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1 Subject of specification

This specification used in conjunction with other technical specifications of LOTOS Group S.A. establishes the minimum requirements for the Process Plant Layout.

2 Scope of validity

This specification applies to the preparation of tender documents, inquiries and contracts concerning new investments and modernization projects planned by LOTOS Group S.A.

It shall also be a basis for preparing both detailed specifications and inquiries for individual or package unit supplies, preparation of plant layouts and investment projects.

2.1 Deviations.

Any deviation from this specification and the relevant specifications, standards and related documents including proposals, which the bidder claims to be economically and / or technically superior solutions must be submitted in writing for review and approval by Grupa LOTOS SA. Non-approved exceptions are not acceptable by Grupa Lotos S.A.

The supplier must report in writing any ambiguity in this or any other specifications of Grupa LOTOS SA or non-compliance with the referred documents / standards and obtain a written explanation from Grupa Lotos SA

3 General

When preparing layouts of newly designed process plants in LOTOS Group's refinery the following priorities shall be observed:

1. Process and safety engineering requirements
2. Economic requirements
3. Operating requirements
4. Design requirements
5. Construction requirements

The designer shall aim at minimizing the plant built-up area (footprint).

3.1 Hierarchy of documents.

In case of conflicts existing between this specification and other documents, the following order of precedence shall govern:

- The current Polish legislation\
- Terms of purchase order / contract and other requirements agreed in writing with GL S.A.
- Data Sheets approved by GL S.A.
- This specification
- Other Specifications
- Drawings and other documents
- Standards,

4 Plant plot plan

The plant plot plan defines the location of a process or auxiliary plant or a part of such plant and of infrastructure elements.

Work on the spatial management plan shall take account of information about the existing underground technical infrastructure. Such information is issued by LOTOS Group in the form of maps according to Specification No. 6200.

The following aspects should be observed when preparing the plant plot plan:

4.1 General aspects

The following shall be taken into account:

- the present division of the Refinery area into the part intended for: production installations, power installations, tank farms and workshop-storage facilities
- the existing road and railway network
- the existing pipe bridges and pipe trenches
- the existing underground technical infrastructure
- the possibilities and directions of further extension

4.2 Environmental protection

- the location of atmospheric pollutant emitters shall comply with the Environmental Impact Study
- the location of noise sources must consider the regulations relating to allowable noise
- the detailed requirements concerning environmental protection can be found in Specification No.1170

4.3 Requirements relating to land preparation

- the built-up land must be drained by means of a drain sewage system
- due to a low bearing capacity of the ground, geological surveys should be carried out and, if necessary, appropriate methods for buildings / structures foundation to meet required construction and operation loads shall be used (e. g. piling under heavy objects shall be considered.)

4.4 Reloading stations

Tank truck reloading stations – take the existing road system into consideration, preferably near the exit gates.

Railroad reloading stations – the infrastructure existing in the refinery area shall be taken into consideration.

Guidelines for the location of liquid fuel and gas reloading stations according to the Regulation by the Minister of Economy of 21 November 2005 on the technical conditions to be met by liquid fuel bases and stations, long-range pipelines for transporting petroleum and petroleum products and their location – (Dz. U. No. 243, item 2063), as amended.

4.5 Power substations

They should be located on appointed strips of land, outside explosive conditions zone, in a way minimizing the length of cable routes.

Outdoor switchgear shall be considered as a potential source of fire.

4.6 Water supply

The source of water shall be the following existing networks and pump stations:

- cooling water network
- fire-fighing water network
- potable water network
- boiler water network
- service water network

4.7 Sewage discharge

Take the existing sewage collectors and sewerage systems into consideration. Apply in compliance with Technical Specifications No.1150 and No. 1151., for details.

4.8 Safety facilities

4.8.1 Fire protection – Technical Specification No. 1180 applies.

4.8.2 Fences

Should it be necessary to modernize the external fence, modification of other systems connected with the fence function shall be taken into consideration, i.e. the patrol road, lighting, monitoring.

Provide access for fencing from outside and inside of facilities for maintenance (painting, repairing).

4.8.3 Explosion protection – Technical Specification No. 1020 applies.

Note, that it is necessary to consider the problem of appointing explosion hazard zones when locating equipment, and especially:

- fired heaters and other equipment where open fire is used
- depressions in the area
- sink basins, sewage inlet (grate),
- spaces (rooms) in building or structures located below surrounding ground level.

4.9 Administration Buildings

Arrange administration buildings and building connected with customer service so that visitors do not have to enter the fenced plant area.

Arrange car parks outside the fenced plant area.

Arrange offices as close to the public transport network as possible.

Take all functions of the building into account at an early stage of designing.

Surroundings grounds shall be planned according actual Building Law regulation.

4.10 Workshops and storage facilities

Locate in the assigned area indicated by LOTOS Group.

4.11 Stacks

The location and height of stacks shall be adjusted to environmental protection requirements and shall result from the (Environment Report Study).

All stacks (emitters) shall be equipped with stub pipe for emission control sampling. Clear access for stub pipe shall be provided.

Stacks shall be design according with Technical Specification 2120 "Flue Gas Stacks, Ducts, Measurement and Monitoring Nozzles"

4.12 Process control room buildings

If possible, locate the equipment of the newly designed plants in the existing control room buildings.

New control rooms shall be located in the appointed strips of land indicated by LOTOS Group.

4.13 Auxiliary installations

When locating new auxiliary installations, than references to the existing power and auxiliary media networks shall be considered.

4.14 Tank farms

When locating tank farms follow the guidelines contained in the Regulation by the Minister of Economy of 21 November 2005 on the technical conditions to be fulfilled by liquid fuel bases and stations, long-range pipelines for transporting crude oil and oil products and their location – (Dz. U. No. 243 item 2063), as amended.

In LOTOS Group's refinery, new tanks shall be designed with outer walls.

The arrangement of pipe trenches, pipe bridges and pipelines shall make a future extension of the tank farm possible.

4.15 Roads inside the plant

Apply Technical Specification No. 5300 – Road and squares.

New roads shall refer to the existing condition.

4.16 Flares

Observe safe spacing to the plant units. A flare shall be localized more than 100 m from process facilities. The area around the flare shall be leveled and fenced within radius of 50 m.

Flares and explosion chambers shall be considered to be fire sources.

4.17 Cooling towers

Cooling towers, cooling cells shall be located on the basis of actual and available meteorological data (prevailing wind direction) in the way that, mists causing icing at subzero temperatures shall not disturb plant operation and maintenance or be harmful to communication roads, production facilities and the environment.

4.18 The local system of coordinates

The main axes of the plant units, roads and pipeline bridges shall be established parallel to the axes of the existing facilities.

The point of reference of the system of coordinates has been defined in Specification No. 6200, art. 4.1.1.

The actual ordinates shall be read from the map.

5 Vessel layout

The vessel layout shall define the location of process equipment, buildings, supporting structures.

The location of vessels and equipment must take the following into consideration:

- requirements resulting from health and safety regulations and fire protection regulations
- requirements resulting from the needs of the process and operation of equipment
- requirements resulting from the classification of explosion hazard zones
- the possibility of conducting efficient rescue operations
- access roads and assembly yards used for transport and assembly purposes
- convenient access for equipment assembly, dismantling and maintenance.

The minimum spacing between vessels and equipment in process plants in crude oil processing facilities can be found in Specification No. 1180, art. 3.2.

When fixing the distances between facilities, follow the Polish regulations.

6 Relevant documents

"Technical Specification" issued by GRUPA LOTOS S.A. listed in Contract Files.

7 Standards and regulations

- Regulation by the Minister of Internal Affair and Administration of 24 July 2009 on fire water supply and fire exits - (Dz. U.2009 No. 124 item 1030) as amended.
- Regulation by the Minister of Infrastructure of 12 April 2002 on the technical conditions to be met by buildings and their location (Dz. U. No. 75, item 690), as amended.
- Regulation by the Minister of Economy of 21 November 2005 on the technical conditions to be met by liquid fuel bases and stations, long-range pipelines for transporting petroleum and petroleum products and their location – (Dz. U. No. 243, item 2063), as amended.

8 Record of changes

No.	Date	Description	Introduced by
1	27.11.2006.	Updated the Law regulation in the points 4.4, 4.14. and 7.	J. Tyborowski
2	30.11.2013 (rev.2)	Review, update, standardize and standard changes in scope of order No. OK/990/2012	Editorial board coordinated by T.Wróbel
-	31-08-2015	Page layout corrections, no contents changes.	T. Wróbel