

# Cogeneration and Trigeneration



**CPL Concordia**  
ENERGIA CHE MIGLIORA LA VITA

## CPL Concordia A reliable partner for gas infrastructure

### A CENTURY OF EXPERIENCE

CPL Concordia is an **Italian cooperative** with roots dating back to **1899**. For more than a century, we have been **designing, building, and managing energy systems**, combining industrial strength, technical expertise, and a capacity for innovation.

### INTEGRATED EXPERTISE FOR COMPLEX SYSTEMS

Our activities range from gas and water distribution to heat management, from facility management to public lighting, from cogeneration to digital services for utilities. **An integrated approach that allows us to manage critical infrastructures with a comprehensive and coordinated vision.**

### OUR PEOPLE, OUR PRIORITY

Our growth is built on the value of people, promoting regulated, safe, and rewarding work. **We invest in continuous training and skills development.** Our commitment to quality, safety, environmental protection, and human rights is supported by **certified systems and regular audits**, following a path of continuous improvement and transparency toward all stakeholders.



**We are your reliable partner for the cogeneration and trigeneration sectors, from design to commissioning.**

\*Data from December 2024

## High-Efficiency Cogeneration: up to 94% efficiency to maximize energy and cost savings

Every day, traditional boilers use **high-quality fuels** (natural gas or diesel) to produce energy with a **low-efficiency system**.

Cogeneration was developed precisely to address this waste: **it can achieve efficiencies of up to 94%.**

Cogeneration is the combined production of electricity and thermal energy.

How does it work? A gas-powered engine (using natural gas) is connected to an electric generator, producing electricity. During operation, the engine generates heat in the cylinders, the lubricating oil, and the exhaust gases. Normally, this heat would be lost to the environment, but in a cogeneration system, it is fully recovered and converted into thermal energy through heat exchangers.

Compared to producing electricity and heat separately—electricity in power plants and heat in boilers—**cogeneration reduces fuel consumption by 30–40%.**

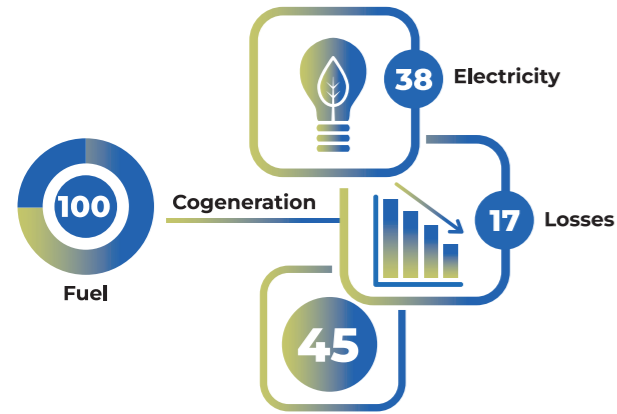
This means **cost savings** and a **reduction in atmospheric emissions**.

Cogeneration is particularly suitable for situations where, alongside the regular electricity demand, there is also a need for thermal and/or cooling energy for production processes or climate control.

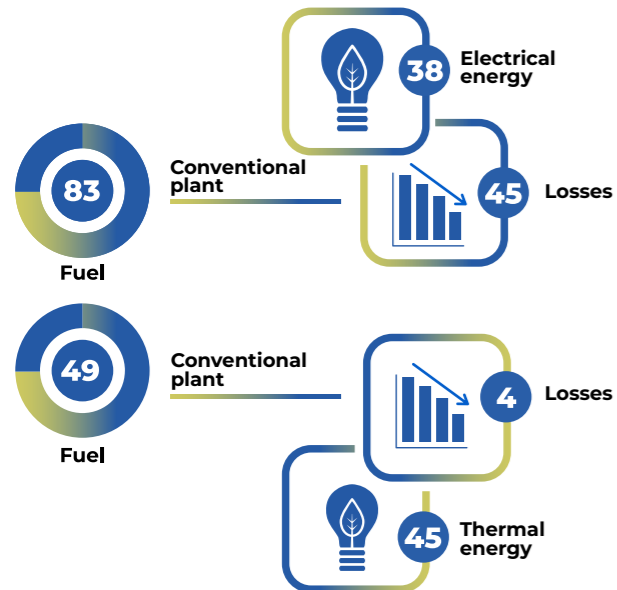


- + energy savings
- + economic savings
- + environmental savings

## Cogeneration Production



## Standalone production



## SMART ENERGY THAT REDUCES CONSUMPTION AND EMISSIONS

Starting from 100 units of fuel, a cogeneration plant can produce 44 units of electricity and 45 units of useful heat, while losses amount to 11 units. To generate the same amount of heat and electricity using two separate plants, 148 units of fuel would be required instead (53 + 95).

CPL CONCORDIA offers customized solutions that increase energy savings, ensure greater operational efficiency, and improve the sustainability of your plant.

## Trigeration

Technology that turns efficiency into tangible economic benefits while reducing CO<sub>2</sub> emissions

Trigeration is the simultaneous production of electricity, thermal energy, and cooling. The conversion of thermal energy recovered from the cogenerator into cooling energy is made possible by pairing it with an absorption chiller.

Absorption chillers are designed to use hot or superheated water as the primary energy source. They produce **no greenhouse gas emissions** and have **zero environmental impact**.

When combined with a cogenerator, they allow the use of heat that would otherwise be lost to the environment. This increases **operating hours and economic benefits**, improving the payback time of the investment.

The absorption chiller can produce chilled water at an outlet temperature of 7 °C, meeting the requirements of most cooling systems. This chilled water can be used for **summer air conditioning in industrial, commercial, and residential applications**.

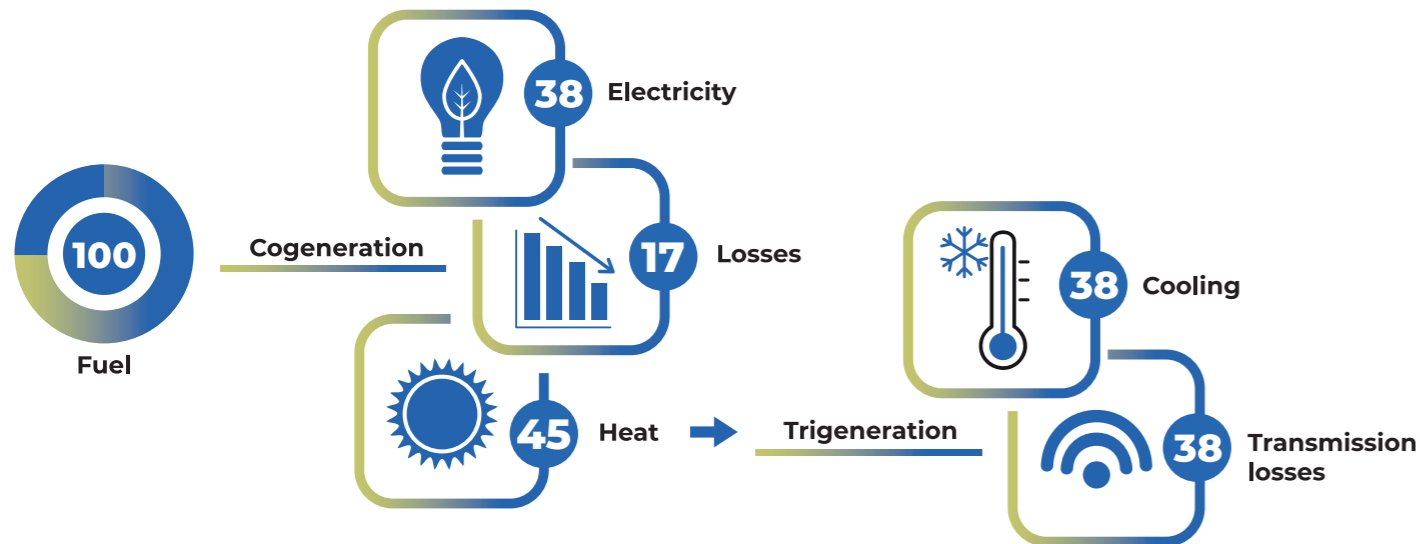


## The Benefits

Thanks to cogeneration and trigeneration systems, it is possible to achieve several benefits:

- **Energy savings:** reduced fuel consumption.
- **Cost savings:** installations can deliver savings of 20–30% compared to traditional methods.
- **Environmental benefits:** lower CO<sub>2</sub> emissions
- **Increased reliability and independence** from conventional electricity supply.
- **Net metering and dedicated electricity purchase:** connection to the grid allows selling or exchanging electricity, eliminating energy waste and shortening the investment payback period.
- **White certificates:** cogeneration and trigeneration plants can benefit from Energy Efficiency Certificates (also known as “white certificates”), an economic incentive mechanism supporting various energy efficiency measures.

## The system



## Clients

Cogeneration and trigeneration are particularly suitable for those requiring at least **3,500 hours of heat per year**, with simultaneous **high thermal and electrical loads**, or for those needing air conditioning during the summer months or refrigeration even in winter.

Below are typical applications and their target users:

### 1. Use of heat for industrial processes:

- Ceramic and paper industries
- Tanneries
- Plastics and chemical industries
- Drying and pasteurization processes
- Greenhouses

### 2. Air conditioning of buildings for residential or commercial use:

- Hospitals
- Clinics and nursing homes
- Fitness centers and swimming pools
- Shopping centers
- Residential complexes, offices, and warehouses
- District heating systems



## Proposal

**CPL provides the expertise required to develop a high energy-efficiency plant and to identify a financial solution aligned with the client's needs.**

Below are the possible financial solutions for installing a cogeneration and trigeneration system:

- Sale and installation of the plant
- Hourly usage fee
- Energy service
- Sale of energy produced by the cogeneration unit
- Discount on energy tariffs

### THE SERVICE

**CPL CONCORDIA boasts 40 years of experience in the cogeneration sector, with over 400 plants installed across Italy and 10 million hours of guaranteed plant operation.**

The company supports and guides clients who choose cogeneration and trigeneration through the following activities:

#### Energy Audit

- Collection of preliminary data
- Identification of the most suitable plant configuration
- Alignment with the client on financial targets (business plan)

#### Feasibility Study

- Detailed data collection
- Technical and economic feasibility study
- Analysis of technological solutions and plant sizing
- Presentation of results to the Client
- Agreement between CPL CONCORDIA and the Client

#### Implementation

- Management of authorization procedures
- Advisory on financing and possible incentives
- Construction of a tailor-made plant based on client needs
- Plant commissioning

#### Operation & Maintenance

- Full-service and scheduled maintenance
- Customized maintenance contracts

## Maintenance and monitoring of cogeneration plants

The **high technical expertise** and long-standing experience of CPL CONCORDIA in the cogeneration sector play a crucial role in ensuring not just support, but a genuine presence alongside our clients.

The CPL CONCORDIA Cogeneration Service features a **'full service' maintenance system designed to prevent and resolve any issues with maximum promptness and efficiency**, providing comprehensive coverage for the plant.

The services offered include:

- **Remote visual inspections** tailored to the characteristics of the plant
- **Flue gas analysis** and monitoring
- **Remote control and management systems**  
Internal spare parts warehouse

Thanks to the presence of CPL CONCORDIA offices and branches throughout Italy, we guarantee our clients **immediate and widespread after-sales support.**

### 40 years of experience at your service

CPL CONCORDIA is synonymous with experience, expertise, and Made in Italy service. With over **400 plants delivered**, for **40 years we have been managing and monitoring cogeneration plants**

of all sizes.

**Our contracts typically last 10–15 years** and cover all aspects of after-sales service, including energy commercialization and access to incentive schemes, either directly or on behalf of the client.

**The repurchase rate** for new cogeneration units following the end of life of previous ones **is currently 95.8%** — a clear and indisputable sign of the company's success in creating value for both its clients and itself.



## After-Sales Service

CPL CONCORDIA has a **maintenance system** designed to prevent and resolve any issues in **cogeneration plants with maximum promptness and efficiency**, ensuring comprehensive coverage of the plant.

Customized contracts can also be arranged to meet the specific needs of individual clients, providing continuous and **complete service 24 hours a day, 365 days a year**.

CPL CONCORDIA guarantees **rapid intervention thanks to continuous monitoring** of the cogeneration system. All our clients are supported by a **Competence Center capable of overseeing maintenance service results**, both in terms of service quality and performance levels.



## Services

- Ordinary maintenance
- Scheduled maintenance
- On-call maintenance
- Full Service
- Complete plant operation
- Remote visual inspections
- Flue gas analysis and monitoring
- Remote control and management systems
- Internal spare parts warehouse



### Warranty

*Continuous and complete service 24 hours a day, 365 days a year*

## Energy and Environmental Practices and Analysis Service

With our new Energy and Environmental Practices and Analysis Service, **we offer comprehensive support to ensure compliance with legal obligations**, assisting clients with all bureaucratic and administrative activities, including:

- **Collection, processing, and storage** of operational data;
- **Energy and environmental management** of cogeneration plants and evaluation of energy efficiency improvement measures;
- **Analysis of operational performance** and global energy efficiency trends;
- **Verification** of proper functioning of **measurement instruments**;
- Monthly **energy reporting**;
- **Management of relationships with key authorities and entities:** GSE, GME, ENEL, TERNA, Customs Agency, Regulatory Authority for Energy, Gas and Water Services (ARERA), SNAM, ISPRA, Ministry of the Environment.



Plant Efficiency Improvement



Routine, scheduled, on-call, and full-service maintenance



Remote Assistance and Monitoring Service





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