



integrated management for the reduction of waste to be treated and the recovery of both matter and energy, the entire system remains the landfill plants, within which the waste can no longer be reused. However, even landfills, undergo a continuous evolution in step with technological innovation, moving from simple holes where to dispose of waste as well as complex and controlled systems where only give that non-recyclable part of waste.



THE COMPANY

OWAC Engineering Company is located in Palermo, Via Resuttana 360, Sicily, Italy; the company has been operating in the “waste to energy” for many years and has a long time experience in the field of management consultings for the development and diversification of industrial assets. In particular the company develops its activities in the designing and building of waste treatment plants and environmental remediation.

The more relevant characteristic of OWAC’s activities is the development of an idea, the designing of the system and the management of the construction works all culminating with the start-up of the initiative. Therefore OWAC is the catalyst for all the phases which bring to the final start-up of industrial plants.

The working team is very flexible, qualified and adaptable, able to develop all the required activities with care, high precision and “tailor made” solutions. Company references and activities, both in progress and already made, are available on our website.



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LANDFILL FOR
NON-HAZARDOUS WASTE



INTRODUCTION

Generation and accumulation of waste is one of the world’s fastest growing environmental problems. The increasing rate of solid waste generation is a result of increasing population, industrialization, and urbanization. This becomes to be a serious problem for national and local governments to ensure effective and sustainable management of waste.

Although considerable efforts are being made by many Governments and other entities in tackling waste-related problems, there are still major gaps to be filled in this field. For example in developing countries, it is common for municipalities to spend 20÷50% of their available budget on solid waste management (open dumping with open burning is the norm), even though 30÷60% of all the urban solid wastes remain uncollected and less than 50% of the population is served.



In low-income countries, collection alone drains up 80÷90% of municipal solid waste management budget. In mid-income countries, collection costs 50÷80% of total budget. In high-income countries, collection only accounts for less than 10% of the budget, which allows large funds to be allocated to waste treatment facilities, facilitating the recycling and energy recovery. Even if technological innovation is increasingly bringing waste management and treatment systems towards Reduction, Reuse and Recycling policies aimed at

THE PLANT

- Site area: 17,1 ha
- Capacity: 3.791.511 m³
- Damp basins: no. 3
- Waste amount expected: 700,000 t / year
- Max production of : 50 m³ / day
- Max production of biogas: 5 ÷ 15 Nm³ / t waste for year.

The plant is part of the type of landfill for the transfer of non-hazardous waste pursuant to Legislative Decree 36/03 and Legislative Decree 152/06 and subsequent amendments, authorized by Decree of the Sicilian Region no. 649 of 20/11/2012, integrated with Decree n. 37 of 31/01/2018 (Integrated Environmental Authorization). The prevalent types of waste are the dry fraction deriving from mechanical treatment of municipal waste, code CER 191212 and the stabilized wet fraction, code CER 190503. The plant consists of three distinct and separate basins, of which the first volume is equal to 1,100,000 m³ (in operation), the second volume is equal to 814,000 m³ (filled) and the third volume is equal to about 970,000 m³ (under construction); in addition, once the capacity of the three basins have been used up, there is a volumetric increase due to the reprofiling of the three basins, such as to fill the volume interposed between them, remodelling the original contiguous orography of the initial natural slope. All basins are waterproofed in order to preserve the environmental matrices in accordance with the provisions of Legislative Decree 36/03.



On the bottom there is a double network for collecting the leachate produced by the waste, the first for ordinary drainage and the second, the lower one, for a safety drainage.



The leachate networks belong to two separate collection and recovery wells, in order to allow the temporary storage of the leachate in separate and dedicated units (steel tanks above ground); the leachate is finally sent, within the same site of the landfill, to the dedicated treatment plant, in which, through a chemical-physical process (ultrafiltration and reverse osmosis), a clarified effluent is obtained (compatible with the limits fixed by Legislative Decree 152/06 and subsequent amendments to surface water bodies) and a concentrate, which can be re-introduced into the landfill body.



The plant is completed by a section dedicated to the suction, purification and valorisation of the biogas produced in the landfill, during the period of disposal and the post-mortem phase of the same. The biogas extraction system consists of vertical shafts with 20 meter influence rays, suction substations that provide condensate discharge and pumping to the electric generating unit consisting of endothermic engines.



In the end, the biogas extraction wells have a dual function as they also allow the drainage of any leachate suspension pits; this expediency derives from the experience acquired by the manager in recent years, in which the characteristics of the plant to be disposal have been changed before the mechanical and biological plants with consequent reduction in porosity and, therefore, ease of migration to the inside of the same mass of waste, giving rise to a diffusion of leachate percolated bags sometimes difficult to intercept with the usual drainage systems of the bottom.

