



ENERGY FOR TELECOM





# Our energy, Your power



Established in 1932, Ausonia represents the company with the highest knowhow in the Italian market of gensets, both as productive potential and technological skills.

Focusing on specific strategies for different industries, it is today recognized as the main Italian player in terms of customized products and services.

Ausonia R&D Department has always driven market reference standards and new technology development.

The company has successfully used this expertise and experience to develop a **wide range of different solutions specifically designed for the telecom market**. In order to meet the specific needs of the telecommunication industry, Ausonia's research and development activity has been successfully oriented **to reduce OPEX and CAPEX costs, to extend the Product's Life Cycle, to increase its reliability and to achieve significant environmental benefits**.



Medi  
power  
AUSONIA GROUP

Rental

Power supply  
for off-grid BTS

Energy Disaster  
Recovery



Plant Operational  
Management

Energy Operational  
Management

Willing to move ahead from product manufacturer to solution maker, in 2003 Ausonia created **MediPower** with specific skills and a dedicated structure, in order to manage all service activities related to the genset world with a customer focused **“energy supply approach”**.

Thanks to the dynamic and flexible nature of its young and innovative organization, Medipower became in a short time undisputed leader for the Italian off-grid BTS energy supply. For such service, Medipower is able to provide a turn-key approach for a **“full rental solution”** based on a daily fee.

Such winning model is based on specifically designed management tools and can be easily and quickly replicated in foreign countries.





[www.ausonia.net](http://www.ausonia.net)

# POWERING YOUR NETWORK

## Data Center / MSC

A wide range of solutions developed for Data centers (HLR) and Mobile switching center (MSC) going from 150 kVA up to 3000 kVA for each unit. To get the best reliability, paralleling configuration is often used. Many sites adopt CCHP solutions (Combined Cooling Heat and Power), in order to have the best trade-off in terms of efficiency, environment and costs.



## BSC / BTS

The Gensets for off-grid BTS designed by Ausonia, in a range from 6 kVA up to 30 kVA, became the winning standard for all the Italian Telcos and are used in the 80% of off-grid sites. Specifically designed to have high reliability, long refueling intervals, complete remote monitoring and alarms the Ausonia BTS solutions guarantee the lowest TCO.



## Disaster Recovery

Telcos' activities ask for energy recovery solutions in case of black-out. In many situations the Ausonia mobile power units are the fastest dependable answer, flexible to place and relocate. Covering a range from 20 kVA up to 800 kVA, these units offer an effective, reliable and energy efficient platform to power mission critical applications anywhere in the world.





# OPEX SMART MANAGEMENT

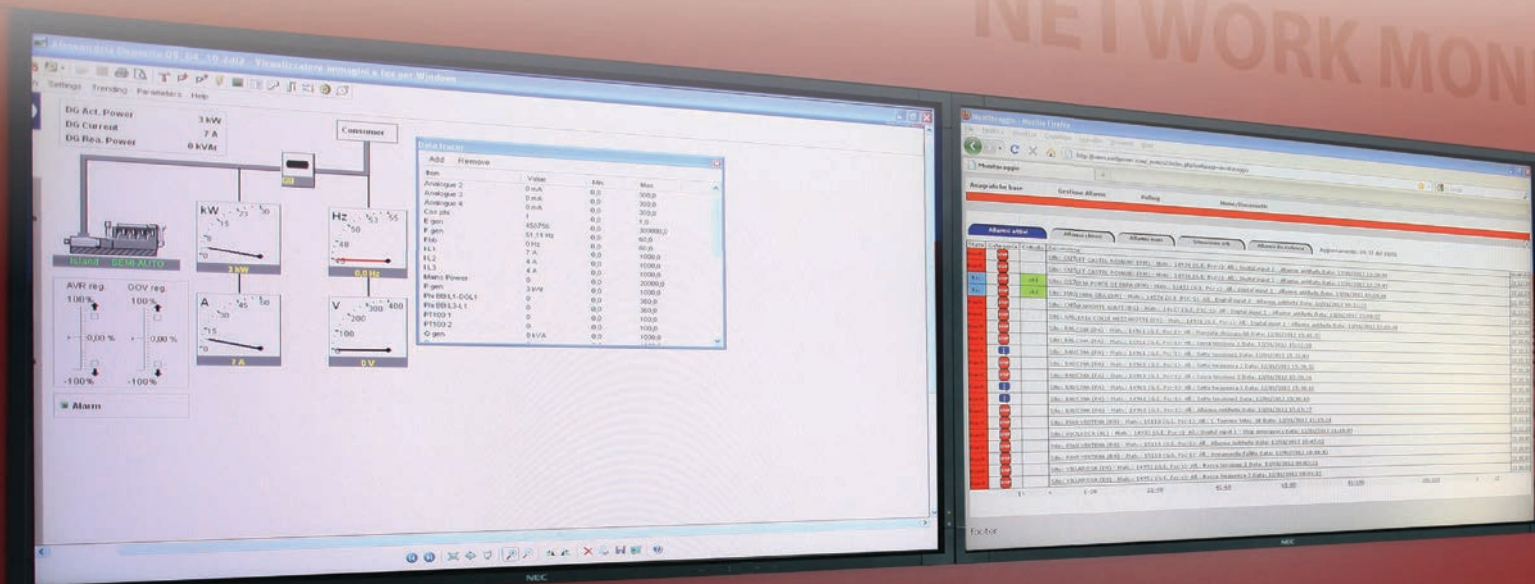
For the off-grid BTS service, Ausonia / Medipower developed and integrated specific information technologies, in order to increase network reliability, achieve high service levels and maintain the expected OPEX savings:

- **Complete Remote Monitoring System (CRMS)**
- **Global Energy Network Management (GENM)**

While the **CRMS** is pretty dedicated to monitor and control the whole gensets' fleet and achieve predictive / proactive maintenance information, all collected data are automatically processed and integrated by the **GENM** in order to schedule and optimize all service activities and the whole operational process. Such smart management tools have been implemented on a remote web-server, through GSM/GPRS technology, and they are controlled by a centralized management centre. They include:

- tele-monitoring system for health monitoring and alarm management;

- remote control system, able to interact with each unit and reconfigure functional parameters depending on specific needs;
- online automatic data acquisition of operational parameters (load, fuel consumption, operating time and cycles, etc.);
- operational planner for the scheduling and optimization of all technical interventions, installations and refueling activities;
- statistic tools for alarm and fault prediction and operational drivers control, including service levels and costs;
- logistic tools, integrated with geographical navigation, for the management of gensets' fleet, service centres and spare parts;
- specific administration management utilities for all different suppliers activities (fuel, transports, maintenance, spare parts, consumables, etc.).





## BTS off-grid solutions: the Italian case

In the latest 10 years, the Italian off-grid BTS market gradually evolved in a **“full rental approach”**, since all telecom operators chosen to convert CAPEX into operational costs, by the provision of an **“energy supply service”** based on a free risk **“daily fee”**.

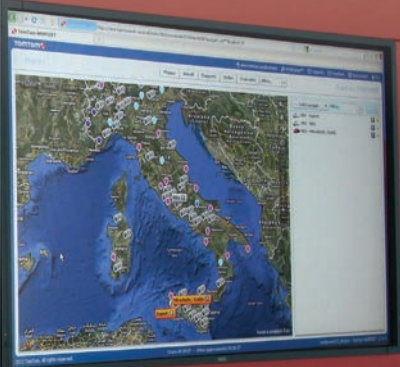
The geographical and morphological complexity of the Italian territory introduces a further level of difficulty into service activities and organization. Such strategies and conditions forced the Italian telecom operators to identify strong and reliable partners in the market, holding specific product and service knowhow and capable to efficiently operate in the whole country.

In a short time Medipower reached an undisputed leader position, achieving more than 80% of the whole off-grid BTS market, through long-term supply agreements with all Italian operators.

The main winning features, which allowed Ausonia / Medipower to reach such targets, are based on:

- lean and centralized management structure, based on specific web-server technologies;
- complete remote control capabilities, together with an efficient Energy Network Management system;
- efficient and distributed operational structure, which controls about 15 service centres;
- continuous in-house development of reliable technologies and products, specifically designed for the off-grid BTS needs;
- integration of all above advantages and knowhow into the overall optimization of TCO drivers;
- capability to provide to its customers an efficient, reliable and economic service in the whole country.

OPERATING CENTER





With the growth of mobile networks and expansion to suburbs and rural areas, with unreliable power grid coverage, the challenge for telecom operators is now focused on how to supply dependable power, while reducing TCO. Additionally corporate policies are even more oriented to the respect of stringent environmental requirements.

In order to satisfy such telecom needs, **Ausonia has developed the Hybrid Integrated Module (HIM) for off-grid BTS power supply, which represents the best energy efficient alternative to an AC generator operating 24/7.**

**“HIM”** consists of a variable speed DC generator which charges a battery bank and powers the load at the same time. The generator is designed to shut down after the battery is charged. The concept behind DC cycling is to allow the generator to operate at its peak efficiency to charge the battery bank and to shut off for the rest of time, **reducing fuel consumption, engine maintenance and carbon footprint.**





# HYBRID INTEGRATED MODULE

## KEY FEATURES

### Saving OPEX (50 / 70%)

- Fuel consumption (50 / 80%)
- Fuel trips to the field (50 / 80%)
- Generator running time up to 85%
- Maintenance up to 85%

### Saving CAPEX (20 / 30%)

- Product calendar life > 12 years
- Elimination of AC / DC rectifiers and battery packs inside the BTS
- Reduction of BTS air conditioning needs / equipment

### Integrated design

- Fast handling and deployment
- Modular design with three independent packs (generator, battery, fuel tank)
- High flexibility / scalability for different site demands
- Easy hot-swap on site of each component / pack
- Overall dimensions optimized for logistic transportation
- High reliability by selection of best components / technologies
- Reduced fuel spillage risk
- Low noise emissions
- Stealing protection (product and fuel)

### Smart Energy storage

- Long calendar and cycle life (overhaul > 6 years)
- Extended temperature range without conditioning
- Compact and light weight
- Sealed, without maintenance
- Very high charge efficiency (> 95%)
- Integrated intelligence battery management
- Safe technology and fully recyclable

### Remote management

- Complete remote monitoring and control
- GPS position monitoring
- Total fleet network management platform

### Environmental friendly

- Carbon footprint reduction up to 70%
- Easy integration with renewable sources (PV and wind)





## Product Features

Dimensions (l x w x h)	2,2 x 1,1 x 2,2 m
System weight (dry)	1500 kg
Single pack weight (genset, battery, tank)	500 kg
Engine speed	1300 - 2900 r.p.m.
Alternator technology	Permanent Magnetic Generator (PMG)
Genset power	9 kW
Peak power	16 kW
Output voltage	48 VDC / 230 VAC
Battery technology	Li-ion
Battery pack capacity (std cabinet)	up to 1000 Ah
Battery cycling	12000@40% DOD
Fuel capacity (std tank)	1500 l
Remote management system	based on GSM technology
Operational temperature	- 20 °C + 55 °C

## OPEX Savings - Case of study

Scenario: 1000 W Off Grid BTS	HIM	Standard Genset	Savings
GS running hrs per day	4,2	24	83%
Fuel consumption (l/day)	9,6	42	77%
Service maintenance interval (months)	4,6	1	78%
Refueling interval with std tank (months)	5,0	1	80%
Overhaul (years)	> 10	2	80%
Battery residual autonomy* (hrs)	> 6	-	-

\* in case of genset failure



## Green energy

The growing attention into environmental aspects and the rapidly rising of diesel prices have committed the telecom industry to realize “**sustainable development**” actions, in terms of carbon footprint reduction and sizeable saving of economic resources.

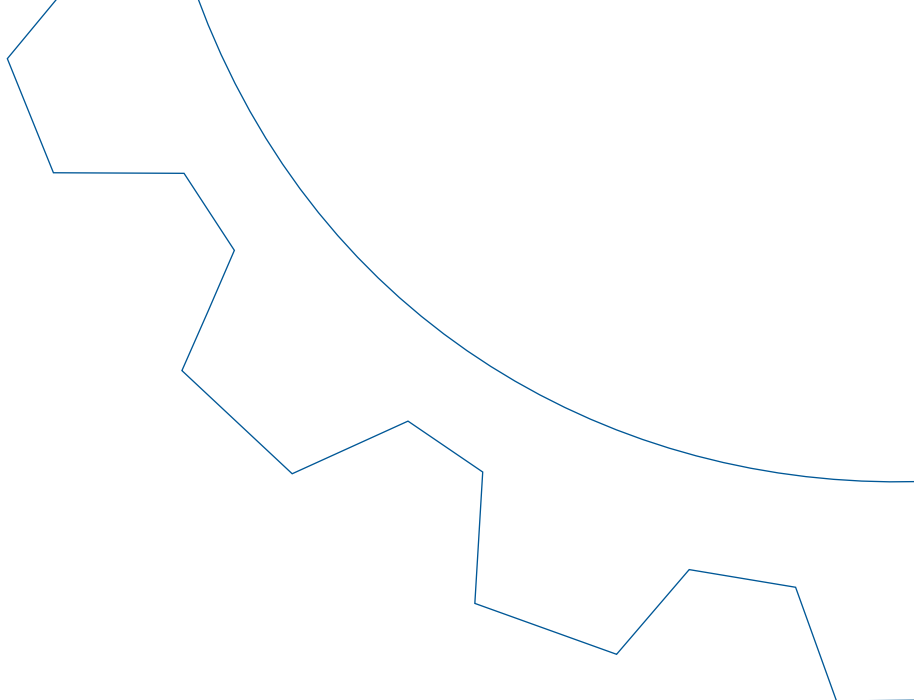
**Transition to renewable energy sources (PV, wind)** can be a valid solution to be applied to off-grid BTS power supply, especially if they are combined with a suitable energy storage capacity and a back-up diesel generator, in order to maintain the availability of a continuous and reliable energy source.

Today, Ausonia’s **Hybrid Integrated Module** represents the most efficient way to achieve such advantages, since it can be easily and efficiently integrated with photovoltaic panels and wind turbines, providing **complete “turn-key” systems**, based on specific site needs and different applications.

In such operational configuration wind and solar power can be used, together with the diesel engine, as an additional contribution to charge the Hybrid Integrated Module battery packs. This is the typical situation in which the battery pack is automatically recharged by the **cheapest energy source available**, depending on weather conditions.

Combining PV and / or wind energy with the Hybrid Integrated Module allows **further significant OPEX savings**, which can rise up to 80% and even more, depending on overall plant configuration.





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