

Waste Collection in Spain and Greece

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As elsewhere, waste collection in Mediterranean countries is important to prevent health risks to the population, caused either by vermin, scavenging or bacteria from decomposing waste. Unlike the UK, however, the problem in these countries is exacerbated by the heat causing faster decomposition and increased odours. To prevent this, waste is collected daily and in some tourist areas is provided twenty four hours a day with the municipalities treble shifting their waste collection fleet.

In Spain and Greece the waste collection service is provided by both the public and private sector.

There are many kinds of waste collection systems used in Spain and Greece. These range from the traditional rear loading waste collection vehicle with comb and trunnion lift for emptying DIN type containers of 120 – 1100 litres capacity. Normally, Ros Roca and Geesinknorba supply waste collection equipment to the Spanish market while Kaoussis, Hfaistos Stefanou and Farid

supply equipment to the Greek market. The waste collection vehicles of rear loading type are supplied in 16 and 22 cubic metres capacities for both markets.

Side loading waste collection vehicles which can lift containers from 660 litres – 3200 litres capacity are also used in the Spanish and Greek waste collection market. The equipment is totally automated, and only requires a driver operating the equipment from inside the cab. Although the side loader is more expensive than the traditional rear loading waste collection vehicle, huge savings can be made in terms of staff since it only requires a driver to operate the lifting / compaction equipment unlike the rear loading system requiring a driver and two loaders. The side loader is capable of emptying containers from 660 – 3200 litres capacity both at street level as well as in conjunction with an underground waste collection system, whereby the container is hydraulically lifted to street level for the container to be emptied by the side loader collection vehicle.

Farid provide their FMO side loader range through Ros Roca in Spain, along with other side loader manufacturers, for example, OMB, AMS and Mazzocchia. The side loader is available in a range of capacities from 13 – 32 cubic metres. Side loaders are widely used in Spanish cities, for example, Madrid - Majadahonda, Boadilla la Monte, Barcelona, Valencia, Malaga, Bilbao, Las Palmas, Telde while in Greece AMS side loaders are operating in Halkidiki and Alexandria. Thessaloniki city and Chalandri in Athens Prefecture are also investigating the possible introduction of the side loader system. In most of these cities, the side loaders are GIS tracked, so the route the driver takes can be reproduced at the depot for when a driver is absent.

Another type is the underground waste collection system with 1100, 2200 or 3200 litre containers underground with waste deposited into a litter bin type aperture above ground level. Larger roll on off Kiggen compactor containers can be used in an underground waste collection system where there is an apartment block or shopping complex.

Pneumatic underground waste collection systems consisting of a pipework network sucks waste along the pipework to a communal collection point for onward transport to a disposal or recycling facility. The collection point above ground also consists of a letter box type aperture for waste to be placed inside to fall into the pipeline network. Ros Roca and Envac are the main suppliers of this system in Spain and it is used in cities such as Palma – Mallorca, Pamplona, Seville etc.

Other innovative systems are also used, one example is the Nord Easysystem from Italy which uses a roll on off collection vehicle which can handle a variety of compactor and open top containers for the collection of municipal, food waste and dry recyclables. It is equipped with an arm similar to a truck mounted crane with a magnet fitted on its base. The magnet lifts the containers with the contents discharged into the collection container on the vehicle. The Nord Easysystem containers can be positioned at road level or below ground with the litter box type aperture for the placement of residual, food waste and dry recyclables. This system was introduced in Barcelona in 2006 and has since been also used in Huelva, Huesca, Gran Canaria and Tenerife.

Another innovation is the use of gas powered chassis. Both Spain and Greece use gas powered waste collection vehicles in Madrid, Barcelona, Valencia and Athens City.

A further development in Spain is the use of Geesinknorba hybrid waste collection vehicles. When Barcelona City renewed its waste collection contract in 2009, the four private contractors who provide the waste collection service in the four zones of the city: FCC, Urbaser, Cespa and COMSA purchased Geesinknorba GPM III standard rear loader and Geesinknorba MF300 series split fraction waste collection vehicles of hybrid design. The decision to use hybrid waste collection vehicles was to reduce noise emissions even further when collecting waste during the night.

To deal with the large volumes of waste produced, waste is collected at night or in the early hours of the morning when there is less traffic to hinder the

productivity levels of the waste collection service. The compaction and lifting equipment is designed to reduce noise emissions to prevent disturbance

Health and Safety is also a major priority when collecting waste in heavily populated tourist areas. This is another reason why the service is provided at night when most bars, clubs and tavernas have closed because there are fewer people on the streets thus reducing accidents. The collection crew are provided with high visibility clothing so that they can be seen easily as well as the collection vehicle having high visibility flashing beacons and high intensity working lights. A final health and safety issue is, because of the heat in Spain and Greece, collecting waste at night improves the working conditions for the collection crews.

FCC have recently provided their waste collection staff using rear loading collection vehicles with a motor cycle type helmet to wear while emptying the waste containers to limit injuries while using the vehicle's lifting equipment. It is also policy that the collection crew working on rear loading waste collection vehicles in Spain, other EU and also non EU Member States may ride on the rear mounted footboards while the vehicle is in transit from one collection point to another. These helmets in the event of a crew member falling from the rear mounted steps of the moving vehicles will help protect the crew. The helmets were tested by FCC and are substantial enough to protect collection crew personnel in this event. It is now FCC company policy to wear this helmet at all times while travelling on the footboards at the rear of the collection vehicle. FCC has also advised their collection personnel that where possible to ride inside the cab and only use the rear footboards for short distances.

Spain

In Spain, most of the waste is collected by the private sector while a smaller proportion is collected by the municipalities own inhouse public companies.

FCC (Fomento De Construcciones Y Contratas SA) collects 50 percent of waste on behalf of Spanish municipalities. They have many waste collection

contracts with major cities and towns in Spain such as: Madrid community where they collect waste from 3,213.271 inhabitants in the central zone and the periphery, Barcelona (Zone A Sur and Zone C Oeste) 638.252 inhabitants, Valencia (Zone two) 363,064 inhabitants, Bilbao 353,340 inhabitants, Zaragoza 666,129 inhabitants, Salamanca 155,740 inhabitants, Vigo 295,703 inhabitants, Malaga 566,447 inhabitants, Castellon de la Plana 177,924 inhabitants, Avila 56,144 inhabitants, Tarragona 137,536 inhabitants, Oviedo 220,644 inhabitants, Albacete 166,909 inhabitants, Vitoria 232,477 inhabitants, Segovia 56,858 inhabitants, Alicante through a joint venture company (INUSA Ingenieria Urbana, SA) serves 331,750 inhabitants and Benidorm 70,280 inhabitants.

FCC also operates waste collection contracts on the Balearic islands in the municipalities of Marratxi (Palma – Mallorca) serving 32,380 inhabitants, Alcudia – Mallorca serving 18,237 inhabitants, Felanitx – Mallorca serving 17,969 inhabitants, Inca - Mallorca serving 29,450 inhabitants as well as Mahon the capital of Minorca serving 28,904 inhabitants and Alaior – Minorca serving 9,133 inhabitants.

FCC also operates waste collection contracts on the Canary islands such as Las Palmas – Gran Canaria serving 190,562 inhabitants, Santa Brigida – Gran Canaria serving 19,042 inhabitants, Puerto del Rosario – Gran Canaria serving 35,293 inhabitants, Olivia – Lanzarote serving 21,354 inhabitants, Island of Fuerteventura through a partnership known as (UTE ZURITA) which serves a population of 100,929 inhabitants. FCC also collects waste on behalf of two municipalities on the island of Tenerife: Guia de Isora serving a population of 20,004 inhabitants and Guimar serving a population of 17,253 inhabitants.

While FCC take 50 percent share of the Spanish waste collection market Urbaser the second largest waste collection contractor in Spain has waste collection contracts in Boadilla La Monte (Madrid), Las Rozas (Madrid), Barceloa City (Zone Avinguda Meridiana), Tierra del Vino – Valencia, Elche –

Alicante, Denia, San Fernando (Cadiz municipalities), Jerez de la Frontera and Chiclana de Frontera Costa De La Luz (Southern Spain).

Cespa, the third largest waste collection contractor in Spain operates waste collection contracts on behalf of municipalities in Barcelona (one zone), Murcia, Huelva, Granada city, Ibiza town and A Coruna in Northern Spain.

Valoriza Medioambientals the fourth largest waste collection contractor in Spain operate waste collection contracts on behalf of municipalities in Majadahonda – Madrid, Coslada – Madrid, Pinto – Madrid, Alcorcon – Madrid, Sant Cugat Del Valles – Barcelona, Cadiz city, Orihuela near Alicante, and in Arona on the island of Tenerife in partnership with Canaries contractor Santana Cazorla.

There are also several smaller contractors providing waste collection services for Spanish municipalities, for example, Sociedad Agricultores de la Vega de Valencia (SAV) collect municipal waste in one of three zones of the city of Valencia. SAV also have waste collection contracts in other Valencian towns and cities, such as, Alaquas, Albal, Albalat dels Sorells, Albuixech, Alcacer, Aldaia to name but a few. Another Valencian contractor is Grupo Secopsa who also collects waste in one of the three zones in Valencia city.

Other smaller contractors are Raga Group who collects waste in the City of Teruel, the region of Jiloca (Teruel) as well as recently winning waste collection contracts in Gibraleon (Huelva), the port of Algeciras near Cadiz and San Juan del Puerto (Huelva). Melchor Mascaró, a construction contractor on the island of Mallorca, has also entered into the waste collection market with municipalities in Mallorca over the last six years. The company has successfully won waste collection contracts in Andratx, Bunyola, S' Arenal, Es Raiguer, Capdepera and Campús.

There is another contractor, Grupo Empresarial SADISA, in Cantabria. Grupo Empresarial SADISA operates waste collection contracts in thirty municipalities in Cantabria, for example, Noja, Camargo, Torrelavega, and Santander. It also collects waste for the Spanish municipalities of Gudar

Jabalambre – Teruel, Subirats – Barcelona, Galicia, Quiroga, and Vault in Lugo in the north of Spain and operates two waste collection contracts on the island of Tenerife in the municipalities of Costa Adeje and San Miguel de Abona.

There is also joint interaction between public and private sector companies in Spain. Two examples of this are LIMASA III (Servicios de Limpieza Integral de Malaga III S.A.) the public company of the City of Malaga who FCC owns a percentage of the public company, while another example is EPREMASA one of the public companies in Cordoba which FCC owns a 35 percent share in.

In some of the waste collection contracts in Spain, two of the private sector companies work together to provide a joint venture waste collection contract. Some examples are in Logrono in Northern Spain where FCC and Urbaser provide a joint waste collection contract for Logrono municipality called (UTE LOGRONO LIMPIO). Another is in Alicante where FCC in conjunction with Cespa provides the waste collection service for the city of Alicante through a joint venture company called (INUSA Ingenieria Urbana, SA). A final example of a joint venture waste collection contract is in the municipality of Arona on the island of Tenerife. The waste collection contract is jointly provided by Valoriza Medioambientals and Canaries contractor Santana Cazorla.

On the island of Mallorca, FCC provides some of its waste collection contracts through its Balearic subsidiary company called LUMSA. LUMSA collects waste on behalf of the municipalities of Alcudia, Inca, Manacor, Muro and Sa Pobla.

Some of the municipalities in Spain that provide the waste collection service totally inhouse are EMAYA- City of Palma island of Mallorca, Calvia 2000 region of Calvia island of Mallorca, EMCA 2002 Port de Pollenca island of Mallorca, FOBESA – Castellon de la Plana, SADECO – Cordoba, LIPASAM – City of Seville, Eco Alcores – Alcala de Guadaira and Dos Hermanas – Seville region, GIAHSA – Coast of Huelva, LIMUSA – Lorca (Murcia), EMULSA – Gijon Asturias, RSU Ciudad Real – Castilla La Mancha near Madrid and RIVA – a municipality in the suburbs of Madrid.

Some of the municipalities which collect municipal waste are also linked to water desalination. Some of these are EMAYA – City of Palma – Mallorca, GIAHSA – Coast of Huelva and the public company of Castellon de la Plana – FOBESA. FOBESA provide waste collection services for part of the city of Castellon de la Plana, as well as providing waste collection services for a further fifty towns in Castellon as well as in Teruel, Alicante and Albacete (the municipality of La Roda).



In Spain, waste collection containers are sited at communal collection points every few metres along streets. They consist of a variety of container types dependent upon the mode of collection, whether rear loader or side loader system. There will be containers at the communal collection points for residual waste, organic fraction, paper and cardboard, plastic, glass, steel and aluminium.

Greece

In Greece the majority of waste is collected by the municipalities because of the potential for industrial action if it seems that the waste collection contract maybe outsourced to the private sector.

There are however four private contractors who exist in Greece which do provide waste collection contracts for some municipalities. These contractors are Technical DION E.E., Helesi (Hellenic Environmental Systems Industry) Spider S.A. Environmental Services and Perme Environmental Transport S.A. (Perme Hellas S.A.)

Technical DION.E.E., whose head office is in Thessaloniki, has operated waste collection contracts on the Greek mainland and its islands for the municipalities of Toroni, Epanomi, Oraiokastro in the prefecture of Thessaloniki, Kerkini in Serres, Pamvotida in Ioannina, Stilida in Fthiotida, Milo and Serifo at the Nome of the Cyclades, Kassandra – Halkidiki, Ithaca – one of the Ionian islands.



The company can also act as an interim or emergency contractor, and this was demonstrated in October 2011 when the company provided the City of Athens with twenty waste collection vehicles and crew to help collect the piles of waste left on the streets of Athens because of industrial action by in house waste collection staff.

Technical DION E.E. buys all of its waste collection vehicles secondhand and normally sources them from the UK or Germany. Technical DION E.E. prefer buying waste collection vehicles from the UK because they believe that the right hand driving position is safer because the driver has a much better view of any hazards whilst completing the waste collection round. Another reason why Technical DION E.E. buys secondhand vehicles is because most waste collection contracts outsourced by Greek municipalities are only for a four year duration so it does not make economic sense in buying new vehicles for such a short contract. However, Technical DION E.E. are constantly updating their waste collection vehicle fleet and most of them are to Euro Three specification as stipulated by Greek municipalities.

Helesi (Hellenic Environmental Systems Industry) has been providing waste collection services to some Greek municipalities for more than ten years. Helesi formed its Environmental Services division from acquiring Perivallontiki Environmental Services (PYP) which as well as providing environmental services, for example, waste collection to Greek municipalities was also agents for Farid waste collection equipment in Greece and mounted the Farid equipments onto chassis at its purpose built facility in Patras. This benefitted Helesi, because any new waste collection contracts that they win they can mount the Farid equipments onto chassis for their contracts, reducing costs internally and reducing the cost of purchasing waste collection equipment externally from another manufacturer.

In 2004, Helesi provided waste collection, street cleaning, recycling and an integrated waste management system in conjunction with Spanish contractor Urbaser SA for the Olympic Games in Athens.

Helesi collects waste for the municipalities of Vrilissia – Athens, Rio – Patras, Rethimno island of Crete, Hersonissos island of Crete, Malia – island of Crete, Simis, Afantou and lalyssou island of Rhodes, as well as the municipalities of Western Macedonia in conjunction with (Diadyma S.A.).

All of the waste collection vehicles Helesi operates are of the Farid T1 type design and are 16 cubic metres capacity. They are fitted with a comb / trunnion lift and can empty containers from 120 – 1100 litres capacity and are normally mounted onto 18 tonne Iveco Eurocargo two axle chassis which can accommodate a driver and two crew.

Spider S.A. Environmental Services in Ioannina have been providing waste collection services to Greek municipalities for thirty years. Similar to Helesi, Spider has its own equipment division, so it can keep costs down of purchasing waste collection equipment for municipal contracts.

Spider Environmental Services operates waste collection contracts for municipalities in Ioannina close to its head office and also for municipalities in Halkidiki.

Spider is very innovative in the kinds of waste collection equipment, preferring new equipment either using the traditional rear loading type waste collection vehicles with comb / trunnion lift for emptying 120 -1100 litre containers or the AMS side loader system using 3200 litre containers.

Spider is the first environmental services company in Greece to use the AMS side loader system in conjunction with the municipalities in Halkidiki.

Significant cost savings have been made in introducing this kind of collection system because it only requires a driver as opposed to the rear loading collection system which requires a driver and two operatives. The equipment can also be GIS tracked so the route the collection vehicle takes can be reproduced for when the regular driver is absent.

Perme Environmental Transport S.A. (Perme Hellas S.A.) whose Head Office is in Athens have been involved in providing waste collection services to

Greek municipalities since 1999. Its main waste collection activities centre on the island of Rhodes.

Perme's key waste collection contract is in the municipality of Archangelos on the island of Rhodes. Perme won this contract in 2005 and since winning this contract, the company also won the waste collection contract in Lindos and has also set up an office and has additional vehicles for providing the provision to collect waste in Rhodes town.



The company also collects mixed glass cullet from the hotels, bars and tavernas across the island of Rhodes and has provided the hotels, bars and tavernas with bottle banks for the deposit of their commingled glass.

Perme buy both new and secondhand waste collection / recycling vehicles. In Archangelos, Perme purchased new Kaoussis Norba RL300 16 cubic metre rear loading waste collection equipment mounted on Volvo FM and Volvo FE two axle 18 tonne chassis. The equipment features a bin lift with comb /

trunnion lift and can empty containers from 120 -1100 litres capacity, while the Volvo chassis feature seating for a driver and two loaders.

Perme also have a secondhand Mercedes SK two axle chassis with Brivio waste collection equipment and comb / trunnion bin lift for collecting paper and cardboard waste from the hotels, bars and tavernas across the island of Rhodes. This vehicle was purchased from Germany second hand. The glass cullet deposited in the bottle banks is collected with a Mercedes SK tipper lorry and crane for lifting and emptying the bottle bank containers.

In Greece, most waste is collected in containers of 120 -1100 litres capacity. The containers are at communal collection points similar to Spain and positioned every few metres along the road. The communal collection point has containers for the collection of residual waste and commingled recyclables.

As in Spain, most waste is collected in Greek towns, cities and its islands either in the night or in the early hours of the morning. The waste collection service in Athens city is provided seven days a week. There are two collection shifts, one commences at 8pm and finishes at 2pm while the second starts at 2pm and finishes at 6pm. In Thessaloniki city, the waste collection service is provided twenty four hours a day and 365 days a year. Eighty percent of waste is collected at night commencing at 8-9pm and finishing at 3-4am. The remaining twenty percent of waste is collected in the day from residential areas where night time collection would be impractical. The main benefits of collecting waste at night in Athens and Thessaloniki is reduced traffic congestion as well as providing a safer working environment for the collection crews. Also the hot temperatures experienced in both of these cities will have dropped at these working times, so the working conditions are much better for the collection crews.

In Kefalonia, the largest of the Ionian islands, waste is collected daily in the summer months due to tourism but reducing to three collection vehicles working Sundays in the Winter. Then the collection service on Sundays is concentrated in Argostoli, the capital of the island.

The same benefits of night time waste collection apply to Kefalonia. Generally, the waste collection service starts at 3am onwards with most collection rounds finishing before midday.

On the islands of Corfu and Rhodes, waste is stored in a cold room while it awaits collection. This eliminates the waste degrading in the hot Mediterranean climate and producing unpleasant odours as well as pools of leachate.

In the municipality of Kalithea on the island of Rhodes, waste is collected from the hotels in the afternoon. This is an alternate practical solution because at this time of the day, most tourists will be on the beach or out sightseeing reducing the risk of accidents while the collection vehicle and crew carry out the waste collection service.

In conclusion, both Spain and Greece provide sustainable waste collection systems in a time when austerity measures are in place to reduce the deficit in EU Member States.