



BARYCZ ECOLOGICAL CENTRE



Barycz Ecological Centre

is a complex of mutually cooperating municipal waste management facilities administered by Municipal Cleaning Company in Krakow, located in the post-mining areas of the Wieliczka Salt Mine, within the City of Krakow.



The location established in the 1970s was a result of an agreement between the Wieliczka Salt Mine, which was responsible for the restoration of degraded areas due to mining operations, and Municipal Cleaning Company in Krakow, seeking a place for storing municipal waste. It was agreed that the cavities created during the exploitation of the salt mine would be filled with municipal waste, which started in 1974. In 1992, under an agreement with the local inhabitants, a period of raising operating standards began. Improvement of the municipal landfill was first, then it was followed by the application of new technologies for waste management.



Barycz Ecological Centre

- Installation for mechanical-biological waste management (MBP)
- Sorting plant for separately collected municipal waste
- Barycz municipal landfill
- Point of separate municipal waste collection
- Installation for electricity and thermal energy production from biogas
- Composting plant
- Educational path



Installation for mechanical- biological waste management (MBP)

– a modern facility for the management of un-separated (mixed) municipal waste with the status of a regional installation. Since 2014 the installation has possessed a sorting plant with a fully automated and maintenance-free technological line equipped with optical, ballistic, iron and non-iron separators. They enable to separate from the waste stream as much recoverable and recyclable waste as possible, while a centre for producing alternative fuel allows non-recyclable waste to be transformed into alternative fuel, later used as an energy source in cement plants. The implemented design solutions allow to sort both mixed and separately collected municipal waste, the latter also called dry fraction. It is one of the largest and most advanced sorting plants in Poland.



The sorting plant is a mechanical part of the MBP installation. It is strongly linked to the Barycz container-modular waste compost plant, which was put into operation in September 2005 and developed between 2012 and 2014. The Barycz compost plant is designed to compost separately collected green waste and to biologically treat a biodegradable fraction separated from mixed municipal waste during the process of sorting it.





The final result of this green waste treatment is a compost, whose high quality renders it possible to market it as an organic fertiliser called „KOMPOST NA RABATY” (“Compost for flowerbeds”). The fertiliser holds an authorisation of the Ministry of Agriculture and Rural Development.



A process of biological treatment of a biodegradable fraction separated from mixed municipal waste during the process of sorting it is divided into two phases. In the first one, the waste undergoes a process of biological drying, which uses heat generated during the production of electricity from biogas acquired from the Barycz municipal landfill. The waste obtained in the process of biological drying is then processed mechanically, upon separation of the 0-20 fraction, subject to a two-stage aerobic stabilisation in the composting plant. The composting plant's containers meet the requirements set by law. They are closed reactors with active aeration and are protected against the ingress of untreated process air into the atmosphere.

Barycz sorting plant for separately collected municipal waste

operating since March 2006 as part of the Barycz Ecological Centre, together with a warehouse hall, had until recently formed a plant for mechanical and manual sorting of separately collected municipal waste (the so-called dry fraction). Technology here had been based mainly on manual sorting (automatic sorting was limited to metal separators).

At that time, the technological line comprised: a loading station, a bag-tearing machine, a drum sieve, 3 sorting cabins, an air separator and a separator of iron and non-iron metals, conveyors for waste, a waste baler and a container loading station. To load waste on the sorting line and to unload it from the line, as well as to transport waste and recyclable materials within the sorting room, a wheel loader and a forklift were used.

The modernised sorting plant, developed, with automatised technological line, shall commence operating on October 1st, 2018.



Today, after the modernisation works related to automation of the technological process of sorting selectively collected municipal waste, Barycz is becoming one of the most advanced plants, adapted to the needs of the era, separating municipal waste into particular types and categories. In a steel structure building and a useable area of approximately 2400 m² and capacity of 28,000 m³, additional equipment has been installed to automate the technological process of sorting. The modernised technological line includes: 72 waste conveyor belts, 16 bunker conveyors, 5 accelerating conveyors, 2 duct conveyors, 7 sorting conveyors, rotational drum sieve, 5 optical separators intended for the recovery of paper and plastics, 1 ballistic separator, 2 iron separators and 1 non-iron separator, 1 air separator, 5 sorting cabins, a bag-tearing machine, a waste baler, 2 loading stations, a compressor station. The process is computer-controlled. The adopted technology is cost-optimised, in line with the best practice and characterised by using energy-saving technological solutions.





In the warehouse hall of the sorting plant there is a Point of separate municipal waste collection called PGOW.



Barycz municipal landfill, which has been exploited since 1974, comprises an area of approx. 36 ha and is divided into 3 phases. It is surrounded by isolating green space with a width of 35-80 m. 25 ha (phases I and II) are restored and grassed. Maintenance works are carried out here every year.



The third phase of the Barycz municipal landfill was commissioned in March 2005, with an area of 11 ha. It adopted a shape of a concave basin. Ultimately, the deposit of waste in this area will be formed so as to be aligned with the II phase of the landfill. The bottom and slopes of the basin of the landfill's III phase were sealed to meet geological conditions. Sealing of the landfill basin is now a two-layer structure consisting of a bentomat and a two-millimeter thick PEHD geomembrane.

Landfill leachates generated during waste disposal are collected in the filtration and drainage layer, whence they are channelled to the municipal sanitary sewage system through a closed leachate collector.

Installation for biogas production and electricity production from biogas



Biogas, which is generated during the fermentation process occurring in the Barycz deposit of municipal waste, is converted into electricity and heat in four automated, maintenance-free power blocks with a power totalling 1341 MWh. The first block was installed in May 1998, the fourth – in December 2009.

Electricity surplus is distributed to external customers. Heat generated during the production of electricity is used for heating buildings, for domestic hot water and for drying biodegradable fraction separated from mixed municipal waste in the process of sorting it.



In the vicinity of the facilities constituting the Barycz Ecological Centre a monitoring research is carried out in the field of: microbiological tests of the atmospheric air and odours, tests for the presence of methane in the soil air, physicochemical and bacteriological tests of surface and underground waters, measurements of noise levels and measurements of subsidence. National Inspectorate for Environmental Protection carries out continuous inspections on the correct functioning of the installation.



Educational path

With a view to the youngest visitors of the Barycz Ecological Centre, educational path has been established there, which is aimed to raise children's awareness of what waste is, what kind of waste is produced every day and how to handle it properly.

Presented facilities for municipal waste management, together with the educational path, which constitute the Barycz Ecological Centre, allow for managing waste in accordance with the requirements of the law of the European Union and Poland. The Centre has been completed with co-financing from the European Union funds.

Implemented technologies, design solutions and maintenance of operating standards ensure safety for people and protection of the natural environment.



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