

THE PKN ORLEN STORAGE DEPOT IN OSTRÓW WIELKOPOLSKI

In order to ensure the proper and safe operation of the storage depot the following facilities have been designed and constructed:

- Six fuel tanks with a total capacity of 55,000 m³;
- Rail unloading facility;
- Computerised air-tight road terminal;
- Gasometer tank and VRU installation (air-tight sealing system using the gas pendulum method);
- Process pump stands;
- Process pumping station and fire-protection pumping station, with a water tank and foaming agent tanks;
- Sewage-treatment plant;
- Offices and administration building, main control room building, and power substation buildings (I, II and the main building);
- Layout of roads, parking lots and squares, power supply distribution, and the storage depot's installations.

Automatics and Control Systems

The control room is the main controlling unit. The loading and unloading processes are controlled by drivers interoperating within a computer network. A driver in the central control room also supports emergency buttons, sensors of combustible gases concentration, subterranean waters monitoring, and sewage-treatment plant's monitoring.

The storage depot has been equipped with the most advanced centralised automated system with an equipment-status visualisation system. Visualisation of the process will be carried out at two computer terminals which will perform the function of operator stations and will be equipped with event printers.

The control system will also keep record of tankers and control traffic in the storage depot's area.

Modern Terminal

The most advanced storage and distribution depot in Poland is a fully automated facility. Loading and unloading functions as well as the operation of the road transport terminal are controlled from the main control room.

The tanker distribution terminal, the most modern facility of this type in Poland, is located in the centre of the storage depot.

In total, nine loading stands (six upper, two lower and one combined) are available to customers who buy fuel directly from the depot.

In order to improve the efficiency of customer service and collection of fuel to the greatest possible extent, a number of facilities have been provided. The parking lot for drivers waiting for their turn at the loading terminal is equipped with large display

boards used to display numbers assigned to the drivers and indicating the loading order. The tanker loading process itself is based on the system of electronic cards and readers installed at individual stands. Such an arrangement will enable automatic distribution of fuel in amounts requested by customers at the customer service point.

The entire storage depot is monitored by a close-circuit television system, which will contribute to increased security and encourage the drivers to strictly observe discipline on the premises.

Air-Pollution Control

The storage depot in Ostrów Wielkopolski is a fully air-tight facility, constructed with the use of world-class technologies ensuring modern logistic solutions and protecting the soil, water and air.

Both the rail unloading facility and the tanker terminal are connected to the VRU operating based on the membrane method. The vapour recovery unit is the most important element of the air-tight sealing system. It collects vapour both from tankers and tanks. The VRU ensures that the air discharged into the atmosphere is clean and meets all European standards. The facility can recover hydrocarbons from 1,200m³ vapours per hour.

No Leakage

The depot meets the most stringent environmental requirements. Systems detecting possible leakage of hydrocarbons into the soil and of their vapours into the atmosphere are installed on the premises.

Detectors of gaseous hydrocarbons are installed in the whole area of the facility and along the fencing. The soil is monitored on an on-going basis with the Leos automated linear monitoring system whose loops encircle the facilities and which instantly identifies the location of hydrocarbons in the terrestrial and aquatic environment.

The quality of ground and underground waters is also monitored with the use of seven specialist facilities (piezometers) and two wells. The tanks are equipped with two coats and a double bottom.

Additional detectors have been placed in the spaces between the sheet metal plates of the bottom that will instantly detect possible leakage of hydrocarbons into the space between the bottoms.

Purifying Roots

The depot can meet all the environmental-protection requirements also thanks to its own biological sewage treatment unit. Precipitation and usable water from the whole area of the depot is collected by a system of special purpose draining grids into a coalescence separator of petroleum products. There, hydrocarbons from the purification process are separated, while the purified water is transferred to retention tanks from which it may be reused for technological and fire-protection purposes.

Fire Protection and the Warning System

The depot has been equipped with fixed, portable and mobile fire extinguishers. A special purpose fire-protection pumping station and a water tank have been constructed.

The following facilities have been installed to enable early fire warning:

- Cable detectors at tanks, signalling a temperature rise,
- UV and IR fire detectors sounding a fire alarm,
- Alarm buttons in the whole area of the depot,
- Fire control units that thanks to UV and IR detectors can independently detect fire and automatically activate the fire-extinguishing system.

All connections and facilities of the fire-protection system are self-controlling.