On-Site Power Generation: The Smart way to overcome Energy challenges

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Facilitators

Sandrine Lestra
ABB - Communication specialist

Presenters

Eng. Marco Pezzaglia
Founder and Owner of Gruppo Professione Energia

Marco Busseni
Global Application Specialist

Microgrid and Grid to charger solutions

Frederic Camelet
ABB - Global Business Developer

Ground rules

The session will be **recorded** to allow distribution afterwards

Your **microphone** is automatically **muted**

Please ask your question in the Questions chat window and they will be addressed during the «**Q&A session**» at the end of the presentation

Agenda

01. Self-consumption: why, what and where

02. On-site generation by law definition

03. Understanding grid tariffs and effects of on-site-generation initiatives

04.Relationships among the parties involved

05. On-site generation conclusion

06. Energy Simulator

07. Q&A

1

Self consumption: why, what and where

Why
System perspective

Source: CEER

What
Legal perspective

Source: CEER

Where

CEER review

Table 3-1 – Legal adoption of concepts

Definition	AT	BE	CZ	DE	EE	ES	FI	FR	HU	IE	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SI	SK	XK
Renewable active self-consumer	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU	PA	FU	FU	FU	PA	FU	PA	FU	FU	FU	FU	FU
Jointly acting renewables self-consumers	MM	FU	FU	FU	FU	FU	FU	FU	PA	MM	FU	PA	FU	PA	FU	PA	FU	PA	FU	MM	FU	PA	PA
REC, CEC	FU	FU	FU	FU	FU	PA	FU	FU	PA	PA	FU	FU	PA	FU	FU	FU	MM	PA	FU	MM	FU	FU	FU
Energy sharing	MM	FU	FU	PA	PA	PA	PA	FU	PA	MM	FU	PA	FU	FU	PA	PA	FU	PA	FU	MM	PA	PA	PA

Legend: FU – Full, PA – Partial, MM – Mostly missing

CEER circulated a survey among the NRAs11 ('Survey') to gain insight into member countries' implementation of community energy initiatives, having received input from 23 authorities (AT, BE, CZ, DE, EE, ES, FI, FR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SI, SK and XK)

Source: CEER

2

On-site generation by law definition

On-site generation
Law definition

Simple production and consumption systems (SSPC)

- a system in which a power line connects
- one or more production units managed, as producers, by the same natural or legal person or by different legal persons
- to a consumption unit managed by a natural person as an end customer or to one or more consumption units managed, as end customers, by the same legal entity or by different legal entities, provided that they all belong to the same corporate group.

Legislative decree 210/2021
(updated in 2025)

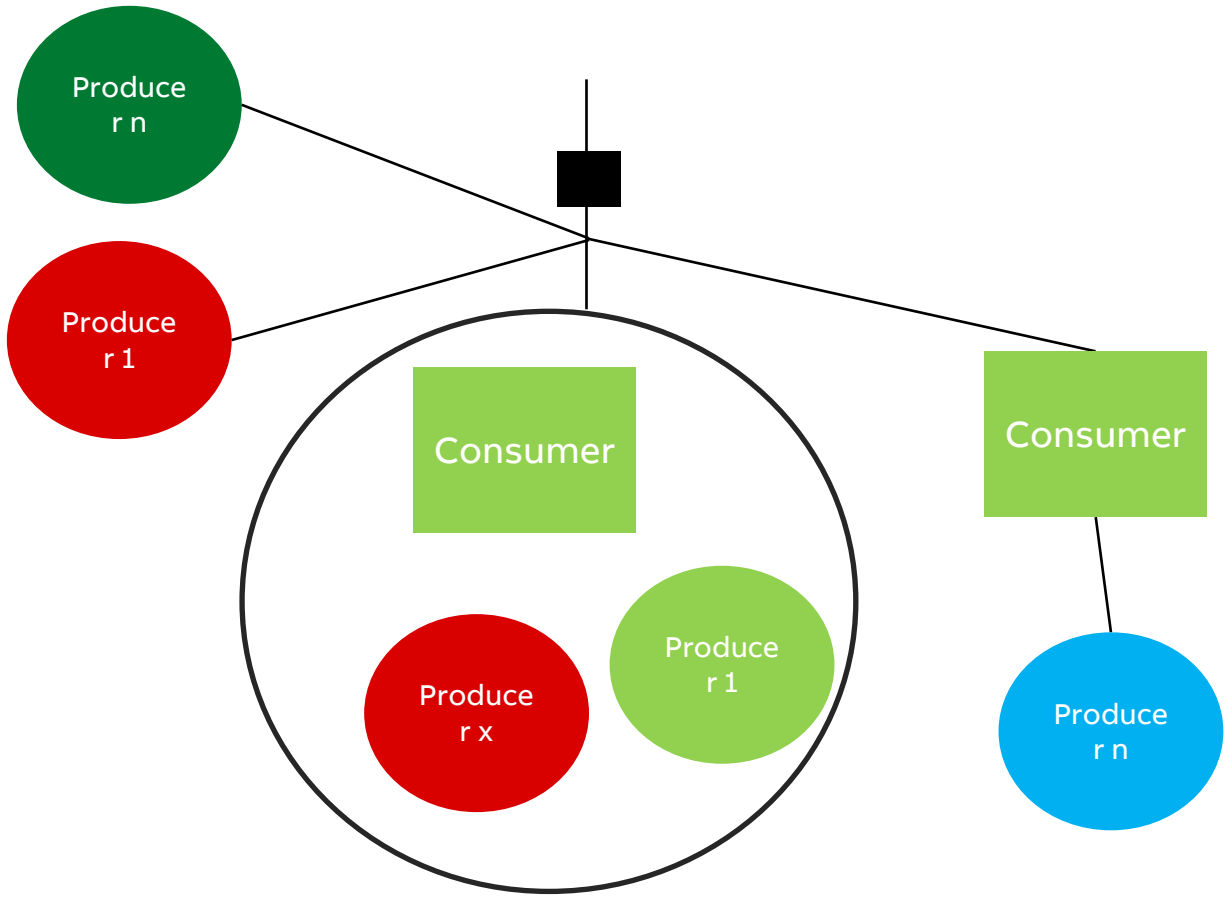
On site generation
Law definition

The various elements that make up a simple production and consumption system, excluding only electrical connections, must be located on cadastral parcels that are fully available to one or more of the entities that are part of the same simple production and consumption system.

The electrical connections between the various elements of the SSPC and between the SSPC and the electricity grid may be located in areas under the simple availability of one or more of the entities that are part of the same simple production and consumption system.

Legislative decree 210/2021
(updated in 2025)

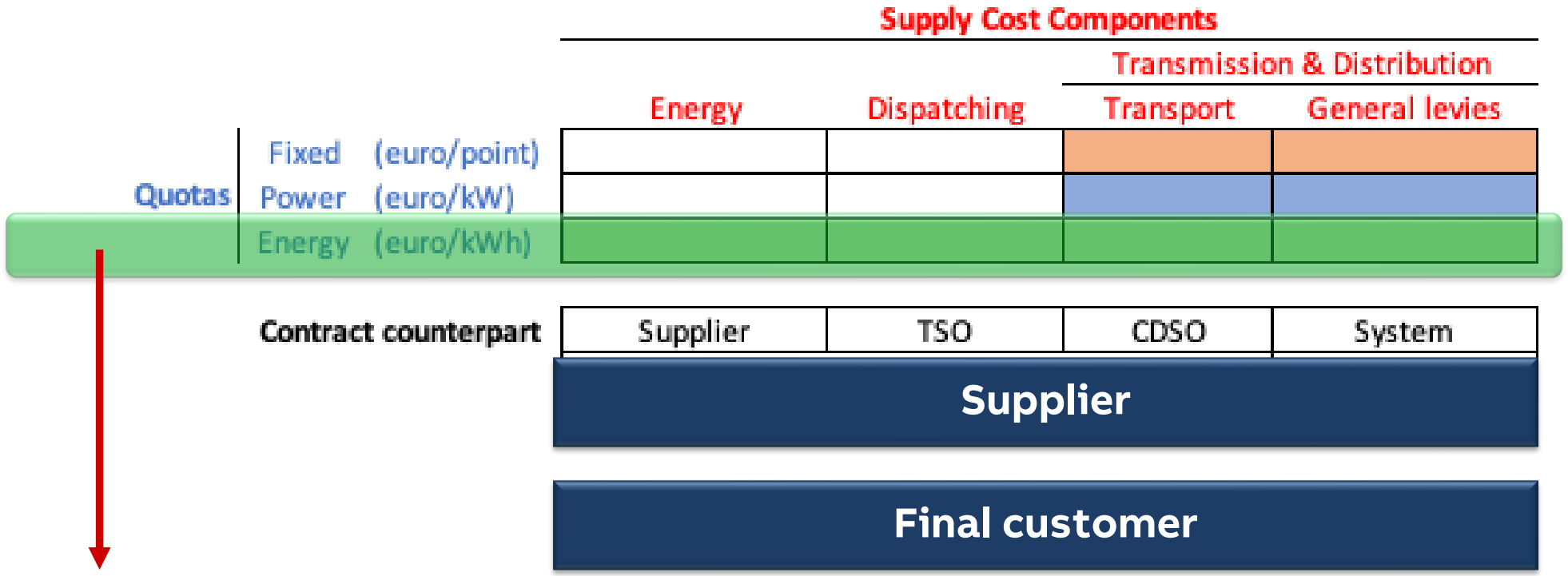
On-site generation
Connected concepts



3 Understanding grid tariffs and effects of on-site-generation initiatives

Supply cost components

The tariff case

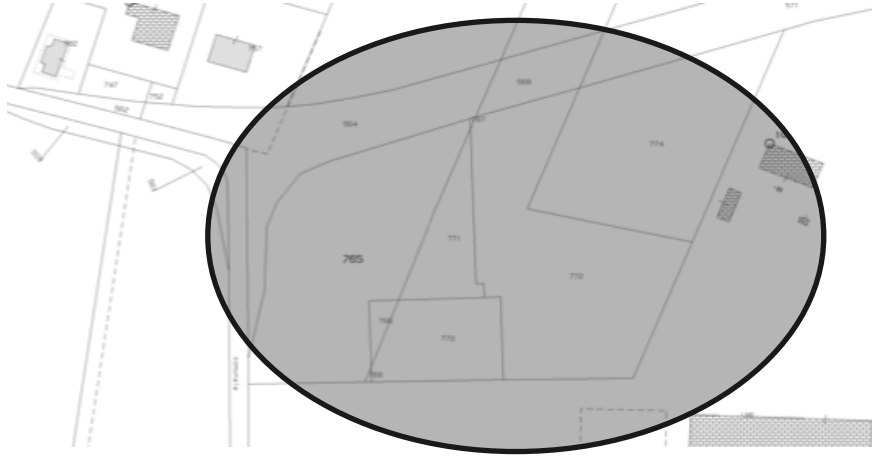


The avoided withdrawing from the grid as a result of on-site generation translates into:

- an avoided cost of the fees expressed in euro/kWh
- buying self-produced energy from market sellers.

Example

- Production and consumption facilities are installed on the same site but are currently independent.
- The production facility and consumption unit must be connected under a single POD, which must be registered in the name of the owner of the consumption unit.
- This does not necessarily have to be the existing POD of the UC; it can also be that of the facility, provided that it is ultimately registered in the name of the consumer.



Data & results

Planta data	Rated power (kWp)	197,4
	LCOE production (euro/kWh)	0,07
Market	Energy market value (euro/kWh)	0,12
Customer data	Energy price for customr (energy) (euro/kWh)	0,23
	Customer Type	MTA2

RESULTS

BILANCIO ENERGETICO (kWh/anno)	
Initial consumption	352.951
Production	213.281
Injection	99.705
Self-consumption	113.576
Energy withdrawal	239.375
% self produced consumption	32%
% self-consumed production	53%
% excess production	47%

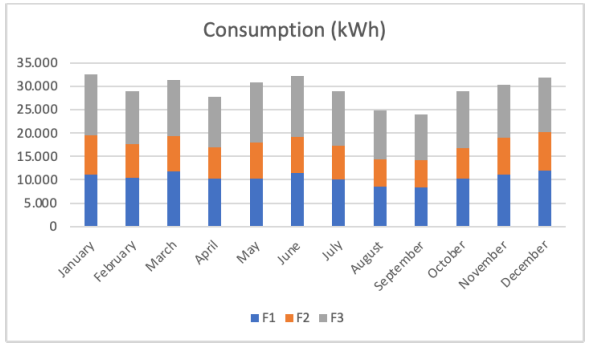
VALUE FOR CUSTOMER (euro/year)	
Initial cost for the customer	81.179
Self consumption saving	20.024
Final position of the customer	61.155
% total saving	25%

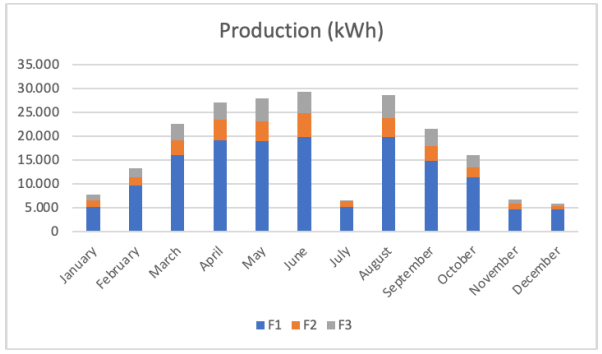
FINAL ECONOMIC RESULTS (euro/year)	
Self-consumption	20.024
Avoided cost of services	6.395
Avoided cost of energy	13.629
Market value of excess production	11.965
Total value (of energy produced in self-consumption regi	**31.988**

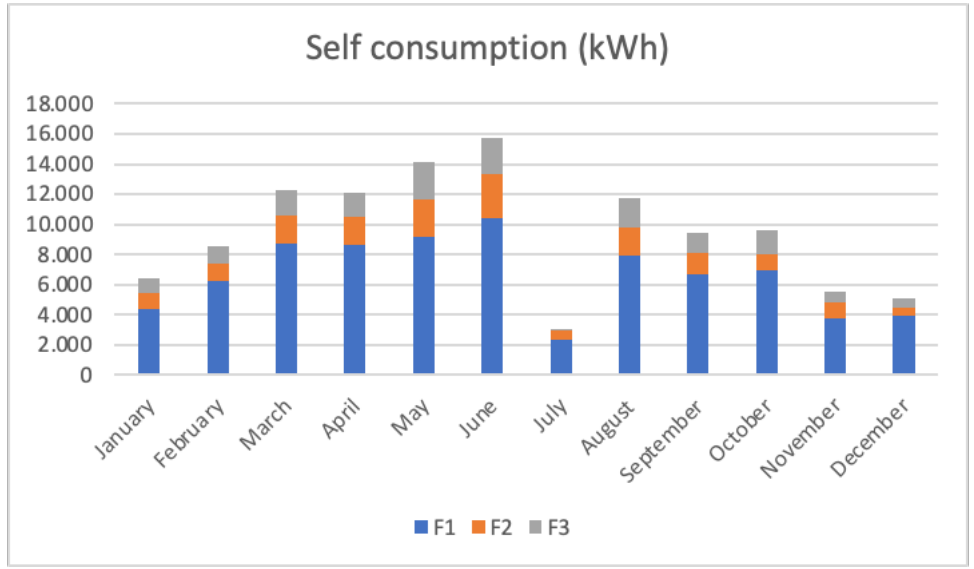
VALUE FOR PRODUCSERS (euro/year)	
LCOE value for production	7.950
Excess energy market condition	11.965
Final position (producer side)	**19.915**

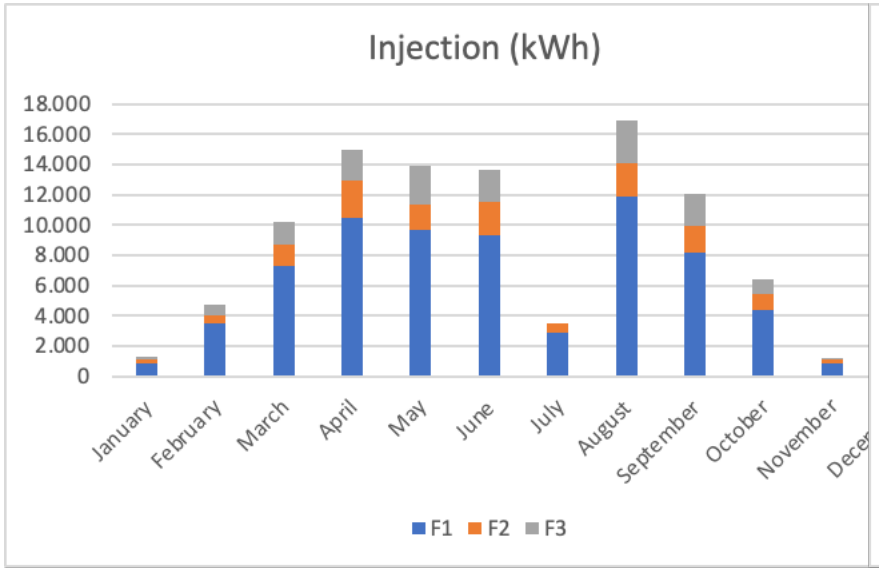
TOTAL FINAL POSITION	
SSV-PV+MV	24.038

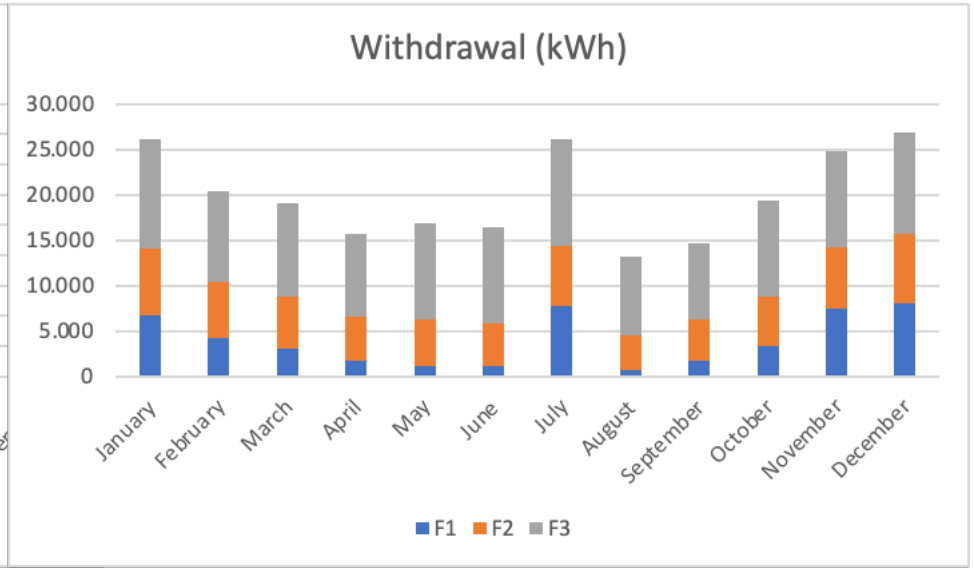
Energy balance details







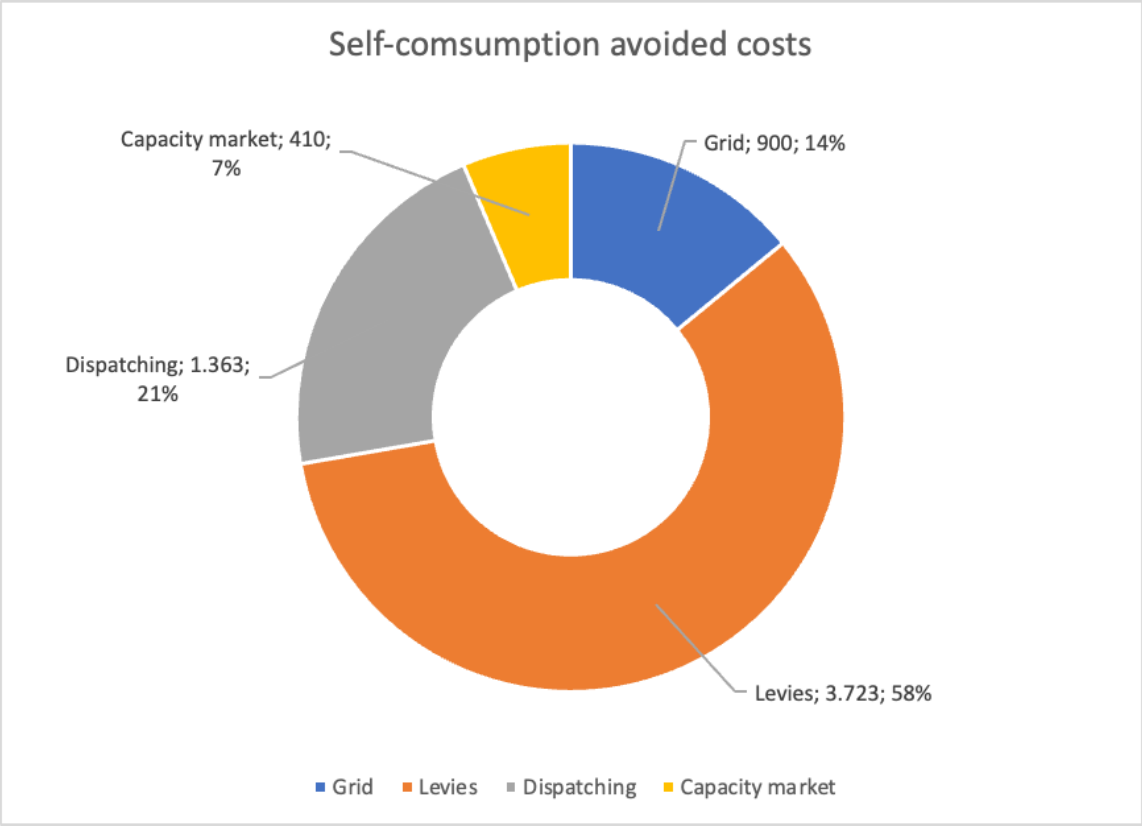


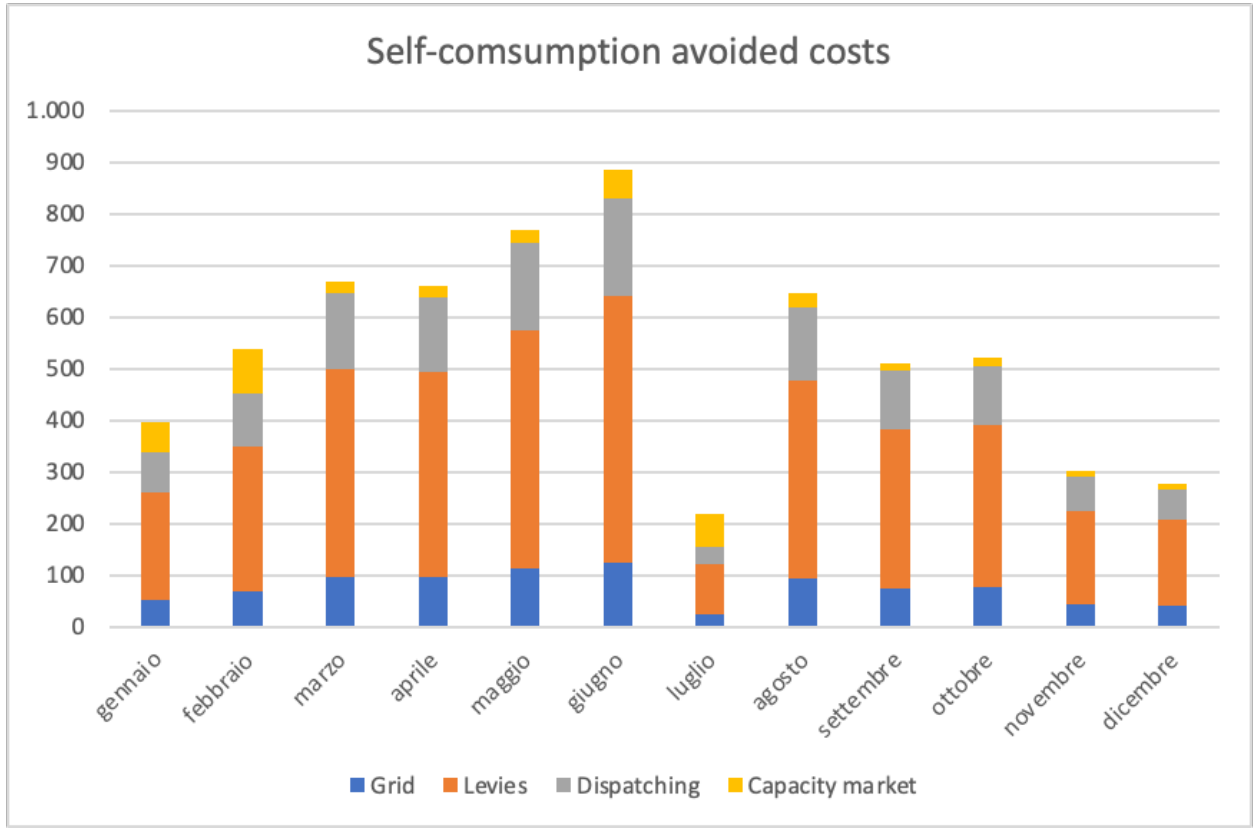


Avoided cost details

Self-comsumption avoided costs (euro/year)

Total avoided costs	Grid	Levies	Dispatching	Capacity market
6.395	900	3.723	1.363	410





4 Relationships among the parties involved

Self-consumption pricing
Principles

Option 1: Value at production cost

The value of energy is set equal to the cost of production: what it costs to produce it (taking into account the fact that the plant may also receive subsidies).

Option 2: Market value

The value of energy is set equal to the market value of energy and represents the alternative value of energy purchased by the customer in the absence of self-consumption.

Option 3: Fixed valuation

Fixed fee assessed on a provisional basis, possibly indexed.

Option x → mix of the various options

The method of sharing avoided costs/added value stands out.

The pricing of self-consumption always takes into account the economic factors that accompany the asset created.

5

On-site generation conclusion

Conclusions

The electricity sector has already developed regulatory concepts and models for self-consumption:

- TYPE OF SITE
  - with production and consumption located either on the same site or on different sites
- TYPE OF CONNECTION BETWEEN PRODUCTION AND CONSUMPTION
  - with direct connections between the production system and the consumption system (using the SSPC model) or through the use of the public grid (distributed self-consumption model)
- TYPE OF PARTIES INVOLVED
  - also through third-party producers with respect to the end customer.

WHAT ARE THE MAIN NEEDS ?

The adoption of self-consumption systems brings with it several requirements:

- Increasing measurement and monitoring activities
- Knowing the parameters of the system's behavior is essential for regulating internal relationships
- The presence of an active system increases the need to exchange signals and information with network operators.

6

Energy simulator

Energy Simulator
Value Propositions

01.

The tool facilitates the evaluation of the investment phase (ROI calculation) of a microgrid project, significantly reducing the initial time and cost dedicated to this estimation.

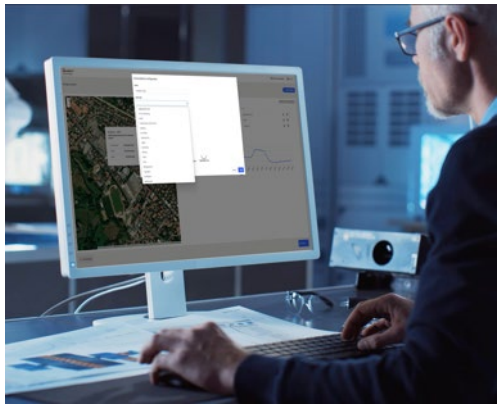
02.

It helps customers make informed investments and better plan their energy transition by providing precise results that consider key investment drivers, such as financial returns versus sustainability.

03.

It enables direct connection with ABB experts for strategic project support.

Energy Simulator
Battle card



What

Energy Simulator is a hardware-free, SaaS platform that enables the design of efficient and sustainable microgrids (greenfield and brownfield, single or multi-site).

It enables unlimited and fast simulations, with downloadable and shareable outputs, supporting investment decisions and energy transition strategies.

Trends

- Growing complexity and cost of microgrid projects.
- Shift from static models (Excel spreadsheets) to dynamic and collaborative tools.
- Greater weighting of ROI and environmental impacts in investment decisions.
- Demand for easy-to-use platforms, accessible even to non-experts.

Value proposition

- Reduced time and costs: ROI calculated quickly and accurately.
- Data-driven scenarios: Compare different technical and economic solutions.
- Precise geolocation data for more reliable simulations (e.g., solar radiation).
- User-friendly: Guided workflow, no hardware license, multi-user.
- Free of charge: Unlimited and free access.
- Expert support: Direct connection with ABB teams for strategic consulting.

Energy Simulator

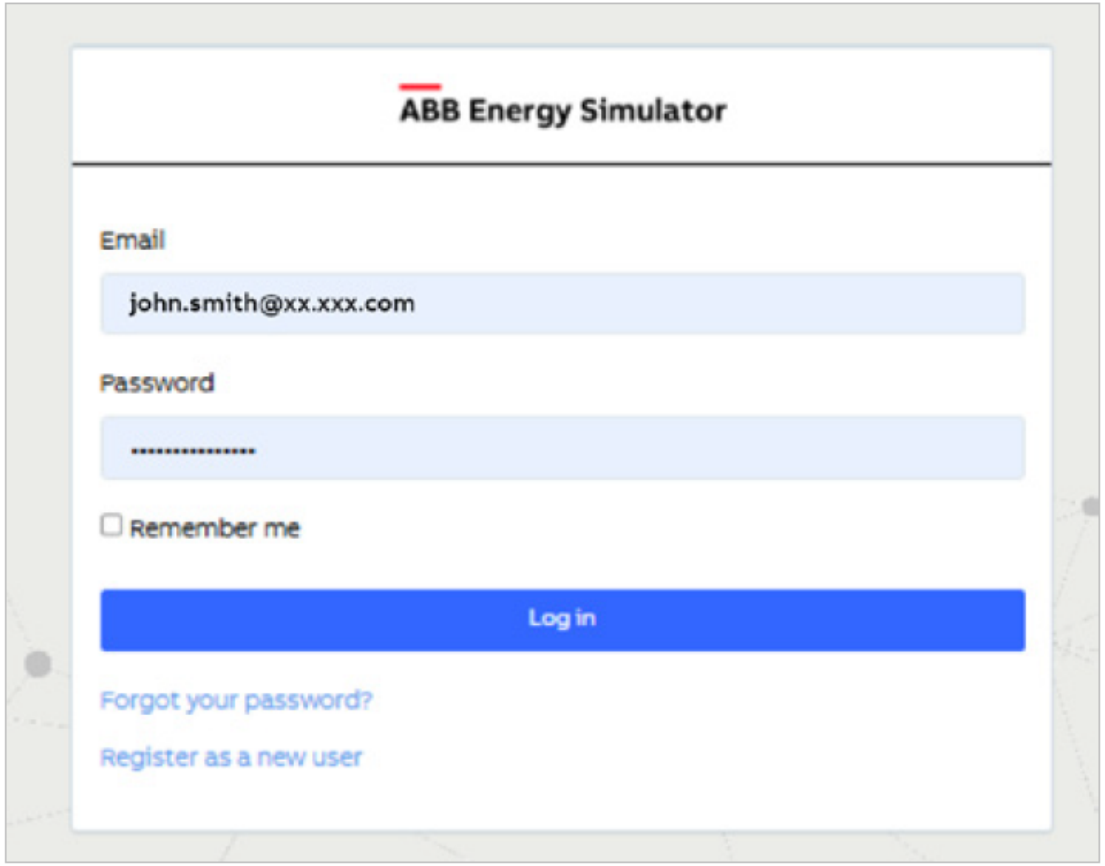
How to access: https://abb-energy-simulator.x-em.eu/

01 To access the Energy Simulator, click on the following link: https://abb-energy-simulator.x-em.eu/

02 Once clicked, you'll be directed to the registration page.

03 On your first access, click on “Register as a new user” and add the requested information to access the tool.

04 After registration, you will receive an email, where you need to confirm the registration and access the main page of the tool.



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