# **Masiasrecycling.com** Advanced Recycling Technologies



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Privileged natural surroundings, those of the Garrotxa region (Girona), lead us to understand and value the importance of looking after and conserving the Environment.

This is a reflection of what we want for the future, in any part of the world, a future which demands that all of us who make up society raise our awareness when it comes to managing waste.

Due to its nature and the high speed with which it develops, society needs people who are committed to responsibility, safety, resolve and quality of life, and integrate these into the economic cycle of our times.

Here at Sant Joan Les Fonts, we share this mission with our team, shareholders, customers, partners, suppliers, friends and in short, everyone who, like us, works to break down the barriers which until the present have kept us away from global environmental awareness. The starting point of this awareness is, to a greater or lesser extent, in the waste we generate as a society.

Masias Recycling's duty, its reason for being and growing, is none other than to improve, based on responsibility, rationality, ethics and profitability, the quality of the waste treatment process, so that companies and administrations can successfully and profitably assume the final wellbeing of all, anywhere in the world. During our first years of activity, <u>Spain was con-</u> templating waste the first time, and companies and administrations were forced to assume the responsibility of this new Masias Recycling of the evolution of this new area, of the necessary solutions of plants, equipment and services which had to respond to this new but potential



# **1993** FOUNDING OF MASIAS RECYCLING

However, in the first steps towards a solid legal framework with regard to the Environment, the peninsula was kept away from the growing European consciousness and commitment to the treatment and management of urban waste as an essential part of the economic cycle.



# GREAT MAGNITUDE

We carry out projects of great scope, in which we apply maximum precision, in the same way that we establish the care and definition of all the details as priorities. Only thus is the quality of the "Masias Recycling" value comprehensively present in each of our works, and in all the elements which participate in the waste treatment chain.

The distinct nature of Masias Recycling lies in the search for perfection on any scale. We are able to work with large volumes and tonnages of iron and steel, but also to establish the millimetric precision necessary in order to calibrate the machines in a plant or assume the level of detail necessary to configure the electrical panels.

# PRECISION



# DORE THAN **20YEARS**















## MORE THAN **6.520.996** KILOMETERS

MORE THAN **4.363.222** ASSEMBLY SCREWS

MORE THAN
510.627
DRAWINGS
UNDERTAKEN

MORE THAN **849.635** METERS ELECTRIC CABLE INSTALLED

MORE THAN **3.101** OWN MANUFACTURING EQUIPMENT INSTALLED

MORE THAN **5.000.000** TONS OF GARBAGE ANNUALLY TREATED IN **MASIAS** FACILITIES

MORE THAN **2.356** ASSISTANCES MAINTENANCE PERFORMED Masias Recycling has been part of the birth and growth of a sector as highly complex, and until then unexplored, as is the Environment industry. Our long experience has brought us to the sum of each of the steps, large and small, which have been established, to the point where we have succeeded in becoming one of the national and international benchmarks in engineering, design and manufacture for waste management and treatment.

Masias Recycling is a multinational leader in the design, engineering, manufacture, installation and maintenance of waste treatment equipment. Our command and extensive knowhow of these five areas, which encompass the key phases of the value chain in waste management, have made us a completely comprehensive supplier, with an international presence.

Our capability for self-sufficiency when taking on all types of project, from any initial phase of the waste treatment cycle, sets us apart as a trusted supplier with the help of an extensive network of partners on the five continents. Our knowledge of the various markets we are present in, along with our headquarters and centres, is key to informing about and designing the best solutions in waste treatment.

In this, maximum quality works as the principal differentiating factor with the competition and as our best ambassador in all the countries where we operate.

It is Masias Recycling quality which, together with the research and dissemination work carried out in our headquarters, production centres, workshops and agencies, has become our most potent hallmark. The road towards the design, manufacture and turnkey installation of plants for the treatment of solid waste which Masias Recycling set out on over 20 years ago has led us to conceive all types of complete solution in different parts of the world. Our Engineering Department, which includes qualified planners and specialised technicians, closely collaborates with our customers in order offer the best solution in each case, whether for new installations or to modernise plants already existing, always with the most up-to-date contributions of our R&D Department.

The machines, along with carefully designed engineering, are the key to our plants. We design, manufacture and distribute a wide variety of systems, devised to achieve high performance and adapted to every material and need. Our range includes trommels, ballistic separators, aspiration systems, bag openers, conveyor belts, as well as mobile machinery.

To the manufacture of equipment and the supply of turnkey plants for the treatment of solid waste must be added the services which Masias Recycling offers to its customers. We seek to make quality a habit and a benchmark, aiming to anticipate our customers' needs and ease the use and operation of the equipment for them. Our pledge to respond to our customers' requests quickly has led us to include a wide range of services in our catalogue, such as maintenance programmes, engineering services, control and automation systems, supply of spare parts and technical assistance.

















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# MUNICIPAL WASTE **Masias Recycling**

#### SPECIALISTS IN THE DESIGN **OF URBAN WASTE MECHANICAL** PRETREATMENT FACILITIES

Municipal Solid Waste (MSW) is waste generated by domestic and commercial activity in cities and towns. The composition of this urban waste varies greatly according to the location, climate and degree of industrialisation of each country. In all cases, it is normally made up of a combination of miscellaneous materials of which approximately half consist of non-fermentable (inorganic) materials, most of which are recyclable. The rest of the materials are organic waste, which must also be recovered to be stabilised, or to produce compost or energy-recoverable biogas.

The aim of every urban waste treatment plant is to recover the greatest quantity of recyclable

materials, treat the organic fraction and reduce the amount of retained fraction sent to landfills. The so-called MBT plants are facilities devoted to the complete treatment of urban waste, which includes mechanical and biological treatments for their recovery.

Masias Recycling offers a wide range of solutions for the treatment of urban waste: mechanical pre-treatments, biological treatments of the organic fraction (aerobic or anaerobic) and compost refining lines.



#### TREATMENT

#### All urban waste treatment plants incorporate mechanical pre-treatment to separate the organic material and, to a greater or lesser degree, the recovery of recyclable materials such as paper, cardboard, plastics (PET, HDPE, etc.), metals, etc. Masias Recycling supplies turnkey mechanical pre-treatments with a variety of degrees of automation depending on the customer's needs and requirements.

- Recyclable materials. •
- Organic material for biological treatment
- RDF. •
- Retained fraction.



The organic fraction present in municipal waste represents a high percentage of the total of domestic waste. The biological treatments (aerobic or anaerobic) are those which enable greater optimisation of the organic fraction, thus achieving considerable reduction of volumes, and recoverable materials (biogas or compost) can also be produced.

Masias Recycling offers a wide range of options for the treatment of the organic fraction separated in the mechanical pre-treatment of urban waste, aerobic (composting, stabilisation or biodrying) or anaerobic treatments (methanisation). The stabilisation of organic material, production of high-quality compost, biological drying of the material or production of biogas in methanisation tunnels are possibilities which we offer to our customers.

The aerobic processes are biological processes where air (oxygen) and humidity are delivered to the organic fraction. During the process, the bacteria decompose the organic fraction into a stabilised material. The type of process selected affects its duration. When the delivery of air is slow (turned piles), the decomposition time is very long, while in systems with forced aeration, the duration of the process is significantly reduced. These closed systems are technologically more sophisticated, more effective and emit less smells. SOLUTIONS FOR RECOVERY AND/OR STABILISATION OF THE ORGANIC FRACTION FROM URBAN WASTE

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#### TREATMENT

Anaerobic digestion, composting, stabilisation or biodrying are the normal biological treatment processes which all urban waste management plants must incorporate in order to complete their treatment. Methanisation tunnels, composting tunnels or biodrying and composting processes in tarpaulins (Masias Covertech) are the alternative technologies we at Masias Recycling offer our customers.

- Methanisation tunnels.
- Composting tunnels.
- Systems of composting in piles.
- Biodrying processes.
- Composting in tarpaulins.
- Compost
- Stabilised organic material
- RDF
- Biogas





AUTOMATIC FACILITIES FOR SELECTING AND CLASSIFYING LIGHT PACKAGING FROM SELECTIVE URBAN WASTE COLLECTION SYSTEMS The main objective of light packaging selection and classification plants is to recover recyclable materials and reduce the retained fraction sent to landfills. As with the urban waste pre-treatment plants, these facilities can be totally automatic, semi-automatic or manual. The degree of automation of the facility is again governed by different parameters, principally the plant's treatment capacity (annual tonnes to be processed, considering the low densities of the material to be treated) and local labour costs. Masias Recycling designs and manufactures the principal equipment for these facilities (bag openers, ballistic separators or pneumatic material conveying systems) and integrates the best available technological improvements (optical separation systems for selecting materials or crushing machines for producing waste derived fuels), thus ensuring optimum efficiency of the process.







#### TREATMENT

The light packaging treatment facilities integrate automatic separation and classification systems (ballistic separators, film aspiration systems, optical separators, metal separators, etc.) and manual systems for recovering recyclable materials with high commercial value.

- Paper and cardboard.
- Plastics: PET, HDPE, Film, etc.
- Cartons.
- Ferrous and non-ferrous metals.
- RDF.
- Retained fraction.



# MRF COMMINGLED **Masias Recycling**

The main objective of "dry recyclable material" (commingled) selection and classification plants is to recover recyclable materials and reduce the retained fraction sent to landfills. As with the mechanical urban waste pre-treatment plants or packaging classification and selection plants, these facilities can be totally automatic, semi-automatic or manual. The degree of automation of the facility is again governed by different parameters, principally the plant's treatment capacity (annual tonnes to be processed) and local labour costs.

The main characteristic of these types of installation is the large presence of glass and the paper and cardboard present in the waste to be processed. In the case of the first material, it is vital to separate it efficiently, not only to ensure the sale of a sub-product with commercial value, but also to avoid high wear on the installed machines. As is a rule in facilities designed by Masias Recycling, it is a case of achieving an efficient process in the separation of fractions, while maintaining the lowest possible operating costs.

FACILITIES FOR RECOVERING **URBAN WASTE** FROM "COMMINGLED" TYPE (DRY RECYCLABLE MATERIALS) SELECTIVE COLLECTION SYSTEMS

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#### TREATMENT

Masias Recycling designs highly efficient processes for treating commingled material, ensuring optimum separation and recovery of the glass, paper and cardboard, plastic materials, etc. The integration of the best available technologies in the mechanical treatment process guarantees its efficiency and optimum performance in these types of facility.

- Paper.
- Cardboard.
- Plastics: PET, HDPE, Film, etc.
- Cartons.
- Ferrous and non-ferrous metals.
- Glass.
- RDF.
- Retained fraction.





## INDUSTRIAL WASTE Masias Recycling

FACILITIES FOR THE RECOVERY OF NON-HAZARDOUS INDUS-TRIAL WASTE, SEPARATION OF RECYCLABLE MATERIALS AND PRODUCTION OF REFUSE DERIVED FUELS Modern industrialised societies generate not only a great quantity of urban-domestic waste, but also a type of waste, named industrial waste, with characteristics which force specific facilities to be designed to treat and recover it. Industrial waste can vary greatly depending on the type of industry generating it. Therefore, it requires treatment typologies adapted to each type. As a general rule, it has a low density and humidity level.

Masias Recycling designs facilities for the treatment of non-hazardous solid industrial waste, with the aim of using all the resources present in the waste, whether by recovering recyclable materials or producing refuse derived fuels.

Non-hazardous industrial waste normally contains a large quantity of materials with high calorific value, so that the production of refuse derived fuels in treatment plants is especially interesting if the customer has consumer potential which can exploit the energy of this product.

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#### TREATMENT

Masias Recycling offers its clients customised solutions for the recovery of industrial waste from a variety of sources. Depending on the material to be processed and the sub-products desired to be recovered, the mechanical treatment process can include various degrees of automation. The production of refuse derived fuels is normally one more part of these types of facility, and complements the recovery of recyclable materials with high commercial value.

- Recyclable materials.
- RDF.



The management of waste (urban or industrial) is increasingly associated with the production of alternative, energy-recoverable fuels in different facilities: waste energy recovery plants, cement plants, thermal power plants, etc.

Both urban and industrial waste facilities can incorporate "treatment modules" for producing alternative fuels. It is a case of recovering the waste to the maximum, reducing the quantity of waste sent to landfills and producing fuels for different thermal processes. Masias Recycling combines the best technologies available to offer its customers the most efficient solutions in the production of recovered solid fuels or refuse derived fuels. SOLUTIONS FOR THE PRODUCTION OF ALTERNATIVE FUELS FROM WASTE FROM A VARIETY OF SOURCES

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#### TREATMENT



Masias Recycling designs facilities comprehensively devoted to the production of alternative fuels using waste from a variety of sources, or mixed facilities for recovering recyclable materials and producing RDF. The incorporation of the best technologies available in the field of crushing completes the range of Masias Recycling's own products. This allows us to supply optimum solutions in terms of both production and operating costs.



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## CONSTRUCTION & DEMOLITION Masias Recycling

#### FACILITIES FOR THE MECHANICAL TREATMENT OF CONSTRUCTION AND DEMOLITION WASTE

Construction and demolition waste (CDW) is waste from building demolition, refuse from dwelling refurbishment works and any public works in general. Due to its characteristics with regard to composition and typology, this waste is normally managed separately and requires mechanical treatment lines specifically designed to treat it.

As is the norm in all types of waste, the characteristics of CDW vary considerably in every country, according to the materials used for building dwellings. As an example of this variety, wood may have a majority or marginal presence in this flow of waste. Masias Recycling has wide experience in the treatment of this type of waste and supplies facilities for recovering recyclable materials and producing marketable secondary products. Masias Recycling's supply range includes everything from complete treatment plants for producing clean aggregates of different gradings to simple manual treatment lines for recovering recyclable materials (plastics, wood, metals, etc.).



#### TREATMENT

#### Construction and demolition waste varies significantly in its composition according to the country. Masias Recycling offers modular solutions which enable the recyclable materials present in this type of waste to be separated and also to obtain clean inert materials in a variety of gradings depending on the customer's needs and on the applications this product may have in the market.

- Aggregates.
- Wood.
- Plastics.
- Metals.
- RDF.

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Biomass is the use of organic material as an energy source. Due to its broad definition, biomass encompasses an extensive group of organic materials which are characterised by their diversity of both origin and nature, and it includes the waste from agricultural, livestock and forestry activities, as well as the sub-products of the agrifood and wood transformation industries.

Biomass must be mechanically prepared so that its energy can then be recovered in heat process-

es. The solutions offered by Masias Recycling include all the elements required in order to obtain a fuel that is uniform in grading and composition from a variety of input materials. Elimination of unsuitable elements and crushing to the sizes required by our customers are the two basic stages of all biomass mechanical pre-treatment facilities.

**COMPLETE FACILITIES** FOR THE TREATMENT **OF FOREST AND** AGRICULTURAL BIOMASS









# **Masias Recycling**

#### **MECHANICAL TREATMENT** FACILITIES FOR THE SEPA-**RATION AND RECOVERY OF METALS**

The recycling of metals, both ferrous and non-ferrous, enables energy to be saved as their extraction and processing at source is reduced. The metals recovered in treatment plants basically come from cars, household appliances, furniture, packaging (cans), etc. Separation of metals by typology and composition and obtaining clean final fractions considerably increases the commercial value of the sub-products obtained, thus increasing the profitability of the facilities devoted to treating them.

Masias Recycling offers solutions for the mechanical treatment of metals and their separation into clean fractions with high commercial value. We integrate the best technologies available for purifying the fractions of metals and obtaining raw materials of great purity.







### +RE RE-ENGINEERING Masias Recycling

Over time, some facilities lose the modernity they once had. Many of these facilities continue to meet the requirements for which they were conceived and designed. While they may become obsolete as regards the technology used, perhaps they have to be adapted to the variations in the waste they are processing or perhaps they need to seek more automatic processes to increase their profitability and improve their operating accounts. The constant updating of a facility to make the process more efficient, both technically and economically, is a need of which we at Masias Recycling are highly aware. The wide experience which backs us up allows us to study the existing facilities in detail and offer the best alternatives for their improvement.

#### AUTOMATION AND IMPROVEMENT OF EXISTING FACILITIES. OPTIMISATION OF PROCESSES







The re-engineering of existing facilities is therefore one of the basic fields in which Masias Recycling operates and for which it has a specific technical department that offers a wide range of services:

- Automation of manual plants.
- Improvements in the quality of material separation.
- Increase in production yields and improvements to processes.
- Optimisation of energy consumptions of equipment.
- Technical advice in general.

Any type of facility (MSW, MRF, IND, CSR, etc.) can be studied in order to incorporate a process improvement and increase its performance and productivity.



Acknowledged for their reliability and efficiency, ballistic separators are used in MSW, LP and RDF plants. Our wide range enables us to offer the best-suited and most economic solution.

It is possible to adjust various parameters in order to adapt to the type of material, from the speed of the fans to the inclination of the machine, all automated.

The equipment is especially designed to ease cleaning and maintenance and is supplied equipped with different devices which make access to the interior of the ballistic separator as ergonomic and convenient as possible.











Equipment designed based on the knowhow acquired in our facilities, especially devised for good maintenance and cleaning.

#### RUBBLE TROMMEL

A machine characterised by its robustness and resistance to wear in demolition plants. Working with this type of waste is no easy task. For this reason, Masias Recycling has designed very robust machines capable of withstanding the wear and abrasion of these types of material.

#### **REFINING TROMMEL**

Obtains high-quality compost thanks to its careful design. A vital machine in compost refining facilities, as it is the first step in separating the compost from the structurant and impurities in order to achieve a high-quality product.









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It implementation is s synonym of success for achieving the correct separation and cleaning of plastic film.

Our experience and knowhow have led us to develop a standard system for recovering this material, based on:

- Automatic suction positioned on a conveyor belt.
- Honeycomb valve for decanting the suctioned plastic film.
- Sleeve filter for cleaning the suctioned air of dust.
- Suction fan.
- System of transport through pipes (max. 40 metres).

We also offer individualised solutions for each project aimed at maximising the separation of plastic film and minimising the investment.





The Masias Recycling OC bag opener offers a high percentage of bag opening with a low investment and low operating costs.

It is a highly effective system which increases the efficiency of any selection and recovery process of recoverable materials, at the same time as avoiding being aggressive with the material. Its main features are its slow rotation (adjustable speed) and monorotor. The machine's aggressivity can be adjusted by regulating the cutting distance between the rotor and the counter blade.

The machine's control system ensures maximum output in the presence of unsuitable materials and the safety systems make access to the interior convenient and ergonomic in order to ease cleaning and maintenance tasks.









An essential system in packaging plants, which has been designed to adapt to the variations in the type of input material.

Easily exchangeable blades with four cutting zones before being changed. Depending on the input material, the distance between shafts can be modified by up to 70 mm.



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The Masias Recycling Biodrums system is a simple, robust and reliable technology which achieves a reduction of the humidity of the waste, thus improving the separation and recovery of the different fractions of the treated material. Its field of application includes selection, incineration, composting, anaerobic digestion or depositing in landfills.

The waste is homogenised, disaggregated and partially degraded in the interior of the Biodrum. The output material can be subsequently treated to obtain a fraction of fine materials which mostly contains organics, paper, celluloses and a residual product of high calorific value (Refuse Derived Fuels or RDFs).



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Recognised for their robustness, safety and versatility, these belts provide a solution to every need and adapt specifically to every occasion.

The experience we have gained in this field has led us to develop various models of conveyors based on the materials to be transported, the location the selection process and the types of machine to be fed.

- Models developed based on acquired knowhow.
- Top brand purchased components.
- Optimisation of the investment depending on the process.
- Compliance with all current quality and safety regulations.

Apart from the standard machines, we have a technical department able to produce special solutions to any need which may arise.









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₹ BU2:

MACHINES



Implementation of the Windsifter MW guarantees high yield in the separation of unsuitable materials.

Its versatility allows greater flexibility and efficiency than in mechanical separation systems.

Its design is based on air separation according to the density of the material combined with the speed and position of the accelerator belts. The blowing system also has a dust filter and air recirculation, thus preventing dust emissions to the outside.

- Very efficient due to the optimised flow design.
- Various parameters can be adjusted to provide maximum yield with different materials.
- They increase the life of the secondary crusher as they eliminate the unsuitable materials.
- Minimum maintenance and operating costs.



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BU2: KEY KEY MACHINES



The SF is synonymous with good regulation in compost feeding.

This machine is composed of two worm drive conveyor belts and a large feed hopper which permit excellent material dosing to be achieved.



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## TRAINING Masias Recycling

Masias Recycling prepares and implements solutions of acknowledged value and spirit of partnership, with the aim of guaranteeing an increase in the performance and productivity of our customers' facilities. Our aim is to achieve excellence based on a strong commitment to developing our customers' human resources and on the growing quality of the service offered.

Our team are specialists in a wide range of services, focussed on:

- Technical Consultation and Advice (Operation and Maintenance).
- Organisational advice.
- Diagnostic studies of facilities.
- Specialised training.

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Masias Recycling offers a wide range of activities: planning, execution, start-up and turnkey delivery. Our main mission is the satisfaction and success of our customers. That is why we carry out systematic supervision of your projects and we establish relationships of collaboration and trust with all of them. +INFO:





To maintain your equipment in perfect condition and with the same characteristics as the first day, Masias Recycling offers an extensive range of genuine parts, totally trustable, exhaustively tested and with a unique advantage: the total guarantee of superior quality.

The company is committed to providing spare parts as quickly as possible so that our customer's systems do not remain shut down.





# MA MAINTENANCE **Masias Recycling**

Masias Recycling establishes a long-term relationship with its customers, regardless of the hours our team works. We offer a complete system of reliable and rapid after-sales services which will help to maintain the equipment in perfect condition so that the processes never cease working.

Contracting a maintenance plan for your equipment is the best way to guarantee:

- The safety of the workers and equipment.
- Greater longevity for your equipment.
- The constant availability of your equipment.
- A high level of productivity.

Masias Recycling offers a variety of maintenance plans which adapt particularly to each type of work of each of your systems or classification plants and the number of working hours.

Get to know our plans in detail:

- M1 Periodic Preventive Visits
- M2 Periodic Preventive Visits
- Quick Service QS1 Basic (Preventive + Corrective)
- Quick Service QS1 Plus (Preventive + Corrective)
- Quick Service QS2 (Preventive + Corrective)

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SERVICES



For Masias Recycling, customising, offering and complying with the after-sales services creates a long-lasting relationship with its customers, based on respect and trust.

Our technical experts in the Customer Service team are available to offer the most rapid and efficient response for a technical assistance need.

Some of the services we offer are:

- Telephone helpdesk
- Personal technical assistance
- Preventive maintenance
- Personalised start-up
- Supervision of systems in real time
- Sale of genuine Masias Recycling parts

We guarantee that your equipment will be available 365 days of the year and fully operational so that your production is uninterrupted.

#### **Incidental repairs**

A faster service makes the difference.

What do I do if there is a fault?

In case of emergency, just contact Masias Recycling. We will do the rest.

Masias Recycling has a highly-specialised team of experts distributed throughout the Iberian Peninsula. Masias Recycling also has a fleet of vehicle/ workshops, with a basic stock of genuine parts, adapted to the vehicle fleet in your operating area. What benefits does the Masias Recycling Technical Assistance Service (TAS) provide?

- Friendly, professional treatment.
- Explanation of the damage and its causes.
- Repair estimate.
- Information on the condition of the equipment.
- Advice on the corrective and preventive assistance plans.







We understand our customers' needs, the legal framework of their countries, the level of awareness of the society in which the project will be ongoing and above all, the nature of the waste it generates

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tomer, whether through partners or with their own offices, adapts to the specific needs of an individual context and accompanies the customer in all the phases of the project.

Masias Recycling's presence in the world has been based on the values which have defined each of the steps it has taken in the environmental context since its beginnings in Sant Joan Les Fonts: respect for the environment, caring for the world which enfolds us and the firm conviction that waste management must play a part in the value chain of companies and administrations as a key to their profitability, safety and sustainability.

#### Masias Recycling ©

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