

FCC Transforms the waste collection service in the municipality of Tias on the island of Lanzarote

BY TIMOTHY BYRNE



In 2013, the municipality of Tias in Lanzarote awarded a ten year contract to Fomento de Construcciones y Contratas, S.A. (FCC), Spain's largest environmental services contractor. This included waste collection, street and beach cleaning services, the washing of empty waste containers, the management of parks and gardens, the pruning of trees and the internal cleaning of council buildings as one contract which commenced in May 2013. Another separate contract awarded by the municipality of Tias to FCC was the cleaning of six public conveniences and bathrooms along the beaches of Puerto Del Carmen, Playa de Matagorda, to Playa Chica (also known as Pila de la Barrilla) which commenced on the 17th July 2013. A further contract was awarded for the cleaning of schools from the 12th March 2014. In total, four contracts were awarded to FCC after the previous contractor for Tias, SALIMPA the Lanzarote subsidiary of Camilo Alvarez Sanchez, had financial problems. Currently, the new contracts are still in their transition phase with the option to extend them for another five years.

Tias is home to the largest tourist resort on the island: Puerto Del Carmen, which receives tourists from the UK, Germany, Holland, Sweden as well as Eastern Europe all year round. The collection of waste is, therefore, a very important task because of the hot climate twelve months of the year combined with large quantities of waste being produced by hotels, bars, restaurants etc. from these tourist resorts.



Lanzarote is home to Mr. César Manrique whose legacy stretches throughout Spain and beyond its borders. Lanzarote was his native island where Manrique's love of the landscape is so clearly manifested that it has been said that Manrique's greatest work is Lanzarote itself. Manrique was born in Arrecife and grew up in the area of San Ginés lagoon. At the age of 23, he held his first art exhibition in Arrecife. He studied at the University of La Laguna and later transferred to the University of Escuela Superior de Bellas Artes de San Fernando in Madrid for five years until 1945. He visited the "Catherine Viviano" gallery in Houston and New York with Mr. Nelson Rockefeller in 1964. Manrique also visited many other famous people, for example, Rita Hayworth, King Hussein of Jordan, Helmut Kohl, Spanish Prime Minister Felipe González Márquez, Luis Ezequiel Ibáñez, Andy Warhol, Barbara Rosse and Alfredo Kraus.

Manrique had a major influence on planning regulations in Lanzarote after he realised the tourist potential of the island and he lobbied to encourage its development. One of the main aspects of this was to make sure that there were no high rise hotels constructed on the island and that all of the buildings would be painted white for their exterior decoration. Manrique also decorated the island with volcanic lava, and native vegetation such as palms, teasels and tabaibas etc.

Manrique was a polymath - a painter, a sculptor, an architect, a town planner, a landscape artist, an ecologist and a monument conservationist. Sadly, Manrique died in a car accident in 1992 in Tahíche, a village near Tegüise which was also near to Fundación, his home on Lanzarote. Manrique was aged 73 when he died.



To provide an efficient waste collection service, FCC has purchased a new state-of-the-art fleet of waste collection and transfer equipment to provide a sustainable waste collection system. FCC has purchased two Geesinknorba N Series N2 10L25 10 cubic metre capacity waste collection vehicles with the Geesinknorba L200 bin lift. This bin lift can empty DIN type containers from 80 - 1100 litres capacity.

The Geesinknorba N Series N2 10L25 10 cubic metre units will empty 800 and 1000 litre containers used in the hotels at Puerto del Carmen as well as the villages in the hill side of Tias; Masdache, La Asomada, Mácher, Conil and Tegüise. FCC chose to purchase the Geesinknorba N Series N2 10L25 10 cubic metre units for their high compaction ratio of 6.1 and for delivery of a healthy seven tonnes and three hundred and forty kilogram payload. These N Series units use the Smartpack system which helps to reduce fuel consumption by 20% by sensing how much hydraulic oil is required when lifting full containers of waste. It also senses how much hydraulic oil is required for compacting the containers' contents after the lift has discharged the waste into the hopper of the Norba unit.

The Geesinknorba N Series N2 10L25 10 cubic metre units are mounted onto a Scania P230 Series 4x2 two axle chassis of 18 tonnes gross vehicle weight. The chassis features a standard vertical exhaust, as well as a manual transmission and a day cab to accommodate a driver and two collection personnel. To help to reduce fuel consumption, an air deflector kit has been fitted to the roof of the cab.

One of the Norba N Series 10L25 10 cubic metre units is in daily use while the second is used in the height of the tourist season when waste volumes are higher. The second vehicle is also used when the sister vehicle is being serviced.



To help improve safety, FCC has supplied the two waste collection operatives who ride on the rear footboards of the new Geesinknortba N Series rear loading waste collection vehicles, safety helmets similar to those worn on a bike. This is to provide protection to the collection crew if they fall from the rear footboards of the collection vehicle while the collection vehicle is moving from one collection point to the other. The collection crew always ride inside the cab when travelling on fast roads and bypasses.



The Norba N Series 10L25 10 cubic metre units with L200 bin lift were specially built for FCC by Geesinknorba Spain for the Tias contract. Their compact dimensions make the vehicles very manoeuvrable when reversing in streets to access the hotels' communal collection points for emptying their 800 and 1000 litre containers. These two Norba N Series units purchased by FCC from Geesinknorba Spain are the first of their kind sold in Spain of 10 cubic metres capacity mounted onto a Scania P230 4x2 18 tonne chassis.

FCC has also introduced the use of 3200 litre side loader containers in the municipality. The introduction of this system has replaced the former 800 and 1000 litre containers used for municipal and tourist waste in communal collection points in Tias, as well as the villages of Mácher, La Asomada, Masdache, Conil and Tegoyo.



The use of the side loader collection system is more cost efficient as it is quicker compared to the conventional rear loader collection system previously used. It is less labour intensive as it only requires a driver to operate the side loader collection equipment compared to a rear loader which requires a driver and two collection operatives to position the containers at the rear of the collection vehicle for emptying, prior to them be re positioned at the communal collection point.

Because Lanzarote is a windy island, FCC have constructed steel fencing around the 3200 litre containers in communal collection points on open stretches of road in Tias. This is to prevent the containers being blown over in a strong gust of wind. FCC has also laid new floor slabs at the communal collection points. New floor slabs have also been laid at communal collection points in the villages where 800 and 1000 litre containers are still used.

To provide the collection service, FCC has purchased four AMS CL1-N side loaders of 25 cubic metres capacity. These equipments have been mounted onto Scania P320 Series 6x2 rear steer chassis of 26 tonnes gross vehicle weight. To ease driver fatigue, the chassis has been fitted with the GA766R (Allison 3200R) automatic transmission with retarder to reduce brake wear. The chassis also features a conventional vertical exhaust and has a day cab to accommodate a driver and a passenger. The chassis also features an air deflector kit to reduce fuel consumption. The AMS CL1-N side loader holds a net payload of ten tonnes and seven hundred kilograms when fully loaded.

FCC use three of the AMS CL1-N side loaders to collect waste in Tias, Puerto Del Carmen and the small villages of Mácher, La Asomada, Masdache, Conil and Tegoyo while the fourth unit is only used in the height of the tourist season when waste volumes are higher. The fourth unit is also used to cover servicing of the three other AMS units.

To help provide a more efficient waste collection service to the hotels and the surrounding neighbourhood in Puerto Del Carmen, FCC has purchased twenty eight Kiggen portable compactors from Geesinknorba Spain. These comprise seven Kiggen PD729 14 cubic metre capacity units and twenty one PD731 units of 25 cubic metres capacity. FCC will assess the best places in the neighbourhood of Puerto Del Carmen for the Kiggen compactors to be placed where they will be efficient and effective to provide a waste collection system for the hotels subject to the width of the streets.

The compactors are replacing the use of 800 and 1000 litre containers currently used by FCC to collect waste from the hotels in Puerto Del Carmen. Once these compactors have been fully mobilised, the two Scania P230 Series two axle Geesinknorba N Series N2 10L25 rear loaders with Geesinknorba L200 bin lift, will only be used to collect waste from 800 and 1000 litre containers in the villages in the hills, for example, Masdache, La Asomada, Mácher, Conil and Tegoyo. Only one of these collection vehicles will be needed to provide this service while the sister vehicle will be kept as a spare to be used when the other collection vehicle is in for service.

FCC has invested considerably in building state – of – the – art communal collection points in Puerto Del Carmen. This has involved the construction of a ramp and solid concrete perimeter walls, reinforced internally with heavy duty steel girders, to maintain the aesthetics of the surroundings. Each communal collection point has electrical connections to operate the Kiggen PD729 and PD731 portable compactors. The concrete floor slab of the communal collection points has been fitted with two heavy duty steel strips which are the width of the Kiggen PD729 and PD731 portable compactors. When the containers are both off

loaded and collected by the hook loader vehicle, they are placed on the strips to avoid damage to the floor of the communal collection point. There are two heavy duty steel bump stops at the end of the steel strips to prevent the Kiggen compactors being forced too far back in the communal collection point by the hook loader vehicle, damaging the rear wall.

A heavy duty water connection has also been fitted at each communal collection point so that the area can be washed down from the spillage of liquid wastes by people when loading waste into the Kiggen portable compactors. Drainage systems have been fitted along the internal rear facing wall of the communal collection point so that all water can drain into the underground sewer system once the washing of the communal collection point has finished.



Each communal collection point has been fitted with a heavy duty flood light to help the loading of the Kiggen compactor at night by people, as well as for helping the driver of the hook loader when he collects the container for emptying in the early hours. All communal collection points are also being fitted with CCTV cameras so that the management of FCC can monitor them twenty four hours a day. This is to prevent the theft of one of the Kiggen compactor containers by a rogue waste operator.

FCC has also built gardens with palm trees, constructed stone wall exteriors using volcanic ash infill and incorporated the use of steel bollards at one hotel so that the communal collection points fit in with their surroundings. Currently, FCC has built eighteen communal collection points to house the Kiggen PD729 and PD731 portable compactors in Puerto Del Carmen.

The Kiggen PD729 and PD731 portable compactors have been designed specially for the municipality of Tias and the resort of Puerto Del Carmen. The compactors are much larger in terms of cubic capacity compared to conventional Kiggen portable compactors used for the storage of municipal and commercial and industrial waste. The portable compactors are fully watertight to retain any leachates produced when compacting the waste. A specially designed lockable lid has also been incorporated into the design so that the lid is not vertical as on other competitors' compactors, making it easier to load. The equipment has a fail safe system to prevent the operation of the compactor by unauthorised people. The compactors have electrics with the latest self diagnostic system able to analyse an electrical fault. The compactors also have the necessary electrical connections to install a communication system as well as a GPS module so that all of the containers can be GPS tracked.

The Kiggen PD729 and PD731 portable compactors are collected from the communal collection points every morning in Puerto Del Carmen, seven days a week, by the four hook loader vehicles purchased by FCC. The weight in the Kiggen portable compactors will vary, subject to the time of year and whether it is high tourist season. In the height of the tourist season, more waste will be produced so the weight in the Kiggen portable compactors will increase. The Kiggen portable compactors will be taken to the sanitary landfill and dirty materials recycling facility (MRF) at Zonzamas in the municipality of Teguiise where their contents will be discharged.

Before FCC returns the portable compactors to the communal collection points, they will be taken to FCC'S purpose built depot in Tias to be washed out with disinfectant. This will remove any remaining leachates from compacting food waste. The disinfectant will eliminate any germs or foul odours produced from the waste so that the containers fit in with their surroundings in the tourist resorts of Puerto Del Carmen. When the portable compactors are delivered back to the communal collection points in Puerto Del Carmen, the driver of the hook loader will reconnect the electrical supply to the portable compactors so that the loading of fresh waste can continue.

The hook loader equipment to lift and carry the Kiggen portable compactors has been purchased from Spanish hook loader manufacturer Cayvol. The equipment has been mounted onto a Scania P320 Series 6x2 chassis with tag lift axle to reduce tyre wear when the vehicle is empty. The chassis is of 26 tonnes gross vehicle weight and features the GA766R (Allison 3200R) automatic transmission with retarder to reduce brake wear. The rest of the chassis is of similar specification to the Scania P320 Series 6x2 rear steer 26 tonne chassis purchased for the AMS CL1-N 25 cubic metre side loaders, although no air deflector kit has been mounted on the roof because there is no requirement for it on the hook

loader vehicles. Three of the Scania P320 Series 6x2 26 tonne chassis with Cayol hook loader equipment are permanently used to transport the Kiggen PD729 and PD731 portable compactors to be discharged at the sanitary landfill site at Zonzamas. One of the Scania P320 6x2 26 tonne tag axle chassis with Cayvol hook loader equipment is spare and is only used when there are increased volumes of waste produced at the height of the tourist season or to cover servicing of one of the other three hook loaders.



The waste collection service in Tias, Puerto del Carmen, and the villages of Mácher, La Asomada, Masdache, Conil and Tegoyo is carried out during the day, seven days a week. The service starts at 6am and finishes around 1pm. At the height of the summer season, the collection service will start at 5am before any tourists are up and traffic builds up in the tourist resorts. This helps to provide an efficient waste collection and transfer system without inconveniencing tourists. Normally, the Norba N Series 10L25 10 cubic metre waste collection vehicle with L200 bin lift mounted to a 4x2 two axle Scania P230 Series chassis collects one to two full loads of waste a day. This vehicle generally collects more waste at the height of the tourist season when all hotels are occupied and more waste is produced. The AMS CL1-N 25 cubic metre side loaders mounted on Scania P320 Series 6x2 rear steer chassis usually collect one to two loads of waste a day. Again, this is dependent on tourism and the increased volumes of waste arising from it. On Mondays, both the Norba N Series and the AMS CL1-N side loaders collect two loads of waste. Larger volumes of waste are produced on Sundays by residents who visit Puerto Del Carmen and Tias for the day. Two of the AMS CL1-N side loaders work in the morning while the third unit works in the afternoon. It commences work at 2pm and finishes its collection shift at 8pm. This vehicle

collects one load of waste from Tias and Puerto Del Carmen to help keep waste volumes down.

The Councillor for the environment at the Municipality of Tias Mr. Franciso Aparicio explained, "The reason the municipality decided to purchase a new fleet of waste collection and transfer equipment was to improve the environment of Tias because the tourist areas are very important to the island's local economy".

Once the waste has been collected, it is delivered to the waste treatment plant in the centre of the island called Complejo Ambiental de Zonzamas. The waste treatment plant is managed, owned and operated by the Excmo Cabildo Insular de Lanzarote - the island council. Waste collection and transfer vehicles from the seven councils across the island - Arrecife, Tias, Haria, San Bartolome, Teguise, Tinajo and Yaiza - deliver the waste directly to this facility. It is open to accept deliveries of waste twenty four hours a day although 80% of waste is delivered to the facility in the day while the remaining 20% is delivered in the night from Arrecife.

Municipal waste is buried in the sanitary landfill which has existed on this site for over four decades.

The waste collection vehicles enter a weighbridge for their loads to be weighed. They drive along the haul road up to the tip face of the landfill where they discharge their loads, which are then compacted by a landfill compactor and other plant machinery operational at the tip face of the landfill. The collection vehicles go to the weighbridge to collect their weighbridge ticket before leaving site. The landfill flares methane produced from the burial of the waste and leachate is collected and treated. The landfill complies fully to the EU Landfill Directive (1999/31/EC).

The site has a crematorium for animal carcasses, a bulking station for old furniture and a bulking station for paper, cardboard, glass and plastic recyclables, for example, PET, HDPE and Tetrapak pre sorted for baling and transport to reprocessors in both the Canary islands and mainland Spain.

There is also a dirty MRF operational on site which processes some of the cleaner municipal waste delivered by Arrecife, Tias and the five other municipalities if it is not too soiled with food waste. The plant extracts paper and cardboard, plastic, for example, PET, HDPE, Tetrapak, glass and food waste. The waste is initially deposited into a waste storage bunker in mixed form. An overhead crane with cactus type grab lifts the waste and places it into a hopper to the right of the waste storage bunker. The mixed waste then moves up a conveyor and enters a trommel where the waste is tumbled so that it is easier to sort by manual labour.

The waste enters a conveyor belt system where all recyclables are extracted into different commodities by manual labour. The food waste is extracted at the end of the process and sent to an anaerobic digestion plant on site while the reject fraction is deposited in the sanitary landfill. This facility helps Lanzarote meet its EU landfill diversion targets.

FCC, who are specialists in this field, has produced its own route maps for the area using the Autocad system. It has done this for other contracts in Isle of Gran Canaria: Las Palmas, Telde, Arucas and Santa Brigida, Tenerife: Guia de Isora and Güimar, and UTE Zurita II - Fuerteventura; Puerto Del Rosario and La Oliva.



All of the new vehicles are GPS controlled so that management know at all times where their vehicles are, thus providing a more cost effective and efficient service to Tias municipality.

FCC are also constructing a new purpose built office and depot to house their new fleet and purpose built workshop facilities to maintain all the new collection vehicles and Kiggen portable compactors purchased for the Tias contract. This, combined with the introduction of the Kiggen PD729 and PD731 portable compactors in the tourist resort of Puerto Del Carmen will help FCC to provide a sustainable and labour efficient waste collection and transfer system for the municipality of Tias for many years to come.