Waste management in Europe

The new EFW facility consists of two Babcock Volund roller type grates to handle municipal solid waste with a capacity of 18.75 tonnes an hour. In 2010, the EFW plant was expanded with the commissioning of two Hitachi Zosen Inova water cooled moving grates which each have a throughput of 30 tonnes per hour. A new tipping hall was constructed for the additional two lines and the expansion means the plant can now deal with municipal and commercial waste, biomass, sewage sludge and waste tyres of small quantities.

The facility also supplies electricity to the national grid through a Mitsubishi and Siemens turbine.

The overall throughput of the EFW facility is now 880,000 tonnes per annum and since the plant’s expansion, has ended the use of landfill for municipal and commercial waste on the island of Mallorca.

Once the initial construction phase was implemented in 1994, FCC Environment bought shares into the facility and won the contract to construct the new EFW facility together with construction partner, Dragados, and then handed the operation concession back to Tirme SA which named the new facility Son Reus. It was handed over to Tirme as a turnkey facility.

FCC was also involved in building the new waste transfer stations and used the Marrel static compactor design to ensure compliance with the loading of municipal waste into the compactor type hermetic enclosed roll-on-off containers.

The new transfer stations were built and commissioned ready for when Son Reus was commissioned in 1996 and became operational in 1997. Before this, the municipalities across the island of Mallorca used to rely solely on the use of landfills for the disposal of municipal waste. Bottom ash from the incineration process is employed in the construction sector and is crushed to type two specification material for use in construction/building projects.

The air pollution control residues are disposed of on site at a specially designed landfill and in special cells where it is covered in mortar to prevent volatile organic compounds or fugitives from being released from the ashes.

Tirme SA decided, as a result of tests across other EU member states about air pollution control residues arising from EFW plants, to bury the incinerator bottom ash mixed in mortar in a hazardous lined landfill on site. This takes care of issues which surround the air pollution control residues produced from EFW plants.

Waste collection

As with most areas in Spain, waste is collected at night, but the EFW facility is operational 24 hours a day and 365 days a year while the transfer stations are open also 24 hours a day.

In the daytime smaller quantities of waste are collected from small private contractors along with collections of municipal waste.

Calvia 2000 or EMCA 2002, the public company provides the waste collection service in Calvia, e.g. Palma Nova, Magalluf, etc, while EMCA provides the waste collection service in Port de Pollenca in the North of the Island. Both Calvia and EMCA 2002 operate an early morning collection service which continues to mid-morning/early afternoon for the collection of municipal solid waste, while FCU provides an afternoon and night waste collection service in Santanyi.

The bulk of the municipal waste deliveries relate to night-time collection from 10pm onwards. The refuse collection vehicles reverse to the edge of the hopper situated above the static compactor and discharge their load into it.

The static compactor uses 40yd roll-on-off containers, again of the Marrel type, so they can hold an approximate net payload of around 25 tonnes of municipal waste.

Once the waste has been compressed into them, the containers are hermetic and totally sealed. These systems have since been implemented in the UK by FCC in partnership with Urbaser at Severn Waste in Worcestershire.

As part of a separate contract, the transportation of the municipal waste from the five transfer stations around Mallorca to the EFW facility Son Reus was signed with Alcudia SA. This company uses a semi-trailer fitted with hook loader equipment which is then pulled by a tractor unit fitted with the necessary hydraulics to operate the hook loader system fitted to the semi-trailer.

Once one compaction container is full, it is released from the aperture of the static compactor and is then mechanically moved on to a traverse moving frame. The full container will move to the right while another empty roll-on-off container will move from the left and line up to the aperture. It will be fixed in-situ for further loading from above from the refuse collection vehicles, discharging their loads into the hopper.

Sometimes the refuse collection vehicles have to wait up to 10 minutes while an exchange container is fitted in situ from the full one. By using the five transfer stations on the island efficiently, the administration is successfully reducing the number of vehicle movements to the EFW plant by more than 66%, proving the efficacy of the waste transfer system.

Changing the face of waste on Mallorca

By judicious use of five waste transfer station and an energy from waste plant on one of the largest of the Balearic islands, the government of Mallorca is altering the landscape of waste management on the island and is no longer reliant on several landfill sites for the disposal of municipal waste. Tim Byrne reports.