

DRACE medioambiente


Activities

Our activities at the service of nature

DRACE
medioambiente



**Our activities
at the service of nature**



DRACE medioambiente is backed by more than 30 years of experience in designing, building and operating all types of installations dedicated to the treatment of water, biosolids and waste.

During this time, **DRACE medioambiente** has built over 130 water purification, desalination, urban and industrial wastewater treatment and waste treatment plants and transfer stations. Their combined capacity is equivalent to serving more than 20 million people.

The key to our success is the global application of technical innovations in the design, construction and execution of our projects in this field, offering a complete range of solutions and achieving results of the highest quality.



A company specialized in design and construction

DRACE *medioambiente* relies on a large team of highly qualified professionals specialized in the design, construction and performance of all types of environmental projects associated with water and waste treatment, renewable energies and air quality.

The constant technological improvement that today's society demands is a challenge that helps make our company dynamic, efficient and capable of competing in national and international markets. We offer a complete range of specific solutions that can be adapted to each problem through a global approach.

Caring for, respecting and protecting the environment are primary objectives in all of our activities.

Aware of the need to contribute to sustainable development through useful strategies and initiatives, we work towards the responsible management of our natural resources.

Global process

There is a long way between resources in their natural state, the complex uses we make of them and their return to the natural environment.

In **DRACE medioambiente** we are specialized in global solutions for optimum water and waste management. Our activities include water collection, purification and desalination, wastewater treatment and subsequent recycling, assessment of biosolids as well as classification and transformation of urban solid waste, all of which are performed with the deepest respect for the environment.

Our experience, our applied and on-going research and the agreements established with companies, consultants and universities enable us to offer the best techniques and solutions for each installation and environmental problem.

Our fundamental tenets are sole responsibility, applied research and total quality in solving any issue associated with the environment, offering a comprehensive service to our customers.

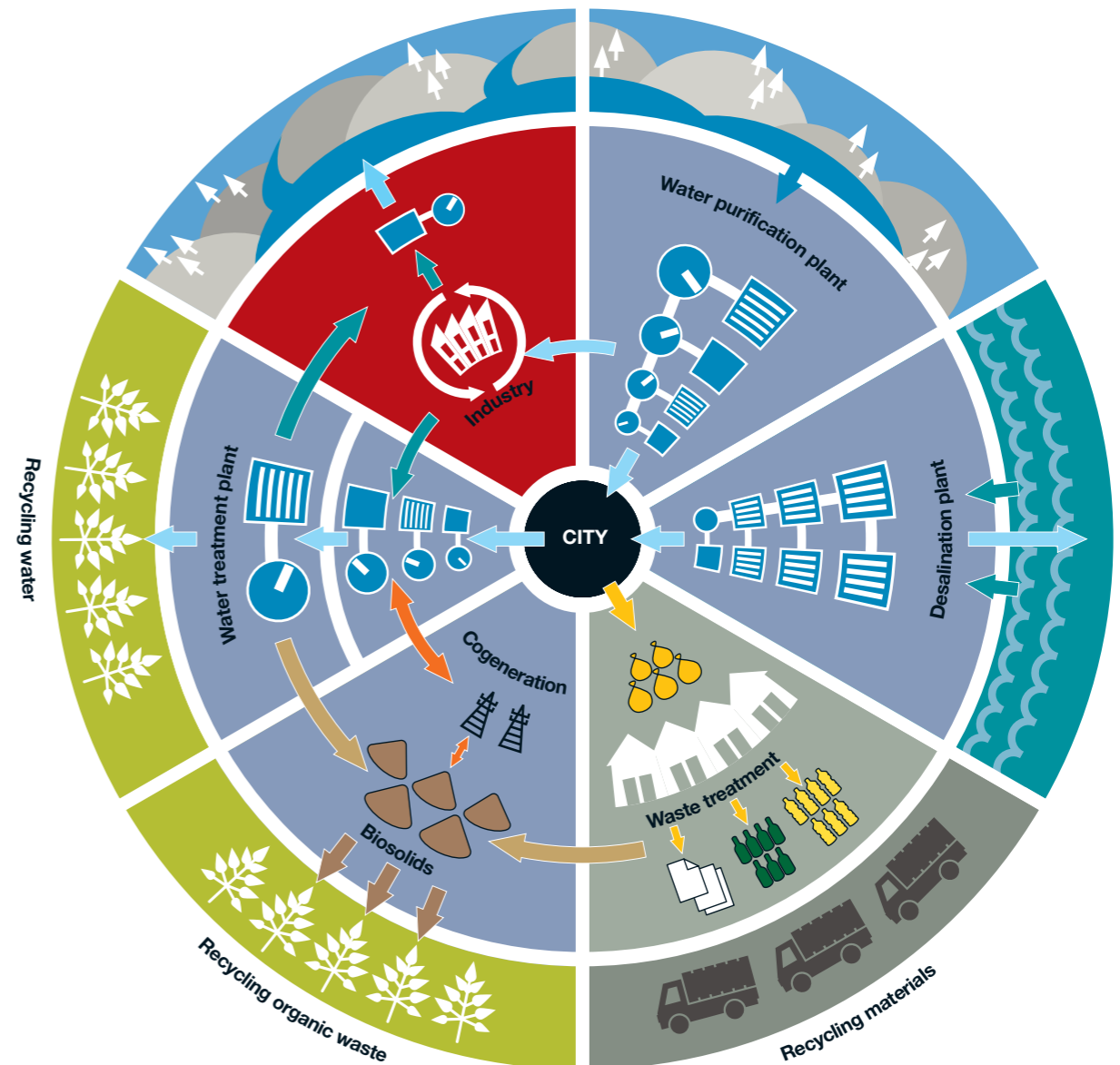
The capacity and quality of response of **DRACE medioambiente** have given us national and international recognition throughout our long business history built on the confidence of public and private institutions.

The following diagram illustrates some of the services offered by **DRACE medioambiente** such as the treatment of water for municipal and industrial use, of the wastewater they produce and of specific wastes.

Our activities also include process sludge treatment such as composting,

cogeneration and thermal drying, as well as desalination plants for purifying seawater.

In addition to these services, we also offer comprehensive packages that include preliminary studies, project, construction work, supplies and commissioning of treatment plants



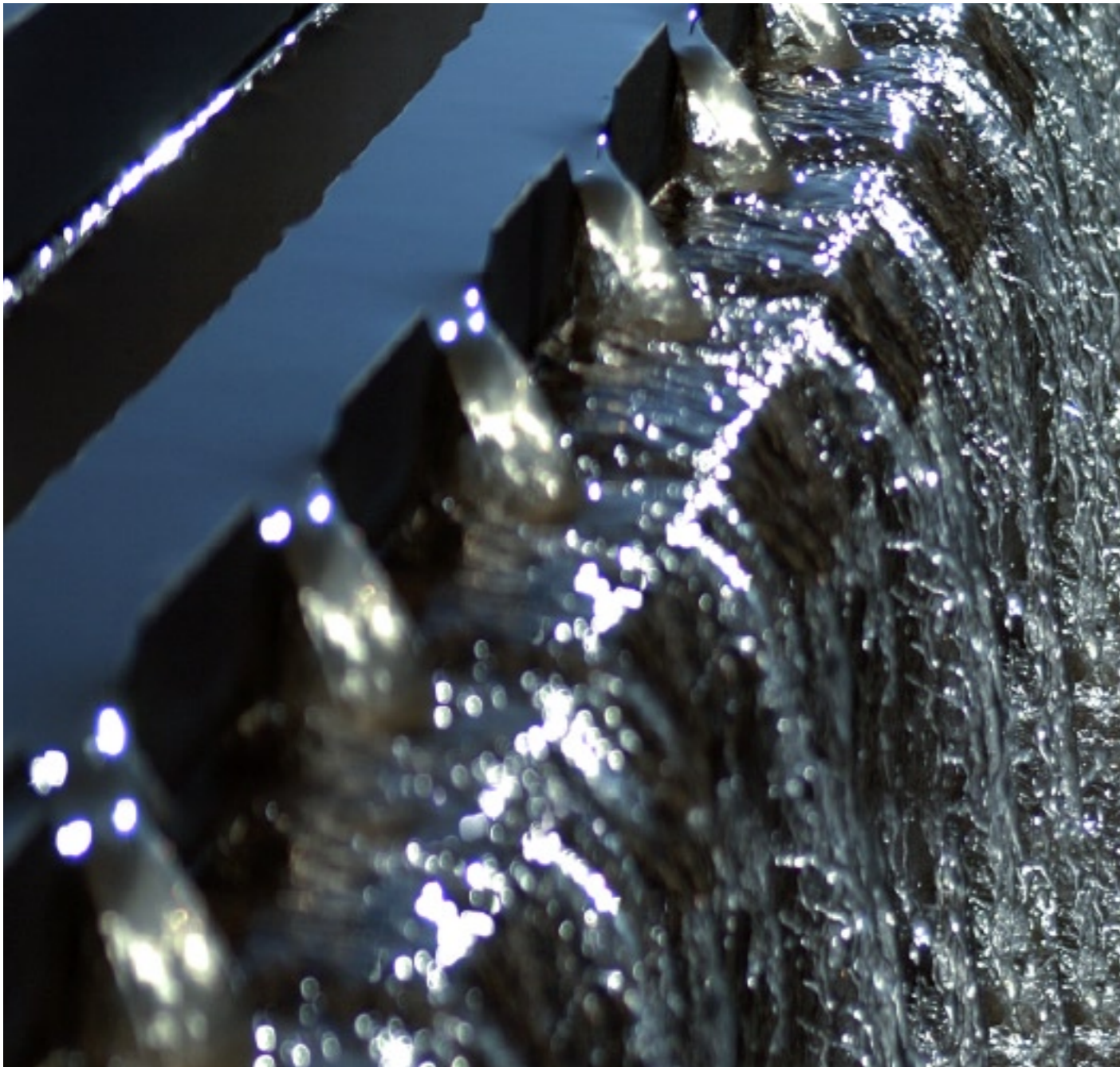


Operation and maintenance

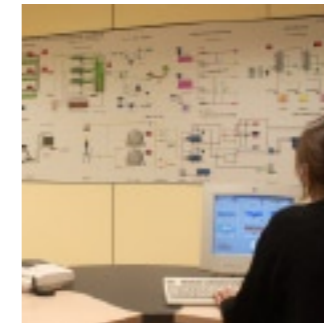
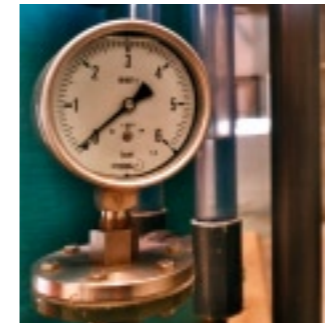
Operation and maintenance

Our extensive experience and specific technical expertise are an important added value that we offer our customers through our plant operations teams.

The wastewater treatment plants we operate serve an equivalent population of more than two million inhabitants.



We offer procedure models and training programmes that guarantee the optimum operation of our installations without interruptions.



The operation of a treatment plant requires a skilled, specialized staff to efficiently manage the services provided by the installation.

DRACE medioambiente uses the most advanced means to maintain the plants we operate in optimum running condition. These range from information technology (used to digitalize the plant in different functioning modes and visualize the performance evolution in minutes, a process that would otherwise entail weeks of plant verification) to monitoring each unit from our central offices through direct connection to the installation's telecontrol unit, enabling perfect interaction between the plant and our office technicians.

Operating and maintaining environmental installations provide us with feedback to improve our designs, an ideal platform for in situ research through pilot plants. It is fully satisfying to verify that each project meets the required performances and know that we have successfully carried out all the phases: engineering, construction and operation.

From the start of a contract, our installations are managed in accordance with the quality and environmental guidelines established in the ISO 9001 and ISO 14001 standards requiring specific procedures for each installation and they are all AENOR certified.

R+D+i Applied research & innovation

DRACE medioambiente maintains a constant line of research to develop the optimum design for each new installation and improve the operation of existing plants.

DRACE medioambiente is firmly committed to innovation targeted at offering environmentally friendly and financially efficient solutions.

We have our own patented processes and collaborate with world-class research centers.



In the 21st century water has become the most essential resource for the progress of a community. Furthermore, the urban waste generated is a problem that requires adequate management if the community is to develop in harmony with the environment.

As the leading company in the sector, **DRACE medioambiente** is aware of this situation. We develop our own processes and carry out research to improve those already in use.

Along this line, the following are worth mentioning:

- Company patents, such as the A2O and the NIPHO to biologically reduce nutrients
- Pilot plants with new designs offering efficient and innovative solutions to the environment market
- Computer parametrization of existing or newly built water treatment plants to improve operation performance and guarantee optimum functioning in the future

Furthermore, in the line of applied research, we collaborate with world-class research centers on a permanent basis to develop new processes that offer significant advances in reducing costs and completion times.

All our experience is focused on satisfying society's growing demands in which the quality of service and the respect for the environment converge at the ideal point and not just one of balance.

As essential objectives, **DRACE medioambiente** is focused on process improvement, excellence in quality and the capacity to adapt to future needs.



Water treatment

Purification

DRACE medioambiente builds water treatment installations that range from the simplest processes to those designed to neutralize more complex pollutants. Our wide experience places us in a leading position in the sector, with the capacity to develop all types of treatments.

We are currently building various water purification plants to supply drinking water to more than three million people.

Our initiatives and projects aim to set an example of maximum responsibility and respect for the environment.



In the past few years, the specific demand for new purification plants has grown due to the new guidelines established that considerably lower the amount of micropollutants that are acceptable in water supplies.

Our constant research efforts provide us with the know-how to meet the most restrictive regulations.

We are currently backed by extensive experience obtained through numerous water treatment plants for human consumption in large communities, some of which have involved the latest technologies such as membrane related processes.

DRACE medioambiente has the technical and human capacity to provide immediate response in critical situations,

offering emergency solutions wherever they are needed. This particularity has led us to develop specific models such as our Modular Water Purification Plants.

These plants have already demonstrated their great flexibility and reliability. In spite of their small size, which makes them easy to transport, they are equipped with power generators and the most advanced processes to guarantee the high quality of the treated water.

We satisfy the needs of our customers by offering tailored solutions for large and small communities, always maintaining our strict quality standards.

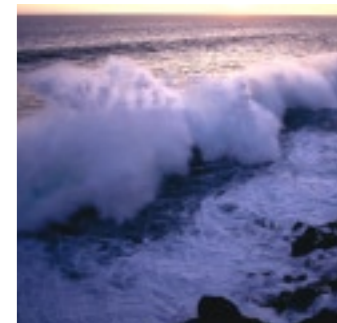


Water treatment

Desalination

DRACE medioambiente builds desalination plants to obtain water from the sea for drinking, irrigation and industrial use. Our Engineering Department is highly qualified in these processes and up to date on the new advances being made in this field.

Our strong commitment to technical innovation enables us to offer quality guarantees and respect for the environment in our installations at reasonable costs



The growing need for quality potable water in urban areas, combined with the deterioration of the environment caused by climate change, have created the need to obtain water by other means. One of these is desalination, the demand for which has increased substantially.

To cover the fresh water needs in those areas where availability is limited, **DRACE medioambiente** offers its great experience in all types of desalination processes.

The methods employed range from the common membrane-related processes, such as osmosis or electrodialysis, to less common ones like distillation. We have also put into practice other more experimental treatments such as freezing, solar distillation, distillation through membranes and ion exchange.

Our constant search for maximum energy efficiency and cost reduction has provided many positive results.



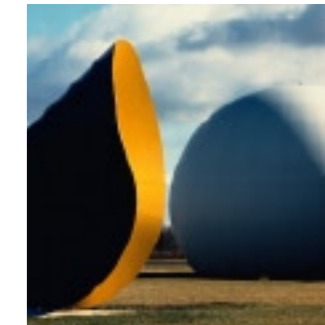
Water treatment

Wastewater treatment and recycling

DRACE medioambiente has the necessary processes to obtain regenerated water for irrigation, industrial applications, recreational areas, recharging aquifers and even domestic purposes. The new technologies we apply in the treatment of wastewater have achieved very high decontamination performance levels.

We are making strong research efforts in solutions like wastewater treatment and recycling, as we think they will play an important roll in society's efforts towards sustainable development and making better use of our natural resources with minimum environmental impact.

DRACE medioambiente has designed and built Barcelona's largest water treatment plants (Besós and Baix) and enlarged those of Madrid (Viveros, Madrid Sur and Rejas).



To preserve the environment, wastewater should be returned to the receiving channel in the best conditions. Given the diversity in process designs, types of wastewater and environmental conditioning factors, in-depth knowledge is needed to establish the most appropriate process for a water purification plant. **DRACE medioambiente's** extensive experience in this field enables us to assess the most appropriate techniques for treating water in order to optimize its quality as well as the investment and operation costs.

Furthermore, we have moved from the concept of wastewater treatment, as the solution to an environmental problem, to the concept of recycling, as the contribution of a new solution. This has been possible thanks to incorporating advanced tertiary treatments at wastewater plants that enable the treated water to be used for other purposes previously only covered by potable water.

In general, the basic tertiary treatments tend to consist of chemical processes followed by filtering through sand or other granular means and ending with disinfection by chlorine, ozone or ultraviolet light to eliminate pathogens. Other processes can be added such as chemocoagulation, flocculation, adsorption with activated carbon, filtering through membranes and ion exchange.

DRACE medioambiente has developed many processes currently being implemented in numerous projects. Two of the most outstanding are the travelling-bridge sand filter designed by our technical department and ultrafiltration through spiral wound membranes in which we are world pioneers.

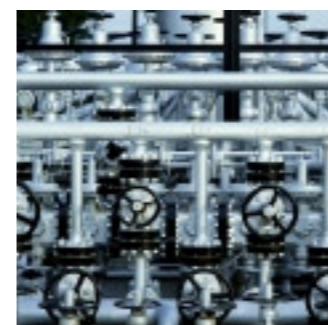


Water treatment

Industrial water treatment

At **DRACE medioambiente** we develop specific technology and processes adapted to all types of industries, offering solutions tailored to each customer's specific needs in accordance with legal requirements.

The solutions we provide for both public and private institutions fully guarantee efficiency, quality, safety and respect for the environment.



Every industry generates very specific industrial wastewater that requires an in-depth analysis and a specific treatment process. For this we need to know the origins of the effluents, their pollution levels and the legal regulations in force on the discharge limits.

DRACE medioambiente offers global solutions for the treatment of process water tailored to each particular industry. Our research and our knowledge of the needs of our industrial customers enable us to adapt quickly to their requirements and to provide customized solutions for each case.

Yet industry not only generates wastewater but it also requires a large supply of clean water, basically for cooling circuits, washing and moving solids, washing surfaces, maintaining pressure and personnel use.

DRACE medioambiente designs technical solutions with specific processes, offering the different types of water quality required by the industrial market.



Recycling

Biosolids

DRACE medioambiente constantly researches ways to use the biosolids produced when treating wastewater in order to find better applications for them and optimize costs.

We study and apply processes involving biosolids that provide reusable material and financially optimize treatments.



Biosolids are a highly organic by-product of wastewater and urban waste treatment. With the adequate processes, they can be converted into a valuable energy source or a product used in agriculture to enrich the soil, thereby closing the natural cycles.

DRACE medioambiente has proven experience in the most widely used techniques for processing biosolids. These are tunnel composting, biomethanization and thermal drying or techniques directly associated with these processes, such as cogeneration. As licensed waste managers, our company's commitment includes the marketing of the resulting products.

Furthermore, we also carry out on-going research into new biosolid technologies that have enabled us to effectively improve process automation, use solar energy for drying and financially optimize the management of the installations.

Processes

Composting with biosolids

The decomposition and stabilization of the organic substances contained in biosolids using a biochemical method. Degradation takes place with the help of various micro-organisms and the resulting temperature increase to the range of pasteurization.

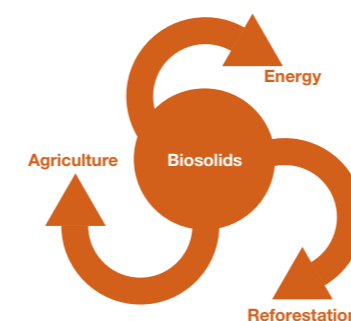
The composting process produces a 'dry', humified and hygienized product that has many uses in agriculture and horticulture as it is very good for improving soil quality.

Thermal drying

The application of heat to biosolids obtained from wastewater treatment plants to evaporate a large part of the interstitial water. Various sources of heat are used, although recoverable sources are preferred (for example, biogas).

Cogeneration

The combined generation of electricity (or mechanical energy) and thermal energy from the same primary source. Two objectives are achieved: operation costs are lowered and thermal drying transforms the biosolids into a highly sanitized, reusable product.





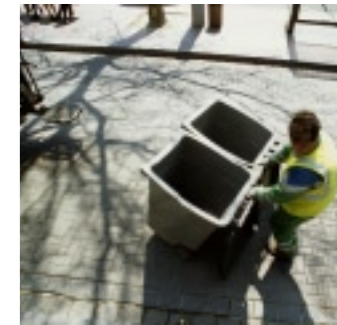
Recycling

Urban waste

We have increased our commitment to the environment through product diversification. The incorporation of activities related to urban waste treatment into our range of services gives us the opportunity to put into practice our knowledge in this field and further our efforts to protect our surroundings.

We build transfer stations and plants to assess, recycle and transform waste. They are all exemplary installations that incorporate ergonomic and safety features at the work stations.

Waste recycling centers make it possible to use the most effective treatment processes for each specific type of waste no matter where it comes from while simplifying maintenance and reducing costs.



The unceasing growth of urban communities clearly calls for the adequate treatment of the waste they generate. Increasing at an alarming rate, it poses specific problems within the framework of the environmental policies of all nations. Furthermore, the growing social importance given to preserving and respecting the environment is not a passing trend but the result of a responsible attitude that demands effective solutions.

One of the major environmental threats is the rise in the volume of waste and uncontrolled dumping that contaminates soil and water and often alters the landscape.

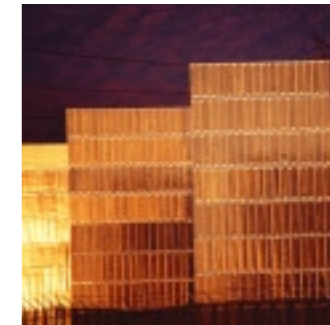
Aware of this problem, we at **DRACE medioambiente** are expanding and diversifying our range of activities in order to offer our extensive experience in these areas.



Renewable energy

The search for alternative energy capable of fulfilling the needs and demands of society has become increasingly important. Therefore, **DRACE medioambiente** has embarked on a new challenge to offer different lines of business geared towards sources of renewable energy that do not harm the environment but rather guarantee its preservation and prevent the irrational exploitation of raw materials.

The current social situation and demand make it necessary to use and seek alternative energy solutions. Therefore, **DRACE medioambiente** is committed to a new line of business that, combined with saving our natural resources and using them responsibly, is the key to a clean, safe and efficient future.



We offer the most adequate technologies to individuals and companies so they can capture nature's renewable potential and help preserve the environment without sacrificing social well-being.

These renewable natural energy sources include solar radiation, wind, subsoil potential, wave and tidal movement and the energy accumulated by living biological matter (biomass).

DRACE medioambiente offers services associated with:

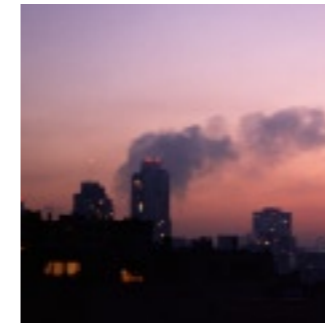
- Wind power
- Photovoltaic solar energy
- Thermal solar energy
- Thermoelectric solar energy
- Mini-hydraulic energy
- Biomass



Air treatment

Air quality is a major issue in the programs of most national and international government authorities. The presence or absence of certain substances, and their concentrations, are the main factors that determine the condition of the air and, therefore, its quality.

Air, a common and limited asset indispensable for life, is one of our company's concerns. It is a new challenge for us with a clear objective: to provide solutions to the public to obtain an ecological balance and improve conditions through modern technologies that guarantee clean, pure air.



Aware of this reality, one of **DRACE medioambiente's** activities is air quality management. This includes identifying causes and effects and, in particular, finding solutions for the industrial sectors as well as for indoor air quality by proposing control methods through special devices.

Likewise, it also provides methods and systems to address other types of problems or forms of contamination associated with odor and noise that affect public health and cause inconveniences.

DRACE medioambiente offers the following services:

- Deodorization
- Renewal

Quality Management

In order to improve the services we offer our customers and meet the requirements of current standards (ISO 14001-2004, 9001-2000), we have developed a Management System focused on planning, prevention and correction efforts that are applied to every aspect of our activities that could have important repercussions.

This Management System includes the organizational structure, activity planning, established responsibilities, good practice guidelines, processes, human resources and materials necessary to ensure that each action taken is effective as a result of having been carried out correctly.

Our management and quality policy fosters prevention, planning, compliance with current regulations and the rational use of resources while providing a simple tool for managing individual tasks. Basically, this policy is focused on continuous improvement.

The Management System consists of a series of documents and on-going personnel training. The former includes manuals, general and specific procedures, instructions

and specific models for assessment, follow-up, control, inspections, communication and registers.

The Management System ensures that each task is performed correctly. It also provides feed-back for analyzing the strong points, standardizing and unifying criteria, establishing new strategies, taking adequate corrective action to eliminate the causes of undesirable results, etc. All of this is directed towards improving the services we offer our customers.

A great deal of effort and resources are dedicated to the prevention of occupational hazards. **DRACE medioambiente** addresses its safety activities through its Prevention Service Department which focuses on four specific areas (work safety, industrial hygiene, ergonomics and applied psychosociology and medical care at the jobsite). We have a commitment to safeguard our most valuable asset, our human resources, a large multidisciplinary team of qualified professionals who are constantly increasing their expertise through continuous improvement. To achieve this purpose an accreditation process has been initiated in accordance with OHSAS 18.001.





Sole responsibility,
applied research
and total quality to solve
any environmental issue



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