



**AnsaldoEnergia**

A Finmeccanica Company

**POWER GENERATION  
SOLUTIONS**

# Power Generation Solutions

Over the last 10 years, Ansaldo Energia has decided to focus the manufacturing side of business on gas turbines, steam turbines and electric generators. The Company has also selectively pursued turnkey contracts (prioritising the domestic market) and decided to boost its service business, by developing a global service provider strategy both on its own and third party units.

Ansaldo Energia is one of the few companies in the world able to offer a broad range of products as manufacturer of all main components of power plants, to supply the whole plant as well as power blocks both in open and combined cycles. Ansaldo Energia is today fully acknowledged as an EPC for turnkey projects, and therefore as a global plant engineering contractor. This capacity comes from a Company evolution due also to the recent history of the Italian power market and the role played by Ansaldo Energia.

Ansaldo Energia was ideally positioned to play a significant role in the development of the Italian power generation infrastructure, namely by putting the best combined cycle technology on the market, thereby contributing to reducing GHG emissions.

In actual fact, in a situation marked by a “market bubble” in Italy for large combined cycle power plants (multiples of 400 MW) a shared approach to local issues and support right from the outset, together with more objective factors such as experience and references, reliability and performance, a good price/quality ratio and a comprehensive, integrated service package, have all been key factors of the successful acquiring of contracts and in establishing loyal relationships in the framework of increasingly complex global competition, not only on the domestic market.

The higher efficiency and lower environmental impact than conventional coal and oil fired power plants, mean that combined cycles also usually enjoy quicker, although still rather lengthy, authorisation procedures.



Further to the 1987 cancellation of the nuclear programme, and emerging from more than a decade of minimal investments in new plants, around the turn of the century, Italy embodied the perfect environment for power generation OEMs: low reserve capacity with high black-out risks, a new regulatory framework which basically started the liberalisation and privatisation of the power sector, and a reasonably priced and secure natural gas supply.

During the first decade of the new century, this scenario has translated into more than 30,000 MW installed by 2010.

Since gas turbine plants offer both the shorter construction times, and the possibility of increasing the installed capacity and efficiency of old sites, thanks to repowering and transformation in combined cycles, in recent years, the power generation sector has increasingly become heavily dependant upon natural gas.

In such a situation Ansaldo Energia was able to exploit these further opportunities to grow as an international player.

# Ansaldo Energia and equipment

Ansaldo Energia state-of-art gas turbine technology stems from more than 15 years of constant and increasing investments in the various fields of engineering, design and manufacturing, which has made a well-known steam turbine-generator OEM a new player in the gas turbine scenario.

Ansaldo Energia allocates significant resources to development programmes, particularly as concerns combustion, automation and special materials.

One example of this is the increasing market demand for high efficiency and low emissions, which led to the development of the cutting-edge VeLoNOx™ burners, and to a series of new patents to be used in all upgraded gas turbine models.

Ansaldo Energia has been designing and manufacturing steam turbine and electrical generators for more than 60 years now, and they represent stable, reliable, but ever updated and upgraded products for the Power Generation Market.



## Gas Turbines

Ansaldo Energia has installed gas turbine all over the world, meeting client demands in terms of fuel diversification, grid stabilisation, performance optimisation, reduction of environmental impact, and operational flexibility.

As of today, Ansaldo Energia has sold more than 150 gas turbines worldwide, ranging from 60 MW to 285 MW. Most of these units are supported by customer services, either under contractual or transactional schemes, and are remotely monitored for better and preventive maintenance.

## Steam Turbines

The company comprehensive steam turbine offer covers a wide range of power generation applications: steam turbines for fossil fired cycles, combined cycles, cogeneration steam turbines for steam processing, district heating and desalination plants, as well as geothermal steam turbines. Ansaldo Energia has extensive design, manufacturing and installation experience, with more than 300 units rated 100 MW and above in service or on order for power stations.

## Turbogenerators

Ansaldo Energia's experience in the design and construction of turbo-generators dates from 1920.

Today, more than 200 units in the 40 to 1220 MVA range have been manufactured.

The total installed generating capacity over the last forty years, exceeds 100,000 MVA. Models range from air-cooled, to hydrogen-cooled and water-cooled.

## Automation and I&C

The quality of the Automation Systems and I & C is extremely important in the supply of turnkey plants and components.

With regard to this aspect, Ansaldo Energia reaches a level of excellence by means of a full knowledge of the process to be controlled, the possibility to develop new solutions starting from the immense experience accumulated from previous projects, and the capacity to supply a plug&play type automation system.

This last result has been obtained through an accurate and effective simulation activity of both process and plant components during the design and test phases - normal practice in Ansaldo Energia Laboratories, where the rule is high attention to the customer and his needs during the entire lifetime of the supply, with suitable up-to-date operations, where required.

## Ansaldo Energia Service

Ansaldo Energia can today offer absolutely anything from an EPC contract, to a long-term Service Agreement on the whole power plant, even down to tailor-made solutions for the re-vamping and re-powering of power plants, offering complete overhauls and original and/or re-engineered strategic spare parts. Ansaldo Energia believes that it is extremely important to offer made-to-measure solutions and to demonstrate that sometimes being smaller may mean being able to provide a quicker and more flexible response. Although each and every Customer has his own structure, organisation, strengths and weaknesses, all face common challenges. As such, all customers search for a reliable partner, one who will stand behind his commitments and who can consistently offer proven state-of-the art equipment and long-term services. Ansaldo Energia has chosen to be one of them.

The only answer to market demands is, therefore, a generation of value right across the whole chain, together with key long-term collaborations between chain players. Ansaldo Energia receives requests to help its Customers optimise assets every single day - certainly a great change from the simple "equipment provider" role it played up until 10 or 15 years ago.



## Ansaldo Energia contracts for large power plants (combined cycle/open cycle) in the period 2001-2011

Contract	Site	Configuration	Type of supply contract	Commercial operation
Servola	Brownfield	Multishaft syngas CC (1+1) 200 MW	EPC Contract	2001
Ballylumford	Brownfield	Multishaft CC (2+1) 500 MW + Single shaft CC (1+1) 100 MW	EPC Contract	2003
Ferrera Erb.	Brownfield	Multishaft CC 2x(1+1) 800 MW + Multishaft syngas CC (1+1) 200 MW	Supply and installation of power block	2003+2004
Ravenna	Brownfield	Multishaft CC 2x(1+1) 800 MW	Supply and installation of power block	2004
Mantova	Brownfield	Multishaft CC 2x(1+1) 800 MW	Supply and installation of power block	2005
Voghera	Greenfield	Single shaft CC (1+1) 400 MW	Supply and installation of power block	2005
Brindisi	Brownfield	Multishaft CC 3x(1+1) 1200 MW	Supply and installation of power block	2005
Rosignano	Brownfield	Single shaft CC (1+1) 400 MW	EPC Contract	2007
Sparanise	Greenfield	Multishaft CC 2x(1+1) 800 MW	EPC Contract	2007
Leinì	Greenfield	Multishaft CC (1+1) 400 MW	EPC Contract	2007
Vado Ligure	Repowering	Multishaft CC (2+1) 800 MW	EPC Contract	2007
Rizziconi	Greenfield	Multishaft CC 2x(1+1) 800 MW	EPC Contract	2008
Moncalieri	Repowering	Multishaft CC (1+1) 400 MW	EPC Contract	2008
Napoli Levante	Repowering	Multishaft CC (1+1) 400 MW	EPC Contract	2008
Escatron	Brownfield	Multishaft CC (2+1) 800 MW	Supply and installation of power block	2008
Ferrara	Brownfield	Multishaft CC 2x(1+1) 800 MW	Supply and installation of power block	2008+2009
Algeciras	Repowering	Multishaft CC 2x(1+1) 800 MW	Supply and installation of power block	2009
Larbaa	Greenfield	Open cycle (4 TG) 500 MW	EPC Contract	2009
Batna	Greenfield	Open cycle (2 TG) 250 MW	EPC Contract	2009
M'Sila	Brownfield	Open cycle (2 TG) 500 MW	EPC Contract	2009
San Severo	Greenfield	Single shaft CC (1+1) 400 MW	EPC Contract	2011
Bayet	Greenfield	Single shaft CC (1+1) 400 MW	EPC Contract	2011
Dunamenti	Greenfield	Multishaft CC (1+1) 400 MW	Supply and installation of GT block	2011
Turano Lodigiano	Greenfield	Multishaft CC (2+1) 800 MW	EPC Contract	2010
Marcinelle	Greenfield	Single shaft CC (1+1) 400 MW	Supply and installation of power block	2010

**Ansaldo Energia has over 150 years experience in the electrical and mechanical engineering business. It is a global player in the power generation sector with an installed capacity of over 176,000 MW. Ansaldo Energia offers the full range of manufacturing, engineering, contracting and service activities, as well as a flexible approach to power projects. Steam fossil fired, gas turbine and combined cycle, hydroelectric, geothermal and nuclear power plants, supplied turnkey, in separate lots or by components. The Quality Systems, certified as complying with ISO 9001 by a recognised certification society, cover all aspects including, design, planning, manufacture, testing, inspection, installation and servicing.**



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