

ORLEN Unipetrol RPA, s.r.o. HSE&Q	Operating rules for pressure equipment	N 11 005

The standard in chapters 1 - 12 is binding for all entities (both physical and legal) participating in assemblies, repairs and modifications of the pressure systems and their laying, whose operator is ORLEN Unipetrol RPA s.r.o. The standard does not apply to subsidiaries of ORLEN Unipetrol RPA s.r.o. or Litvínov and Kralupy refinery units.

The standard in chapters 13, 14, 15, 16 is binding for all departments/sections in ORLEN Unipetrol RPA s.r.o. for capex constructions and installation of new pressure equipment.

Designated pressure equipment is registered at the inspection department (OI) based on registration of the users. Ambiguity in classification of the equipment as designated pressure equipment as well as classification as per the type must be consulted with the OI.

Table of contents

1	Initial provisions	Chyba! Záložka není definována.
2	Scope of validity	Chyba! Záložka není definována.
3	Terms and definitions	Chyba! Záložka není definována.
4	General provisions	Chyba! Záložka není definována.
5	Records	6
6	Operation and attendance	7
7	Safety equipment	8
8	Safety/pressure relief valves	8
9	Pressure gauges.....	8
10	Temperature gauges	10
11	Level gauges.....	11
12	Maintenance and verifications	11
13	Repairs	12
14	Manufacture and reconstruction of pressure equipment ...	Chyba! Záložka není definována.
15	Required documentation for new pressure equipment.....	18
16	Tightening manufacture conditions	Chyba! Záložka není definována.
	List of related and other legal regulations.....	Chyba! Záložka není definována.
	Annex No. 1 List of activities performed on the pressure equipment – schedule index	24
	Annex No. 2 Appointment of an employee responsible for operation of the vessels (boilers)	25

Superseding:	Administrator:	Valid from:
N 11 005 z 1.3.2013	Maintenance support section	3.2.2022

Annex No. 3 Outline of permanent education of stationary pressure vessels (TNS) attendance staff and instructions for preparation of a training program for new employees	26
---	----

1 Initial provisions

1.1. This standard elaborates provisions of legal and technical standards related to gas equipment operation within the conditions of ORLEN Unipetrol RPA s.r.o..

1.2. The operator is responsible for proper and regular maintenance, inspections and verifications of the production and working installations (Government Decree No. 378/2001 Coll.).

1.3. Maintenance and repairs of pressure equipment in the company are ensured via contractual relation between ORLEN Unipetrol RPA s.r.o. and an authorized service company (Contractor).

2 Scope of validity

2.1. This standard is valid and applicable in ORLEN Unipetrol RPA s.r.o.

2.2. The obligation of external companies to accept and comply with this standard must be stipulated in the Contract for Work or in any other similar contract between ORLEN Unipetrol RPA s.r.o. and the contractor.

3 Terms and definitions

Company	– ORLEN Unipetrol RPA s.r.o.
Designated pressure equipment (DPE)	– This is equipment pursuant to Decree No. 18/1979 Coll., in particular: steam and hot-water boilers, stationary pressure vessels and metal pressure vessels for gas transportation.
Operator	– ORLEN Unipetrol RPA s.r.o. represented by its Executive pursuant to the company articles of association. The Executive is entrusted with the duty to properly maintain custody over the means entrusted to him/her by the employer and must guard and protect the assets against damage, loss, destruction and misuse and he/she may not act in contradiction with the legitimate employer's interests and he/she must ensure timely and effective measures for protection of its assets. For the purpose of fulfilment of the associated obligations, the operator nominates the users and maintenance entities through control, organizational and technical standards.
User	– head of any organizational section (e.g. Director of division, plant, or head of a department, plant or a

	section), to whom the assets are entrusted by the operator for use. He/she is responsible for compliance with the conditions needed for safe, reliable and steady operation in compliance with the guidance and regulations determined for the use, operation and attendance of the assets.
Maintaining entity (maintainer)	– head of the technical section or service section, head of maintenance department, site and asset administration or an employee assigned otherwise, who is responsible for technical condition of identified individual groups of tangible assets, including maintenance, repairs, verifications and tests.
Client	– an employee responsible for activities related to ordering of works concerning maintenance of pressure equipment and selection of contractors (S 505).
Contractor	– authorized physical or legal entity technically competent and authorized for assembly and repairs of pressure equipment possessing valid certification from TICR pursuant to Section 6c, par. 1, letter b), of the Act No. 174/1968 Sb. and possessing valid trade licence.
Inspector (verification)	– an employee of OI or external contractor authorized to perform verifications and tests of pressure equipment, who is certified and professionally competent for these activities, the certificate is issued by the TICR.
Initial verification of DPE	– is carried out after completion of new, repairs and reconstructed stationary pressure vessels and boilers in order to find out, whether it can be safely commissioned. The verification also includes completion of the documentation (passport)s
Operating verification of DPE	– overall assessment of equipment under operation detecting operating safety and reliability of the equipment, or its part, through inspection or measurement and testing as well as assessment of professional competence of the attendance staff as per respective ČSN standards.
Internal verification of DPE	– is performed after cleaning all DPE in order to enable assessment of surface condition of the internal and external walls of the pressure equipment. Deposits, sediments and slag (clinger) must be removed from the walls so that the surface is clean. The wall surface must not be mechanically or chemically damaged during the cleaning.
Pressure test of DPE	– the pressure test demonstrates strength of the DPE under test pressure. It is usually performed by water, or by other non-caustic, non-poisonous and non-explosive liquid with max. temperature of 50°C. A technological procedure for pressure equipment must be prepared in advance.

Leak test of DPE	– the leak test demonstrates whether the pressure assembly of the pressure equipment including accessories is tight at the operating pressure.
Repair of DPE	– action with the pressure assembly for the purpose of removal of defects which occurred due to operation, transport or other reasons, when the working parameters or DPE determination are not changed.
Reconstruction of DPE	– pressure equipment subjected to substantial reconstruction changes, which change its original characteristics, purpose, type, change in material, thickness, volume, shape, etc.
Construction test	- is performed after completion of the repair pursuant to Decree ČÚBP and ČBÚ No. 18/1979 Coll.
Final test of DPE	– performed by manufacturer after completion of the DPE manufacture
Assembly of DPE	– assembly of individual parts of DPE by an authorized company using welding, riveting, bending, forming, drilling holes to pressure parts, followed by the pressure test.
Employee responsible for safe and economical operation of DPE	– an employee demonstrably (in writing) appointed by the Plant director, or Section director.
Attendance staff	– an employee appointed by the user to attend/operate the designated pressure equipment DPE. Employees authorized to attend/operate the equipment must be demonstrably familiarized with operating regulations (local operating rules, fire rules, fire alarm instructions, etc.) and practically trained in DPE attendance/operation. Before the employee is authorized to attend/operate the equipment independently, he/she must be tested. Testing of the employee must be recorded in writing.
Notified body	– legal entity intended for activities concerning assessing compliance of a product with technical requirements.
Periodic inspection of transportable pressure equipment	– external and internal inspection and pressure test of the vessel for gas transportation
Welding engineer – inspector	– performs supervision of the welding activities in order to create trust in welding production and reliable function of equipment in operation. He/she is responsible for production welding operations. The function of an inspector/supervision may be carried out by: welding engineers, welding technologists and welding specialists.
Assembly of pressure equipment	– see Government Decree 219/2016 Coll. The assembly consists of several pressure installations assembled by the manufacturer so that these represent an integrated functional unit. The assembly consists of piping, vessels,

	valves, safety and pressure equipment.
ČÚBP	– Czech Occupational Safety Office
OIP	– Regional Labour Inspectorate
TICR	– Technical Inspection of the Czech Republic
SOD	– State inspection body
STS	– Technical service section
OTD	– Technical inspection dept.
OI	- Inspection section.
HSE&Q	– OHS section
PHK	– Steam and hot-water boilers
TNS	– Stationary pressure vessels
NDP	– Gas transportation vessels
DPE	– Designated pressure equipment
ADR	– European agreement concerning the International Carriage of Dangerous Goods by Road
PKZ	– Inspection and test plan
AO	– Authorized person
EMC	– Electro-magnetic compatibility
NCR	– Non-conformance report (defects and backlogs)

4 General provisions

4.1. The rules have been prepared based on the Decree No. 18/1979 Coll. and as subsequently amended to ensure unified method for execution of activities concerning designated pressure equipment in ORLEN Unipetrol RPA s.r.o.

4.2. Designated pressure equipment is divided by the abovementioned Decree into three groups:

a) Steam and hot-water boilers

- Basic technical requirements for manufacture and repairs are stipulated, for example, in:
 - Government Decree No. 219/2016 Coll.,
 - ČSN 07 0622 (with reference to standards ČSN 07 0620, ČSN 07 0623 and ČSN 07 0624)
 - ČSN EN 12952 (1 - 16),
 - ČSN EN 12953 (1 - 13).
- Basic requirements for operation, attendance and maintenance are stipulated in:
 - ČSN 07 0710,
 - ČSN 07 0270.

b) Stationary pressure vessels

- Basic technical requirements for manufacture and repairs are stipulated, for example, in:

- Government Decree No. 219/2016 Coll.,
 - ČSN 69 0010,
 - ČSN EN 13445 (1 - 6).
 - Basic requirements for operation are stipulated in:
 - ČSN 69 0012
 - Operation and service instructions from the manufacturer
- c) Metal pressure vessels for gas transportation
- Basic technical requirements for manufacture and repairs are stipulated in:
 - Government Decree No. 208/2011 Coll.,
 - ČSN 07 8305.
 Each manufactured transportable pressure equipment must be fitted with a compliance mark π (valid from 1.4.2003)
 - Basic requirements for operation are stipulated in:
 - ČSN 07 8304,
 - Annex A to ADR.
- d) Transportable pressure equipment is divided into:
- Vessels, represented by cylinders, tube vessels, pressure drums, cryogenic vessels and cylinder bundles,
 - Tanks, represented by removable tanks, portable tanks, tank containers, tank cars, or cars with one or more tanks, tanks or vessels of battery vehicles.

4.3. Locally competent authorities and inspector organizations for the facilities in our company are the Regional Labour Inspectorate and the TICR, both residing at Ústí nad Labem. STS, or Integrated management system department are authorized to contact the abovementioned authorities. Binding effect of Czech technical standards (ČSN) within the company premises is determined by the Decision of CEO No. 2000/02. Any deviations from the ČSN that are binding by the decision of CEO No. 2000/02, are approved by the CEO of the company based upon recommendation of the STS department.

4.4. In the conditions of ORLEN Unipetrol RPA s.r.o., the measuring gauges such as pressure gauges, temperature gauges and level gauges, which are installed directly on the pressure equipment must be marked as per the binding document „Metrology Rules“.

4.5. Revision (verification) activities within the company premises are carried out by the OI or verification inspectors of external companies. The inspector of external companies performing the verifications must be approved by the OI.

5 Records

5.1. The records of stationary pressure vessels and steam boilers are kept and the passports (inspection books) of the equipment are archived by the OI centrally for the company and contractually for other legal or natural persons, in the specified classification. OI also automatically updates the dates of verifications according to the actual verifications and tests carried out. Updating the number (decommissioning, relocation, new equipment) is carried out by the OI on the basis of a written notification from the user. The supplied technical documentation (drawing part) of new and reconstructed DPE must be handed over to the archive of the company by the maintainer

5.2. Passport of new equipment must be an annex to the written notification on installation of such new equipment, unless it has already been handed over to the OI. This also applies to the investment actions.

5.3. The records of metal pressure gas transportation vessels shall be kept by their respective owners. The owner is obliged to damage the decommissioned gas transportation vessels in such a way that they are no longer used (e.g. by drilling). The register of railway tanks is kept by ORLEN Unipetrol Doprava, the register of road tank cars by the OI. Periodic inspections and tests of tanks are carried out by both legal entities by their own employees or through contract with the participation of an OI inspection technician (tank car) and an authorised person.

6 Operation and attendance

6.1. Operation and attendance is governed by the operating regulation, one of whose base document is ČSN 69 0012 - vessels, ČSN 070710 – boilers, ČSN 07 8304 – transportable pressure equipment.

6.2. The employee responsible for operation of the vessels or boilers is usually the Head of the production or operation unit or an employee authorized by this senior manager. Specimen of such authorization is presented in the Annex No. 2. Lower level of authorization must be consulted with the OI in advance.

6.3. Activity related to operation of transport of hazardous goods and gases is coordinated by the user in compliance with the operating instructions.

6.4. The pressure equipment may be commissioned and operated only if complying with the respective regulations and upon completion of the determined inspections, tests and verifications. For new products the requirements in chapter 13-16 hereof must be complied with.

6.5. In the company conditions the vessel (pressure assembly) may be commissioned only upon valid result of the initial verification performed by an authorized inspector of the authorized assembly organization and verified by the OI inspection engineer. By performance of the initial verification, the company fulfils provisions of the Government Decree No. 378/2001 Coll., Section 4.

6.6. The boiler may be commissioned only upon successful pressure test, if fitted with all the equipment in satisfactory condition and in case such equipment has been subjected to conformity assessment using the procedure as per the Government Decree No. 219/2016 Coll. and upon performance of successful functional tests by the contractor, inspection engineer in the presence of the OI inspector.

6.7. Only the employee who has confirmed by his/her signature that he/she has been trained, practiced and tested may be entrusted with attendance of the stationary pressure vessels and steam and hot-water boilers.

6.8. Only the employee, who possesses a valid boiler certificate of the respective class, including the type of fuel, may be entrusted with attendance of the boiler.

6.9. Regularly after three year period, the attendance staff of the vessels and boilers is obliged to pass verification of their professional competence in front of an employee appointed by the user, or in front of an external expert company or inspector defined by the OI section.

6.10. Boiler attendants for steam and hot-water boilers must be retested regularly after 5 years by the TICR organization (Act No. 124/2000 Coll.).

7 Safety equipment

7.1. Safety equipment is equipment designed to protect pressure equipment from exceeding maximum permissible limits, including direct pressure limiting devices such as pressure relief valves, bursting safety devices and limiting devices that either actuate corrective devices or ensure shutdown or shutdown and blocking, such as pressure switches, temperature switches or level switches, and safety-related measuring, control and regulating equipment.

7.2. Temperature gauges, pressure gauges and level gauges must be maintained clean so that the data are legible.

8 Safety/pressure relief valves

8.1. Installation, operation and maintenance of safety/pressure relief valves is solved by N 11 021 and N 11 153.

Before commissioning of the boiler or a vessel, the user is obliged to verify that the pressure relief of the installed pressure relief valves is in accordance with the information in the documentation. This means checking that the relief pressure of the installed pressure relief valve (the value shown in the relief valve report) is in accordance with the pressure area to be protected. A similar check shall be carried out by the pressure equipment inspector (inspection engineer) as part of the initial verification.

9 Pressure gauges

Table 1 – Accuracy classes of DPE pressure gauges

Max. operating pressure in MPa	Accuracy class of operating pressure gauge	Accuracy class of control pressure gauge
Up to 1,0	4	1,6
above 1,0 up to 2,5	2,5	1,0
above 2,5 up to 16,0	1,6	1,0

above 16,0	1,0	0,6
------------	-----	-----

9.1. The pressure gauges as per table 1. are used for the pressure vessels.

9.2. The measuring range of pressure gauges shall be selected so that the working pressure is in the second third of the scale range. The pressure gauge scale shall be marked with a red mark indicating the working pressure which is the maximum permissible in terms of the safety of the vessel operation. Some types of pressure gauges (filled with buffer fluid) cannot have a red mark inside, therefore in accordance with EN 69 0010 - 5.2, paragraph 3.4 they have a red mark outside the gauge.

9.3. Operating pressure gauges located on the vessel must be fitted with a valve enabling control of the pressure gauge under operation.

9.4. Operating pressure gauges are classified as per the binding document called the „Metrology Rules“ into the category of indicative gauges. In specially justified cases, the operating pressure gauges may be classified as service gauges.

9.5. Inspection of correct function of the operating pressure gauge is performed by inspection for zero values of the pressure gauge scale in the following time periods:

- a) Once per month for pressure gauges located on a steam or hot-water boiler,
- b) Once per three months for pressure gauges located directly on the vessel,
- c) Once per six months for pressure gauges located on the vessel that is also fitted with remote transmission of pressure to the panel,
- d) Once per six months for pressure gauges located on the vessels that is part of the mobile extinguishers with no pressure in the stand-by state.

Note:

The principle of zero setting of pressure gauges is to eliminate the source of pressure acting on the gauge. The pressure gauge needle should then drop to zero on the pressure gauge scale. If this is not the case, the pressure gauge must be replaced.

9.6. Activities of the remote, signalling and registration pressure gauges are compared with the pressure gauge located directly on the vessel once per month, and for a boiler as per the local operating regulations.

9.7. The operating pressure gauges must be compared with the control pressure gauge at least:

- a) Once per month – vessels for liquid chlorine
- b) Once per year – steam and hot-water boiler
- c) Once per two years – other vessels
- d) Once per five years – for pressure gauges located on the vessel that is part of the mobile extinguishers with no pressure in the stand-by state.

9.8. Apart from that, the operating pressure gauges compared with the control pressure gauges always when malfunction of the pressure gauges is detected.

9.9. Activities associated with operation of the pressure gauges are clearly specified in the Annex No. 1.

9.10. If the deviation between the readings of the pressure gauge and the control pressure gauge between the highest and lowest pressure in use is greater than 5 % of the scale range, the pressure gauge shall be replaced by another one.

9.11. Results of the pressure gauge (local, remote) inspections must be recorded by the attendance staff and available for potential checking/inspection.

9.12. The scale of the control pressure gauge must be fitted with the sign „control pressure gauge“. It is classified in the category of service gauges („Metrology Rules“). The holder of the control pressure gauge is the user of the pressure equipment.

9.13. Repairs of the pressure gauges and other activities associated with their maintenance are ensured by the maintainer within the terms specified in Annex No. 1.

10 Temperature gauges

10.1. A temperature gauge must be fitted to each vessel or boiler that is part of a process undergoing mandatory temperature control or where overheating of the wall could jeopardise safe operation of the equipment.

10.2. The highest or the lowest permissible temperature is marked with a red line on the temperature gauge.

10.3. The temperature gauges must be selected so that the top limit of measurement range exceeds the operating temperature by 10 %.

10.4. For the vessels with remote temperature gauge, where the filling boils in the working space, it is ensured that the temperature can be checked by placing a thermowell for a check temperature gauge in a suitable place in the vessel (determined by the manufacturer of the vessel on the basis of the relevant drawing documentation).

10.5. Operating temperature gauges are classified in the category as indicative gauge („Metrology Rules“). In specially justified cases, the operating temperature gauges may be classified as service gauges.

10.6. Pursuant to the Metrology Rules, the control temperature gauge is classified in the category of service gauges. Based upon the maintainer's request, the organization possessing respective permits for performance of these activities may verify or calibrate the control temperature gauge.

10.7. The operating temperature gauges must be compared with the control temperature gauges in the thermowells at least:

- a) Once per three months – steam boilers with superheated steam above 500 °C without continual temperature measurement,
- b) Once per year - steam boilers,
- c) Once per two years – stationary pressure vessels.

10.8. Comparison of data from temperature gauges with control temperature gauges must be performed in case of every justified suspicion of incorrect operation.

10.9. Operation of remote, signalling and registration temperature gauges is compared with the temperature gauge located directly on the vessel at least once per month.

10.10. Results of the temperature gauge (local, remote) inspections must be recorded by the attendance staff and available for potential checking/inspection.

10.11. Activities associated with operation of the temperature gauges are clearly shown in the Annex No. 1.

10.12. Repairs of el. temperature gauges and temperature gauges with remote transmission of limit value defined for remote transmission and other activities associated with their maintenance are ensured by the maintainer (see Annex No. 1).

10.13. Non-functioning glass temperature gauges are replaced with new ones as part of regular maintenance of the equipment.

11 Level gauges

11.1. A (direct) level gauge must be fitted to any vessel in which an impermissible overheating of its walls could occur if the level falls below the permissible limit. The gauge of such a vessel shall show the minimum level and, in the case of boilers, the lowest - normal - maximum permissible level.

11.2. Even the vessels for liquefied gases must be fitted with the level gauge. Such a level gauge for the vessel must have marked max. permissible level height.

11.3. Direct level gauges created by a glass tube may be used for vessels for non-poisonous, non-explosive and non-flammable substances with max. working overpressure of 1,6 MPa and direct level gauges created by inspection holes with glass (mica) up to 4,0 MPa.

11.4. Level gauges are classified in the category as indicative gauge („Metrology Rules“).

11.5. Results of the level gauge (local, remote) inspections must be recorded by the attendance staff and available for potential checking/inspection.

11.6. Periods for inspection of level gauge function are specified in the Annex No 1.

11.7. The level gauges must always have solid construction or they must be fitted with a protective cage in the area of the measurement tube.

11.8. The maintainer shall ensure maintenance and repairs of the level gauges and level gauges with remote transmission.

12 Maintenance and verifications

12.1. The purpose of maintenance is to keep the equipment in working order. Maintenance includes replacement of safety equipment, grinding of valves, replacement of gaskets and bolts, replacement of bundled expanded tubes of exchangers and boilers, drilled spacers,

bolted reinforcements, etc. No TICR approval for assembly workers is required for this work. However, these works must be carried out by properly instructed employees, over 18 years of age, who have been properly familiarized with the requirements of this work.

12.2. Integral part of the maintenance is performance of verifications and tests. According to the verification and test results, the intensity of maintenance or repair works is modified. Verification and test periods are defined in the Annex No. 1.

12.3. Verifications, technical inspection (supervision) during tests and during periodical inspections of vessels for gases within the company are provided by the OI or the equipment user.

12.4. The scope of necessary maintenance disassembly works for the purpose of the internal verification or during a test must be agreed by the maintainer and the OI in advance

12.5. Preparation of the internal verification, leak or pressure test is carried out by a respective contractor in cooperation with the maintainer and the external verification inspector for pressure equipment approved by the OI or the OI inspector.

12.6. The department carrying out preparation for the verifications or tests is obliged to ensure performance of the non-destructive tests and inspection, that the verification inspector might need for successful assessment of the equipment condition.

12.7. The external inspector or the OI inspector shall prepare a verification (revision) report on the results of the verification or the test. The employee responsible for operation shall receive two copies of the report, the original copy shall become an annex of the equipment passport. The employee responsible for operation shall pass one copy to the maintainer. Obligation of the maintainer is to prepare a program for rectification of defects concerning maintenance, upon potential agreement with the user, and inform the user (the employee responsible for operation) in proposed dates about their rectification.

12.8. Periodic inspection and tests of gas vessels and of transportable pressure equipment for hazardous goods may only be carried out by the authorized persons and persons/bodies defined within the meaning of the GR 208/2011 Coll.

12.9. Operating verifications of vessels and boilers are carried out pursuant to the plan of the Inspection department. The user is provided with two copies of the report on results.

12.10. Internal verifications/revisions, leak and pressure tests are ensured or carried out by the OI section upon request.

12.11. Before the insulated vessels is filled with water for the leak or pressure tests, it is necessary to fit the highest place of the vessel with a sufficiently long overflow pipe to prevent leakage of water under insulation.

13 Repairs

13.1. In the conditions of ORLEN Unipetrol RPA s.r.o. repairs of the pressure equipment intended for the company may be carried out only according to documentation approved in advance.

13.2. The approval of the relevant documentation is confirmed by the signature of the contracted welding technologist and the head of the OI on the approval stamp printed on the drawing of the main vessel assembly and on the first sheet of the strength calculation. Internal inspections by the client do not relieve the contractor of responsibility for the completeness of the final product and have no impact on any complaints procedure. Failure of the client and STS to comply with certain inspection points and comments on the delivery of the DPE does not relieve the contractor of the manufacturer's obligation to comply with these regulatory requirements.

a) The contracted welding technologist confirms the following:

- correctness of designed construction in terms of welding,
- correctness of prescribed weld coefficients,
- correctness of prescribed excess (filler) materials and electrodes,
- correctness of heat treatment,
- agreement with proposed scope of weld inspection with the value of permissible classification degree.
- validity of the scope of certificates and qualifications of the welding staff

b) The Head of OI confirms the following:

- agreement with overall concept of the pressure vessel,
- correctness of construction design of the pressure vessel,
- agreement with the scope of drawing documentation,
- correctness of the passport strength calculation.

13.3. Repairs of the pressure vessels and boilers may only be carried out by the contractor possessing valid authorization to repair the designated pressure equipment issued by the TICR.

13.4. The intention to repair the vessel must be consulted by the maintainer with the OI department in advance. Upon discussion, the scope of necessary documentation shall be specified.

13.5. Any repair of the pressure vessel or the boiler must be discussed between the maintainer and the OI department in advance. Unless stipulated otherwise, the repair shall be performed pursuant to documents in the equipment passport. The current, worn part, shall be replaced with a new one.

13.6. After completion of the vessel repair, certifications of the construction and pressure test, initial verification and the leak test protocol shall be documented. Presence of the TICR representative must be ensured, in defined cases, for the construction and pressure test. Presence of the TICR representative is ensured by the OI department. The contractor is obliged to notify the OI department of the necessity of TICR representative presence before the repair is commenced.

13.7. After the repair of the boiler the certifications of the construction and pressure test and the leak test protocol shall be documented. Presence of the TICR representative must be ensured, in defined cases, for the construction and pressure test. Presence of the TICR representative is ensured by the OI department. The contractor is obliged to notify the OI department of the necessity of TICR representative presence before the repair is commenced.

14 Manufacture and reconstruction of pressure equipment

Manufacture and reconstruction of pressure equipment is carried out in accordance with the Government Decree No. 219/2016 Coll. (Directive of the European Parliament and of the Council EU 2014/68/EU) – PED and respective harmonized standards.

The manufacturer prepared the design, calculation of pressure equipment exclusively on its own responsibility, based on the input data from the client. If possible, the manufacturer shall take into account the requirements for detailed material specification and required product properties from the client and its comments. However, these detailed specifications of the client are not binding and do not relieve the manufacturer of responsibility for the correctness of the final product design. If it is not possible to use the client's detailed specifications and comments during manufacture, this must be stated during the inspection at the design stage.

14.1. In scope of the customer's inspection, ORLEN Unipetrol RPA s.r.o. requires to enable continual inspection and to submit documentation to demonstrate quality of manufacturing in a form a random manufacture and assembly inspection in the following individual stages:

- a) DESING STAGE- pre-manufacturing activity
- b) MANUFACTURING STAGE- inspection during manufacture at the manufacturer's premises
- c) ASSEMBLY STAGE- inspection during assembly on site in Chempark
- d) FINAL APPROVAL STAGE- check of the Inspection and test plan, final tests and documentation for individual devices
- e) PRESSURE EQUIPMENT ASSEMBLY TEST STAGE

14.2. Approval of the respective documentation is confirmed by the appointed representative of ORLEN Unipetrol RPA s.r.o. in a form of signature in the approval stamp printed on the cover page or onto the Inspection and test plan.

14.3. Detected non-compliances shall be recorded in the form of a NCR protocol and shall be continually rectified by the contractor.

14.4. In case of gross violation of the approved procedures, failure to rectify the NCR protocol, the appointed representative of the client is entitled to suspend manufacture/assembly at the contractor's expenses until everything is rectified.

14.5. The STS dept. confirms gradual fulfilment of individual stages a-e, in a form of separate record where individual NCRs are specified. It is assumed, that it is not permitted to continue in other activities of the following stage without confirmation of the fulfilment of requirements in the previous stage.

14.6. Internal inspection of the client does not relieve of responsibility for completeness of the final product and do not influence the complaint procedure. Failure of the client and STS to apply certain inspection points and comments on the delivery of the DPE does not relieve the contractor of the manufacturer's obligation to comply with these regulatory requirements.

14.7. Connection to the piping systems must meet the requirements of N 11 986.

14.8. The success of the client's inspection pursuant to 14.1. assumes fulfilment of these check point in particular: (proposal for check points in the Inspection and test plan of the contractor).

14.9. The contractor must ensure with the STS dept. that supervision tests are carried out in accordance with S 338 in full.

14.10. The contractor must ensure performance of the initial wall thickness measurement with the STS dept.

Table 14.1.a. Stage of design in particular

	Title	Y/N
1	Checking all input technical parameters specified in the contract	
2	Checking project documentation and welding procedures	
3	Audit at a selected supplier - verification of qualifications and quality assurance procedures	
4	Approval of the Inspections and test plan of production and assembly (PKZ)	
5	Checking the production plan and schedule	
6	Inspection of requirements for surface treatment, coatings, conservation, insulation	
7	Technological process diagram (PFD), machine-technological diagram (PID)	
8	Definition of individual elements included in the set and precise delimitation of the set by marking on the machine-technological scheme (PID)	

Table 14.1.b. Stage of manufacturing in particular

	Title	Y/N
1	Participation in the tests required by the inspection and test plan	
2	Checking the scope of non-destructive tests	
3	Checking the certificates of the materials used	
4	Notch toughness tests of materials and testing welding plates	
5	Physical verification of the material of pressure parts and verification of all certificates and transmission of marks	
6	Checking compliance with the qualification of welders for approved welding procedures	

7	Inspection of the production process of shells and necks, grooving of welds	
8	Verification that the connected extension and accessories agree with the approved drawings - before installation	
9	Partial pressure test of prefabricated parts - if applicable	
10	Checking X-rays and verifying the results of NDT tests	
11	Checking the correctness of the gaskets used	
12	Checking the correctness of the fasteners used	
13	Final visual and dimensional inspection according to the approved documentation	
14	Checking the final production documentation	
15	Checking the condition of surface preparation for coatings	
16	Paint inspection, including measurement of thickness and quality of work	
17	Transport readiness check	
18	Checking the certificates of the materials used	
19	Participation in the final assessment by the Notified Body - if applicable	
20	Draft of operating and maintenance instructions in the Czech language	

Table 14.1.c. Stage of assembly in particular

	Title	Y/N
1	Before assembling the vessel/tank in position, the contractor's engineer will perform a visual inspection of the vessels in the presence of a designated ORLEN Unipetrol RPA representative in order to determine the condition of the vessel/tank since the last inspection, transport, and handling.	
2	Record of the cleanliness of the installed equipment before the beginning of the assembly	
3	Participation in the tests required by the inspection and test plan	
4	Checking the scope of non-destructive tests of connection welds	
5	Checking the certificates of the materials used	
6	Qualification sheets of welding and NDT personnel	
7	Checking compliance of the qualification of welders for approved welding procedures	
8	Inspection and participation in working tests of welders	
9	Studying X-rays and verifying the results of NDT tests	
10	Checking the correctness of the gaskets used	
11	Checking the correctness of the fasteners used	
12	Qualifications for the installation of flange connections TALUFT / ČSN EN 1591-4	
13	Participation in pressure tests	
14	Machine-technological scheme (PID)	
15	Pressure equipment (valves, gate valves, flaps)	

16	Safety equipment (safety valves, bursting/rupture discs, limiters, flow meters)	
17	Checking the condition of surface preparation for coatings	
18	Paint inspection, including measurement of thickness and quality of work	

Table 14.1.d. Stage of final approval of individual products in particular

	Title	Y/N
1	Verification of all production tests and inspections of individual pressure equipment	
2	Photocopies of production labels of individual pressure equipment	
3	Documentation in accordance with the Annex to the PED I.3.3.a 3.4. No. 2014/68/EU (GR 219/2016 Coll.) in the form of a passport pursuant to ČSN 690010 part 7.2 - vessels, or ČSN 07 0008- boilers.	
4	EU Declaration of conformity according to 2014/68 / EU of individual pressure equipment	
5	EU Certificate of the Authorized Persons / Notified Body of Individual Pressure Equipment	
6	Inspection report of the Authorized persons (contractual annex to the delivery) of individual pressure equipment	
7	Instructions for operation and maintenance in the Czech language of individual pressure equipment	
8	Evaluation of residual risks according to the Labour Code and the European Directive 89/391 / EEC of individual pressure equipment	

Table 14.1.e. Stage of final commissioning of pressure equipment assemblies and functional units in particular:

All the necessary documents for the assessment of the assembly must be delivered before the start of the assessment itself at the place of installation and approved by the AO.

	Title	Y/N
1	Definition of individual elements included in the assembly according to PED and precise delimitation of the assembly by marking on the machine-technological scheme (PID).	
2	The supplier of the assembly defines the safety equipment including actuators installed in the pressure equipment assembly. It includes a reference to the processed risk analysis, including proposed other equipment protections (indicators, warning devices), which allow automatic or manual intervention, which keeps the equipment within the allowable limits.	
3	Overall assessment of the pressure equipment assembly against exceeding the maximum permissible limits confirmed by the AO.	
4	The approval of the assemblies takes place in partial sub-sets according to the process paths of the fluid through the pressure device.	

5	Checking documents certifying performed conformity assessment of the limiters, whether these comply with requirements of EN 50 156-1 ed. 2 and EN 50 156-2. The manufacturer shall provide documents certifying conformity of the limiters with requirements of EN 12 952, EN 12 953, EN 13 445, EN 764-7.	
6	The manufacturer proves that he has complied with the assembly instructions of the limiter elements and the resistance of the limiter to external interference. EMC measurements shall only be performed in justified cases.	
7	Functional tests of limiters from the assembly manufacturer in accordance with the developed technological test procedure (start-up, test operation). The project must also include the conditions for the recognition of a positive result of the performed tests in the form of a "Record of performed functional tests of safety equipment, signalling of blockages" with an indication of the measurement range and set limits.	
8	Affirmative standpoints of the TICR what concerns tests, initial verification and tests according to national regulations before commissioning and after commissioning to a trial operation. All initial verifications of the DPE must be approved and signed by OI ORLEN Unipetrol RPA, otherwise they are considered invalid.	
9	After the installation and connection of the vessel/tank, the OTK technician of the supplier will perform a leak test with the participation of the OI inspection technician (inspector), which will be part of the handover documentation of the new vessel/tank when commissioning for test/warranty run.	

15 Required documentation for new pressure equipment

The documentation for vessels/tanks will take the form of quality files. Each file will contain.

	Title	Y/N
1	Approved welding management documents for manufacturing and assembly by the representative of ORLEN Unipetrol RPA (before the start of manufacturing).	
2	Approved design parameters and documentation by the ORLEN representative of Unipetrol RPA (before the start of manufacturing).	
3	Documentation in accordance with the Annex to the PED I.3.3.a 3.4. 2014/68/EU (GR 219/2016 Coll.) in the form of a passport pursuant to ČSN 690010 part 7.2 - vessels, or ČSN 07 0620 - boilers (hereinafter see point 15 – vessel and 16 – boiler).	
4	EU Declaration of Conformity according to 2014/68 / EU for individual specified products and assemblies.	
5	EU Certificate of the Authorized Person	
6	Inspection report of the Authorized Person (contractual annex to the delivery)	
7	Confirmed prescribed inspection and test as per international regulations or with participation of the TICR in the form of an issued „TICR opinion“.	

8	Instructions for operation and maintenance in the Czech language.	
9	Draft of the supplier's operating regulations, if requested.	
10	Evaluation of residual risks according to the Labour Code and the European Directive (89/391/EHS)	
11	Verifications (revisions) and tests according to international regulations with the participation of the TICR	

Table 15.1. The documentation for pressure vessel shall contain:

	Title	Y/N
1	Passport of the vessel classified pursuant to ČSN 690010-7.2 – annexes Technical documentation of the foreign supplier shall be delivered as bilingual (original / Czech language).	
2	List of (table of content) documentation	
3	Documents specified in 14.3	
4	Strength calculation of pressure parts confirmed by AO. The strength calculation will clearly specify the minimum allowable wall strength of individual components of the device (shell, dished bottoms, neck, etc.) including consideration of potential cyclic stress.	
5	Detailed drawing documentation, confirmed by AO on each approved drawing. In addition to the set of drawings and individual details, it will also contain the following:	
6	A. Sub-sets and all details of necks, reinforced collars, counter-flanges, or blinding flanges	
7	B. Laying, supports, hinges, brackets for platforms, ladders and piping	
8	C. Pedestals, sliding plates hinges and laying	
9	D. Determination of places for the first NDT thickness measurement - initial states	
10	E. Location of lifting eyes for all detachable parts exceeding 40 kg	
11	F. Location of earthing flags.	
12	G. Location of insulation clips, if applied.	
13	H. Forcing-off screws and fixing pins at main flanges of the apparatus	
14	I. Drawings of main gaskets (each separately, A4 drawing)	
15	J. Identification marks of welders on individual welds of the device	
16	Copies of the validated Inspection and Test Plan (ITP) from all parties involved	
17	Electrical data (e.g., pipe or vessels heat tracing)	
18	Calculation of tightening torques of individual flange connections	
19	BOM (including basic) containing specifications of fasteners for flanged joints	
20	List of spare parts	
21	Photocopy of the factory label mounted on the product, filed in the accompanying technical documentation.	

22	Welding inspection certificate	
23	Record of welds	
24	WPQR list - individual WPQRs	
25	List of WPS and individual WPS	
26	List of welders and their certificates confirmed by the employer	
27	Technological procedure of weld repairs - defect reports	
28	Procedures to ensure identifiability of materials	
29	NDT plan	
30	NDT maps	
31	List of NDT employees	
32	NDT personnel certificate	
33	List of NDT reports	
34	NDT test reports	
35	List of PWHT staff and their certification	
36	List of PWHT reports	
37	PWHT reports	
38	Report on final and first pressure test	
39	Report on final acceptance and inspection after pressure test	
40	Pipe cleanliness report	
41	Dimensional inspection report	
42	Surface treatment report - external, internal	
43	Quality management certificate in the field of MANUFACTURE OF PRESSURE EQUIPMENT, e.g., according to ČSN EN ISO 9001	
44	Welding process certificate according to ČSN EN ISO 3834	
45	Control boards test results	
46	Initial verification - electro	
47	Initial verification of earthing, connection of pipes, vessels, etc	
48	Initial verification - I&C	
49	Summary initial verification of designated pressure equipment (it is not a list of initial verification reports, but physical inspection of the condition of the initial verification reports handed over against "as built" execution in scope of the investment action implementation)	
50	Documents certifying conformity assessment in scope of the assembly, see point 5 from table 14.1.e	
51	Initial verifications and test pursuant to the national regulations including participation of the TICR. All initial verifications of the DPE must be approved and signed by OI ORLEN Unipetrol RPA, otherwise they are considered invalid.	
52	Based upon the AO certificate. to the assembly The contractor shall add safety and pressure equipment (safety devices, basic valves and I&C instruments) in the passport.	

16 Tightening production conditions

	Title	Y/N
1	„U“ tubes of the bundle shall be manufactured from one piece - bended	
2	For bundles manufactured from austenitic and two-phase AK steel, we require manufacture of tubes from one heat (in case of more heats, draw layout of tubes of used heats in the tube sheet drawing)	
3	Provide at least one piece of used tube for manufacture of the bundle, length of 2000 mm, from each heat with the embossed heat number and number of apparatus for subsequent service life assessment.	
4	All detachable segments exceeding 40 kg will be fitted with lifting eyes.	
5	Complete tube bundle is including slide rods and sealing strips.	
6	In the course of assembly, the pressure vessel and its parts will no longer be tampered with by welding, especially where heat treatment before and after welding would be necessary. The installation will be carried out by assembly, and any welding will be in the manufacturing stage or in the downstream piping to the vessel.	
7	All pressure parts must enable full drainage and drying.	
8	Do not mark the identification marks of welders on the equipment, but on the welding diagrams in the passport.	
9	Condition for safe execution of a pneumatic test for subsequent periodic inspection will be specified for the prescribed pneumatic pressure test.	

List of related and other legal regulations

- ČSN 07 0008 Boiler passport
- ČSN 07 0270 Safety technique. Steam and hot-water boilers. Requirements for pressure gauges
- ČSN 07 0620 Construction and equipment of steam boiler and hot-water boiler
- ČSN 07 0622 Construction of steam and hot-water boilers
- ČSN 07 0623 Technical documentation of boilers
- ČSN 07 0624 Erection of boilers and boiler equipment
- ČSN 07 0710 Operation, attendance and maintenance of steam and hot-water boilers
- ČSN 07 8304 Gas cylinders - Operation rules
- ČSN 07 8305 Metal pressure vessels for transport of gasses. Technical rules
- ČSN 13 4309-1 Industrial armatures. Safety valves. Definition

- ČSN 13 4309-2 Industrial armatures. Safety valves. Part 2, Technical requirements
- ČSN 13 4309-3 Industrial armatures. Safety valves. Part 3, Calculation of flowing capacity
- ČSN 13 4309-4 Industrial armatures. Safety valves. Part 4, Type tests
- ČSN 65 0205 Flammable liquefied hydrocarbon gases. Plants and storage rooms
- ČSN 69 0010 Stationary pressure vessels - Technical rules, Part 1.1 - 12
- ČSN 69 0012 Stationary pressure vessels. Operating requirements
- ČSN EN 286-1 Simple unfired pressure vessels designed to contain air or nitrogen. Part 1, Pressure vessels for general purposes
- EN 764-7 Pressure equipment. Part 7, Safety systems for unfired pressure equipment
- ČSN EN 1591-4 Flanges and their joints. Part 4, Qualification of personnel competency in the assembly of the bolted connections of critical service pressurized systems
- ČSN EN 12816 LPG equipment and accessories - Transportable refillable LPG cylinders - Disposal
- ČSN EN 12817 LPG Equipment and accessories - Inspection and requalification of LPG pressure vessels up to and including 13 m3
- ČSN EN 12819 LPG Equipment and accessories - Inspection and requalification of LPG pressure vessels exceeding 13 m3
- ČSN EN 12 952 Water-tube boilers and auxiliary installations - Part 1 - 18
- ČSN EN 12 953 Shell boilers – Part 1 - 13
- ČSN EN 13 445 Unfired pressure vessels – Part 1 - 6
- EN 50 156-1 ed.2 Electrical equipment for boilers and auxiliary installations - Part 1: Requirements for application design and installation
- EN 50 156-2 Electrical equipment for boilers and auxiliary installations – Part 2: Requirements for design, development and approval of safety relevant equipment and sub-equipment
- ČSN EN 61 508 Functional safety of electrical/electronic/programmable electronic systems related to safety – Part 1 ed.2 through 7 ed.2
- ČSN EN ISO 3834 Quality requirements for fusion welding of metallic materials– Part 1 - 5
- ČSN EN ISO 4126 17 Safety devices for protection against excessive pressure. Part 1 - 7
- ČSN EN ISO 9001 Quality management systems - Requirements
- ČSN EN ISO 13 849-1 Safety of machinery – Safety related parts of control systems - Part 1: General principles for design
- N 10 051 Surface treatment (protection) of metal structures and equipment
- N 11 004 Operating rules for gas equipment
- N 11 017 Standard for performance of Loop checks
- N 11 021 Safety devices for protection against excessive pressure
- N 11 062 Pressure tests (hydraulic)
- N 11 063 Pressure tests (pneumatic)

- N 11 153 Valves and safety valves for high pressure equipment. TDP
- N 11 200 Standard for acceptance of equipment from operation to repair and from repair to operation
- N 11 985 Standard for passports of production equipment
- N 11 986 Piping systems. Documentation, inspection and acceptance
- N 13 700 Marking of piping as per fluids

- Directive 338 Incoming inspection of metallic materials and products manufactured from these materials using the NDT methods
- Directive 465 Work permitting
- Directive 505 Placing orders
- Metrology Rules

- Decision of CEO No. 2000/02 Determination of binding force of the ČSN standards
- Decree ČÚBP and ČBÚ No. 18/1979 Coll., defining designated pressure installations and laying down certain conditions to ensure their safety
- Decree ČÚBP No. 48/1982 Coll., defining basic requirements for occupational safety and technical equipment
- Decree ČÚBP and ČBÚ No. 551/1990 Coll., amending and supplementing the Decree of the Czech Office for Occupational Safety and the Czech Mining Authority No. 18/1979 Coll., defining designated pressure installations and laying down certain conditions to ensure their safety, within wording of the Decreed of the Czech Occupational Safety Office and the Czech Mining Office No. 97/1982 Coll.
- Government Decree No. 119/2016 Coll., on assessment of simple pressure vessels when launched on market
- Government Decree. 208/2011 Coll., on technical requirements for transportable pressure equipment
- Government Regulation No. 219/2016 Coll., laying down technical requirements for pressure device assessment when launched on market (This decree stipulated technical requirements for pressure equipment)
- Government Regulation No. 378/2001 Coll., laying down detailed requirements for safe operation and use of machines, technical equipment, apparatuses and tools
- Act No. 174/1968 Coll. on state inspection of labour safety
- Act No. 22/1997 Coll. on the technical requirements for products, and on a change and addition to certain laws

- Act No. 124/2000 Coll. , amending the Act No. 174/1968 Coll., on state inspection of occupational safety as subsequently amended, the Act No. 61/1988 Coll., on mining activities, explosives and on the state mining administration, as subsequently amended, and the Act No. 455/1991 Coll., on trade licencing (Trade Licencing Act), as subsequently amended
- Act No. 262/2006 Coll. Labour Code
- Act No. 90/2016 Coll. on conformity assessment of specified products when made available on the market
- Directive of the European Parliament and of the Council EU 2014/68/EU on the approximation of the laws of the Member States concerning launching of pressure equipment

- Directive 89/391/EEC introducing measures to encourage improvements in the safety and health of workers at work

Annex No. 1 List of activities performed on the pressure equipment – schedule index

The list of activities is located in the file: N 11 005 Annex 1 – Schedule index.xls (lhutnik.xls)

Annex No. 2 Appointment of an employee responsible for operation of the vessels (boilers)

ORLEN Unipetrol RPA, s.r.o. Litvínov

Mr.
Karel Novák
Head of plant 3706
(Head of boiler house T 200)

In re: A p p o i n t m e n t

Within the meaning of article 3 of the binding annex to the ČSN 69 0012 for Stationary pressure vessels - TNS (or within the meaning of article 4 par. d) of the ČSN 07 0710 for boilers) I, hereby, appoint you as the employee responsible for operation of vessels (steam boilers) at the plant 3706 (boiler house T200) effective from January 15, 2013 *.

stamp and signature
Plant director (Section director)

The appointment was accepted by:

Date and signature of the appointed employee:

Note:

* It is only possible to give names and specific serial numbers of the equipment (or attach the list of vessels as an annex)

Annex No. 3 Outline of permanent education of stationary pressure vessels (TNS) attendance staff and instructions for preparation of a training program for new employees

- Decree ČÚBP No. 48/1982 Coll.
- Decree ČÚBP and ČBÚ No. 18/1979 Coll. within the meaning of Decree ČÚBP and ČBÚ No. 551/1990 Coll.
- ČSN 69 0012 (stationary pressure vessels – operating requirement)
- N 11 005 (Operating rules for pressure equipment)
- Operating regulations