Grupa LOTOS S.A.	**TECHNICAL SPECIFICATION**	Spec. N° 8200
	Pressure vessels subject to UDT / ZDT approval	

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1 Subject of specification

This specification and other documents referenced herein establish the minimum requirements for the design, fabrication, inspection and tests for pressure vessels tanks subject to UDT/ZDT.

2 Scope of validity

This specification applies to the preparation of tender documents, inquiries and contracts for newly planned investment or modernization projects of Grupa LOTOS S.A.

It shall also be a basis for preparing both detailed specifications and inquiries for individual or package unit 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 S.A. 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 S.A. or non-compliance with the referred documents / standards and obtain a written explanation from Grupa LOTOS S.A.

2.2 Order of Precedence

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 Grupa LOTOS S.A.
- Data Sheets approved by Grupa LOTOS S.A.
- This specification
- Other Specifications
- Drawings and other documents
- Standards

3 Definitions and designations

UDT – Office of Technical Supervision

ZDT – Factory Technical Inspection of Grupa LOTOS S.A.

NB – Notified Body

4 Designing and manufacturing of pressure equipment

4.1 General requirements

All equipment that handle fluids (liquids or gases) under pressure that differs from atmospheric pressure shall be subject to UDT inspection in accordance with requirements of Rozporządzenie Rady Ministrów z dnia 7 grudnia 2012 r. w sprawie rodzajów urządzeń technicznych podlegających dozorowi technicznemu Dz.U 2012 nr 0 poz. 1468 (Regulation of the Council of Ministers of 7 December 2012 on types of equipment being subject to technical inspection Journal of Laws 2012 No. 0 item 1468).

All pressure equipment (pressure vessels) shall be designed, fabricated and furnished in accordance with Rozporządzenia Ministra Gospodarki z dnia 21 grudnia 2005 w sprawie zasadniczych wymagań dla urządzeń ciśnieniowych i zespołów urządzeń ciśnieniowych wdrażającym postanowienia dyrektywy Parlamentu Europejskiego 97/23/WE w sprawie urządzeń ciśnieniowych Dz.U. 2005 nr 263 poz. 2200 (Regulation of Minister of Economy of 21 December 205 concerning pressure equipment, implementing provision of Directive of the European Parliament and of the Council 97/23/EC on the approximation of the law of the Member States concerning pressure equipment (PED) Journal of Laws 2005 No. 263 item 2200, year 2005) or Rozporządzenie Ministra Gospodarki z dnia 23 grudnia 2005 w sprawie zasadniczych wymagań dla prostych zbiorników ciśnieniowych wdrażającym postanowienia dyrektywy Rady Europy nr 87/404/EWG odnoszącej się do prostych zbiorników ciśnieniowych Dz.U. 2005 nr 259 poz. 2171 (Regulation of Minister of Economy of 23 December 2005 concerning simple pressure equipment, implementing provision of Directive of the European Parliament and of the Council 87/404/EEC on simple pressure vessels Journal of Laws 2005 No. 263, item 2200) ,whichever applies.

It shall be note that 87/404/EEC directive has been replaced with 2009/105/EC, however the new directive does not affect the content of Regulation of Minister of Economy of 23 December 2005.

In terms of design codes and other Grupa LOTOS S.A. requirements that shall be used for pressure vessels, reference shall be made to Grupa LOTOS S.A. specification no 2200 for detailed requirements.

In case of modernization and repair of existing pressure vessels, UDT requirements must be met.

Modernization or repair of equipment shall be carried out by manufacturer having UDT authorization for such work.

This specification shall be strictly used with Grupa LOTOS S.A. specification no. 8100.

4.2 Marking of equipment – nameplate

The pressure vessel marking shall be in accordance with requirements of PED 97/23/EC.

Each pressure vessel shall be furnished with durable name plate in Polish or Polish and English language in accordance with PED 97/23/EC.

Nameplates shall be of corrosion resistant material installed on a nameplate bracket by solid stainless steel rivets. Inscriptions on the nameplate shall be engraved. The nameplate on vertical vessels shall be located on the shell above the lowest manhole, and on horizontal vessels it shall be located above the fixed support saddle. The nameplate shall not be covered with insulation.

5 Technical documentation

5.1 Design documentation

5.1.1 Documentation being approved by NB

Technical documentation of pressure vessels prior to fabrication commencement shall be subject to NB verification and agreement on compliance with requirements of PED. All costs related shall be covered by Manufacturer.

5.1.2 Scope of design documentation for approval

5.1.2.1 Assembly drawing that shall contain at least the following data:

- Applicable regulations and design codes
- Operating pressure [bar g]
- Maximum / minimum allowable pressure [bar g]
- Test pressure [bar g]
- Operating temperature [^{0}C]
- Maximum / minimum allowable temperature [^{0}C]
- Fluid(s) name
- Capacity [L - litre]
- Heat exchange area (for exchangers) [m^2]
- Corrosion allowance [mm]
- Weight of vessel (empty, operating, testing) [kg]
- Type and thickness of insulation
- For columns – type and number of trays or packing quantity
- Dimensions necessary for strength analyses checking
- Details of welded joints
- Type and scope of non-destructive examinations
- PWHT requirements, if applicable
- Data on materials used for pressure vessel construction, including their grades and specification
- Group of fluids / Hazard category according to 97/23/EC directive

5.1.2.2 Strength calculations according to applied design code..

5.1.2.3 Welder/operator qualifications.

5.1.2.4 Particular Material Appraisal if materials used are not included in harmonized standards and do not posses European Appraisal of Material.

5.1.2.5 Hazard analysis

5.1.2.6 Operating instruction – in Polish language (original copy on English language should be enclosed, if

exists).

5.2 Final documentation

5.2.1 General requirements

Documentation supplied with the pressure vessel shall be in number copies as specified in purchase order, including 1 copy of original documents signed by Notified Body. Moreover documentation shall be delivered in an editable (native) electronic form. Requirements for electronic form of documents are included in Grupa LOTOS S.A. specification no. 6200.

All certificates, reports and conformity certificates for imported materials and pressure vessels shall be prepared in English language.

All operating, assembly, maintenance, manuals, and other instructions prepared originally in English language, shall be translated into Polish language.

Contractor (a part who carries out design engineering, procurement, construction or construction of the project) shall set up (work out) a database that will include basic data about pressure equipment and data about inspections during operation (e.g. location of measuring points of thickness, possible other tests with information about frequency of these tests…). This database should be connected with simplified drawings equipment in electronic form.

5.2.2 Scope of final documentation

- Design documentation (drawings and analyses/calculations) agreed with Notified Body
- Safety equipment data – only if supplied together with the equipment. The scope of this documentation is defined in Grupa LOTOS S.A. specification 8400
- Accessories data – only if supplied together with the equipment
- Instruments for measurement, control, signalling and automatic blocks – only if supplied together with the equipment
- Feed equipment – only if supplied together with the equipment
- Measurement card (protocol) of main parts of the pressure vessel
- NDE reports with NDE plan and certificates of qualified NDT personnel
- Mechanical test run report – if required
- Heat Treatment Certificate with heat treatment plan and temperature vs. time chart– if required
- Certificate of performed anticorrosion protection in accordance with EN ISO 12944-8
- Certificate of pressure test and certificate of water used for pressure test
- Certificate of conformity issued by Manufacturer
- Certificate of conformity issued by Notified Body
- List of materials for pressure parts
- Information card (protocol) about the marking place of every part of vessel
- Material certificates including welding consumables followed by the list of the names of the vessel parts with the indication of: item no. according to the drawing, grade of material,

material std., heat number, certificate number and successive number of the certificate acc. to the list - certificates required according to EN 10204 / 3.1.

- Welding plan map including welders' identification numbers for each weld. List of welders including welders' qualifications. Certificates of Qualified Welders
- WPS, PQR
- Report of documentation approval by Notified Body
- Certificate on the inspection of the construction and first pressure test issued by Notified Body
- Assembly drawings " as built "
- Risk analysis.

Any change must be clearly indicated. "As built" shall be stamped on the drawing. If the changes have any influence on the results of strength calculations the "as built" drawing shall be again approved by Notified Body.

- Other documents – if required.
  - Instruction for transport, preservation, storage and erection
  - Maintenance, repair and tests during operation instructions. They must be in Polish language (if original in English is available it must be included)
  - Instructions for erections (notes on erection, heat insulation as well as testing and test run of equipment items)
  - Certificate of design examination EC or certificate of type examination EC issued by Notified Body

5.3 Registration documentation

Registration documentation shall meet requirements of Rozporządzenie Ministra Gospodarki, pracy i polityki społecznej z dnia 9 lipca 2003 w sprawie warunków technicznych dozoru technicznego w zakresie eksploatacji niektórych urządzeń ciśnieniowych. Dz.U 2003 nr 135 poz. 1269 rok 2003 (Regulation of Minister of Economy of 9 July 2003 on requirements for pressure vessel being in operation / service. Journal of Laws 2003 nr. 235 item 1269)

6 Costs of Notified Body / UDT inspection

Any costs of NB participation in inspection activities shall be covered by Manufacturer.

7 Pressure vessels subject to ZDT inspection

7.1 General requirements

Construction of vessels and their documentation shall meet the same requirements as for vessels subject to UDT approval. However, instead of NB a ZDT inspector will be assigned.

7.2 Design and final documentation

Design documentation shall be subject to agreement with ZDT in the same scope as for vessels subject to UDT.

The scope of final documentation delivered with pressure (As-built documentation) shall be the same as for vessles subject to UDT.

8 Relevant documents

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

9 Codes and standards

Design, fabrication, installation and documentation shall be in compliance with applicable Polish laws and regulations

- Rozporządzenie Rady Ministrów z dnia 7 grudnia 2012 r. w sprawie rodzajów urządzeń technicznych podlegających dozorowi technicznemu Dz.U 2012 nr 0 poz. 1468 (Journal of Laws 2012 No. 0 item 1468)
- Rozporządzenie Ministra Gospodarki z dnia 21 grudnia 2005 roku w sprawie zasadniczych wymagań dla urządzeń ciśnieniowych i zespołów urządzeń ciśnieniowych wdrażające postanowienia dyrektywy Parlamentu Europejskiego 97/23/WE z dnia 2 czerwca 1997 w sprawie zbliżenia ustawodawstw Państw Członkowskich dotyczących urządzeń ciśnieniowych Dz.U. 2005 nr 263 poz. 2200 (Journal of Laws 2005 No. 263 item 2200)
- Rozporządzenia Ministra Gospodarki z dnia 23 grudnia 2005 roku w sprawie zasadniczych wymagań dla prostych zbiorników ciśnieniowych wdrażające postanowienia dyrektywy Rady Europy nr 87/404/EWG odnoszącej się do prostych zbiorników ciśnieniowych Dz.U. 2005 nr 259 poz. 2171 (Journal of Laws 2005 No. 259 item 2171)
- Rozporządzenie Ministra Gospodarki z dnia 21 października 2008 r. w sprawie zasadniczych wymagań dla maszyn, wdrażające postanowienia dyrektywy Parlamentu Europejskiego i Rady 2006/42/WE w sprawie maszyn oraz uchylającej dyrektywę 98/37/WE Dz.U. 2008 nr 199 poz. 1228 Dz.U. 2008 nr 199 poz. 1228 (Journal of Laws 2008 No. 199 item 1228)
- Rozporządzenie Ministra Gospodarki z dnia 22 grudnia 2005 r. w sprawie zasadniczych wymagań dla urządzeń i systemów ochronnych przeznaczonych do użytku w przestrzeniach zagrożonych wybuchem wdrażające postanowienia dyrektywy Parlamentu Europejskiego i Rady nr 94/9/WE z dnia 23 marca 1994 w sprawie zbliżenia ustawodawstw Państw Członkowskich dotyczących urządzeń i systemów ochronnych przeznaczonych do użytku w przestrzeniach zagrożonych wybuchem (ATEX) Dz. U. 2003 nr 263 poz. 2203 (Journal of Laws 2005 No. 263 item 2203)
- Rozporządzenie Ministra Gospodarki, pracy i polityki społecznej z dnia 9 lipca 2003 w sprawie warunków technicznych dozoru technicznego w zakresie eseksploatacji niektórych urządzeń ciśnieniowych. Dz.U 2003 nr 135 poz. 1269 rok 2003 (Journal of Laws 2003 nr. 235 item 1269)
- PN-EN 10204 Metallic products - Types of inspection documents

10 Attachments

Attachement no 1 – Pressure Vessel technical description.

11 Record of changes

No.	Date	Description	Introduced by
0		This specification entirely replaces the former LOTOS Group S.A. standard No. PR 07 820 with the same title.	W. Zaborowski
1	27-04-2011	Changed points: 5.2.1, 5.2.2, 5.3. Added attachement no 1	A. Jarosz J. Dampc
2	30-11-2013	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 contents changes.	T. Wróbel