Energy & Ecology

at Man’s Service

Ecology ensures a better standard of life. Energy, as all other resources, is limited and expensive.

Right from its birth in 1958, Bono Group has committed itself to pursue the environment protection by using traditional energetic sources in the most careful way and exploiting the alternative ones.

BONO considers Energetic and Ecological fields connected in one unique system: Energy can be considered as an ecological instrument and Ecology as a saving of energetic, environmental and human resources.

As a consequence BONO is currently committed to make economy and high efficiency of energy systems fully compatible with a “sustainable development” of industrial activities with regard to environmental issues.
History

BONO was born during the stimulating season of the Italian economic development that followed World War II. A favourable social and economic situation brought to an extraordinary expansion which was called “Economic Miracle”. Wonderful as it was, such development was mined by distortions, inequalities, social and economic disequilibriums.

In this Italy - densely populated, lacking energy sources, poor in other natural resources, whose system had been violently accelerated by the industrial push - the challenge of the new "post-industrial" era was strongly felt. The company was established in 1958 with the aim to provide a full service in the Energy and Ecology fields. The first workshop was built in 1961. The main factory in Peschiera Borromeo was started in 1965 and completed in 1973. In the same year the factory of Netro, near Biella in Piedmont, was acquired and started an activity in the area of Environment and Ecology technologies. In the early 1970's the Group strengthened BONO's presence in Southern Italy collaborating with ARTES Ingegneria, an engineering company based in Napoli.

In 1988 BONO joined the Cannon Group who, already well established as an international leader in plastics technologies, was putting into practice a strategic diversification in areas with potential synergetic opportunities for their current activities. Since 1991 BONO is organized with three individual companies: BONO Energia, dedicated to Industrial Thermal Units, BONO Sistemi, specialized in Integrated Systems for Energy and Ecology, BONO Netro, manufacturing facility for Flash Steam Generators and medium size Thermal Oil Heaters. Artes Ingegneria was definitively incorporated in 1997 as the BONO company responsible for all activities related to water treatment.
BONO and the Cannon Group

BONO is one of the engineering and manufacturing centres of Cannon, a multinational Group specialising in Plastics Processing Technologies, Equipment for Energy and Ecology and Electronic Control Systems for Industrial Process.

Cannon, employing today 900 persons, is present in more than 40 countries and generated in 2004 a turnover of 300 Million Euro.

Four BONO companies work in strict co-operation to achieve the maximum synergy in the various fields of activity:

- **BONO Energia SpA** : Industrial Boilers, Thermal Fluid Heaters & Cogeneration Units
- **BONO Sistemi SpA** : Integrated Systems for Energy & Ecology
- **ARTES Ingegneria SpA** : Systems & Technologies for Water Treatment.
- **BONO Netro Srl** : Flash Steam Generators and medium size Thermal Fluid Heaters

They generated in 2004 a turnover in excess of 40 Million Euro: 70% in the Energy compartment and 30% in Environmental and Water technologies. Export accounts for 40% of the total turnover, with significant recent experiences in Europe and Far East.

A staff of 250 dedicated specialists is employed in Italy, and a network of agents represents BONO in more than 25 countries.
Operations & Facilities

BONO organization consists of a network of units (manufacturing centres, integrated sub-suppliers, locations and service centres) specialized in specific tasks.

The joint effort of these units is oriented toward a common goal: maintaining profitability through the supply of technologies and equipment and ensuring customer success.

The manufacturing facilities, located in the three main factories of Peschiera Borromeo (Milano), Netro (Biella) and Oliveto Citra (Salerno), cover 50,000 square meters. Workshops and production halls count for 30,000 square meters.

Aerial view of the Peschiera Borromeo (Milano) facilities

Netro (Biella) Factory

Oliveto Citra (Salerno) Factory
Technology & Innovation

BONO companies work to their own original design to solve the technological problems occurring in the wide range of different industrial applications of their products.

The sound technical structures, with heavy commitment to R&D and long specific experience in complying with the most severe international engineering standards, enable BONO to be constantly ahead in conceiving advanced, reliable and effective solutions both for their current and new products and systems.
BONO philosophy, summarized in the binomial Energy & Ecology, is based on the firm belief that the industrial service offered must not only be mutually beneficial for supplier and customer, but also for their staff, the environment and the community as a whole.

Customers can, as a consequence, take advantage of the behaviour of BONO acting at the same time as a supplier of state-of-the-art equipment at competitive prices and as a skilled consultant concerned of both technological problems and relevant environmental and social aspects.

This principle, as a background of all BONO activities, is regularly applied in supplying a wide range of equipment and systems to a wide range of very different industries including chemicals, pharmaceutics, oil & gas, paper, wood, textiles, laundries, plastics, food & drinks, district heating & cogeneration, engineering & main contractors.

Products & Applications

More than 600 water tubes boilers
More than 2,500 thermal fluid heaters
More than 100 heat recovery steam generators
More than 800 deaerators
More than 1,500 water treatment systems
More than 7,500 steam boilers

Applications

District Heating & Cogeneration
Food & Drinks
Paper
Engineering & Main Contractors
Chemicals & Dyes
Oil & Gas
Pharmaceutical
Wood
Plastics
Industrial Laundries
Leather
Quality

On the strength of 40 years intense activity in the development, design and production of technologies for energy and ecology applications, BONO is well versed in the supply of equipment and systems made with certified materials, subjected to strict, well-codified test procedures, and furnished with detailed technical documentation and certificates of conformity to its own high quality standards and the customers' specifications.

The numerous approval certificates issued by the major international inspection bureaux confirm the excellent reputation gained by BONO as a valuable and reliable partner for customers wishing to work to exacting production standards.

BONO’s quality organization has been further enhanced by the implementation of a quality Assurance System to meet the specific requirements imposed by its activities to comply with the ISO 9001 VISION 2000 standard, as demonstrated by the certificates already obtained.

BONO Energia and Artes have obtained the ASME Stamp according to ASME Code, sections I and VIII.
Service

Service, comprising both pre-sales technical advice and after-sales service, has always been a vital part of the BONO philosophy.

Customers can call on a widespread network of agents and distributors to help them choose the most appropriate technical and commercial solution.

Once an item of equipment has been sold and installed, BONO offers an efficient start-up and management assistance service, including training courses for technical personnel and information about current standards and financial aspects.

In addition to these services, an efficient Original Spares department guarantees the constant efficiency of the equipment. Every item of equipment in operation is identified by a specific fact sheet containing the design, test data and the characteristic of the materials supplied.

The fact sheet is constantly updated so that original spares can be supplied all over the world at the shortest possible notice. This is a top priority, because BONO exports worldwide, confirming that its cutting-edge technology is able to operate in any environment or climate.
Industrial Boiler Division

The Industrial Boiler Division of BONO Energia is devoted to the design, manufacturing, marketing and service of fire tube steam boilers, thermal fluid heaters, evaporators, flash steam generators for industrial and naval applications, package water tube boilers.

Thanks to the application of new technologies developed by the BONO Energia R&D department, a new range of industrial boilers is now available.

These new generation boilers combine the traditional robust construction of BONO equipment with the extremely reduced emissions and high efficiency of the new “Ultra-Low-NOx” burners (BONO Ciclonox) as well as with the proprietary advanced integrated electronic control system (BONO Optispark).

These characteristics of high efficiency combined with a reduced environmental impact now place BONO Industrial Boilers in line with the emission reduction trend required by the impending Kyoto Protocol recommendations.

UM type flash steam boiler

OMP series thermal fluid heaters; 7 off package units, rated capacity 64 MW for 105 t/h indirect superheated steam generation

OMV thermal fluid-heater and EVO evaporator

Fully electronically controlled shell and tube boiler 20 t/h capacity

Visualization of boiler working conditions by the fully integrated electronic control (OPTISPARK)
STEAM-MATIC  SM - SG
Fire tube steam generators 2 or 3 passes design
Package Units for steam and superheated water
Steam production from 1 to 22 t/h (16 MW)
Pressure from 1 to 30 bar

UNI-MATIC  UM
Flash steam coil generators
Package Units in vertical or horizontal version
Steam production from 0.3 to 3 t/h (2.5 MW)
Pressure up to 70 bar

CT
Water tube package boilers
Steam production up to 35 t/h
Pressure up to 25 bar

OIL-MATIC  OMP - OMV
Thermal fluid heaters
Package Units in vertical or horizontal version
Capacity from 0.4 to 30 MW

EVO-OIL
Evaporators
Steam production up to 30 t/h
Pressure up to 40 bar

DISTROTHERM
Incinerator for industrial waste fluids
Package Units in vertical or horizontal version

Turn key supply of fully electronically controlled shell & tube boilers (20 t/h each) for tomato sauce production plant

Package water tube boiler (20 t/h capacity) for hospital complex

Turn key installation for district heating; 4 off OMP thermal fluid heaters, total rated capacity 60 MW
Engineering Division

The Engineering Division of BONO Energia is devoted to the design, marketing and manufacturing of process thermal fluid heaters, water tube boilers, waste heat recovery boilers from gas turbines and endothermic engines.

Due to its sound technical structure and long manufacturing experience, BONO Engineering Division is able to comply with the most severe, international standards.

Design, construction and testing can indeed be carried out to API, ASME, PED, EN, DIN, R.I.Na., ABS, SQLO and others.

Flexibility, innovation and ingeniousness, always in the frame of the solid BONO reliability tradition, are the strong points of the BONO Engineering Division.

Its structure has been able to develop its own original systems of integrated design as well as proprietary thermo-fluid-dynamic calculation skills, opening the way for successful achievements in the challenging markets of petrochemical industry and power generation.
CTRTG heat recovery steam generator rated 22 MW with supplementary firing

Auxiliary boiler for power generation, in Vietnam

CTH superheated water direct firing generator for district heating application (20 MW)

SMR heat recovery steam generator for textile plant (10 MW)

HTH
High temperature thermal fluid heaters for process applications
Capacity from 2 to 40 MW
For use of synthetic fluids, both in liquid and vapour phase, up to 400°C

CTH
Superheated water generators
Preassembled package units or prefabricated modules for field erection.
Capacity up to 70 Mcal/h (80 MW)

CTD
Water tube steam generators
Preassembled package units or prefabricated modules for field erection.
Steam production up to 150 t/h
Pressure up to 80 bar
Superheated steam temperature up to 450°C
Any type of heavy fuel or gas

CTR & SMR HRSG
Waste heat recovery boilers from gas turbines
Water tube or fire tube package units
Capacity up to 50 MW
Pressure up to 60 bar
Superheated steam temperature up to 450°C
For gas turbines from 1 to 15 MW

SPECIAL CONSTRUCTIONS
Biomass Boilers
Naval Boilers
Co-generation thermal power and/or district heating stations

HTH high temperature thermal fluid heaters for polyester bottle grade production (60 MW)
Founded in 1977, ARTES Ingegneria S.p.A. is the BONO Company in charge of Water Treatment Systems. Artes designs and manufactures industrial water treatment systems on a turn-key basis. Throughout more than 40 years of BONO experience in water applications, Artes is fully able to support Customers for both process and waste water needs.

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**Water technologies, effective solutions**

Desalination & Drinking Water Production System
Artes develops and manufactures systems to convert water into drinking water. These solutions increase water value and turn an available resource into a profitable commodity.

Industrial Process Water Treatment
Industrial plants require large amounts of water for their products and processes. Artes provides solutions to convert available water into industrial water specific for their needs.

Water Treatment System for Steam Generation
Feed water for industrial boilers requires ad-hoc treatment. As part of BONO, which is a leading manufacturer of industrial boilers, Artes has gained extensive experience in providing solutions for water problems related to thermal cycles such as make-up, deaeration, condensate polishing and side-stream filtration.

Civil Waste Water Treatment
Artes offers solutions for civil waste water problems in the most critical situations. Where no sewer trunk line is available, ARTES can supply skid-mounted automatic waste water treatment systems in the form of package units easy to transport and install.

Industrial Waste Water Treatment
Most industrial processes use clean water as a raw material and dispose of contaminated water in the environment. Artes provides customised solutions for industrial waste water problems and helps to cut disposal costs.

Water Recovery
The recovery and reuse of waste water for industrial processes offers major benefits. Owing to its expertise in primary water and waste water treatment technologies, Artes can supply customised solutions for waste water recovery.

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Chemical-physical waste water treatment: Flue Gas Desulphurisation, coal fired plant

Pre-fabricated sewage treatment system; gas treatment complex

Condensate polishing; oil refinery
Ion-exchange demineralisation unit for boiler make-up water; food processing plant

Skid-mounted sewage treatment system; off-shore application

High pressure deaerator for cogeneration system; pharmaceutical plant

Reverse osmosis feed water package; chemical processing plant

Containerised package unit for seawater desalination; beach resort

High capacity cooling water filtration system; power generation

Treatment of “produced” water from an oil field; off-shore installation

Biological type of wastewater treatment system; food processing plant

Waste water treatment: solid waste treatment platform
System engineering and contracting

BONO Sistemi, summarizing the experiences developed by the individual companies of Cannon Group in developing their own plant design, engineering and construction technologies over the years, is currently active in Energy & Ecology projects as well as in plastics industry production plants, chemicals blending and storage systems.

BONO Sistemi has a dedicated Project Management structure, supported by site erection and start-up teams, able to carry out, also on behalf of other companies of the Group, complete projects for integrated production systems and large-size plants implying substantial financial engagement.

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Being active since over ten years in projects financed by United Nations Organizations in compliance with the “Sustainable Development” programs, BONO Sistemi has acquired unique skills in carrying out projects for the substitution of the Ozone Depleting Substances (according to the Montreal Protocol recommendations) and for the application of the Kyoto Protocol on the “greenhouse effect gases” global reduction.
Complete Polyurethane chemicals storage and blending system for a refrigerator factory

Three dimensional solid modeling of vaporizer area for polyester plant

Chemicals bulk storage system with unloading area, storage tank and preconditioning tank

“Turn-key” installation for chemical application

The “Stratospheric Ozone Protection Award” assigned to Cannon by the USA Environmental Protection Agency “in recognition of exceptional contribution to global environmental protection”
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