ELF-TECH

Energy and Heat for the Future of Your Home

The Complete Solution for Families: **Off-Grid Hydrogen Cogeneration**

Why switch to domestic cogeneration?

The problem:

- Gas and electricity prices increase every year
- Forecasts:
  - +7% per year for natural gas, +6% per year for electricity (moderate scenario)
  - +9% per year for natural gas, +9% per year for electricity (unfavorable scenario)
- Gas boilers and burners are inefficient, increasingly expensive, and highly polluting
- Solar energy from the sun is free but wasted if not stored

The solution:

An off-grid cogeneration system that captures and stores the sun's free energy, converting it into electricity and heat available 24/7.

Typical Consumption and Estimated Savings

Average family profile:

- 4 people
- Average annual consumption:
  - 4.500 kWh for domestic electricity
  - 1.200 Smc gas
  - 9.600 kWh for two electric cars covering 25,000–30,000 km/year

Total annual consumption: approx. 14,100 equivalent kWh

Current costs (first year – without cogenerator):

- Electricity: € 0,30/kWh => € 1.350
- Gas: € 1,20/Smc => € 1.440
- Electric cars: € 2.880

Total first year: € 5.670

Cumulative 10-year costs (with forecasted increases):

- Electricity: € 65.100
- Natural gas: € 23.700
- Cumulative total: € 88.800

The Cogeneration System: How It Works

The off-grid cogeneration system we offer is not just technology, but a fully integrated solution to achieve total energy independence.

Main components:

- **Electrolyzer**: it uses electricity generated from the photovoltaic system to split water into oxygen and green hydrogen
- **Hydrogen Storage System (ISAIA):** it stores the produced hydrogen (capacity from 320 kWh to 1,600 kWh, equal to 13–66 days of autonomy)
- **Fuel Cell**: it converts hydrogen back into electricity and heat

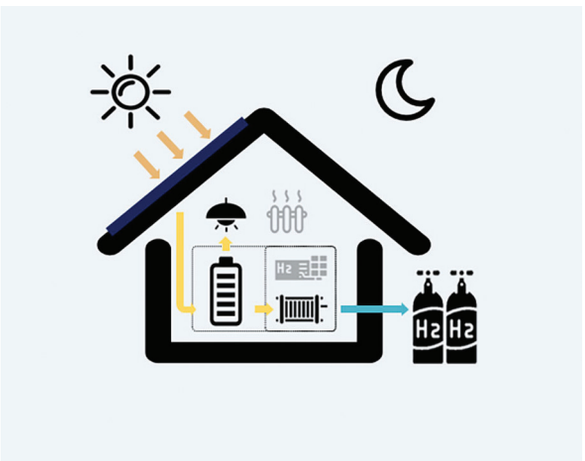
Physical structure of the ELF-TECH system:

- **Indoor unit (GERRHY):** it integrates electrolyzer, fuel cell, and intelligent control

- **Outdoor unit (ISAIA):** long-term hydrogen storage tank

Simplified Annual Operation:

- **Summer**: Photovoltaics cover consumption and store energy in batteries and hydrogen



- **Winter:** Stored hydrogen powers electricity and heat via the fuel cell

Overall Efficiency:

- **Solar energy utilization up to 90–95%**
- **Storage costs up to 60% lower than lithium batteries**
- **Zero waste**

Strategic Advantages:

- **100% energy independence**
- **Energy cost savings**
- **Flexibility and security against future price increases**
- **Environmental sustainability**

Economic considerations

Without a cogeneration system, and considering variable increase scenarios in electricity and gas costs, total energy costs over 10 years tend to rise significantly and are estimated to reach between €89,000 and €106,000, depending on the increases in gas and grid energy prices.

On the other hand, by installing an off-grid cogeneration system, despite the initial investment, the annual costs of electricity and natural gas are completely eliminated, and maintenance costs are included.

Over a 10-year period, this solution becomes economically advantageous compared to non-cogeneration scenarios, ensuring greater stability and long-term energy autonomy—is becoming cost-effective starting from year 10.

Conclusions and benefits

- From year ten onward, each additional year generates full net savings
- Total energy autonomy, also for electric mobility
- Complete reduction of dependency on energy and gas suppliers
- Selectable autonomy of up to 66 days without sunlight
- Added property value and environmental sustainability

Turn your home into an autonomous energy plant.
Contact us today for a free consultation.

Discover your potential savings and choose your autonomy.

Energia Ligure Futura Technologies S.R.L.
VAT ID: 01794780088
Via Tommaso Schiva 62, Imperia, IM, Italy
www.elf-tech.it | info@elf-tech.it