



**EMAS**

GESTIONE AMBIENTALE  
VERIFICATA  
reg. n. IT-000821



The Eco Elpidiense Ltd has become a big family which has grown and has been developing as a leader in the territory since its birth thanks to the earnestness of the company, the passion of the employees and the environmental sensitivity.

The company was born in 1990 from the far-sightedness of the public administration and from the experience of the private partners which have allowed the company to face effectively and efficiently the challenges and the developments which have occurred during the years in the field of the care and the defense of the environment.

The 57% of the Eco Elpidiense Ltd is a private capital and the 43% is a public capital with a capital stock equal to 516.000,00 € (five hundred sixteen thousand) completely paid out. This composition of the company represents a balance which permits the conjugation of the efficiency of the private part with the important supervision of the public part.

Today the company is completely privately held, allowing itself to meet new challenges in the market.

The Board is composed of 7 counselors, 4 of them belong to the private part and 3 of them belong to the public part, one of whom fills the role of President.

At present, the company boasts almost 120 people endowed with high technical skills in its staff and it avails itself of a team composed of highly skilled professionals who are very well-known in their own sector.

The “mission” of the company is to strengthen its own role as the main operator in the territory dealing with the complete management of the environmental services, keeping a strong inclination towards the efficiency and the effectiveness of the activities carried out for its own customers.

After the recent national legislative reforms to the liberalization of the essential public services, the Eco Elpidiense Ltd is now committed to operating not only on the national territory, but also on an international scale and it is particularly interested in the development of all the activities which it has been testing for twenty years in the environment field.

The internal human resources are yearly instructed through specific courses on the basis of the activity they deal with, allowing them to operate with “self-control” and in accordance with the different proceedings of the Eco Elpidiense Ltd. The respect of the regulations on safety represents one of the main aims of the Eco Elpidiense Ltd. All the internal human resources are equipped with the most modern individual safety devices (DPI) and all the machinery is provided with the required certifications (CE).

Since 2008, the Eco Elpidiense Ltd can boast the most important Eco-Management and Audit Scheme (EMAS) Registration, which is a voluntary tool created by the European Community, where Public or private companies and organizations can participate voluntarily in order to evaluate and improve their environmental performances and to provide the public and other interested subjects with all the information on their own environmental management. It is included among the voluntary tools activated within the 5th Environmental Action Programme. The main purpose of EMAS is to contribute to the realization of a sustainable economic development, placing special emphasis on the role and the responsibilities of the enterprises.

In addition to this certification, in August 2008 the Eco Elpidiense Ltd obtained the ISO 14000 certification for the “Management of non hazardous waste disposal systems and of waste treatment plants through the following stages: landfill farming and management of leachate. Gathering, transportation of the urban waste and the non hazardous special waste. Services of cleansing department and urban disinfection”.

Through the ISO 14000, the Eco Elpidiense has set a “system of environmental management”, resulting from a voluntary choice of the company which has decided to improve its own attention towards the environment, with the purpose of keeping the environmental plants of its own activities under control, systematically trying to improve them.

## **waste collection**

The Eco Elpidiense Ltd is also a national leader for the sector of the “curbside collection”, reaching excellent results in the managed towns.

As evidence of that, the Municipality of Porto Sant’ Elpidio was awarded as the first town in the Centre Italy with more than 10.000 inhabitants that have reached the best result and the rating of good management (see the following prize-giving) by Legambiente Nazionale in 2007 because it had reached a percentage of 56,77% of the separate waste and in 2008 because it had reached a percentage of 56,72%, within the “Comuni Ricicloni ” demonstration, in collaboration with the Department of Environment.

With regard to the waste collection service , Eco Elpidiense Ltd implemented the first collection service "door to door" of the Marche Region in 2003 , obtaining in 2006 the awards in the national competition " Recycling Municipalities " promoted by Legambiente as the first common in central Italy ( with a population of over 20,000 inhabitants) for separate collection rates achieved . Since then the city of Porto Sant 'Elpidio has been awarded every year in regional and national competitions " Recycling Municipalities " for having exceeded the objectives of the law as regards the percentages of recycling.

The Eco Elpidiense Ltd is an important landmark in the activation of separate collection "door to door" . In 2008 the collection "door to door" was also activated in the municipality of Torre San Patrizio , with excellent results , so much so that in 2009 the municipalities of Porto Sant 'Elpidio and Torre San Patrizio were the only two municipalities in the province of Fermo to overcome the goals of recycling established by law.

The collection "door to door" was recently activated with excellent results in different Municipalities like Montegranaro (2009), Monte San Pietrangeli (2010), Sant 'Elpidio a Mare (2012) and Monte Urano (2013) . As regards the latter municipality in which the service was activated in March 2012, it has gone from a percentage of recycling from 20% ( February 2012) to 72.87 % ( April 2012) , until it reaches the actual percentage of 74.10 % (August 2012).

Eco Elpidiense Ltd is also a national leader in the management of the collection of waste through the use of the method "door to door" with excellent results in the municipalities managed.

Porto Sant 'Elpidio collection "door to door" ( 25 684 inhabitants) recycling 70%  
Torre San Patrizio collection "door to door" ( 2,131 inhabitants) recycling 70%  
Montegranaro collection "door to door" ( 13,394 inhabitants) recycling 69%  
Monte San Pietrangeli collection "door to door" ( 2577 inhabitants) recycling 71%  
Monte Urano collection "door to door" of the paper ( 8,471 inhabitants) recycling 71%  
Sant 'Elpidio a Mare collection "door to door" ( 17,185 inhabitants) recycling 72 %

Lapedona traditional funding ( 1,177 inhabitants)  
Moresco traditional funding ( 621 inhabitants)  
Monterubbiano traditional funding ( 2,432 inhabitants)

The Eco Elpidiense Ltd is the owner of plant for selection of solid urban waste " differentiated " from the dry fraction (paper, glass, aluminum , plastic, etc. .. ) . with an annual capacity of processing 25,000 tons. The implant is inserted as a reference level of A.T.O for the treatment and selection of the " dry " in the Provincial Plan . To confirm this, the system described above has been identified as a reference platform of Comieco ( paper and cardboard) and Corepla ( plastic packaging ) .

## **Water treatment.**

In our district, regarding the water treatment Eco Elpidiense Ltd is well known as a leader of this sector, in fact , Eco Elpidiense has got 2 liquid waste treatment plants physico-chemical, in Corvese street with the capacity of 240 mc per day and another depuration plant in Mazzini street with the capacity of 100 ton per day, that will satisfy the demands of many production companies and over.

## **Environmental remediation .**

The Eco Elpidiense Ltd in your resume can boast one of the largest reclamation of polluted sites on the Italian territory , this area is situated at the Municipality of Porto Sant 'Elpidio (EX website FIM). The total area of the whole is 85 583 square meters of which 55,979 involved in the clean.

## Permissions To The Execution Of The Activity

The general permission, which allows the execution of the activity of the Eco Elpidiense Ltd, concerns the registration to the CCIAA of Ancona – National Register of Waste Managers – Regional Section of Marche Region, No. AN/000354, with the categories and classes hereafter related in the list below:

category	class	type of registration	expiration date	description
1	B	ordinary	18/06/2012	Urban and assimilate waste collection and transportation (see art. 1, paragraph 1 and 2, of the deliberation of the National Committee no.1 of the 30.01.2003). Class B: less than 500.000 inhabitants and over or equal to 100.000 inhabitants.
2	A	simplified	09/07/2011	Non hazardous waste collection and transportation, identified according to the art. 216 of the D.Lgs. 152/2006, for the effective and objective recycling. Class A: total annual treated quantity over or equal to 200.000 tons.
4	D	ordinary	18/06/2012	Collection and transportation of non hazardous special waste which is produced by third parties. Class D: total annual treated quantity over or equal to 6.000 tons and below or equal to 15.000 tons.
5	E	ordinary	18/06/2012	hazardous waste collection and transportation. Class E: total annual treated quantity over or equal to 3.000 tons and below 6.000 tons.
9	B	ordinary	21/01/2013	Sites reclamation. Class B: amount of the reclamation works which have been approved up to Euro 7.746.853,49
OG6	Class I			Waterworks, gas pipeline, oil pipeline, irrigation and evacuation works. Amount of works up to €258.228,00
OG 12	Class IV			Reclamation and environment protection works and plants. Amount of works up to € 2.582.284,00
OS24	Class III			Green areas and street furniture. Amount of works up to €1.032.913,00

### CARRIED OUT ACTIVITIES

1. Management of collection and transportation services for a third part of all types of solid and liquid waste. (from 10th September 1990)
2. Management of landfills for all types of solid and liquid waste disposal (from 10th September 1990)
3. Temporary storage of special waste meant for recycling and of hazardous urban waste (from 2nd May 1994)
4. Services of external urban waste cleaning (dal 25 May 1994)
5. Gardening (from 11th May 1995)
6. Freight on behalf of a third party (from 11th December 2000)
7. Management of thermal plants of public buildings following the direct municipal assignment (from 15th May 2001)
8. Services of urban and industrial cesspools and sewages cleaning (from 29th May 2002)
9. Sites reclamation (from 1st July 2008)
10. Planning, realization and management of water purification plants (from 2003)

## Landfills management



In order to effectively accomplish its task, that is to limit the noxious emissions and not to become a pollution source for the ground and the hydrosphere, a landfill must be properly planned according to the relevant law. The contemporary landfills must be built with a structure like an ecological barrier so that it is possible to isolate the waste by the ground, respect the hygienic standards and the biosphere, reuse the biogases which are produced as combustible for the energy generation.

The structure is generally made like an “underground yard”, formed from down upwards, as follows:

- a passive ground composed of clay and plastic insulation (geomembrane);
- a layer of sand for the absorption, recovery and subsequent treatment of the leachate;

- the layer of waste;
- another superior layer of soil for the covering and the growth of trees;
- some chimneys for the emission and the recovery of the gas (in the case of RSU landfills).

Also in a contemporary landfill it is possible to recover almost only the 40% of the methane, while the rest is dispersed. So, it is important that the wet part of the waste is collected in a separate way or that the waste undergoes a process of composting and/or a mechanical biological treatment before being dumped to the landfill (these processes allow to recover the 100% of the methane since they occur in close reactors).

For example, from a landfill of almost 1.000.000 cubic meters which grows more than 60.000 cubic meters per year (equal to 51.000 t/year), it is possible to extract about 5,5 millions of cubic meters of biogas per year (more than 600 m<sup>3</sup> per hour).

The environmental pollution linked to a well controlled and managed landfill can be noticeably reduced (also for what concerns the greenhouse gases, not only doing a preliminary selection of the materials which will be dumped here, but also exploiting the compostable part for the production of biogas and agricultural. However, there are some drawbacks like the landscape defacement and the need of checking the area for a certain period of time after the closing of the activity, besides the occupation of the territory which becomes unusable for other purposes after the abandonment of the landfill, which can also be converted in a green area.

## Biogas recovery



Before the arrival at the landfill, an intense biological activity of fermentation begins in the wastes. The aerobic bacteria are the first to come into action consuming the present oxygen.

Then, the anaerobic bacteria come into action, disgregating the organic compounds in simpler particles (simple acids) which constitute the substratum (food) where methanogenic bacteria can soon after live and develop.

The components of the RSU able to provide biogas are the organic putrefying substances which are characterized by different speeds of biodegradation.

The non putrefying substances, like the plastics, the glasses, the metals, the inerts etc. remain in the landfill like foreign bodies without any possibility of degradative evolution, or at least within a timeframe that is absolutely not comparable with the timeframe of the biogas production.

The organic part present in the wastes is generally composed of amino acids, proteins, urea, fats, fatty acids, carbohydrates, cellulose and other complex molecules.

The wastes with the higher speed are the food ones, as well as the biological sludges coming from the treatment of the effluent waters, then the garden wastes and, finally the paper wastes, the cardboards, the wood, the textile materials, etc.

The anaerobic digestion occurs at several stages:

The first stage involves the oxygen consumption present in the mass of the wastes, that is the aerobic digestion process. It lies in the hydrolysis of the macromolecules of the complex organic substances which are in the RSU (carbohydrates, proteins, fats, etc.), that is the degradation of the complex molecules into simpler molecules (sugars, fatty acids, alcohols which can be defined intermediate compounds).

The second stage is the acidogenesis, that is the degradation of the intermediate compounds into volatile organic acids such as the acetic, formic, butyric, methyl, hydrogen acids and the carbon dioxide.

The third stage is the methanogenesis, which brings to the formation of a gaseous product called biogas, which is mainly composed of methane and carbon dioxide and of a small amount of H<sub>2</sub>S, H<sub>2</sub> and N<sub>2</sub> in varying quantities according to the composition of the starting wastes.

## Waste selection plant



The separate waste involves the collection of waste according its typology, for example aluminium, paper, plastic, glass, compost. Only the non recycling waste is brought to the landfill. The planning of an efficient service of curbside collection involves also the management of a selection plant which is very important to select the types of wastes which are collected together.

The general composition of the wastes is a given difficult to set, it changes according to the area, the wealth and the culture of the citizen as well as to the industrial production of the place. A sure given is the daily production for inhabitant which, in 2006 is near 1.5 kg per day on the average.





