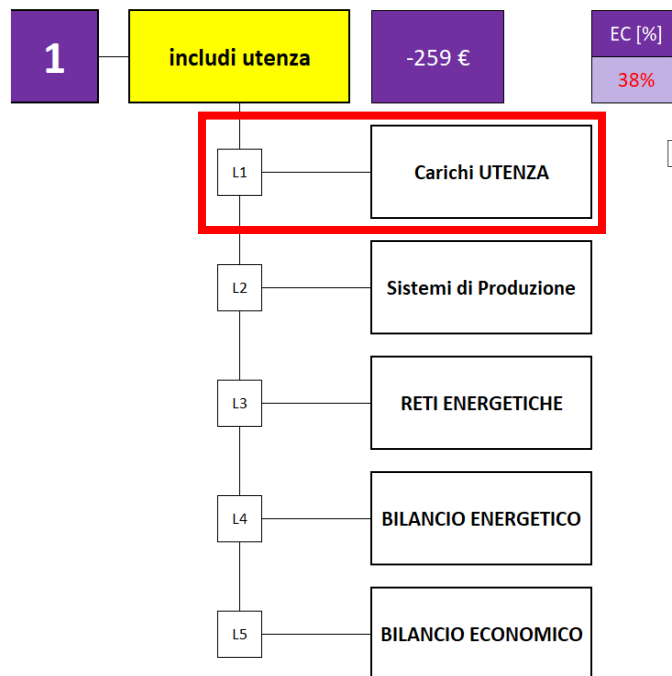
sviluppo di un modello di calcolo di rete energetica complessa

ECOS 6.4 – Energy Communities Optimizer Software



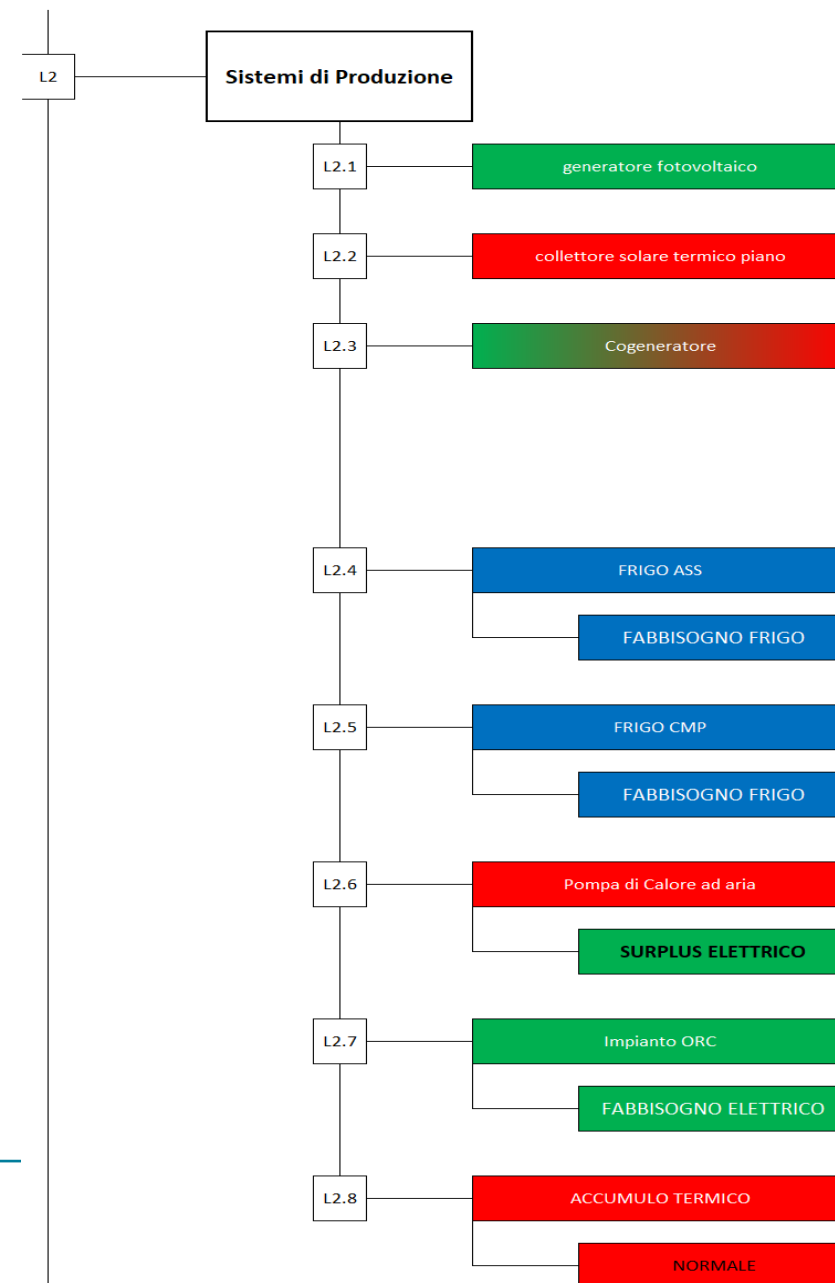
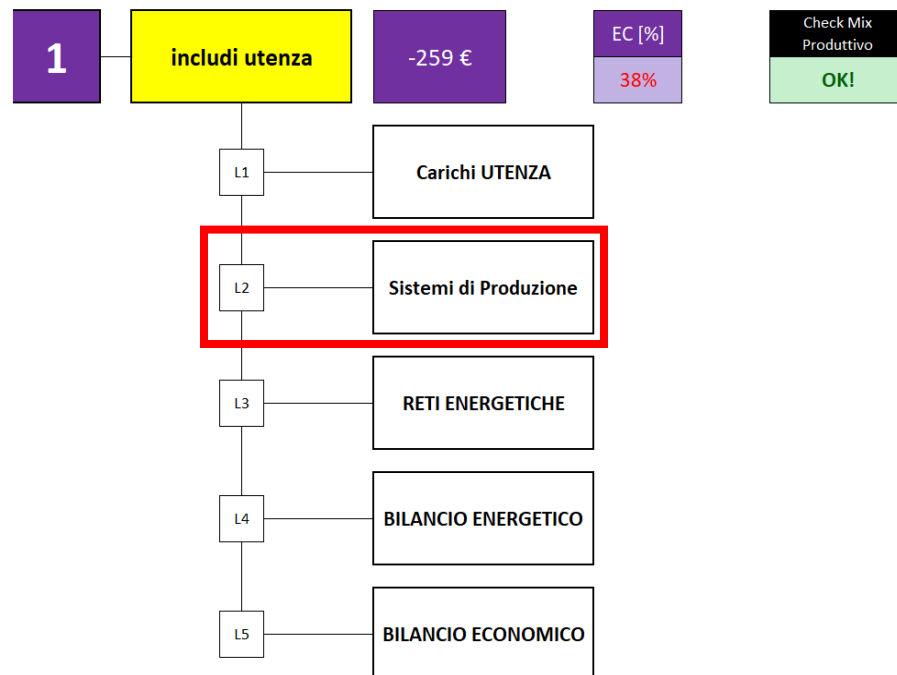
sviluppo di un modello di calcolo di rete energetica complessa

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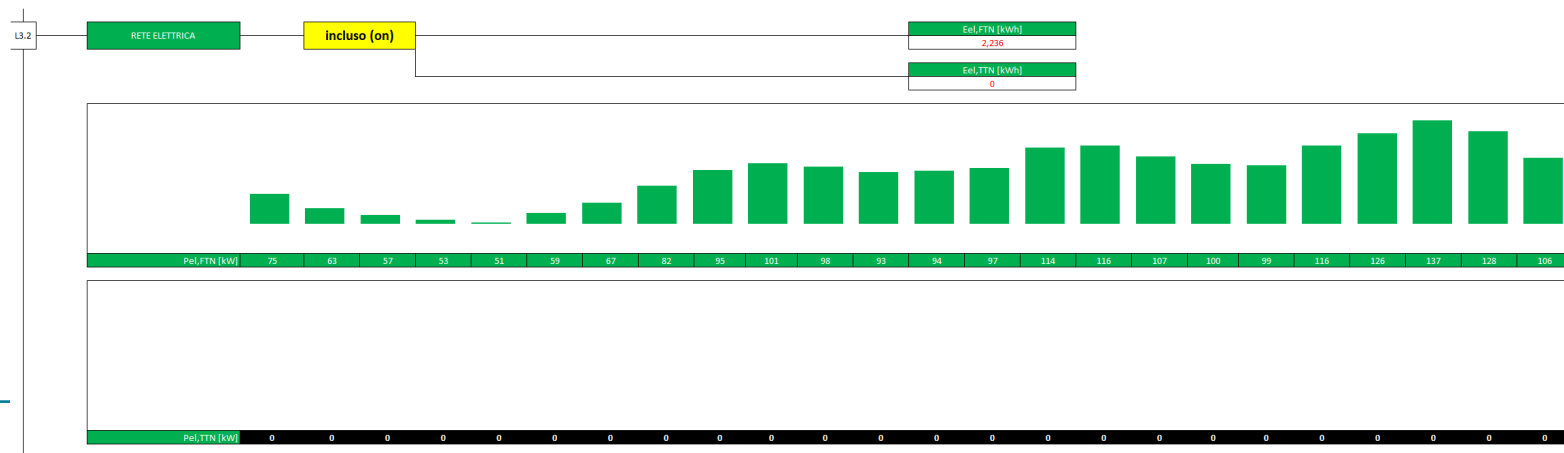
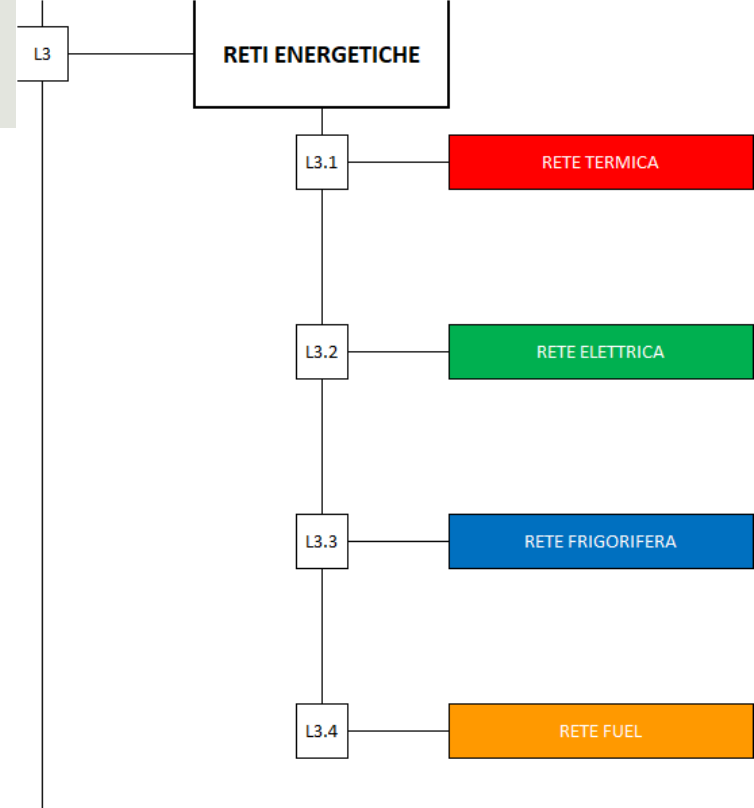
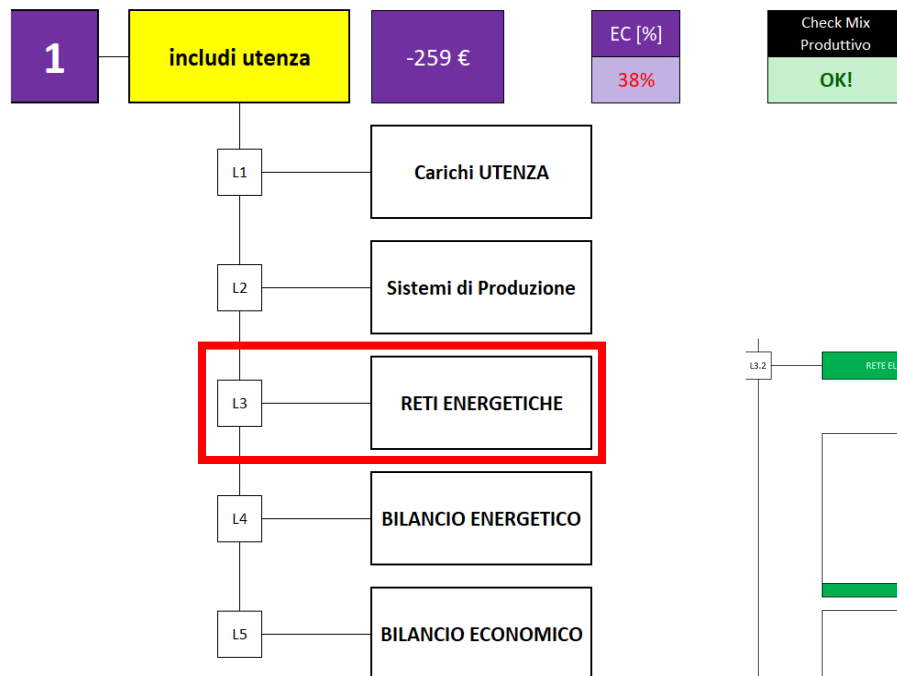
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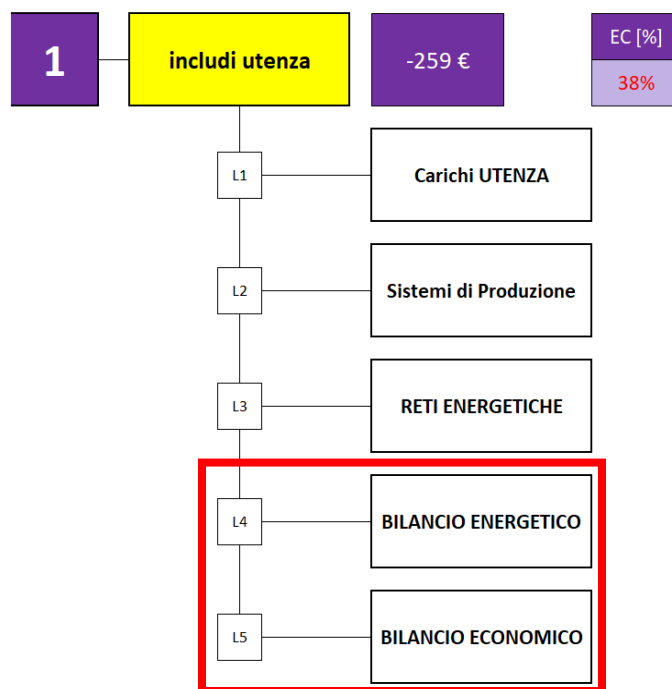
sviluppo di un modello di calcolo di rete energetica complessa

ECOS 6.4 – Energy Communities Optimizer Software



sviluppo di un modello di calcolo di rete energetica complessa

ECOS 6.4 – Energy Communities Optimizer Software



PV	escluso	ST	incluso (on)	FR-ASS	escluso
CG	escluso	PdC	escluso	FR-CMP	incluso (on)
ORC	escluso	R-TH	ESCLUDI IMMISSIONE		
		R-TH	NO SCAMBIO SUL POSTO		

RSEth,tot [€]	0
RSEel,tot [€]	-257
RSEfr,tot [€]	0
RSEfuel,tot [€]	-2

APth [%]	100%
APel [%]	0%
APfr [%]	100%
APfuel [%]	0%

QRth [%]	100%
QRel [%]	0%
QRfr [%]	0%
QRfuel [%]	0%

Eth,R-UT [kWh]	359
Eel,R-UT [kWh]	1,258
Efr,R-UT [kWh]	3,911
Efuel,R-UT [kWh]	49

Eth,R-tot [kWh]	359
Eel,R-tot [kWh]	2,236
Efr,R-tot [kWh]	3,911
Efuel,R-tot [kWh]	49

Eth,P-tot [kWh]	415
Eel,P-tot [kWh]	0
Efr,P-tot [kWh]	3,911
Efuel,P-tot [kWh]	0

Eth,P-acc [kWh]	211
Eth,I-acc [kWh]	214
Eth,D-acc [kWh]	53
Eth,acc [kWh]	2

Eth,FTN [kWh]	0
Eel,FTN [kWh]	2,236
Efr,FTN [kWh]	0
Efuel,FTN [kWh]	49

Eth,TTN [kWh]	0
Eel,TTN [kWh]	0
Eth,TTN [kWh]	0
Efuel,TTN [kWh]	0

Check Eth [kWh]	0,000
Check Eel [kWh]	0,000
Check Efr [kWh]	0,000
Check Efuel [kWh]	0,000

ORC	FABBISOGNO ELETTRICO	PdC	SURPLUS ELETTRICO	FR-ASS	FABBISOGNO FRIGO
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R-EL	incluso (on)	R-TH	incluso (on)	R-FR	incluso (on)	R-FUEL	incluso (on)
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