Contents

1 Subject of specification 3
2 Scope of validity 3
2.1 Deviations 3
2.2 Exclusions 3
3 Hierarchy of documents 3
4.1 Definitions 4
5 Description 4
5.1 Ambient conditions 4
5.2 Supply system data 5
5.3 Basic Information 5
5.3.1 Basic Requirements 5
5.3.2 Cable laying 6
5.3.3 Cable identification system 7
5.4 Design requirements 7
5.4.1 Units of measures 7
5.4.2 Voltage levels (U_0/U) 8
5.4.3 Number of cable conductors 8
5.4.4 Marking of cables' external sheaths made of PVC 8
5.4.5 Marking of cables cores insulation colours 8
○ Technical requirements 9
5.5 Technical Requirements 9
5.5.1 Medium voltage cables 9
5.5.2 Low voltage cables 9
5.5.3 Control cables 11
5.5.4 Special cables (measuring cables) 12

This document is the property of LOTOS Group SA.. Coping and giving it to other are forbidden without express written authority by LOTOS Group SA

5.6 Cable ducts and racks 13
5.6.1 General information 13
5.6.2 Technical requirements 14
5.7 Cable drums 14
5.7.1 Marking of drums 14
5.7.2 Winding of cables on drums 15
5.8 Transport 15
5.9 Inspection and testing 15
5.9.1 Winding the cables on the drums. 15
6 Relevant documents 15
7 Codes and standards 16
8 Record of changes 17

1 Subject of specification

This specification used in conjunction with other technical specifications of LOTOS Group S.A., establishes minimal requirements regarding designing and manufacture of low and medium voltage electric cables and wires.

2 Scope of validity

This specification shall be used when preparing both quotations and Purchase Orders concerning planned LOTOS Group S.A. new investments and modernizations.

It shall also be a base for preparation of other detailed specifications and quotations relevant for package units or other equipment deliveries.

The Contractor is independently responsible for selection of equipment and materials to be purchased on the basis of technical design particularly in relation to instruments and equipment made in explosion – proof execution.

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.

2.2 Exclusions

This specification does not apply to telecommunication cables and automation systems for which specific requirements are listed in the group of standards 3000

3 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 SASA
- Data Sheets approved by GL SA
- This Specification
- Other Specifications
- Drawings and other documents
- Standards

4 Definitions and designations

CONTRACTOR: GL SA LOTOS Group Inc./ BUYER

SUPPLIER: BIDDER/ DELIVERER

4.1 Definitions

GL SA – Grupa LOTOS S.A.

SN – medium voltage

DC – direct current

IT – electrical network with isolated neutral point

SZR – Auto Transfer Switching system

CSNiM – Central Monitoring and Supervision System

KiA – Control Systems and Instrumentation

EMC – Electromagnetic Compatibility

Shall – Indicate a mandatory requirement.

5 Description

5.1 Ambient conditions

The cables shall be designed for the following ambient conditions:

- Atmosphere: marine, aggressive industrial, chemical and dusty
- Ambient temperature (max/min): +36°C/-25 °C
- Relative humidity (max/min): 90%/70%
- Elevation above sea level: 1m
- Wind speed: 26 m/s
- Snow falls: 290mm
- Work conditions: refinery, sea coast

5.2 Supply system data

- Medium voltage — 15kV(LOTOS Kolej, Port Północny i Ujęcie Wody Przejazdowo), 3-phase, IT (insulatet grounding point)
  10,5kV (GPZ3), 3-phase, IT (insulated grounding point)
  6kV (GPZ1, GPZ2), 3-phase, IT (insulated grounding point)
- Frequency — 50Hz with allowable tolerance +4%/-6%
- Low voltage — 400V, 3-phase, TN-C-S
- Low voltage (lighting, heating) — 230V, 1-phase, TN-S
- Low voltage (emergency lighting) — 110V DC
- Alternate current control voltage — 230V, 1-phase
- Direct current control voltage — 24V DC, 110V DC. 220V DC (for GPZ1,S7 and S9)

5.3 Basic Information

5.3.1 Basic Requirements

- Independent dedicated cables shall be routed to individual receivers.
- Use of different voltages in the same cable is not allowed.
- Control and signalling cables of low voltage motor drives shall be for 1 kV voltage, irrespective of working voltage.
- Power, control and signalling cables in explosion hazard zones shall have armour made of steel, round wires, insulation made of cross-linked polyethylene or PVC, and jacket made of PVC resistant to hydrocarbons and moisture. The cables must be independently sized with 25% reserve of long-term load ability.
- Control and signalling, non-armoured cables for 24V DC working voltage, laid outside of explosion hazard zones, shall be screened in pairs or in triples, depending on their designation.
- Multi-conductor control and signalling cables shall dispose of 30% free reserve.
- Conductor of a cable shall be made only of copper. Use of aluminium is prohibited.

unless the GL SA in writing agrees to deviate from the above requirements (applies only to cables with a cross-section above 16 mm2).

- Minimum diameter of power, control and signalling cable conductor, excluding special measuring cables (p. 5.5.4), and general used cables shall be equal to 2.5 mm^2.
- Single and control cables of a minimum 1.5 mm^2 cross-section area shall be used for connections between electric switching station and control room. Cables with 230V signals shall have 2.5 mm^2 cross-section area, and subject to adjusting with LOTOS Group S.A. each time.

- It is allowed to use power cables of the same conductor cross-section areas only. For low voltage cables, cross-section area for PE protective conductor shall be the same up to 35mm^2, as for working conductor.
- For cable cross sections higher than 35mm2, PE protective conductor shall be at least half of the cross section,as for working conductor.
- All cables and wires shall be protected against mechanical damages.
- Use of short, flexible cables between intermediate box and motor is required for motor drives supply. Rubber coated, OnPdżo cables (oil-resistant, heavy-duty type) shall be used for this purpose. For such short connections type, use of additional protection against mechanical damages is not required.
- Use of flexible cables along with intermediate box shall be extended on other receivers, if they have to be frequently disconnected (e.g. motor auxiliary accessories, such as temperature and vibration sensors, motor heater, etc.).

- Supply and control cables for motors in systems with frequency converters, shall be shielded.
- A contractor is independently responsible for matching of equipment and materials purchased by him/her on the grounds of technical design, and the requirements of specification 1020, Classification of Explosion Hazard Zones.

5.3.2 Cable laying

Depending on intended use, cables shall be laid separately, and in particular:

- electric cables and control cables
- intrinsically safe cables in relation to other cables
- cables for security installations (such as emergency lighting, firefighting installation)
- cables for different voltages
- DC and AC cables
- other, not listed here.

The following rules shall be employed for laying of cables in soil:

- the distance between MV cables – 100 mm
- the distance MV cables and other cables – 100 mm
- the distance between low voltage cables equal to cable diameter
- control and signal cables can touch each another
- the cables supplying lighting systems can touch each another

Cable exit from ground shall be shielded with steel pipes of diameters matching those of cables. Pipe ends shall be sealed after cable exit. Pipes shall have protection againts corrosion,

In explosion hazard zones MV cables shall be laid solely in soil. Laying of above-mentioned cables on overhead cable ducts, outside the explosion hazard areas is allowed, after adjusting it in advance with GL SA.

Low voltage, supply cables, control and signalling cables, shall be laid in soil, or overhead on cable racks or cable ducts.

The cables laid under roads, concrete yards, at close-ups and crossings, where proper distance from other cables and objects cannot be kept, and where high risk of mechanical damage of cable exists, shall be safeguarded by means of protecting culverts made of plastic.

In the area of technological installation plastic culvert output above ground shall be protected by the steel one additionally.

In one bushing the laying of cables to the same consumer or control cables with the same voltage. Culverts on both sides must be sealed. Culverts with cables and empty shall be mutually sealed.

Main cable buses routed in cable ducts or racks, shall be protected against direct sunlight influence by means of adequate umbrella roof and guards.

The cables supplying motors from frequency converters shall be laid with minimum distances being kept, and shall not cross with cables of other receivers. If such crossing cannot be avoided, then it shall be at angle close to 90º as far as possible.

After agreement with the GL SA there will be allowed laying down of cables (underground cable trays, cable racks) power and control cables, without armour. In this situation control and signaling cables shall shielded type.

5.3.3 Cable identification system

- The cables shall be marked with max 20-meter spacing, giving:
  - cable type, number of conductors and cross-section area
  - cable manufacturing standard, e.g. IEC, VDE

- Cable marker shall be made in the form of flexible PVC plates, attached to the cable using cable ties. Marking the cable shall comply with the 6120 specification " Process identification system" and also shall include the year of laying the cable and obligatory beginning and end address.
- To supply power electrical devices which are will be used during the fire (e.g., valves) certified cable support and assemblies system shallbe used (fire-resistant cables and wirings along with dedicated supports).

5.4 Design requirements

5.4.1 Units of measures

If not established otherwise, metric unit system shall be used.

5.4.2 Voltage levels (U_0/U)

- 12/20 kV – for medium voltage cables 10 kV
- 6/10 kV – for medium voltage cables 6 kV
- 0,6/1 kV – for low voltage cables and control cables up 1 kV
- 0,45/0,75 kV – for industrial, rubber coated low voltage wires up 1 kV
- 0,45/0,75 kV – for single–conductor cables, intended for earthing connections.

5.4.3 Number of cable conductors

- Medium voltage cables – 3 copper conductors, 1 return conductor (armour or screen can be used alternatively) and screen
- Low voltage cables – 1, 2, 3, 4, 5 copper conductors according to detailed project specification
- Control cables – multi-conductor cables with numbered conductor
- Special cables (measuring) – multi–pair cables with numbered pairs

5.4.4 Marking of cables' external sheaths made of PVC

- Medium voltage cables – red
- Low voltage cables – black
- Control cables – black
- Special cables (measuring) – black or gray

Usage of cables and wires in blue colour is reserved exclusively for intrinsically safe circuits.

5.4.5 Marking of cables cores insulation colours

- Medium voltage cables - black
- 5-conductor, low voltage cables - black, gray, brown, blue, yellow-green
- 4-conductor, low voltage cables - black, brown, gray, yellow-green
- 3-conductor, low voltage cables - brown, blue, yellow-green
- single conductor, low voltage cables - black or yellow-green (according to requirements)
- Multi-conductor control cables - black with conductors numbered starting from 1to n & yellow-green conductor
- Special cables - according to detailed specification (refer to: technical requirements)

- **Technical requirements**

5.5 Technical Requirements

5.5.1 Medium voltage cables

- **Armoured 12/20 kV cables**, with insulation made of cross-linked polyethylene XLPE for motors and other equipment 10kV
- **Armoured 6/10 kV cables**, with insulation made of cross-linked polyethylene XLPE and other equipment for 6kV motors

Construction of 3-conductor armoured cable:

- working copper conductors
- layer of semi-conducting cross-linked polyethylene
- insulation made of cross-linked polyethylene
- semiconducting screen made of cross-linked polyethylene
- return copper conductor
- armour made of steel round wires
- external sheath made of thermoplastic polyethylene, sealed radially and lengthwise, oil-resistant and flame retardant.

5.5.2 Low voltage cables

- **Armoured 0.6/1 kV cables, with PVC insulation**, for motors and other low voltage receivers, including lighting circuits and electrical heating circuits.

Construction of armoured, multi-conductor low voltage cable:

- round, solid-wire / stranded wire or sector type copper conductors
- PVC insulation
- common filling
- armour made of steel, round wires
- external PVC sheath, oil-resistant, self-extinguishing and flame retardant

- **Armoured 0.6/1 kV cables, with insulation made of cross-linked polyethylene XLPE**, for motors and other low voltage receivers, including lighting circuits and electrical heating circuits as well.

Construction of armoured, multi-conductor low voltage cable:

- round, solid-wire /stranded-wire or sector type, copper conductors
- insulation made of cross-linked polyethylene XLPE
- common filling
- steel, round wires armour
- external PVC sheath, oil-resistant, self-extinguishing and flame retardant

- **Non-armoured 0.6/1 kV cables, PVC** insulated, for supplying of lighting circuits, overhead supplies for electric heating circuits and internal connections of station

Construction of non-armoured, multi-conductor low voltage cable:

- round, solid-wire /stranded-wire or sector type copper conductors
- PVC insulation
- common filling
- external PVC sheath oil-resistant, self-extinguishing and flame retardant.

- **Non-armoured 0.6/1 kV cables, cross-linked polyethylene XLPE**, for supplying of lighting circuits, overhead supplies for electric heating circuits and internal connections of station

Construction of armoured, multi-conductor low voltage cable:

- round, solid-wire /stranded-wire or sector type, copper conductors
- insulation made of cross-linked polyethylene XLPE
- common filling
- steel, round wires armour
- external PVC sheath, oil-resistant, self-extinguishing and flame retardant

- **Power and control cables, fire-resistant, armoured** 0.6/1 kV, for supplying and control critical receivers, such as flame proof gate valves. Actuators must withstand the fire of hydrocarbons according to the requirements of the standard 4220 " Electric actuators for Motor Operated Valves (MOV)" and actual codes. In the case of non-availability of cable with parameters required by standard no. 4220, additional fire protection for cables is required by using flame retardant material to cover cables layer. Cables must be made according to the PN-IEC 60331

Construction of multi-conductor, fire resistant cable:

- round, solid-wire /stranded-wire or sector type copper conductors
- special, fire resistant insulation
- common filling
- armour made of round steel wires
- external sheath resistant to fire, oil-resistant if available

- **Rubber coated, industrial** 0.45/0.75 kV cables, for connections between low voltage motors and intermediate boxes

Construction of rubber-coated, industrial cable:

- round, multi-wire copper conductors
- rubber insulation or equivalent
- external rubber sheath or equivalent, oil-resistant, flame retardant

- **Single-conductor, non armoured** 0.45/0.75kV cables, PVC insulated, yellow-green, for earthing connections

Construction of single-conductor earthing cable:

- round, multi-wire copper core
- PVC flame retardant insulation.

5.5.3 Control cables

- **Control cables, armoured 0.6/1 kV, PVC** insulated, for connections with control cassettes of motors and other receivers, as well as for laid in soil control circuits of electric heating

Construction of armoured, multi-conductor control cable:

- round, solid-wire /stranded-wire copper conductors
- PVC insulation
- common filling
- armour made of round steel wires
- external PVC sheath, oil-resistant, self-extinguishing and flame retardant.

- **Control cables, armoured 0.6/1 kV, cross-linked polyethylene XLPE** insulated, for connections with control cassettes of motors and other receivers, as well as for laid in soil control circuits of electric heating

Construction of armoured, multi-conductor control cable:

- round, solid-wire /stranded-wire copper conductors
- XLPE cross-linked polyethylene insulation
- common filling
- armour made of round steel wires
- external PVC sheath, oil-resistant, self-extinguishing and flame retardant.

- **Non-armoured control cables 0.6/1 kV, PVC insulated**, for overhead electric heating control circuits, and control connections inside station

Construction of non-armoured, multi-conductor control cable:

- round, solid-wire /stranded-wire copper cores
- PVC insulation
- common filling
- external PVC sheath, oil-resistant, self-extinguishing and flame retardant.

- **Flame resistant, armoured control cables 0.6/1 kV, fabrication according to IEC 60331**, for supplying critical receivers, such as gate fireprotection valves.

Time of cable operation in fire – 30 minutes.

Construction of armoured, multi-conductor, flame resistant control cable:

- round, solid-wire /stranded-wire or sector type copper conductors
- special, fire resistant insulation
- common filling
- armour made of round steel wires

- external oil-resistant, fire resistant sheath

- **Screened, non-armoured control cables** 0.6/1 kV, PVC insulated, for control connections between the station and control room.

Construction of screened, non-armoured, multi-conductor control cable:

- round, solid-wire /stranded-wire copper conductors
- PVC insulation
- common filling
- screen made of cooper wire, tape
- external, oil-resistant, fire resistant sheath

5.5.4 Special cables (measuring cables)

- **Multi-pair, non-armoured cables** *(number of pairs)x2x0.75mm^2* with screen for pairs and external one, for non intrinsically safe connections of 4-20mA signals from measuring transducers

Construction of non-armoured, multi-pair cable with screen for pairs and external screen:

- 7 conductors made of non tinned copper 0.5 mm^2
- internal PE insulation, of minimum 0.35 mm thickness
- marking of wires – black and white with conductor numbering in pairs (1-1, 2-2 and so on)
- at least 20 twists per meter
- polyester foil shield of minimum 0.2mm thickness, with 20% overlap
- pair screening – 100% coverage with polyester tape, aluminized with tinned copper wire 0.5 mm^2
- cable screening in form of copper mesh (braid)
- external oil-resistant, flame retardant PVC jacket, minimum thickness 1.4 mm, black colour.

- **Multi-triple, armoured cables** *(number of triples)x3x1.5mm^2* with triples' screen and external screen, for non-intrinsically safe connections for thermal protection (PT100) of 6 kV motors

Construction of multi-triple, armoured cable with triples' screen and external screen:

- 7 conductors made of non tinned copper 1.5 mm^2
- internal PE insulation, of minimum 0.35 mm thickness
- marking of wires – black, white and red with conductor numbering in triples
- at least 20 twists per meter
- polyester foil shield of minimum 0.2mm thickness, with 20% overlap
- triples' screening – 100% coverage with polyester tape, aluminized with tinned copper wire 0.5 mm^2
- cable screening in form of copper mesh (braid)
- armour made of round steel wires

- external oil-resistant, flame retardant PVC sheath, minimum thickness 1.4 mm, black colour.

- **Non-Armoured shielded control cables** 0.6/1 kV, PE insulated or XLPE, for SIL conection

Construction of screened, non-armoured, multi-conductor control cable:

- round, solid-wire /stranded-wire copper conductors 2,5mm^2
- XLPE insulation
- common filling
- schield made of cooper wire, tape, external layer fireretandand
- external, oil-resistant, fire resistant sheath
- external PVC sheath, oil-resistant, self-extinguishing and flame retardant.

- **Non-Armoured control cables** to PTC variable speed drive connections

Construction of non-armoured multicore control cable

- 3-core conductors 2,5mm^2
- PVC insulation
- common filling
- external PVC sheath, oil-resistant, self-extinguishing and flame retardant.

5.6 Cable ducts and racks

5.6.1 General information

- Cable routes on the outside shall be laid in cable racks made of hot galvanized steel. Minimum thickness of protective zinc layer shall be equal to 70 μm for such elements, as racks, brackets, connecting members, covers of cable trays, etc., and 40 μm for bolts, nuts and washers. The thickness of the ww. zinc layer for cable routes inside buildings (power stations) can be thinner after consultation with GL SA. Cable routes inside buildings may also be placed in plastic trays after approval with GL SA.

- Cables shall be protected against direct sunlight influence by entire coverss.
- Covers for cable trays shall be fitted with locks that allow the closure of the cover in a safe and sustainable way, taking into account the present weather conditions (wind). The design shall prevent the self-locks to be opened, and thus automatic uncontrolled falling down.
- All elements that racks are composed of, shall have smooth surfaces, without burrs, in order to avoid cable damage possibility.
- Coupling elements, such as elbows, tees, four-way pieces, etc., shall have the same load-carrying ability and shall be made of steel sheet of the same thickness as straight elements.
- Side rails and rack rungs shall be perforated, and the perforation shall take up at least 30% of area in order to provide adequate ventilation and avoid water accumulation.

- Any connection between the ladders, trays, racks shall be done as conductive ones, with using the appropriate factory connection or elements. In another case, along the cable trays, or ladders shall be laid grounding tape connected to the earthed structure.
- All connections between racks, trays shall be made as conductive ones, with use of adequate elements. Whole structure shall be connected to earthing network.
- Assembly elements, such as connecting members, bolts, nuts and washers shall be delivered along with the racks and be included in scope of delivery.
- Cable ducts, racks and cable trays shall contain at least 30% place reserve for adding new cables.

5.6.2 Technical requirements

- Horizontal elements
  - Material: – h**ot-dip galvanizing** steel , DIN 50976, BS 729, ASTM 13 A 386
  - Thickness: – 2 mm minimum
  - Standard length – 6m for straight sections
  - Spacing of rungs – not more than 300 mm
  - Height – 100 mm and more
  - Design – heavy duty (high strength)
  - Load capacity: – rack width **600 mm**, supports every 3 m, load: 100kg/m – deflection not greater than 8mm
– rack width **400mm**, supports every 3m, load 70kg/m – deflection not greater than 8mm
– rack width **200mm**, supports every 3m, load 35kg/m – deflection not greater than 8mm
- Vertical elements
  - Material: – hot galvanized steel , DIN 50976, BS 729, ASTM 13 A 386
  - Thickness: – 2 mm minimum
  - Standard length – 6m for straight sections
  - Spacing of rungs – not more than 500mm
  - Height – adequate for connecting to horizontal elements
  - Design – high strength
  - Load capacity: – rack width **600mm**, supports every 6m – load carrying ability 100kg/m
– rack width **400mm**, supports every 6m – load carrying ability 70kg/m
– rack width **200mm**, supports every 6m – load carrying ability 35kg/m

5.7 Cable drums

5.7.1 Marking of drums

Each drum shall be furnished with factory fitted, water resistant plate, containing data for:

- cable type,
- number of conductors or pairs,
- length of the cable on drum
- manufacturer name
- order number
- ordinal numbers of cables on the drum.

5.7.2 Winding of cables on drums

- Length of cables on drums shall be equal to –0+3% of specified length.
- Cables shall be wound on drums in such manner, that both ends are accessible. Both cable ends shall be protected with thermo shrinkable caps.

5.8 Transport

- The supplier is fully responsible for proper preparation of cables for transport.
- Each drum shall be equipped with guard preventing cable damage during transport.
- The supplier shall deliver together with his offer information about own standard method of drums packaging.

5.9 Inspection and testing

- Authorized representative of GL SA shall be entitled to checking of materials, production cycles, and reporting these in each moment of production, as well as after its termination.
- GL SA. reserves right to participate in tests, and shall be informed in advance about planned tests.
- The Supplier shall specify testing method which will be employed, if more than one testing methods are specified in testing procedure.
- The Supplier shall perform detailed tests and inspections in course of production.
- Test results shall be submitted to GL SA

5.9.1 Winding the cables on the drums.

- The length of cables on the drums shall be up to 3% of the specified length.
- Cables shall be so wound up on both ends of the drums that were available.
- Both ends of the cable to be secured by thermo shrinkable caps.

6 Relevant documents

- Other Technical Specifications, shown on delivered List of Technical Specifications for GL S.A
- Specification No. 6120 "System Identification Process"

The Supplier shall deliver along with the offer the following documents as a minimum:

- List of documents,
- Certificates

- completed Price List
- cable data sheets, specifying voltages and all external diameters
- cross-sectional drawing of cables along with description

After signing of contract, the Supplier shall hand over supplemented data tables for cables, which have been previously supplied together with his offer.

Cable data sheets delivered by the Supplier, possibly supplemented after negotiations completion, shall be valid as design data of the cables.

7 Codes and standards

Electrical cables shall be manufactured according to the following norms PN-EN, PN-IEC & IEC/CENELEC :

IEC 60502	– Power and control cables 1-30 kV with accessories
PN-EN 60445	– Basic and safety principles for man-machine interface, marking and identification. Identification of the terminal equipment and cable terminations
IEC 60227-1	– PVC insulated cables for voltages up to 450/750 V
IEC 60228	– Leads of insulated cables
IEC 60331	– Fire resistant cables
IEC 60332-1	– Fire testing of cables
IEC 60584-1	– Cables for thermocouples
PN-HD 627 S1	– Power cables. Multi-conductor and multi-pair cables, intended for laying in soil and overhead.
PN-EN 60228	– Cores of leads and cables
PN-EN 50525-1	– Electrical wires. Low voltage power cables with a rated voltage not exceeding 450/750 V (Uo / U). Part 1: General requirements
PN-HD 308S2	– Identification of cores in cables and flexible cords.
SEP N SEP-E-004	– Power and signal cable lines. Design and construction.

Electric cables made by other norms and standards must be submitted for approval GLSA.
In the event of a discrepancy between the requirements of individual documents adhere to the following hierarchy:

- The current Polish legislation
- These provisions and other requirements agreed in writing GLSA
- This specification
- Data Sheets
- Other specifications
- Drawings and other documents
- Standards

8 Record of changes

No.	Date	Description	Introduced by
1		This specification entirely replaces the former LOTOS Group S.A. standard No. PR 07 422 with the same title.	J. Bućko
2	28.04.2011	Review, update, standardize and changes to the Standard within scope of 10+ program	J. Bućko
3	30-11-2013 (rev.3)	Review, update, standardize and changes to the Standard within scope of order No. OK/990/2012	Editorial board coordinated by T.Wróbel
-	31-08-2015	Page layout corrections, no content changes.	T. Wróbel