Contents

1 Subject of specification 2
2 Scope of validity 2
2.1 Deviations 2
3 Definitions and designations 2
3.1 Hierarchy of documents. 2
4 Technical and design requirements of closed slop systems 3
4.1 Gravitational closed slop system 3
5 Relevant documents. 4
6 Standards and codes 4
7 Record of changes 5

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1 Subject of specification

This specification used in conjunction with Standard Technical Specifications of the LOTOS Group establishes the minimum requirements for the design and manufacture of closed slop (drain) systems, both designed and modernised.

2 Scope of validity

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

It shall also be a basis for preparing both detailed specifications and inquiries for individual or package supplies.

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 Definitions and designations

The closed slop system gravitationally collects hydrocarbons and other hazardous media from equipment and pipelines and conveys it to the slop vessel. In case of accident it is used to empty the vessels. The content of the slop vessel is pumped to the refinery's storage slop tanks, which is controlled by a level controller. Light slops at the battery limits can have a maximum temperature of 40°C, and dark slops maximum of 80°C. Separate systems are required for light and dark slops

Light slops – products with a boiling point <350°C.

Dark slops - products with a boiling point >350°C.

Shall – means mandatory requirements.

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 Technical and design requirements of closed slop systems

The use of closed slop systems will have the following advantages:

- reduction of excessive pollution of sewage systems and sewage treatment plants by liquid hydrocarbons and other harmful substances which – in the absence of a closed system - might be discharged to sewage systems
- reduction of production loss by returning recovered hydrocarbons and other slops back to processing
- reduction of environmental pollution by reduced evaporation of hydrocarbons in open sewage or drain systems
- increased safety at work on production installations (limitation of explosive conditions)
- prevention against the possibility of pollution by hydrocarbon streams, which do not meet the requirements of the standard, the product and semi-finished product storage tanks
- reuse of hazardous substances in the same or other processes.

4.1 Gravitational closed slop system

The system is used to safely collect hydrocarbons and other harmful substances from the bottom outlets of pumps, vessels, instruments.

The design pressure of the slop system elements shall take into account the maximum pressure in the gas discharge network to which the system is connected, and the design temperature shall be selected to allow safe steam purging of the slop system.

The system piping is routed underground.

The pipelines use for the closed slop system shall have assured tightness and a possibility of inspection.

The above mentioned pipelines may be made as:

- traced and insulated pipelines with a possibility of inspection and repair if necessary, located in ditch.
- jacketed pipelines with a pressure-controlled space routed in ground
- not traced pipelines routed in ditch,

4.1.1 Traced and insulated pipelines

Slop traced and insulated collectors shall be routed in a ditch, located on supports, and directed downwards to the slop vessel. In case of higher temperatures compensation joints shall be considered.

Slop pipelines shall be connected to aboveground pipelines by flanges.

On slop pipelines, at the drain connections of pumps and vessels, one nozzle allowing for the connection of low-pressure steam and nitrogen shall be provided.

Ditches shall be tightly covered with removable panels allowing inspection and repair, if necessary.

For repair and maintenance purposes, the underground slop tank shall be provided with permanent low-pressure steam and nitrogen connections.

4.1.2 Jacketed pipelines with monitored jacket space.

Slop jacketed collectors with a monitored jacket space shall be routed in ground, and inclined downwards the slop vessel. The space between the outer pipe and the basic pipe (jacket) shall be pressurised. Pressure monitoring shall be provided.

Slop pipelines shall be connected to aboveground pipelines by flanges. The aboveground section of the pipeline shall be provided with permanent low-pressure steam and nitrogen connections for repair purposes.

4.1.3 Not traced pipelines

Not traced pipelines shall be designed as in point 4.1.1 above in a channel but without tracing or as in point 4.1.2.

4.1.4 Slop tanks

Slop tanks shall be connected to the flare discharge system. Tanks shall be air-tight sealed with combustible gas. The pumps must ensure emergency pumping-over to the storage tanks.

Jacketed slop tanks shall have the space between the walls filled with pressurised gas and gas pressure monitoring system.

5 Relevant documents.

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

6 Standards and codes

- PN-EN 752-1:2000 – External sewage systems – General concepts and definitions.
- PN-EN 10216-2 – Steal seamless pipes..

7 Record of changes

No.	Date	Description	Introduced by
0		This specification supersedes in whole the previous LOTOS Group standard No. PR 07 122 with the title "Closed drain systems (slop systems).	T.Wróbel
1	30.11.2013 (rev.1)	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